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Discursive Interpersonality: Engaging Audiences in Digital Feature Articles

Rosa Lorés
Universidad de Zaragoza

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Abstract: Engaging audiences is widely regarded as essential for science communicators aiming to bridge the gap between the expert knowledge they convey and their target audience's presumed lack of expertise. Drawing on the concept of *discursive interpersonality* (Suau et al., 2021), this study explores a corpus of 30 digital feature articles from the *SciDis Corpus* (Pascual and Sancho-Ortiz, 2024) in order to identify and analyse pragmatic strategies and their associated (meta)discursive features used by science communicators to make expert knowledge accessible and engaging for lay audiences. Results show that writers deploy a range of strategies and resources, including not only interactional metadiscourse features, as expected, but also strategic resources adapted from journalistic and narrative discourses. In sum, the study shows that audience-oriented pragmatic strategies (Lorés, 2024b) extend beyond traditional metadiscourse (Hyland, 2005b). Further conclusions point to editorial and disciplinary differences in the use of pragmatic and (meta) discursive engaging strategies.
Keywords: Engagement; Digital discourse analysis; Science communication; Popularisation; Metadiscourse.

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1. Introduction: the (digital) popularisation of scientific knowledge

The traditional divide between scientists and the public has been questioned for decades now (Jones et al., 2015; Pilkington, 2018; Freddi, 2020; Pascual, Plo-Alastrué and Corona, 2023), leading to the recognition that popular science is designed for diverse audiences, including experts, displaying varying levels of knowledge, needs, and expectations (Myers, 2003; Hyland, 2010; Banks and Martino, 2019). Readers are no longer seen as passive consumers but as active participants in the broader societal discourse surrounding science (Pilkington, 2018: 14). In this view, the priority lies not just in explaining scientific events but also in interpreting their societal significance, thereby promoting the democratisation of scientific discourse (Moirand, 2003; Motta-Roth and Scherer, 2016). The democratisation of science has been enhanced by the role played by digital technology in reshaping communication and knowledge-sharing. The tools afforded by Web 2.0 and social media have significantly enhanced the sharing of textual, visual, and audio content while enabling new forms of interaction and changing "power dynamics" (Sterk and Van Goch, 2023: 20), thus altering traditional dynamics between scientists and the public. This trend has sparked considerable academic interest (e.g., Luzón, 2013; Bondi et al., 2015; Luzón and Pérez Llantada, 2019; Bondi and Cacchiani, 2021; Facchinetti, 2021; Labinaz and Sbisà, 2021; Lorés, 2023, 2024b; Pontrandolfo and Piccioni, 2022; Plo-Alastrué and Corona, 2023; Mur-Dueñas 2024; Pascual, 2024, 2025; Sancho-Ortiz, 2025). Thus, new genres emerging from digital innovation (e.g., blogs, social media posts, video abstracts, podcasts) have been explored, as well as traditional genres migrating and adapting to online formats with new forms and functions (e.g. feature articles, research digests, breaking news, among others).

At the basis of the democratisation of science is the idea of popularisation, a concept that goes beyond mere simplification of scientific knowledge. The act of popularising and its resulting product (popularised

discourse) can be tackled from many theoretical perspectives (discourse analysis, pragmatics, communication studies, media studies, sociology, history, science), as it involves language in use and the interaction between different actors, in various contexts, on different media, and about different disciplinary fields.

The idea of a continuum is pervasive in science communication studies, with popular discourse at one end and academic discourse at the other (Hilgartner, 1990; Myers, 2003; Hyland, 2010; Luzón, 2013; Sterk and Van Goch, 2023), and scientific findings travelling along a "communicative path" (Bucchi, 2008). This "continuum view" (Giannoni, 2008; Sterk and Van Goch, 2023), in which popularisation is seen as a matter of degree, somehow opposes the view of the "deficit model", which assumes that popularisation discourse involves a one-way process from experts to lay audiences, and which understands that the main function of popularisation is pedagogical, as the audience is always in lack of knowledge (Myers, 2003; Motta-Roth and Scherer, 2016).

But why focus on popular discourse? As Sterk and Van Goch (2023: 4) indicate, "[a]lthough the research fields of science communication and science journalism have existed for several decades, controversy surrounding research findings is one of the reasons why it remains important to discuss the discourse from an academic stance". I would also add that deepening into our knowledge of how science is communicated and " popularised" may help us distinguish between good and bad practices of science communication, at a time where the concept of a "reliable voice" seems to have more to do with the number of followers than with the quality and the reliability of the science transmitted. Thus, in line with Myers (2003: 267), when analysing popular science texts, "[w]e need to question who the actors are, how the various discourses interact, what modes are involved, and what is communicated - and we need to consider what these questions imply for text analysts", more so when these popular texts take advantage of the affordances of the digital mode. Popularisation is not only about information: it is also about interaction (Moirand, 2003; Myers, 2003).

