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ARTICLE

Numbers, names, and narratives: evidencing practices in media coverage of genomic research

Helena Bilandzic, Susanne Kinnebrock, Markus Schug and Theresa Engstler

Abstract

Media coverage of science often departs from scientific conventions, adapting content to audiences less familiar with research practices while following journalistic routines. Evidence for scientific claims is similarly transformed when presented in the media. We examine *evidencing practices*, defined as textual strategies to establish scientific findings as "true", in science news. In a content analysis of media coverage of genomic research in German newspapers, we investigate three evidencing practices: (1) data/methods, (2) experts/authorities, and (3) narratives. The sample comprised 1,020 articles from quality and regional newspapers, tabloids, and weekly news magazines. Findings show that reliance on experts/authorities is the most common practice, followed by narratives and references to data/methods. While experts/authorities often functioned as stand-alone evidence, narratives and data/methods were more frequently used in combination with other practices. The distribution of evidencing practices varied by both the contestedness of scientific findings and the type of newspaper.

Keywords

Science and media; Representations of science and technology

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1 ▪ Introduction

Providing evidence for claims is a central practice in science. Evidence is "what confirms or refutes scientific theories, and thereby constitutes our grounds for rationally deciding between competing pictures of the world" [DiFate, 2026]. It is considered a crucial, long-debated and constantly negotiated issue in science, and it also affects journalism, where calls for evidence-based reporting are increasingly articulated [e.g., Kreutzer et al., 2025]. We follow an epistemological view of evidence as a proposition that serves as justification for beliefs and makes one view of the world more probable than another [Kelly, 2016]. Importantly, evidence functions only if those who encounter it find it credible [DiFate, 2026]. Sensory experiences may seem the most immediate form of evidence, because — "unlike a belief — it makes no sense to demand evidence *for an experience*" [DiFate, 2026]. Yet many domains remain inaccessible to everyday observation, particularly in scientific research. In scientific communities, evidence is produced through systematic procedures such as observation, experimentation, systematically collected data, robust methods, and careful statistical analysis, and hypothesis testing, which are widely acknowledged as generating reliable knowledge [National Academies of Sciences, Engineering, and Medicine, 2019].

However, what counts as solid evidence in science may not be the best way to convince a broad audience. In news, evidence is once more removed, as extensive details about scientific procedures and related uncertainties are unlikely to hold broad audience attention [Guenther et al., 2019; Maier et al., 2016; Ratcliff et al., 2023]. Journalists transform scientific findings and their supporting evidence according to journalistic conventions, bridging the gap between the researchers and audiences who are interested to learn about the research, but lack the expertise to evaluate it directly [Villagrán Sánchez & López Pan, 2026]. In this vein, Maier et al. [2014] emphasise the active role of journalists in turning scientific findings into focused, easily understandable presentations. This perspective aligns with normative calls for public engagement, stressing the importance of providing audiences with the evidentiary basis needed to assess scientific claims [Retzbach & Maier, 2015; Retzbach et al., 2013].

Although scientific evidence in news has often been discussed in scholarship on science communication, more attention is needed to how knowledge claims are supported and validated in news coverage [Kreutzer et al., 2025]. Journalists frequently rely on sources, experts, and authorities to legitimize statements [Godler & Reich, 2017a], and narratives are discussed as a means of communicating science effectively [Avraamidou & Osborne, 2009; Dahlstrom, 2014; König et al., 2025]. While experts and narratives are not *scientific evidence* per se, they can function as *justifications* for knowledge claims. To capture these different modes of justification, we use the concept of evidencing practices [Zachmann & Ehlers, 2019], defined in the media context as textual strategies through which statements or facts are constructed and legitimised as 'true' or 'confirmed' [Kinnebrock et al., 2019].

This study systematically explores evidencing practices in science news, using the example of genomic research in print media coverage. We distinguish three types: the presentation of (1) data and methods, (2) experts and authorities, and (3) narratives [Kinnebrock et al., 2019; Kinnebrock & Bilandzic, 2023; Zachmann & Ehlers, 2019]. We analyse 1,020 German newspaper articles across four different newspaper types with a standardised content analysis. Genomic research is a timely and important topic, has received sustained media attention since the Human Genome Project, and continues to receive considerable media attention as new scientific subfields emerge [Kossmann et al., 2025]. We investigate the

prevalence and combination of evidencing practices and assess how their use varies with the contestedness of findings and across newspaper types.

2 · Presenting evidence in science journalism

From a normative perspective, publics should have a vested interest in current scientific results and issues — from the application of scientific innovations in their own lives to learning about potentials and risks and being informed about the uses of public funding [Intemann, 2023]. However, citizens rarely have direct access to scientific results, as resources such as conferences and publications are often restricted or difficult to understand without specialized expertise. Journalism has the important task to transform knowledge into a presentation intelligible to the public [Maier et al., 2014; Villagrán Sánchez & López Pan, 2026]. Brennen [2018] considers science journalism as a series of translations: from complex reality, through scientific investigation and presentation in scientific outlets, to reconstruction of these findings in media representations.

Science coverage maintains connections to how scientists access reality, but it also adds meaning along the process. Journalists balance "stasis and change" [Brennen, 2018, p. 431], maintaining a connection to the real (stasis) while adding meaning (change). Brennen [2018, p. 425] emphasises that this is more than simplifying complex content, calling for an acknowledgement of the "*productive* work" that science journalists deliver by "adding content and context".

