

**SPECIAL ISSUE****Transitions in Science Communication: Continuity and Change****ARTICLE**

Shared gatekeeping: comparing relevance criteria for selecting science information

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Science communication experiences major transitions: alongside science journalists, scientists, their institutions, and public relations departments increasingly select and communicate science information to publics, thereby stepping into gatekeeping roles. To better understand this “shared gatekeeping” and how different science communicators select topics, this article investigates relevance criteria that guide selection and communication decisions of science information. Drawing on 57 interviews with German-speaking science journalists, science public relations practitioners, and scientists, the study identifies and compares relevance criteria for each group based on the hierarchy of influences model. Findings reveal a wide range of relevance criteria as well as similarities and differences at individual, communication routines, organizational, and social institutional levels. Although all groups seem to be guided by similar, partly journalistic, relevance criteria (e.g., overlapping goals, topic characteristics), they operate within distinct professional contexts and thus weigh these criteria differently.

Keywords

Science communication: theory and models; Science and media; Scholarly communication

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1 - Introduction and objective

For decades, the answer to the question “Who will tell society what is really going on in science?” was science journalism [Badenschier & Wormer, 2012, p. 81]. In turn, research has primarily focused on science journalists as central gatekeepers in science communication who are responsible for filtering a large number of available messages and selecting some of them for public dissemination [Guenther & Ruhrmann, 2013; Shoemaker et al., 2001]. However, given the recent challenges facing science journalism in digital media landscapes – financial problems, job cuts, and online competition, to name a few [Dunwoody, 2021] – science journalists can no longer fulfill their gatekeeper function alone. For example, the rise of copy-and-paste journalism (so-called churnalism) illustrates that (science) journalists are increasingly reliant on and reproduce third parties’ material rather than writing and editing their own articles [Brück et al., 2025]. In parallel, other science communicators, such as scientists and scientific institutions, have also undergone significant transitions by becoming more strategic in the context of new public management and by more strongly seeking legitimization in the face of society’s expectations [Bucchi & Schäfer, 2025]. These science communicators select and communicate science topics to lay audiences through various channels, such as online platforms (e.g., social media), interviews with journalists for (online) news articles, or press releases on institutional websites [Autzen, 2014; Peters, 2021]. Therefore, not only scientists but also their institutions (e.g., universities, non-academic entities, or private research organizations) as well as their public relations (PR) departments have stepped into gatekeeping roles and increasingly communicate about science to publics [Borchelt, 2008; Ho et al., 2020]. Hence, all three groups of science communicators – science journalists, science PR practitioners, and scientists – participate in *shared gatekeeping*. They select information from a seemingly endless supply of potential science stories [Shoemaker & Vos, 2009; White, 1950]. Gatekeeping, however, involves more than merely selecting information. It is “the process by which the vast array of potential news messages are winnowed, shaped, and prodded into those few that are actually transmitted by the news media” [Shoemaker et al., 2001, p. 233]. In this process, items pass through a series of decision points, or “gates”, where decisions are made about how to proceed with them [Shoemaker et al., 2001]. For that reason, gatekeepers also determine how stories are framed and when they are disseminated. Yet, not all science communication equals gatekeeping; rather, gatekeeping refers to processes in which science communicators select and shape information for publics.

Nevertheless, research to date has largely focused on science journalism, while the decision-making of other science communicators remains underexamined [Autzen & Weitkamp, 2020; Borchelt, 2008; Volk et al., 2023]. Existing studies on science PR and scientists mainly explore *why* the actors communicate publicly [Borchelt, 2008; Dudo, 2012; Ho et al., 2020; Peters, 2013], not *how* they select topics, or which criteria guide their decisions. Thus, it remains unclear whether those criteria as well as selection and communication decisions differ across science communicators. To address this gap, this article introduces the concept of “relevance criteria” and examines factors influencing such criteria across science communicators, based on interviews with 57 German-speaking science journalists, science PR practitioners, and scientists. The aim is to identify and compare relevance criteria across all science communicator groups and to derive implications for an approach to shared gatekeeping.

2 - Relevance criteria in science communication

Considering the growing diversity of science communicators with gatekeeping roles and the proposed approach to shared gatekeeping, the question of so-called *relevance criteria in science communication* needs to be raised. Such criteria relate to how science communicators decide which science information is selected, considered to be newsworthy, and thus communicated (e.g., published) and which is not. In this context, science communication includes all communication on science topics that deals with both the communication *from* and *about* science [Schäfer & Fährnrich, 2020].

To capture the complexity of relevance criteria, this article applies the hierarchy of influences model [Shoemaker & Reese, 2013; Shoemaker & Vos, 2009]. In the context of gatekeeping, the model conceptualizes news selection as “a complex series of interrelated decisions” occurring at different levels of analysis [Shoemaker & Reese, 2013, p. 138]. A key assumption is that gatekeepers do not make their selection and communication decisions solely as individuals; rather, these decisions are shaped by their profession, their organization, and their environments. Accordingly, the model systematically maps influences on the production of media content at five interconnected levels that interact with each other, ranging from micro to macro: the (a) individual (e.g., attitudes, demographic characteristics, and role attributions), (b) communication routines (e.g., characteristics of topics, news values and factors), (c) organizational (e.g., ownership, hierarchies, and guidelines), (d) social institutional (e.g., competitive and/or dependent relationships), and (e) social systems level (e.g., national, political, cultural, and/or economic contexts) [Guenther & Ruhrmann, 2013; Rosen et al., 2016; Shoemaker & Reese, 2013]. The model’s flexibility makes it suitable for group comparisons and for analyzing shared gatekeeping: its generic nature can be applied to different media types and does not refer exclusively to the production of journalistic content [Shoemaker & Reese, 2013]. However, research on science communication to date has considered it only in the context of science journalism [Guenther & Ruhrmann, 2013; Rosen et al., 2016], and not for other science communicators as potential gatekeepers who may experience other influences.