In the following sections, the concept of engagement and discursive interpersonality will be discussed, and the object of study will be introduced, followed by the presentation and discussion of qualitative and some quantitative results. Some final remarks by way of conclusion will also be offered.

2. Engagement as an essential aspect of popularised scientific knowledge

Engagement is inextricably linked to the popularisation discourse of science. It signals writers' awareness of the audience's presence, expectations, and needs. The intent to link up with the audience and engage them in some kind of interaction (a question of degree depending on the media and technical affordances associated with it) is at the heart of the general purpose of any sample of popularised discourse, and the factor that explains many discursive choices made by the authors, whether scientists or mediators.

Among others, three studies on popularisation have singled out engagement as a major theme in scientific popularised discourse and deal explicitly with it: Hyland (2010), Luzón (2013), and Sterk and Van Goch (2023), who build their proposal on the previous two. By formulating the concept of "proximity", which refers to the writer's control of rhetorical features, Hyland (2010) identifies five "facets" of proximity in a corpus of 120 research articles and 120 popular science articles: Organisation, Argument Structures, Credibility, Stance, and Reader Engagement. The facet of Reader Engagement is drawn from the metadiscourse model (Hyland, 2005b) and refers to:

> an alignment dimension of interaction where writers acknowledge and connect to others, recognising the presence of their readers, pulling them along with their argument, focusing their attention, acknowledging their uncertainties, including them as discourse participants, and guiding them to interpretations (Hyland 2010: 125).

Sticking close to the metadiscourse model, two resources of reader engagement are explored: reader pronouns and questions.

In her study of science blog posts, Luzón (2013) offers a wide view, exploring the discursive strategies used by science bloggers to communicate and recontextualise scientific discourse and to engage their diverse audiences with scientific issues. Luzón (2013) identifies two rhetorical strategies to recontextualise scientific information: strategies to tailor information and strategies to engage the reader. Focusing on the latter, the author (2013: 446) offers a list of "devices to signal awareness of their audience, engage the readers and guide them to particular positioning". This list of resources offers a variety of features which combine more structural devices (e.g. titles) with typical engagement metadiscursive resources at the lexicogrammatical level (e.g. questions, inclusive pronouns, references to reader) and with pragmatic resources (e.g. humour, expression of feelings or emotional reactions).

With the purpose of designing an overarching model which is usable in any subgenre of popularisation discourse, among other aims, and based on Hyland (2010) and Luzón (2013), Sterk and Van Goch (2023) propose an analytical framework of 34 strategies captured under five themes: Subject Matter, Tailoring Information to the Reader, Credibility, Stance, and Engagement. As far as Engagement is concerned, the authors (2023: 56-57) include eight different strategies, namely: titles/subheadings, references to popular lore, beliefs and popular culture, self-disclosure of the authors' public or personal life, inclusive pronouns, features of conversational discourse, questions, humour, and explicit self-reference, thus situating at the same level pragmatic strategies (e.g. "self-disclosure of the authors' public or personal life" or "humor") and (meta)discursive features (e.g. questions, inclusive pronouns, explicit self-reference, etc.). In my view, however, the use of these (meta)discursive resources in popularised practices obeys to a series of pragmatic strategies, enacted by the writers to foster an engaged attitude on their audience. Thus, the focus of the present study as part of

the exploration of popularising discourse is the identification and discussion of pragmatic strategies used by mediators (journalists and scriptwriters) to communicate scientific findings in an engaging way. These pragmatic strategies are instantiated by means of (meta)discursive resources which include lexicogrammatical but also multi-sentence features, as well as some multimodal resources which exploit the technical affordances of the digital media.

3. Discursive interpersonality and the exploration of popularised scientific discourse

Discursive interpersonality (Suau et al., 2021) stems from two concepts: *discursive turn* (Jaworski and Pritchard, 2005), which sees discourse as a departure point for analysis, and *interpersonality* (Lorés-Sanz et al., 2010; Mur-Dueñas et al., 2010), considered as an umbrella term, broader than interpersonal metadiscourse, which offers coverage for diverse discursive and textual phenomena that seem to be excluded from the metadiscourse model. Following Mur-Dueñas et al. (2010: 83), interpersonality is defined as an encompassing term that "can integrate all the linguistic resources that writers can use to bring about the intended interpersonal effects and make their text successful".