What counts as trusted knowledge ultimately depends on a community's epistemic culture [Godler & Reich, 2013, 2017b; Villagrán Sánchez & López Pan, 2026]. Supporting this, journalists and scientists hold different perceptions of what counts as valid knowledge [Post, 2015], and science journalists tend to adhere to journalistic norms to a greater extent than to scientific standards [Dunwoody, 2014]. Previous studies in the German and US context have shown that science journalists often address and discuss evidence and uncertainty only with great caution in their reporting, partly due to unknown audience reactions [e.g., Guenther et al., 2019; Maier et al., 2016].

Accordingly, what is classified as evident is a process of negotiation in which — depending on the subsystem under consideration — different practices are employed to construct knowledge as valid [Zachmann & Ehlers, 2019]. Evidencing practices differ across epistemic cultures and scholars note that journalism develops its own practices and ways of substantiating knowledge in news coverage [Godler & Reich, 2017a; Neuberger, 2017]. Investigating evidencing practices in science journalism differs from approaches that capture framing or news values prominent in science coverage [e.g., Marmorat et al., 2025; Napiórkowski et al., 2024]. Framing is the process by which certain elements are made salient [Entman, 1993]. Any content can be made salient: responsibility, consequences, causes, moral issues — also sources to evidence science-related claims. However, the concept of framing cannot distinguish between different *functions* of content — and this is exactly what we seek to do with evidencing practices: to explore what content is used to evidence a scientific claim. News values (such as conflict, controversy, or personalization), on the other hand, compose the newsworthiness of a text [Mast & Temmerman, 2021]. Like evidencing practices, they are constructed through language, visuals or other semiotic means in the process of news production [Caple & Bednarek, 2016]. So, the principle is the same —

certain elements in content are discursively highlighted. However, evidencing practices do not necessarily lead to an increase in newsworthiness. For example, citing an expert can increase newsworthiness if the expert is a celebrity scientist; but this is not always the case. The same applies to narratives and data/methods — they can be, but often are not, related to the newsworthiness of a text. Both frames and news values are concepts that can describe the content of news, but do not express the same thing as evidencing practices.

Previous research points to three different evidencing techniques: in the epistemic culture of science, presenting data and methods counts as the paramount way of justifying conclusions: following Brennen [2018] and his notion of science journalism as a series of translations, presenting data and methods in science news counts as stasis, because it remains close to the conventions of science. The epistemic culture of journalism, however, adds two strategies to provide evidence to scientific claims, which can be interpreted as change: first, experts who confirm and explain findings; second, telling narratives about researchers, studies, or affected people may also serve as confirmation of scientific claims [Kinnebrock et al., 2019]. We assume that this strategy is particularly important as narratives represent a mode of communication that is both close to everyday life and engaging for lay audiences [Bloomfield, 2024]. In a thematic analysis of alternative news media's coverage of COVID-19 research, these three practices proved to be sufficient categories to broadly classify journalistic instances of supporting or rejecting research as (in)valid [Schug et al., 2023]. The following section discusses the three evidencing practices that science journalists use to substantiate scientific claims in greater detail.

3 ▪ Evidencing practices in science coverage

3.1 ▪ *Data and methods*

Systematic data collection according to disciplinary conventions lies at the heart of justifying knowledge in science [National Academies of Sciences, Engineering, and Medicine, 2019]. Science journalism mirrors these standards by referring to, translating and interpreting data and methods to support claims based on scientific findings [Cushion et al., 2017]. In doing so, journalists pursue "knowledge brokering functions", which includes presenting research evidence in their texts [Gesualdo et al., 2020]. Consequently, scientific publications and journal articles are increasingly used as information sources by science journalists [Fleerackers et al., 2022; Kiernan, 2016].

This evidencing practice depends on an audience's ability to understand scientific data and methods [Cushion et al., 2017]. Thus, it is not surprising that data and methods are often underrepresented in the media. Kessler et al. [2014] found that scientific findings on molecular medicine in German television science shows were supported by scientific data in only 40% of the news items; 39% contained no scientific evidence, and a fifth referred to experts. Guenther et al. [2019] confirmed that scientific evidence is rarely integrated in German print and online science coverage.

3.2 ▪ *Experts and authorities*

Using experts as sources for news coverage is a common practice that journalists actively pursue [Albæk, 2011; Schäfer & Painter, 2021], including in science communication, where

experts explain findings, background, and context [Biermann et al., 2024; Conrad, 1999]. Citing scientific experts and other academic elite sources is widespread in science coverage [De Dobbelaer et al., 2018; Morani et al., 2022]. Often, it is not simply the most appropriate expert who is cited; media-savvy scientists attract more attention and can dominate science coverage [Kruvand, 2012], and non-scientific experts (government, business and interest-group sources) also regularly appear in science coverage [Anderson et al., 2005; Takahashi et al., 2017]. The prevalence of scientific and non-scientific actors' presence in news may depend on the contestedness and political relevance of the scientific field discussed. For instance, in the case of UK television news on COVID-19, Morani et al. [2022] found that political actors were significantly more present as experts than health or scientific experts.