Although studies on science PR practitioners and scientists remain fragmented, they provide indications of relevance criteria. At the (a) individual level, studies have identified certain *individual characteristics*¹ as relevance criteria. Science journalists’ news decisions are shaped by sociodemographic factors, personal dispositions, and work situations [Clark & Illman, 2006; Guenther & Ruhrmann, 2013; Rosen et al., 2016]. Research on science PR has especially focused on professional backgrounds [Volk et al., 2023]. Scientists’ motivation for communicating depends on their position, discipline, attitude toward communication, and time available [Kessler et al., 2022; Peters, 2013], albeit also on sociodemographic factors [Bao et al., 2024; Dudo, 2012]. As further relevance criteria, *goals and associated roles of science communicators* shape news and communication decisions. Science journalists chiefly aim to inform, educate, inspire, and critically reflect on science while strengthening its public image [Fahy & Nisbet, 2011; Kristiansen et al., 2016]. Depending on whether they act as information providers, critics, entertainers, or service providers, they make different decisions [Guenther & Ruhrmann, 2013; Weischenberg et al., 2006]. PR practitioners pursue institutional goals of image-building and media attention [Autzen & Weitkamp, 2020; Lo

1. To avoid redundancy, the description of the levels follows the logic of first outlining overarching aspects (italicized) that apply to all three science communicator groups, followed by specific examples identified in the literature for science journalists, science PR practitioners, and scientists.

et al., 2019]. Their roles are divided into four segments identified by Volk et al. [2023, pp. 6–7]: leading all-rounders (i.e., guardians of institutional reputation and university leadership supporters), generalists (i.e., with varied roles that are less likely to be managerial and often with journalistic experience), science mediators (i.e., who transfer knowledge, foster dialogue, and enhance institutional reputation), and service partners (i.e., who support internal communication and university leadership). Scientists communicate primarily to inform and educate audiences with factual knowledge [Dudo & Besley, 2016], even if dialogue and engagement are becoming increasingly important [Kessler et al., 2022]. They also pursue strategic goals, including popularizing research, strengthening trust, and countering misinformation [Dudo & Besley, 2016]. As their communication roles are not yet firmly established — they are often described as experts in policy advice and public communication [Peters, 2021] — Horst [2013, pp. 771–772] has proposed a classification into experts (i.e., representing fields of expertise and supplying factual knowledge), research managers (i.e., representing organizations and resources for knowledge production), and guardians of science (i.e., representing science as a social institution and basis for rational problem solving).

Next, concerning (b) communication routines, certain *characteristics of scientific topics* increase their likelihood of being selected. Journalism studies highlighted a topic's (scientific) importance, subject area, novelty, narrative style, and everyday relevance [Badenschier & Wormer, 2012; Elmer et al., 2008]. *News factors* also rank among key relevance criteria for journalists; they include general news factors (e.g., controversy, personalization, or actuality) as well as science-specific factors (e.g., astonishment and scientific, societal, economic, or political relevance) [Badenschier & Wormer, 2012; Guenther & Ruhrmann, 2013]. These routines are, however, assumed to be medium-specific — for example, television journalism emphasizes visuality [Guenther & Ruhrmann, 2013]. In science PR research, characteristics such as the importance and success of a scientific finding, as well as its organizational alignment, are also emphasized [Autzen & Weitkamp, 2020; Borchelt, 2008]. Research on scientists, meanwhile, has revealed no explicit criteria; (public) communication is usually linked to scientific publication and follows scientific norms (e.g., a serious, factual, cautious, and educational style), with a focus on disciplinary knowledge [Peters, 2021]. Traditional (science journalistic) news factors, aside from scientific relevance [Autzen, 2014], are less often considered in studies on science PR or scientists.

Concerning the (c) organizational level, *organizational characteristics* are essential relevance criteria. Journalism studies show that media organizations represent their own institutional viewpoints, influenced by characteristics such as hierarchies, organizational size, and institutional norms and values [Guenther & Ruhrmann, 2013; Rosen et al., 2016]. Patterns of socialization, ethics, and the recruitment of journalistic staff are all factors that influence science PR practitioners [Autzen & Weitkamp, 2020; Göpfert, 2008]. For scientists, institutional hierarchies, size, and (funding) structure (e.g., private/public universities), as well as peer acceptance and social norms in the field concerned, are important organizational characteristics that affect their communication [Ho et al., 2020; Kessler et al., 2022]. The *working environment* (which is closely linked to organizational characteristics) is also a key relevance criterion. Particularly, internal editorial processes (e.g., editorial conferences), relationships with editors and peers, and (big) newsroom concepts affect science journalists' decisions [Badenschier & Wormer, 2012; Kristiansen et al., 2016]. Whereas employed science journalists are relatively dependent on decisions made by editors-in-chief, freelancers

benefit from autonomy [Rosen et al., 2016]. Depending on the role and functions performed by PR practitioners, autonomy or task-sharing factors are also significant factors [Volk et al., 2023]. Added to institutional pressure, the autonomy of scientists, institutional support, and cooperation with PR experts (typically through media training) are important factors for scientists as well [Bao et al., 2024; Ho et al., 2020].

At the (d) social-institutional level, key relevance criteria are linked to the *target group's interests*. Science journalists orient content to the audience's expectations [Clark & Illman, 2006; Fahy & Nisbet, 2011], whereas science PR practitioners and scientists consider stakeholders such as journalists, publics, and funders [Autzen & Weitkamp, 2020; Peters, 2013]. Another relevance criterion results from *competition and source monitoring*. Whereas science journalists are influenced by coverage from other media outlets and by (input from) sources such as PR and/or science (e.g., scientists, journals, and conferences) [Elmer et al., 2008; Guenther & Ruhrmann, 2013], research on science PR and scientists seldom deals with those relevance criteria. Only in science PR does the monitoring of scientific sources appear to be important; for example, publications are particularly relevant if they are published in a recognized journal [Göpfert, 2008]. In terms of *issue attention*, science journalists follow trends and (nonscientific) events [Clark & Illman, 2006; Elmer et al., 2008], science PR practitioners assess potential media attention of a topic [Autzen, 2014; Borchelt, 2008], and scientists are increasingly orienting themselves towards the media [Dudo, 2012].