Based on studies of different academic and professional genres, Suau et al. (2021) coin the concept of *discursive interpersonality* to problematise the notion of interpersonal metadiscourse. Interpersonal metadiscourse has proved to be conditioned by contextual variables, such as genre, discipline, language, and corpus, as has been shown in a large number of studies (Dahl, 2004; Yakhontova, 2006; Lorés-Sanz, 2011; Ivorra Pérez, 2015; Suau-Jiménez, 2016; Herrando-Rodrigo, 2019), thus making it very difficult to explain certain linguistic and discursive phenomena from the rigid view offered by the more conventional metadiscourse model.

The notion of discursive interpersonality offers a more flexible alternative to the conventional application of the metadiscourse model, as conceived by Mauranen (1993), Crismore et al., (1993), Hyland and Tse (2004), and Hyland (2005b), among others, incorporating propositional features which also contribute to the interpersonal play between writers and readers.

The present study takes one step further in the exploration of discursive interpersonality by applying this concept to the analysis of popularised scientific discourse published online. While the discourse of science popularisation has been extensively investigated from various linguistic, discursive and rhetorical perspectives (Myers, 1991; Calsamiglia and Van Dijk, 2004; Giannoni, 2008; Hyland, 2010; Luzón, 2013; Gotti 2014), a significant gap remains in our understanding of the interplay between pragmatic strategies and (meta) discursive resources used in online scientific popularisation. Adopting the perspective of discursive interpersonality enables us to examine how expert writers engage their audiences through discursive resources rooted in pragmatic intents and extending beyond interpersonal metadiscourse.

This study will focus on the digital feature article. Traditionally an offline genre, feature articles have migrated to online platforms, retaining their function in the ecosystem of popularising scientific practices while potentially leveraging the affordances of digital media. Their purpose is to disseminate research within a specific subject area to heterogeneous audiences, including both specialists and the general public interested in the topic, for whom complex research must be made accessible. Digital feature articles are basically characterised by three key aspects. Firstly, they are writer-mediated discourse, usually written by a science journalist or scriptwriter. Secondly, they summarise multiple research findings, rather than focusing on a single scientific paper; that is, they represent an instance of *digital research dissemination genres*, a mediated form of providing public access to scientific knowledge (Lorés, 2024b), in contrast with *digital summary genres* (Luzón, 2023), written by the scientists themselves to summarise and promote their published research. Finally, they are published in scientific magazines (as opposed to academic journals), often organised around disciplinary topics.

Thus, focusing on the scientific digital feature article as an object of study, in this contribution I seek to answer the following research questions:

1. What audience-oriented pragmatic strategies are used in digital feature articles on scientific topics to foster engagement?
2. Which (meta) discursive resources realise these audience-oriented pragmatic strategies in digital feature articles on scientific topics? Do multimodal resources play any role in the pragmatic strategies identified?
3. How does the concept of *discursive interpersonality* contribute to understanding the discursive action taken in digital feature articles on scientific topics?

4. Corpus and methods

The corpus collected for the present study includes a dataset of feature articles written by professional science journalists and published in two widespread online publications: *The Smithsonian Magazine* (https://www.smithsonianmag.com/) (*Smith*) and *Popular Science* (https://www.popsci.com/) (*PopSci*). The dataset consists of a total of 30 texts (15 from each publication) on the topics of mental and physical health (see Appendix). Medical and health issues are topics of social interest which greatly attract the general public's attention, as some informed sources state (see, for instance, the "Encuesta de percepción social de la ciencia y la teconología", published by FECYT, in the Spanish national context, or the "European citizen's knowledge and attitudes towards science and technology", published by the Eurobarometer of the European Commission, that attests the relevance given by European citizens to research on healthcare

issues). Moreover, it is not risky to state that health questions are some of the most Googled topics and a recurrent subject of online searches for the general public (see the 1000 most asked questions in 2025 https://meetglimpse.com/top-searched/most-searched-questions/), especially after a specific health crisis, like Covid 19.

The 30 texts selected were authored by a diversity of writers (10 different authors in *Popular Science* and 14 in *The Smithsonian Magazine*), which ensured a variety of writing styles. The dataset, which makes up a total of 48,537 words, is considered to be representative of its type, taking into account that "providing in-depth, nuanced, and contextualized insights into an interaction, a particular social phenomenon, or a specific discursive practice, often involves carrying out highly detailed, fine-grained qualitative analysis, which necessitates smaller rather than larger datasets" (Vásquez, 2022: 7). As there was no section entitled "feature articles" in any of the publications, they were selected attending to their completion of criteria to be considered as such: (i) they were writer-mediated (written by professional journalists); (ii) they summarised and presented scientific findings from various sources on a single topic; (iii) they were not presented as news, and, (iv) they were not transcriptions of podcasts.

The distribution of words per publication is detailed in Table 1. As shown, there was a significant difference in the length of the publications, which, in the case of the quantitative data, was normalised per 1000 words.