3.3 ▪ *Narratives*

Narratives have often been described as mere illustrations in news, for example, showing the human side of a medical condition [Rowe et al., 2003]. However, they can also serve as evidence in science journalism, for instance, when stories illustrate the research process, personal fates, or professional careers of science-related actors [see Bilandzic et al., 2026]. Narratives go beyond mere illustrations and also differ from "vignettes" that represent short (hypothetical) scenarios and situation descriptions, often used in survey research [e.g., see Hughes, 1998].

Following Abbott [2008] and Fludernik [2010], we define narratives as representations of events and characters. Events contained in narratives are characterised by a particular chronological sequence and causal relationships [Abbott, 2008]. As an intuitive and everyday mode of communication, narratives are attractive for journalism generally and for science communication specifically [Bilandzic et al., 2026; Dahlstrom, 2014; Goodwin & Dahlstrom, 2014; Howell et al., 2025; Riedlinger et al., 2019]. Some authors underline the beneficial property of narratives to turn abstract scientific findings into tangible stories [Avraamidou & Osborne, 2009; Yang et al., 2026], while others point to their potential incompatibility with the epistemological intricacies of scientific findings [König et al., 2025; Muurlink & McAllister, 2015].

Nonetheless, research shows that narratives and science news are intertwined. Narrative elements, such as personalization or a human-interest angle, guide the selection of science news [De Dobbelaer et al., 2018]. Science news often includes descriptions of characters and experiences as well as drama and human-interest stories [Michelle, 2007; Ruhrmann et al., 2015]. Clear protagonist-antagonist-structures have been observed, for example, in coverage of the human genome project [Holliman et al., 2001]. Comparisons of the use of narratives with the use of statistics or experts are relatively rare [König et al., 2025]. An exception is Atkin et al. [2008], who found that media coverage on breast cancer featured about twice as many personal narratives as statistical references, though the most prevalent source remained medical professionals, researchers, or organizations.

3.4 ▪ *Research questions*

While the literature outlined above documents various sources cited in science news, none examines whether the sources are actually used as *evidence* for a scientific claim. This study

examines how science news substantiates scientific findings through different evidencing practices. Using German print media coverage of genomic research, we first assess the prevalence:

RQ1: *How prevalent are different evidencing practices (data/methods, experts/authorities, narratives) in science news on genomic research?*

While evidencing practices can be identified individually, they may also appear in combination. For example, a finding may be supported by references to data or methods while simultaneously being reinforced through narratives [Dahlstrom, 2014]. Yet the specific combinations used in science journalism remain largely unexplored. We therefore ask:

RQ2: *How prevalent are combinations of different evidencing practices in science news on genomic research?*

As noted in the introduction, we argue that the presence of evidencing practices in science journalism may vary by (1) contestedness of scientific findings and (2) newspaper type.

(1) Contestedness is inherent to scientific findings [Taddicken & Thoms, 2025] and can appear in media coverage in multiple ways: findings may be contested in terms of associated risks [Donk et al., 2012], ethical implications [Hwang, 2011] uncertainty [Guenther et al., 2019; Kessler, 2016] or scientific and societal controversies [Kienhues et al., 2011]. To report and discuss contested findings, journalists may conduct deeper research and prepare the topic more thoroughly. In this regard, they may engage with data and methods, cite experts and authorities, or employ narratives that illustrate the risks, ethical implications, uncertainty, or controversies [Boukes et al., 2022; Kessler et al., 2014]. Based on this reasoning, we ask:

RQ3: *How does the contestedness of scientific findings (i.e. risks, ethical implications, uncertainty, and/or controversy) relate to the use of different evidencing practices in science news?*

(2) Finally, we propose that comparing different types of newspapers is essential for understanding coverage of genomic research. Prior studies highlight differences in journalistic approaches and audience demographics across newspaper types, particularly between high-quality newspapers and tabloids [Berg, 2018]. Tabloids, for example, tend to emphasise news factors such as controversy, simplification, or personalization more than high-quality newspapers [Esser, 2013]. Yet, it remains unclear how these styles are related to the use of evidencing practices and comparatively unfold in newspaper types other than quality newspapers and tabloids (e.g., regional newspapers, weekly news magazines). On the one hand, assessing research through more scientific evidencing practices like data/methods may indicate a move away from conventional tabloid news criteria. On the other hand, news values such as personalization may raise the probability of narrative coverage, for example by emphasizing the personal fate of individuals connected to the research [Cushion et al., 2017]. Regarding newspaper types, we therefore ask:

RQ4: *How are different (combinations of) evidencing practices in science news on genomic research connected to different newspaper types?*

4 ▪ Method

To answer our research questions, we conducted a quantitative content analysis of newspaper articles on genomic research.[1]