Last, at the level of (e) social systems, *national and cultural differences* have been identified as relevance criteria in research across groups of science communicators [Guenther & Ruhrmann, 2013; Lo et al., 2019; Rosen et al., 2016]. However, because this article focuses only on Germany, a public service-oriented ecosystem “characterised by a strong role of the state coupled with long traditions of academic popularisation and a strong role of science in society” [Fischer et al., 2025, p. 9] as well as diversified and professional organizational communication [Peters et al., 2020], the empirical analysis presented addresses only the first four levels and does not account for the level of social systems.

In total, to expand the literature, examine relevance criteria of diverse science communicators, and explore the implications of an approach to shared gatekeeping, this article addresses two research questions (RQs):

RQ1: Which relevance criteria can be identified for different science communicators at the (a) individual, (b) communication routines, (c) organizational, and (d) social institutional level?

RQ2: Which similarities and differences in relevance criteria can be identified between different science communicators at those levels?

3 - Method

To answer the RQs, this article draws on interviews with German-speaking² science journalists ($n = 20$), science PR practitioners ($n = 22$), and scientists ($n = 15$), as part of a larger research project. The interviews were conducted online using Zoom by the author from October 2024 to April 2025.³

2. One interviewee was working in Austria at the time of the interview, all others in Germany.

3. Two interviews were conducted face-to-face at the request of the interviewees. The difference in interview mode was not considered to limit the comparability of the findings.

3.1 ■ *Sample selection and description*

To ensure diversity, interviewees were recruited through a combination of random, purposive, and snowball sampling. PR practitioners⁴ were identified via project contacts, networks, and online searches; journalists through science-related media coverage, online searches, and personal contacts; and scientists through PR practitioners' recommendations and mentions in press releases. All potential interviewees were contacted via email or social media using customized messages (for details, see OSF⁵). The final sample included a similar number of PR practitioners and journalists and slightly fewer scientists. For anonymization, they were respectively labeled "PR," "J," or "S" and sequentially numbered. Fewer scientists were recruited because they do not (usually) operate full-time as communicators, and the sample was satisfactory for theoretical saturation.

Of the 57 interviewees, 29 were women, and 28 were men (see Table 1). The average age was 46 years (range 27–64). Interviews lasted 37 minutes on average (21–61 minutes). PR practitioners were mainly employed at universities ($n = 9$) or non-university research institutions ($n = 9$). Among journalists, freelancers ($n = 6$) and employees of leading German newspapers ($n = 5$) predominated. Both groups also included "multipliers" (e.g., individuals working for news agencies or information services). The group of scientists consisted primarily of professors ($n = 9$) and researchers in the natural sciences ($n = 6$). Overall, the sample represented diversity in position, gender, age, and experience. Across all groups, interviewees used a wide range of science communication formats, including media-related (e.g., interviews, media contributions for print, online TV, and radio), institutional PR (e.g., press releases, websites, videos, events), and researcher-related formats (e.g., workshops, public talks, blogs, podcasts, social media).

3.2 ■ *Interview guide and analysis*

A semi-structured interview guide was adapted for each group but covered the same topics. Questions addressed factors influencing selection and presentation decisions, based on previous research and theoretical considerations of the hierarchy of influences model [e.g., Guenther & Ruhrmann, 2013; McKinnon et al., 2018; Rosen et al., 2016; Shoemaker & Vos, 2009]. The model enables the exploration of multiple influencing factors across levels and groups: At the (a) individual level, the questions primarily related to their role perceptions (e.g., the main goal of their communication) and not individual characteristics (e.g., age, gender) as interviewees are not consciously aware of them when making selection decisions. For (b) communication routines, questions were asked about the characteristics of scientific topics that affect selection and communication decisions (e.g., importance of news factors). At the (c) organizational level, the influence of the work environment was asked (e.g., people involved in selection processes). Last, for (d) the social institutional level, questions addressed the role of external factors (e.g., target group interests, competition, sources, issue attention). The full interview guides, translated into English, are available on OSF.

Interview recordings were transcribed (using HappyScribe) and checked for accuracy. After four rounds of testing to ensure a consistent understanding of the categories, two coders

4. For simplicity's sake, the terms "journalist" and "PR practitioner" hereafter refer only to science journalists and science PR practitioners, respectively.

5. OSF project: <https://osf.io/6jbys/overview>.

Table 1. Information about the interviewees. *Notes.* M = Male, F = Female.