4.1 ▪ *Sample*

Regarding the sample, we focus on traditional science journalism, which, in the German case, outscores other media such as social media or formal science communication as source for scientific information [Mede et al., 2025]. Specifically, we focus on genomic research coverage published in print media. In this regard, research to date has shown that newspaper's digital or online coverage frequently mirrors the corresponding print version; where discrepancies exist, the print version often surpasses the online version in terms of journalistic quality [for instance, see Ramírez de la Piscina et al., 2015]. To represent different newspaper types within the German print media market, we selected popular national quality newspapers (*Frankfurter Allgemeine Zeitung*, *Süddeutsche Zeitung*, *TAZ*), regional newspapers (*Hamburger Abendblatt*, *Nürnberger Nachrichten*, *Mitteldeutsche Zeitung*), tabloids (*Bild*, *Express*, *Berliner Kurier*) as well as weekly news magazines (*DER SPIEGEL*, *DIE ZEIT*, *Focus*). For the German context, these four newspaper types make up an "extensive picture of science coverage in German print media" [Summ & Volpers, 2016, p. 780] and the selected newspapers reach comparatively large audiences [see Bundesverband Digitalpublisher und Zeitungsverleger, 2026]. Articles were located via WISO Genios or direct electronic access to individual newspapers. Relevant articles were identified using keywords referring to genomic research and its subfields based on Engelhard et al. [2009] and Müller-Röber et al. [2015]. The following search string was used for headlines and text body: "genomics" OR "genetics" OR "genome", OR "genetic research" OR "genetic engineering" OR "gene therapy" OR "stem cell research" OR "genome editing". We included articles published between January 1, 2000 and December 31, 2016 to capture multiple phases of media attention, spanning key developments such as the completion of the Human Genome Project and the emergence of CRISPR-Cas9 technology, while avoiding disproportionate focus on single, high-profile events [Bauer & Gutteling, 2006; Marmorat et al., 2025].

In total, $n = 18{,}099$ articles were located. From these, we drew a stratified random sample with representative layers for medium and year. As the main focus of this study was to investigate evidencing practices, articles were only included in the sample if they contained a scientific finding. For this study, a finding was defined as a claim presented as the result of an empirical study, expert opinion, case study, review, or meta-analysis (see Supplementary file: Codebook). This procedure yielded $n = 1{,}023$ articles. During data cleaning, three cases with unclear missing data were removed, resulting in a final sample of $n = 1{,}020$ articles.

4.2 ▪ *Measures and coding procedure*

Articles served as the primary coding unit (the 'natural' unit within the newspapers), while scientific findings constituted the secondary unit of analysis [Guenther et al., 2019]. Because evidencing practices are used to substantiate scientific findings, the latter provided the most appropriate unit for their analysis.

1. This analysis is part of a larger project. Another portion of the data (on narratives and narrativity) is presented in Bilandzic et al. [2026].

Overall, we identified 1,744 findings in 1,020 articles. The evidencing practices were coded on the level of the findings; for analysis, they were aggregated to the level of the article. In the following, we describe the coding rules for our central variables (for details, see Supplementary file: Codebook).

Evidencing practices. For each finding, we coded the presence of each of the three evidencing practices if it appeared at least once in the article: (1) *Data/methods* were coded as an evidencing practice when information on test procedures and study design was used to support scientific findings [see Kessler et al., 2014]. (2) *Experts/authorities* were coded when individual researchers or research groups, research institutions, scientific journals, non-scientific stakeholders, media representatives, or other authorities were cited to support a finding [see Kessler, 2016]. (3) *Narratives* were coded as representations of events and characters relating to the research process, personal fate or professional career. We coded the presence of up to three narratives per article. The narratives were connected to the findings through actors: if an actor was associated with at least two events related to the research, we coded a narrative [for a detailed derivation of the different story types based on previous research in science communication, see Bilandzic et al., 2026].

Contestedness of scientific findings. We measured the contestedness of scientific findings along four dimensions: first, following Donk et al. [2012] and Marcinkowski et al. [2010], we coded the presence (0/1) of risks associated with the presented findings, including general, medical, scientific, economic, political, or societal risks. Second, we coded the presence (0/1) of ethical implications, e.g., health or ecological risks, scientific ethics, interventions in the creation/the concept of life, discrimination and data protection, misuse, or global nutrition concerns [Fehse et al., 2021]. Third, following Kessler [2016] and Kessler et al. [2014], we coded for scientific uncertainty, including research gaps, limited scientific and technical facilities, limited data base, methodological quality, representativeness of data, external interests, diverging scientific results, or varying interpretations. Fourth, we coded for the presence (0/1) of societal or scientific controversies associated with the findings [Kessler et al., 2014].

Student coders were extensively trained to code the materials. Intercoder reliability was tested for all variables; coders achieved good to excellent agreement (detailed procedure see Supplementary files “Intercoder reliability” and Table 1).

5 ▪ Results

Regarding RQ1 and the prevalence of different evidencing practices (data/methods, experts/authorities, narratives) in science news on genomic research, data/methods were the least prominent evidencing practice (31.4% of articles contained at least one reference, $n = 320$), followed by narratives (43.6%, $n = 445$). References to experts/authorities were by far the most frequent, appearing in 92.6% of articles ($n = 945$; see Table 1).

A closer look at evidencing practices shows that references to data/methods mainly focused on test procedures ($n = 316$, 31.0% of articles), while study design was rarely mentioned ($n = 25$, 2.5%). References to experts/authorities were dominated by individual researchers or research teams ($n = 706$, 69.2% of articles), followed by research institutions ($n = 470$, 46.1% of articles), non-scientific stakeholders ($n = 375$, 36.8%), and scientific journals ($n = 226$, 22.2%). Media representatives ($n = 41$, 4.0%) or other kinds of experts/authorities ($n = 4$,

Table 1. Frequencies of (combined) evidencing practices.

	Articles ($n = 1020$)	
	n	%
Evidencing practices		
Data/methods		
Test procedures	316	31.0%
Study design	25	2.5%
at least one Data/methods reference in the article	320	31.4%
Experts		
Researcher / Research teams	706	69.2%
Research institutions	470	46.1%
Scientific journals	226	22.2%
(Non-scientific) Stakeholders	375	36.8%
Media representatives	41	4.0%
Other reference to Experts	4	0.4%
at least one Experts reference in the article	945	92.6%
Narratives		
Research process	368	36.1%
Personal fate	77	7.5%
Professional career	187	18.3%
at least one Narrative present in the article	445	43.6%
Combined evidencing practices		
No evidence presented	58	5.7%
Data/methods only	4	0.4%
Experts only	455	44.6%
Narratives only	9	0.9%
Data/methods + experts	58	5.7%
Data/methods + narratives	4	0.4%
Experts + narratives	178	17.5%
Data/methods + experts + narratives	254	24.9%
Overall	1,020	100.0%

Note. For each row, percentages refer to the sample size of $n = 1020$ articles. For the evidencing practices, multiple coding was possible. Accordingly, the percentages of (different types of) data/methods, experts, and narratives do not add up to 100%. For the combined practices, the combinations are mutually exclusive, and the percentages add up to 100%.

0.4%) only played a minor role. Regarding narratives, the most common were stories on the research process ($n = 368$, 36.1%), followed by professional careers ($n = 187$, 18.3%), and personal fates ($n = 77$, 7.5%).

RQ2 examined *combinations* of evidencing practices. Articles without any evidencing practices were rare ($n = 58$, 5.7%, see Table 1). Similarly, narratives alone ($n = 9$, 0.9%), data/methods alone ($n = 4$, 0.4%), or a combination of narratives and data/methods ($n = 4$, 0.4%) were very uncommon. The only solitary evidencing practice of substantial frequency was experts/authorities ($n = 455$, 44.6% of articles).

Combinations of narratives and experts/authorities were moderately frequent ($n = 178$, 17.5%). Nearly a quarter of articles ($n = 254$, 24.9%) included all three evidencing practices.

Next, we investigated the relationship between evidencing practices and the contestedness of scientific findings (RQ3). Chi-square tests showed that different (combinations of) evidencing practices were significantly associated with risk, ethical implications, and scientific uncertainty, but not with controversy (see Table 2).

Data/methods references were more likely in articles referencing scientific uncertainty (41.0%) than in those without (28.1%). Experts/authorities occurred less frequently with ethical implications (88.6%) than without (93.9%). Narratives were less common in articles portraying risks (33.7% vs. 47.4%), but more common in articles with scientific uncertainty (53.5% vs. 40.3%).

Experts/authorities as solo evidencing practice appeared more often in articles referencing risks (54.1% vs. 41.0%) and less often with scientific uncertainty (34.4% vs. 48.0%). Combinations of experts/authorities and narratives were more frequent with risks (19.7% vs. 11.5%). All three evidencing practices co-occurred more often with scientific uncertainty (33.6% vs. 22.0%; see Table 2).

Finally, RQ4 explored the associations between (combined) evidencing practices and different newspaper types. Chi-square tests revealed significant relationships for data/methods and narratives (see Table 3). Data/methods were more common in national quality papers (36.6%) and weekly news magazines (34.4%) than in tabloids (29.9%) and regional newspapers (22.3%). Narratives were also more frequent in weekly news magazines (56.5%) and national quality papers (42.6%) compared to tabloids (33.9%) and regional newspapers (33.3%). Experts/authorities as solo evidencing practice in one article were most frequent in regional newspapers (56.4%) and tabloids (47.2%) compared to national quality papers (43.6%) and weekly news magazines (35.0%). The combination of experts/authorities and narratives was highest in weekly news magazines (23.6%), while it co-occurred more in weekly news magazines (31.1%) and national quality papers (27.9%) than in tabloids (19.7%) or regional newspapers (16.3%) (see Table 3).

Given that tabloids are also more likely to publish sensational stories, their lower use of narratives and data/methods warrants a closer look at the types of evidencing practices associated with different newspaper types (see Table 4). Accordingly, additional analyses reveal that, for data/methods, national quality papers (35.9%) and weekly news magazines (34.4.%) cited test procedures more often than tabloids (29.9%) and regional newspapers (21.6%). For experts/authorities, significant differences emerged for references to researchers/research teams and scientific journals. References to researchers/research teams were highest in weekly news magazines (81.9%) and lowest in regional newspapers (57.2%). Concerning scientific journals, tabloids (4.7%) cited them far less than national quality papers (30.5%), regional newspapers (26.5%), and weekly news magazines (17.8%). No significant differences were found for other types of expert/authority references (see Table 4).

Lastly, for narratives, differences emerged across all story types, with weekly news magazines demonstrating the highest values (research process: 47.1%; personal fate: 14.8%; professional career: 29.6%). Especially regarding the more 'scientific' narratives (research process and professional career), tabloids (26.0%, and 10.2%) and regional newspapers (27.7%, and 11.0%) show strikingly low uses of narratives while national quality papers score close to the average for both categories (see Table 4). These results suggest that it is not the

Table 2. (Combined) Evidencing practices by contestedness of scientific findings within the article level ($n = 1020$).