ID	Position	Subject area, where given	Age	Gender
J1	Journalist for science magazine	General	41	M
J2	Journalist for science magazine	Medicine/life sciences	27	F
J3	Freelancer	Humanities/social sciences	55	M
J4	Freelancer	Medicine/life sciences	47	F
J5	Journalist at weekly newspaper	Natural sciences	52	F
J6	Journalist at publisher/specialized medium		29	F
J7	Journalist at publisher/specialized medium	Medicine/life sciences, natural sciences	64	F
J8	Journalist at publisher/specialized medium	Medicine/life sciences	46	M
J9	Freelancer		38	F
J10	Freelancer	Medicine/life sciences, natural sciences	43	F
J11	Journalist for science magazine	Medicine/life sciences, natural sciences	51	M
J12	Freelancer		47	F
J13	Journalistic multiplier	General	41	F
J14	Journalist at daily newspaper	General	29	F
J15	Freelancer	General	56	M
J16	Journalist at public broadcaster	General	63	M
J17	Journalist at daily newspaper	General (humanities/social sciences)	55	M
J18	Journalist at online newspaper	General	37	F
J19	Journalistic multiplier		32	F
J20	Journalist at daily newspaper	General (medicine/life sciences, natural sciences)	37	M
PR1	PR practitioner at university	General	43	M
PR2	PR practitioner at university	General	49	F
PR3	PR practitioner at non-university research institution	General	33	F
PR4	PR practitioner at university	Engineering sciences, natural sciences	28	F
PR5	PR practitioner at non-university research institution	General (natural sciences, engineering sciences)	38	M
PR6	PR practitioner at non-university research institution	General	43	M
PR7	PR practitioner at university	General	59	F
PR8	Private sector research institution	General (natural sciences)	52	M
PR9	PR practitioner at university	General	39	F
PR10	PR practitioner at non-university research institution	General	57	F
PR11	PR practitioner at university	General	45	F
PR12	PR practitioner at university		41	M
PR13	PR practitioner at non-university research institution	Engineering sciences	45	F
PR14	PR practitioner at university	General	54	M
PR15	PR practitioner at private sector research institution	General	48	M
PR16	PR practitioner at non-university research institution	Engineering sciences	62	M
PR17	PR practitioner at non-university research institution		59	F
PR18	PR practitioner at non-university research institution	General	50	F
PR19	PR practitioner at private sector research institution	General	61	M
PR20	PR multiplier	General	52	F
PR21	PR practitioner at private sector research institution	Medicine/life sciences	61	M
PR22	PR practitioner at university	Medicine/life sciences	27	F
S1	Professor at university	Natural sciences, humanities/social sciences	43	F
S2	Professor at university/non-university research institution	Medicine/life sciences	45	M
S3	Professor at university/non-university research institution	Natural sciences	53	M
S4	Professor at university	Natural sciences	51	M
S5	PostDoc at university	Natural sciences	37	F
S6	Professor at university	Natural sciences	59	M
S7	Professor at university/non-university research institution	Medicine/life sciences	51	M
S8	Professor at university	Engineering sciences	39	M
S9	Professor at university	Humanities/social sciences	53	M
S10	PostDoc at non-university research institution	Natural sciences	33	F
S11	Professor at university	Medicine/life sciences	37	M
S12	PreDoc at non-university research institution	Humanities/social sciences	31	M
S13	PostDoc at non-university research institution	Humanities/social sciences	41	F
S14	PostDoc at non-university research institution	Medicine/life sciences	38	F
S15	Scientist at non-university research institution	Engineering sciences	56	M

coded the transcripts as part of a qualitative content analysis, using a deductive-inductive category system via MAXQDA (version 24.0.0). Most (superior) categories were derived from previous literature (see OSF) and extended inductively during coding. Codes were double-checked (consensual coding, to increase reliability), and ambiguities were resolved in regular meetings. In several iterative steps, the codes were summarized. All quotations were translated from German into English.

4 ▪ Results and discussion

In response to the RQs, the relevance criteria identified in the interviews for each of the four levels are presented below and compared in terms of the similarities and differences indicated by the different science communicators.

4.1 ▪ Individual level

At the individual level, nearly all journalists stated that they aim to *provide reliable information about and promote an understanding of (complex) science topics* (for an overview of all relevance criteria for different science communicators, see OSF). Based on that goal, most journalists interviewed can be assigned the role of information provider. For instance, J11 stated:

I'd like to inform the public about ... current relevant topics and be able to classify them and, in that way, somewhat contribute to people being able to form an informed, well-founded picture of what's happening around them.

Journalists also indicated striving to *demonstrate the social relevance of science* and to arouse interest and enthusiasm for potentially dull topics: "My hope is simply that I can manage to present the topics ... in such a way that it's really enjoyable to read and you still take away information" (J6). At the same time, journalists reported aiming to *strengthen social dialogue* with a scientific perspective and to illustrate how science works. However, it was also important for some journalists to identify shortcomings and critically observe the science system — in other words, to fulfill the role of critics. J1 summarized it as follows: "Personally, I claim to fulfill a watchdog function to a certain extent — as an outside observer of the scientific system, so to speak." *Personal goals* were also reported by some journalists; in particular, the satisfaction of personal interests was mentioned as a "selfish" overarching goal by J4 and J8. Beyond that, two journalists indicated wanting to *entertain* the audience: "I'd like people to enjoy taking in the information, and you can do that by entertaining them" (J18). Those journalists can be seen in part as entertainers and service providers.

The reported goals of PR practitioners differed from those of journalists, as they indicated that they primarily pursuing *strategic and institutional goals*, including "making one's own research institution look good" (PR2) and placing topics and scientists in the public (media) sphere. In private-sector contexts, PR interviewees reported wanting to present the institutions as "innovative companies" (PR8) and "pioneers for new technology and research development" (PR15). In particular, the PR-oriented efforts and media work to publicize topics and highlight the generalist role linked to strategic and institutional goals. However, a

few experienced PR practitioners in leading positions can be assigned the role of leading all-rounders who support management. Beyond strategic aims and similar to journalists, PR practitioners emphasized *informing the public about the science topics* (of their institutions) by “providing background knowledge” (PR10). PR practitioners also expressed seeking to *foster social dialogue and public engagement* with their own institution’s research by “providing information as comprehensibly as possible about the processes leading to a research result” (PR12) and to *demonstrate the social relevance of their own science topics*, especially to “make clear how important science is for solving social challenges” (PR17). Regarding public institutions, they also emphasized their sociopolitical duty as tax-funded organizations. Those goals align with the mediator role of most PR practitioners interviewed. However, given the focus on public science communication, the role of service partners could only be assigned to a few PR practitioners who also addressed internal communication processes (e.g., with scientists).