	Overall	Contestedness of scientific findings											
		Risks			Ethical implications			Scientific uncertainty			Controversy		
	Present %	Present %	Not present %	Chi-square tests	Present %	Not present %	Chi-square tests	Present %	Not present %	Chi-square tests	Present %	Not present %	Chi-square tests
Evidencing practices													
No evidence	5.7%	6.5%	5.4%	$\chi^2(1) = .42$, $p = .52$, $V = .02$	7.3%	5.2%	$\chi^2(1) = 1.61$, $p = .21$, $V = .04$	5.5%	5.8%	$\chi^2(1) = .03$, $p = .86$, $V = .01$	4.7%	6.1%	$\chi^2(1) = .73$ $p = .39$, $V = .03$
Data/Methods	31.4%	27.2%	32.9%	$\chi^2(1) = 3.05$, $p = .08$, $V = .06$	32.5%	31.0%	$\chi^2(1) = .20$, $p = .66$, $V = .01$	41.0%	28.1%	$\chi^2(1) = 14.76$, $p < .001$, $V = .12$	28.8%	32.3%	$\chi^2(1) = 1.20$, $p = .27$, $V = .03$
Experts	92.6%	92.8%	92.1%	$\chi^2(1) = .16$, $p = .69$, $V = .01$	88.6%	93.9%	$\chi^2(1) = 7.73$, $p = .01$, $V = .09$	93.4%	92.4%	$\chi^2(1) = .26$, $p = .61$, $V = .02$	93.2%	92.5%	$\chi^2(1) = .15$, $p = .70$, $V = .01$
Narratives	43.6%	33.7%	47.4%	$\chi^2(1) = 15.42$, $p < .001$, $V = .12$	40.7%	44.6%	$\chi^2(1) = 1.17$ $p = .28$, $V = .03$	53.5%	40.3%	$\chi^2(1) = 13.59$, $p < .001$, $V = .12$	39.9%	45.0%	$\chi^2(1) = 2.13$, $p = .15$, $V = .05$
Most frequent combinations													
Experts only	44.6%	54.1%	41.0%	$\chi^2(1) = 14.07$, $p < .001$, $V = .12$	43.5%	45.0%	$\chi^2(1) = .16$, $p = .69$, $V = .01$	34.4%	48.0%	$\chi^2(1) = 14.48$, $p < .001$, $V = .12$	49.3%	42.9%	$\chi^2(1) = 3.38$, $p = .07$, $V = .06$
Experts + narratives	17.5%	11.5%	19.7%	$\chi^2(1) = 9.54$, $p = .00$, $V = .10$	14.2%	18.5%	$\chi^2(1) = 2.34$ $p = .13$, $V = .05$	19.1%	16.9%	$\chi^2(1) = .68$, $p = .41$, $V = .03$	16.2%	17.9%	$\chi^2(1) = .43$, $p = .51$, $V = .02$
Experts + narratives + data/methods	24.9%	26.3%	21.1%	$\chi^2(1) = 2.90$, $p = .09$, $V = .05$	23.2%	25.5%	$\chi^2(1) = .52$ $p = .47$, $V = .02$	33.6%	22.0%	$\chi^2(1) = 13.81$, $p < .001$, $V = .12$	22.3%	25.9%	$\chi^2(1) = 1.38$, $p = .24$, $V = .04$

Table 3. (Combined) Evidencing practices by newspaper types.

	Newspaper types					Chi-square tests
	national quality papers	tabloids	regional newspapers	weekly news magazines	Total	
Evidencing practices						
No evidence presented	5.4%	8.7%	5.3%	5.1%	5.7%	$\chi^2(3) = 2.41$, $p = .50$, $V = .05$
Data/methods	36.6%	29.9%	22.3%	34.4%	31.4%	$\chi^2(3) = 15.31$, $p = .002$, $V = .12$
Experts	93.0%	91.3%	92.4%	93.1%	92.6%	$\chi^2(3) = .46$, $p = .93$, $V = .02$
Narratives	42.6%	33.9%	33.3%	56.5%	43.6%	$\chi^2(3) = 38.71$, $p < .001$, $V = .20$
Most frequent combinations						
Experts only	43.6%	47.2%	56.4%	35.0%	44.6%	$\chi^2(3) = 27.68$, $p < .001$, $V = .17$
Experts + narratives	13.8%	14.2%	15.5%	23.6%	17.5%	$\chi^2(3) = 13.30$, $p = .005$, $V = .11$
Experts + narratives + data/methods	27.9%	19.7%	16.3%	31.1%	24.9%	$\chi^2(3) = 20.55$, $p < .001$, $V = .14$

Note. The percentages for (combined) evidencing practices indicate their frequency across different newspaper types. For the single practices, multiple coding was possible, so the percentages of data/methods, experts, and narratives do not round up to 100%. For the combined practices, the combinations are mutually exclusive, and the percentages add up to 100%.

Table 4. Subcategories of data/methods references, expert references, and narratives by newspaper types.