For scientists, the principal goal of their science communication was to *inform the public* and *promote social dialogue*. For example, S3 stated aiming to be a “reliable information source,” while S10 wanted to be a “positive voice.” In line with public engagement with science, scientists also indicated aiming to engage in mutual exchanges with the public and to involve them in scientific processes (e.g., through laboratory visits, S7) and thus to “de-hierarchize science” (S8). In line with those goals is the role of experts who provide factual knowledge; most of the scientists interviewed can be assigned to that role. *Personal* and *strategic goals* such as “marketing” for their research (S5), developing their “own human brand” (S10), or engaging in public outreach in line with the transfer strategy of their institutions or funders were also mentioned by the researchers. Such objectives align most closely to the roles of research managers and, in cases where little personal self-promotion is involved, guardians of science, as both focus on strategic objectives for their institutions and the science system [Horst, 2013]. S4 illustrated the guardians of science role by emphasizing that universities offer society far more than educating the next generation and that the public should recognize this contribution.

In sum, the results indicate that the underlying goals of science communicators as key relevance criteria at the individual level differ considerably. Although all science communicators reported aiming to inform the public and promote social dialogue, their goals varied in focus and priority. Journalists and PR practitioners often emphasized demonstrating social relevance, whereas PR practitioners and scientists also pursued strategic and/or institutional goals. Journalists expressed focusing on entertainment, whereas scientists highlighted personal goals. Thus, similarities and differences emerge in the roles most frequently identified in the sample. Given the common emphasis on information, most journalists in the sample can be classified as information providers, PR practitioners as science mediators, and scientists as experts [Horst, 2013; Volk et al., 2023; Weischenberg et al., 2006]. These findings align with prior studies on science journalists and scientists [Guenther & Ruhrmann, 2013; Peters, 2021], but contrast with research on science PR [Volk et al., 2023], indicating that science PR likewise places a strong emphasis on information. However, due to the simultaneous focus on strategic and personal goals, some PR practitioners can also be regarded as generalists or leading all-rounders, and scientists as research managers and guardians of science. The finding that interviewees pursue several objectives indicates that science communicators embody not one but several, sometimes overlapping, roles [Horst, 2013; Volk et al., 2023].

4.2 ■ Communication routines

The characteristics of science topics that are crucial for their selection and communication decisions mentioned by journalists relate primarily to their *scientific value and quality*. Such value and quality can be expressed by a prestigious publication in high-ranking journals, the uniqueness of a topic, and/or a milestone. Another important point is *orientation to the audience*. A topic is particularly relevant if it arouses the interest of the audience and is discussed publicly. According to J1, it is therefore important to know the target group well, and J18 even mentioned asking herself, “What are people interested in at the moment? What moves people?” In addition, journalists named characteristics that are associated with *resources* as relevance criteria. Thus, a topic is particularly relevant if it corresponds to their expertise and interests and involves a reasonable amount of work. Based on those characteristics, journalists seemed to regard *relevance to society* as an important news factor but emphasized *actuality*, *novelty*, or *timeliness* even more. For example, J13 described an “embargo period” for communication about scientific publications that affords time to prepare ways to communicate about a topic. Another news factor mentioned by journalists is *astonishment* [Badenschier & Wormer, 2012], which emerges as a special feature of science topics that often implies “scurrility” (J1), or “surprise” (J20). Journalists for science-focused magazines in particular name *composition* as a key determinant of a topic’s fit for an issue since “an article or topic does not stand alone but is always part of the context of a compiled magazine” (J1).

Similar to journalists, the characteristic that determines decisions about selecting and communicating a topic for PR practitioners is its *scientific value and quality*. Again, prestigious publications in high-ranking journals are mentioned frequently. PR8 explained the focus on high-ranking journals because it is “always an indication that the research is of very high quality and has a certain broader relevance.” A topic’s innovativeness, transferability, and relevance to people’s everyday lives are also stressed as being crucial. As PR17 put it, “Obviously, it’s also important for communication that you can capture a topic and explain it well. Some topics are certainly easier or more suitable than others.” That perspective goes hand in hand with the focus on the *orientation of the audience* to science topics — for instance, that a topic arouses interest and generates public attention. PR8 additionally revealed that communication via specialized media can be relatively complex, whereas topics geared toward the general public need to be broken down. Last, unlike journalists, PR practitioners reported selecting topics based on *strategic and institutional fit*, with the aim of enhancing the institution’s reputation. PR12 stated that they “naturally select topics that contribute to our [the institution’s] strategic profile.” Again, the intention seemed to be to communicate topics with the potential to generate media attention to the institution and its “visibility” (PR18). Therefore, it is hardly surprising that PR practitioners, along with journalists, indicated paying particular attention to a topic’s *relevance to society* as a news factor. PR4 even admitted: “We’re actually guided by the news factors from journalism — for example, that a topic is relevant to everyday life.” PR15 added that a topic “has to be relevant for the journalist, and if it’s relevant for the journalist, then it’s also relevant for the reader.” In some interviews, *range* was also mentioned as a news factor, such that a topic “affects a certain number of people out there” (PR22). PR practitioners also referred to *political relevance* and, according to PR17, *economic relevance*. Similar to journalists, they mentioned how *actuality* and *timeliness* determine their communication. *Astonishment* and the *availability of graphical material* were mentioned by PR practitioners only occasionally.

Lastly, similar to journalists and PR practitioners, scientists indicated to base their decisions about the selection and communication of topics primarily on their *scientific value and quality*. According to scientists, such value and quality depend not only on the topic's scientific evidence, applicability in everyday life, and innovativeness but also — as journalists and PR practitioners have noted — on its appearance in prestigious publications. In S7's words, "as soon as a publication has an impact factor of more than 10 — that's already a high impact — we always write a press release that's generally understandable." For scientific topics to be communicated, they have to be "safe" and "to have existed for a long time" (S10) such that some scientific findings are simply "a bit more suitable than others" (S9). For journalists and PR practitioners, orientation to the audience was also identified as being a decisive factor. Several scientists stated that a science topic can be communicated only if it also meets the *interests of the audience* and has the potential to pique interest. Moreover, scientists, similar to journalists, recognized *resource-related factors* as essential features of science topics that determine decisions about their selection and communication. S12: "I have to feel confident about the topic. If I get the impression that I'm the wrong person for the job, then I say so." A science topic's *strategic fit* was only relevant for a few scientists, who stated a topic has to be stable and "survive out of context" (S3), correspond to the "goal of the research project" (S3), and should not contradict any "nondisclosure agreements" in the industry (S4). For scientists, too, the central news factor identified in the interviews was *relevance to society*. At the same time, the *novelty* of a science topic was also highlighted as being essential. Furthermore, the *availability of graphical material* is a factor that influences scientists' decisions about the selection and communication regarding topics. S10 explained, "I've experienced that images and personal experiences are extremely important emotional connection points."

In all, the findings concerning communication routines suggest that all three groups regard scientific value and quality (e.g., due to prestigious publications) as well as orientation to the audience as relevance criteria. This is noteworthy not only because science communicators share these criteria and thus follow scientific norms, but also because they share a certain bias — particularly journalists and PR practitioners — by focusing predominantly on high-ranking journals and publications, which is in line with previous literature [Göpfert, 2008; Rosen et al., 2016]. This may reinforce the underrepresentation of certain topics and disciplines in public communication about science. Whereas journalists and scientists were concerned with the resource-related factors of a science topic (e.g., whether they had sufficient expertise and time for communication), PR practitioners and scientists considered the strategic fit of topics. This pattern points to a stronger strategic orientation among PR practitioners and scientists compared to journalists, reflecting the institutional contexts in which their communication activities are embedded [Autzen & Weitkamp, 2020; Bucchi & Schäfer, 2025]. The similarities and differences were also reflected in the stated news factors of the three science communicator groups. Relevance to society, actuality, novelty, and timeliness were central for all, suggesting that all science communicators are at least partly guided by journalistic working routines [Göpfert, 2008]. Beyond that, though journalists and PR practitioners also focused on astonishment as a science-specific news factor [Badenschier & Wormer, 2012], PR practitioners additionally mentioned political and economic relevance as well as the availability of visual material. The latter was also reported by scientists. This suggests that differences in communication routines exist not only between different types of journalism [Guenther & Ruhrmann, 2013], but also between communicator groups, and the science communication formats they use. Thus, the

characteristics and news factors that PR practitioners and scientists prioritize reflect not only an orientation toward journalistic methods and scientific norms, but also a strategic orientation in their communication [Göpfert, 2008; Peters, 2021].

4.3 ■ *Organizational level*

Regarding the relevance criteria at the organizational level, most journalists described regular (i.e., daily or weekly) *editorial conferences* with colleagues, especially if they have a permanent position and a team. Editorial conferences are described as meetings for “presenting topics to the team” (J11) and deciding which ones should be developed further and in what form (J7) — often focusing on issues that “have been on the journalists’ minds lately” (J17). As a magazine journalist, J2 reported attending monthly theme-focused conferences, in which suggestions for topics are often made between the editorial teams and the freelancers. The hierarchies described by the journalists also differ depending on the (size of the) media outlet and employment contract. Some journalists reported a *hierarchical decision-making process* in which the topics are specified by the editors-in-chief, who “decide which topic they really want from me, which I then develop” (J7). However, the topics are often selected in a *joint decision-making process* between journalists and their editors-in-chief. As a journalist at a weekly newspaper, by contrast, J5 described an *autonomous decision-making process*: “I’m actually solely responsible for my area. So, the opportunities for discussion aren’t especially great.”

PR practitioners also mention a regular exchange, especially through (daily or weekly) *editorial conferences*, including with internal research departments. PR16 reports monthly and annual theme conferences in which topics are queried. For most PR practitioners, topic planning is determined by requests from scientists, but interim PR managers in scientific institutes or requests from journalists also play a role: “Despite our personnel resources, we don’t have the opportunity to search for topics on a large scale ourselves but depend on researchers’ approaching us and telling us something” (PR14). Added to that, PR practitioners reported that topics are introduced by the “presidium” (PR1) or “board” (PR10 and PR17). Regarding hierarchies, some PR practitioners therefore reported a *hierarchical decision-making process* in which topics are set by management. PR2 even stated:

I know that sometimes, due to the requirements of the company, ... there are topics that are discussed for longer, so you have to weigh whether to place it for corporate strategy reasons, or because it’s a super exciting topic for the public.

In addition, some PR practitioners described “flat hierarchies” (PR6 and PR21) and *joint decision-making processes* within the team. *Autonomous decision-making processes* were confirmed only in individual cases, including by PR13, who described herself as a “one-woman show.”

Scientists, by comparison, reported *no regular exchange or conferences* for planning their science communication. However, most scientists stated that planning topics often takes place in cooperation with the PR department of their institutions (e.g., for events or interviews, S7). S11 also mentioned an internal experts database: “As far as I’ve heard, the

press offices have certain subject areas, and then there's an internal list: Who could you possibly contact?" In addition, S4 and S13 confirmed that they are contacted directly by journalists. Additional hierarchies that determine the processes of science communication were hardly commented on by the scientists, however. Only S15 pointed out that PR acts as a "gatekeeper" in his non-university research institution and that there are rules that he has to follow in public communication. Even so, scientists confirmed that science communication is well received in their institutions. S7 even stated that they have up to three people in their department who are explicitly responsible for science communication. While S7 and S13 also mentioned media training offered by the PR department, S1 and S12 bemoaned a lack of *institutional support*.