Evidencing practices	Newspaper types					Chi-square tests
	national quality papers	tabloids	regional newspapers	weekly news magazines	Total	
Data/methods						
Test procedures	35.9%	29.9%	21.6%	34.4%	31.0%	$\chi^2(3) = 16.19$, $p = .001$, $V = .13$
Study design	3.7%	0.0%	2.7%	2.1%	2.5%	$\chi^2(3) = 5.31$, $p = .15$, $V = .07$
Experts						
Researcher / Research teams	64.8%	71.7%	57.2%	81.9%	69.2%	$\chi^2(3) = 45.91$, $p < .001$, $V = .21$
Research institutions	46.3%	37.0%	46.6%	48.9%	46.1%	$\chi^2(3) = 5.33$, $p = .15$, $V = .07$
Scientific journals	30.5%	4.7%	26.5%	17.8%	22.2%	$\chi^2(3) = 41.02$, $p < .001$, $V = .20$
(Non-scientific) Stakeholders	38.9%	30.7%	41.7%	33.2%	36.8%	$\chi^2(3) = 7.11$, $p = .07$, $V = .08$
Media representatives	4.4%	3.1%	3.4%	4.5%	4.0%	$\chi^2(3) = .82$, $p = .85$, $V = .03$
Other references to Experts	0.0%	0.0%	0.4%	0.9%	0.4%	$\chi^2(3) = 3.92$, $p = .27$, $V = .06$
Narratives						
Research process	35.6%	26.0%	27.7%	47.1%	36.1%	$\chi^2(3) = 31.30$, $p < .001$, $V = .18$
Personal fate	2.3%	6.3%	4.9%	14.8%	7.5%	$\chi^2(3) = 39.40$, $p < .001$, $V = .20$
Professional career	15.8%	10.2%	11.0%	29.6%	18.3%	$\chi^2(3) = 44.49$, $p < .001$, $V = .21$

Note. The percentages for types of data/methods, experts, and narratives indicate their frequency across different newspaper types. For all types of practices, multiple coding was possible, so the percentages do not add up to 100% both within one type of evidencing practice and across different evidencing practices.

presence of narratives per se, but the type of story that aligns differently with quality versus tabloid-style newspapers.

6 ▪ Discussion

This study investigated evidencing practices — textual strategies to support a claim as 'true' or 'valid' — in German print media coverage of genomic research. We explored the prevalence and co-occurrence of three evidencing practices: data/methods, experts/authorities, narratives.

Our study revealed that the overwhelming majority of articles (94.3%) employed *some form* of evidencing, and only 5.7% presented scientific findings *without* any evidentiary support. This indicates a great need to justify findings when they are reported — but through different means. The diagnosis that science reporting suffers from a lack of references to evidence [e.g., Kreutzer et al., 2025] is certainly based on a narrower understanding of evidence as referencing research and studies.

In line with earlier studies on health-related science coverage [e.g., Atkin et al., 2008; MacDonald, 2005], we found that data/methods received comparatively little attention in the coverage of genomic research (31.4%). Instead, we found that almost all articles cite sources and experts (92.6%). This reflects the core journalistic routine of using experts as sources [e.g., Conrad, 1999], especially when it comes to science reporting [De Dobbelaer et al., 2018; Kruvand, 2012].

Here, evidencing practices borrowed from scientific logics are replaced by evidencing practices shaped by media logics. Also, narratives are fairly prevalent with 43.6% of all articles. Again, this does not comply with scientific logics but media logics to offer legitimation by narratives that are easily and intuitively understandable for lay audiences [Dahlstrom, 2014; Howell et al., 2025; Riedlinger et al., 2019]. So evidencing is happening in science news, but in a much broader sense, with more audience-oriented means — narratives and experts/authorities —, which are all part of the "*productive* work" [Brennen, 2018, p. 425] in science journalism.

While journalistic routines are one explanation why experts are favoured, accessibility and availability of data/methods and narratives may be another. First, referencing data/methods requires at least some expertise in science. With increasing economic pressures in science journalism [Schäfer, 2017], expertise from specialized journalists to process scientific studies may be on the decline. Research shows that smaller newspapers are more likely to rely on press releases while larger newspapers process the materials to a greater degree [Ashwell, 2016]. This interpretation can be cautiously supported by the differences of data/methods usage between national quality newspapers (that often have science editors) with 36.6% and regional newspapers (that often do not) with 22.3%. While recent research shows that science literacy improves journalists' ability to accurately report and critically assess scientific materials [Berger et al., 2026], it remains unknown whether this also translates into more extensive evidencing practices. Second, press releases and news agency reports come with ready-to-use expert quotes in the first place. For example, for health news in the UK and The Netherlands, Bossema et al. [2019] found that 99% of the UK press releases and 85% of the Dutch press releases contain at least one quote from an expert [Bossema et al., 2019]. Leaving expert quotes in is the least time-consuming option. Future research could follow up

whether the lack of specialist science journalists is compensated by relying on more accessible forms of evidencing, such as consulting external experts or telling stories, rather than reporting methodological details or data.

Citing experts/authorities seems to be the go-to strategy, a standard or baseline, which may or may not be complemented by one of the other evidencing practices. In contrast to experts, narratives and data/methods rarely appear alone; they most often co-occur with other evidencing practices. The most frequent combinations involve narratives paired with experts/authorities or all three practices together, providing the highest level of evidentiary richness. This may also reflect resources available at the news outlet: in our study, we found that articles from national quality papers and weekly news magazines most often contain a combination of the three evidencing practices, compared to tabloids and regional newspaper that relied most often on experts as a stand-alone evidencing strategy. For readers of the respective newspapers, this means that while genomic research is written about in all newspaper types, the findings may be more thoroughly justified from several angles (the scientific, the expert, and the narrative) only in higher quality outlets, potentially making the material more vivid, impressive and memorable. This too is a domain for future research: do different evidencing strategies cumulate in their effects? Is more evidence better, or can cumulation signal over-justification?

We also found that the presence and combination of evidencing practices vary with the contestedness of scientific findings. When risks were reported, experts as solo references were more common, while narratives were less frequent. When findings were presented as uncertain, experts as solo reference appeared less often, whereas data/methods and narratives were used more frequently. In about a third of the cases in which uncertainty was discussed, *all three* evidencing practices were employed. In contrast, references to ethical implications and controversy were hardly associated with specific evidencing practices. A tentative interpretation may be that journalists tailor evidencing to the epistemic demands of specific issues, depending on the uncertainty or risk-related claims. In contrast, ethical implications and controversy may demand less in terms of legitimizing scientific findings, and a more detailed focus on representing competing values, interests, or societal consequences, irrespective of scientific evidence, experts, or narratives.

In about a third of the cases in which uncertainty was discussed, all three evidencing practices were employed. This may suggest that journalists perceive uncertain findings as requiring additional epistemic support — from different perspectives. Of course, more practical aspects may also play a role: when there is space in the newspaper to report on uncertainties, there is also space to elaborate on the study and tell a story. Similarly to the potential future research question raised above, the question is whether the combination of evidencing practices cumulates in its effect on audiences and how it changes the perception of uncertainty.

In all, our results show that different contexts in terms of contestedness and newspaper type change the evidencing practices employed, implying that each evidencing practice serves a different function, each signalling differently why the evidence of the reported finding is believable [see Cushion et al., 2017; Kelly, 2016; Morani et al., 2022]: data/methods indicate rigor and link to scientific conventions, ensuring the correspondence of the scientific claim with reality; experts/authorities lend personalised legitimacy to the findings, demonstrating that the scientific claim sounds believable to experts as well; narratives translate abstract

research into meaningful stories, giving audiences the opportunity to relate to the scientific findings by resonating with their everyday lives, their lived experience and their common-sense judgements of plausibility.

The presented results should be interpreted in light of methodological limitations. One aspect to consider is the heterogeneous structure of the evidencing practices. References to experts/authorities were by far the most frequent, mirroring an established practice of journalism. Their prevalence may also reflect parsimony — simply naming a scientist or institution suffices, whereas data/methods and narratives require more space to develop. Consequently, the prevalence of experts/authorities may partly stem from typical space and time constraints in print journalism. Moreover, this study focused only on genomic research as a specific topic of science communication. Also, it analysed traditional science journalism in the form of print media. How evidencing practices unfold in other formats of science communication remains to be explored. Even though, in the German case, traditional science journalism still reaches large audiences, recent research also finds a growing relevance of alternative channels for science information [e.g., social media, see Mede et al., 2025]. To take account of this gradual, usage-related shift, future research should examine evidencing practices across diverse media types.

7 ▪ Conclusion

Journalism plays a crucial role in conveying abstract scientific findings to the public. When reporting on these findings, journalists negotiate their validity by applying evidencing practices. In doing so, they provide audiences with guidance and tools on how to contextualise scientific findings themselves. Accordingly, how scientific findings are communicated and how evidencing practices support them may shape public perceptions of genomic research and other scientific fields [e.g., Ratcliff & Wicke, 2023; Retzbach & Maier, 2015]. Our study provides an important building block for further investigating the presence and impact of various evidencing practices in science coverage. We showed that evidence in science journalism is co-constructed through multiple strategies, not just statistical evidence, demonstrating that numbers, names, and narratives work in concert to convey scientific claims and make them meaningful for the public.

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About the authors

Helena Bilandzic is a full professor at the University of Augsburg, Germany. She earned her Ph.D. in 2003 from LMU Munich and her habilitation degree in 2009 from the University of Erfurt. She has taught at universities in Munich, Erfurt, Ilmenau, Berlin, Hamburg, and Friedrichshafen. Her current research interests include media effects related to science, the environment and health, and social and moral issues, as well as narrative experiences and persuasion.

helena.bilandzic@phil.uni-augsburg.de

Susanne Kinnebrock is a professor of communication at the University of Augsburg, Germany. She earned her Ph.D. from the LMU Munich in 2002 and has taught at several European universities (Munich, Erfurt, Hamburg, Salzburg, Vienna, Aachen, and Lisbon). Her research interests include communication history, gender media studies, narrative journalism, and health communication.

susanne.kinnebrock@uni-a.de

Markus Schug is a Ph.D. student in the Department of Media, Knowledge, and Communication at the University of Augsburg, Germany. His research interests focus on science communication in times of public crises, in particular evidence and norm negotiations as well as their interplay with public perceptions of science.

markus.schug@uni-a.de

Theresa Engstler, M.A. earned her BA in communication science at the Department of Media, Knowledge, and Communication at the University of Augsburg, Germany, her MA in communication science at the Ludwigs-Maximilians-Universität München, Germany and her BA in computer science at the Technische Hochschule Augsburg. She worked as a research

associate at Department of Media, Knowledge, and Communication at the University of Augsburg, and is now working at Baramundi Software as a software engineer.

theresa.engstler@web.de

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