Altogether, editorial conferences (daily, weekly, or monthly) are key relevance criteria at the organizational level, at least for journalists and PR practitioners. Scientists, by contrast, mentioned the lack of fixed structures for science communication. Depending on the position and employment type [Rosen et al., 2016; Volk et al., 2023], journalists and PR practitioners reported hierarchical, joint, or autonomous decision-making processes, with some PR practitioners stating that the management of the institution determines (strategic) topics. Consequently, gatekeeping varies in degree among individuals — for example, between chief editors and freelancers [Guenther & Ruhrmann, 2013] — and may also be exercised by management (i.e., those who make or prioritize decisions in hierarchical processes) or sources (e.g., scientists who bring topics to the attention of PR practitioners). Scientists indicated that when science communication is encouraged in their institutions, it can create institutional pressure [Bao et al., 2024]. Institutional resources ranged from several people who are explicitly responsible for science communication to little or no support (e.g., media training). Overall, journalists and PR practitioners operate within more formalized and hierarchical settings, whereas scientists often lack established routines but increasingly face institutional expectations to engage in science communication [Peters, 2013].

4.4 ■ *Social institutional level*

Concerning relevance criteria at the social institutional level, most journalists indicated paying particular attention to the interests of their target groups. Many journalists, depending on the specialization of the medium, referred to the broad target group of the *general public* as a lay audience for whom science content has to be specially prepared. The target groups' interests are often determined via online feedback and metrics, but J2 and J6 viewed it as a challenge. PR practitioners and scientists also indicated paying great attention to the interests of their target groups and differentiating between groups and channels. For PR practitioners, *journalists* were viewed as being an important target group alongside the *general public* and *scientists* working at their institution. Many PR practitioners also mentioned *strategic target groups* such as future employees (PR8), (prospective) students (PR11), and economic or political stakeholders (PR17). Key target groups for scientists, meanwhile, included the *general public* as well as *strategic target groups* such as funders (S3), students (S8), and economic stakeholders (S15). In addition, S7 and S15 mentioned wanting to reach *other scientists* with their communication.

Otherwise, (journalistic) competitors were hardly ever monitored by journalists in the sense of a *reactive orientation*. J2 simply stated, "Of course I don't walk blindly through the world. Obviously, I know the titles of my competitors." J13 and J18 stated that they check the

reporting of other media outlets to recognize the relevance of a science topic and weigh whether a topic should be reported on. For journalists, their sources were described as being far more important, especially *scientific sources*, including journals and scientists themselves. In contrast to the level of communication routines, however, the focus is not on the characteristics of the topics or sources themselves, but rather the monitoring processes that make certain sources accessible. In addition, the journalists also mentioned paying attention to *science PR (texts)*. However, J7 confessed to “a huge number of press offices that you should keep an eye on,” and J19 stated, “We also receive press releases, but it’s very rarely a basis for a decision for or against a topic.” Moreover, several journalists confirmed the relevance of *multipliers* — above all, the “Science Media Center” (J14, J17, J20), “Informationsdienst Wissenschaft” (J7, J15, J17), “EurekAlert!” (J11, J15), and the “German press agency” (J14). By contrast, the PR practitioners reported paying attention to their competitors in a more *cooperative* sense because their organizations are “unique” in their orientation (PR16). Scientific institutions were characterized as working together primarily through “international cooperation” (PR18) and therefore as communicating together. As a consequence, though the communication of other scientific institutions is merely observed (e.g., only “rankings,” PR7), the focus is on the “promotion of one’s own topics” (PR12). Private-sector research institutions seemed to be more observant of competition; for instance, PR19 confirmed an evaluation of competitors’ communications compared with their own. The PR practitioners hardly reported any concrete monitoring of sources outside their *own institutions* and their *own scientists* with whom topics are coordinated. Unlike journalists and PR practitioners, scientists did not mention competitors, including other scientists, or specific sources at the social institutional level. S1 attributed that difference to a lack of time.

When it comes to issue attention — i.e., whether science communicators select topics because they are of general relevance to the media and relate to trends or events — journalists primarily mentioned (*science*) *events* that make a topic relevant for their reporting. For example, the publication of a recent study or the awarding of prizes (e.g., Nobel Prize) leads journalists to pick up on a topic. Depending on whether the journalists are responsible for daily reporting or not, the timing of events also plays a role: “Talking to a historian about the (non)sense and the history of wars has been much more interesting in the last two or three years than it was ten years ago” (J17). Therefore, *political events* were also described as impacting decisions about topics, along with general topics that receive general *attention in (online) media* (e.g., social media). Similar to journalists, PR practitioners described basing their communication-related decisions on (*scientific*) *events*, including new publications, conferences, and awards ceremonies. However, some PR practitioners also indicated keeping an eye on which topics are covered in the media and receive particular (*online*) *media attention*. *Political attention* to a science topic is only occasionally relevant for PR practitioners. For instance, PR17 highlighted the importance of paying explicit attention to what is currently “on the political agenda.” Only PR18 reported on topics that do not attract attention as issues and that the media outlets would probably not report on, just to provide a platform for those topics. Last, similar to journalists and PR practitioners, scientists based their decisions about the selection and communication of topics on *scientific events*, including publication: “Most of the time ... a study has just been published, and it’s relatively independent of what’s happening in the world at the moment” (S13). However, scientists also admitted that (*online*) *media attention* for a topic plays a role in their communication-oriented decisions, especially if they receive and respond to media inquiries on a publicly discussed topic. S5 also described aiming to strengthen public discourse in the

context of *political events*:

I didn't address the topic because I thought "Great, I'll get into the media with this," but it's more like we were inspired by the context and thought we could support the discussion with data.

Compared with journalists and PR practitioners, more scientists stated that the issue attention is of little importance to their decisions about selecting and communicating topics. As S10 explained, "I'm not active enough for it ... simply because I don't have the time and because I'm not sure if that's my skill."

Consequently, at the social institutional level, the results indicate that while all groups of science communicators seek to address the general public as an essential relevance criterion, they also target other audiences. Consistent with previous literature [Autzen & Weitkamp, 2020; Peters, 2013], PR practitioners and scientists focus on strategic target groups, including funders. Monitoring competitors is important for journalists and PR practitioners but not for scientists. Source monitoring is particularly relevant for journalists (e.g., scientific sources, science PR, and multipliers) and partly for PR practitioners (e.g., scientists from their own institution). Issue attention as a relevance criterion also plays a greater role for journalists and PR practitioners, as they focus on (scientific and/or political) events and the (online) media attention of topics [Clark & Illman, 2006; Guenther & Ruhrmann, 2013]. Scientists rarely mentioned those aspects due to time and resource constraints, which partly contradicts the assumptions of increasing media orientation [Dudo, 2012]. Overall, journalists and PR practitioners emphasize relevance criteria at the social institutional level more than scientists, presumably because science communication is only one of scientists' many tasks.

5 - Conclusion

The objective of the study was to identify relevance criteria of different science communicators — science journalists, science PR practitioners, and scientists (i.e., *RQ1*) — and to assess similarities and differences (i.e., *RQ2*). Following the hierarchy of influences model [Shoemaker & Reese, 2013], the approach involved examining relevance criteria at the individual, communication routines, organizational, and social institutional levels.

Regarding *RQ1*, the interviews revealed numerous relevance criteria at all levels, which form the basis for the subsequent analysis of *RQ2* concerning similarities and differences in relevance criteria across science communicators. Although all groups are guided by similar (partly journalistic) relevance criteria — for instance, overlapping goals, roles, topic characteristics, and external factors — they operate within distinct professional, situational, and organizational contexts and thus weigh criteria differently. PR practitioners and scientists communicate with strategic intent and seek to present their science topics positively, whereas journalists focus primarily on (neutrally and critically) conveying information. Consistent with previous research, individual factors dominate for journalists, while organizational influences are more important for PR practitioners [Autzen & Weitkamp, 2020; Göpfert, 2008; Volk et al., 2023]. Scientists, in turn, combine personal and strategic criteria — for example, to promote their careers or to represent their subject areas and science as a

system [Horst, 2013]. Differences may also be linked to varying degrees of autonomy that science communicators have in selecting and communicating topics. This interpretation aligns with studies showing that scientists with greater freedom are more likely to engage in outreach activities [Dudo, 2012; Ho et al., 2020]. Similarly, journalists' and PR practitioners' selection decisions depend on their autonomy (e.g., balancing strategic and informative goals). Relevance criteria at the level of communication routines and social institutions appear more influential for journalists and PR practitioners than for scientists. Sources are particularly central for journalists, while PR practitioners focus more on (cooperation with and/or distinction from) competitors. Consequently, science communicators select and communicate science topics according to their professional logic, which overlaps in some respects (e.g., journalistic working routines, scientific standards/quality), but differs in others (e.g., personal and strategic intentions). This indicates both a diversification of relevance criteria and a blurring of journalistic, scientific, and strategic norms shaping how science enters the public agenda. In times of transition, in which gatekeeping is not a task of science journalists alone but shared with other communicators, relevance criteria are shifting; these differences must be considered when discussing a shared gatekeeping approach.

The related consequences for public science communication are twofold. On the one hand, shared gatekeeping and diverse relevance criteria can enrich science communication, as PR practitioners and scientists are often closer to scientific happenings and seek to contribute to public discourse. The present study indicates that science PR and scientists can, in fact, support journalism in its crisis, as their standards partly overlap. On the other hand, if, for example, science PR dominates [e.g., through churnalism; Brück et al., 2025], then biased communication can result. In such cases, more institutional and strategic interests may enter public discourse, potentially leading to a shift away from critical reflection, social relevance, and public interest. This may also relate to the degree of autonomy of science communicators [Ho et al., 2020]: when autonomy is limited, societal aspects may receive less consideration. Moreover, insufficient journalistic scrutiny could negatively affect how science communication is perceived, including its credibility and trustworthiness [McKinnon et al., 2018]. Ultimately, the impact of shared gatekeeping depends on how it is implemented by the respective communicators and the extent to which they adhere to professional standards. New quality standards for public science communication tailored to the various science communicators are therefore likely to be necessary.

Although this article provides a comprehensive overview of relevance criteria, several limitations should be acknowledged. First, the study focused on relevance criteria in science communication, guided by the hierarchy of influences model. However, science communication involves more than the relevance criteria considered, and the communicators examined are not isolated groups. It is not only about the relevance criteria of individuals, but also about how actors agree on what is communicated. Thus, the results cannot fully explain the decision-making processes underlying science communication. While the model proved suitable for comparing groups, the findings are limited to aspects the interviewees were aware of [Shoemaker & Reese, 2013]. Many relevance criteria interact across levels, and some were simplified, such as roles derived solely from stated communication goals. They also vary with the medium and format of science communication — aspects that could not be examined in detail in this study. Second, limitations arise from the interview situation. To minimize external factors, interviews were conducted by one person, while analysis was handled in tandem. Despite efforts to ensure a balanced sample, minor imbalances remain,

including an overrepresentation of professors among scientists. Self-reporting bias and third-person-effects are also possible, as interviewees may have responded in socially desirable ways. Third, the interviews were conducted in German and limited to the German context; hence, no relevance criteria at the social systems level were examined. The findings may reflect Germany's specific science communication landscape, characterized by strong institutionalization and state involvement [Fischer et al., 2025; Peters et al., 2020]. Future research should address the social systems level — through cross-country comparisons — and consider weighing the identified relevance criteria. Additionally, factors such as age or gender were not analyzed and should be investigated quantitatively. Analyses of communicators' texts [e.g., news factors; Vonk et al., 2024] could further clarify which relevance criteria are decisive for the selection and communication of science topics.

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