Table 1. Number of words of digital feature articles by publication (SciDis corpus)

	No. of texts	**Average number of words**	**Range of words in each text**	**Total word number**
The Smithsonian Magazine	15	2031,73	1415-3053	30,476
Popular Science	15	1204,07	576-2256	18,061
				48,537

To investigate digital feature articles from the point of view of discursive interpersonality and operationalise the study, I here followed Pascual (2024: 71) and understood pragmatic strategy as "the visible textual proof of speakers' utmost intentions, in varying degrees of explicitness, for the completion of a communicative purpose". Pragmatic strategies are then instantiated as a range of various (meta)discursive features which are identified and realised through a variety of pragmatic and discursive roles that mediators play in popularising specialised knowledge.

A primarily qualitative discursive approach was taken here to explore pragmatic strategies and their instantiations in engaging audiences in digitally-mediated scientific discourse. This approach allowed the identification and classification of the cases as categories which were then formulated as a taxonomy. Categories were developed in an inductive (data-driven) way. Quantification was complementary in this study, whose aim and design focused mainly in the identification of a representative range of pragmatic strategies used in online writer-mediated popularised scientific texts and their associated (meta)discursive resources. As Brunner and Diemer (2022: 214) state: "Any analysis of digital discourse needs to take into account its complexity. Although it is useful to quantify key features and to limit the dataset to allow some quantitative interpretation, the key to understanding digital discourse is careful qualitative analysis". Thus, quantification is present at various specific points where realisations are well-delimited and devoid of any formal or functional fuzziness or ambiguity.

The pragmatic strategies included in the present study illustrate a wide range of the possible intents used in mediated popularised scientific discourse. The identification of pragmatic strategies stopped adding types when a point of saturation was reached (Holton, 2007), meaning that each new strategy and their associated resources was less representative than the ones already identified, and suggesting that those listed provided good coverage. Thus, some data-driven yet less representative types were discarded and not included in the taxonomy. This was the case, for instance, of a strategy detected in one of the textual instances in which the audience is taken to act as scientists, and attributions of scientific knowledge are made through the use of the inclusive personal pronouns we ("When it comes to lab experiments on parent-child attachment, we may know everything we need to know— and have for more than 60 years" (*PopSci1*))

To carry out the identification of pragmatic strategies, the texts were first analysed manually, by means of close reading. Once a preliminary taxonomy had been designed, the qualitative data analysis software NVivo was used. The software allowed me first to codify the strategies in the texts in a systematic way and also to refine the initial taxonomy by including new cases which had been overlooked in the manual analysis. To complement the qualitative findings offered by NVivo, the corpus analysis toolkit AntConc was used for more specific lexicogrammatical realisations, such as the use of personal pronouns.

5. Results: pragmatic strategies and (meta) discursive resources

The present study explores the pragmatic and (meta)discursive resources that scientific communicators and, more specifically, those who act as mediators (journalists and scriptwriters) employ in their online texts to engage their audiences. The pragmatic strategies oriented towards engaging audiences are taken to be

"audience-oriented" strategies (Lorés, 2024b: 9), which "help readers grasp complex information and enable them to engage in a meaningful dialogue with experts". The salient strategies identified in the corpus under analysis, which do not exhaust the list of potential strategies that mediators may use, are geared towards establishing a horizontal relation between writer and reader, an interaction among equals in which writers address readers as members of a community of interested peers.

The exploration of audience-oriented pragmatic strategies led to the identification of four different strategies used by mediators to present potentially complex issues to lay audiences by introducing those issues in a sufficiently engaging and motivating way.

The pragmatic strategies identified are:

- Hooking the audience's attention
- Creating an emotional bond with the audience
- Enhancing direct interaction with the audience
- Establishing a common territory of experience

These strategies will be presented together with the (meta)discursive resources that typically realise them, ordered by their frequency.

5.1. Hooking the audience's attention

Writers make use of resources taken from various discursive conventions, thus leading to the adoption of a hybrid type of discourse, partly scientific, partly journalistic. The following features illustrate this point:

i) Popular press titles

Using resources typical of the popular press seems common in scientific research dissemination discourse. The similarities between the titles chosen for the feature articles under study and those appearing in publications as popular as *The Huffington Post* are evident. Following Scott (2023) and Finkbeiner (2024), Escandell (2025: 185) claims that, although in the past the function of press titles was to provide informative summaries of news articles, in recent years, the aim of promoting readers' curiosity to attract their attention is gaining ground. This engagement purpose in the use of titles is transferred to scientific popularisation discourse.

Three different formulations for titles were identified:

- Type 1. Titles which create expectations on the reader by announcing solutions to health problems and concerns:

  (1) *How to Deal With Work Stress and Recover From Burnout* (Smith1)
  (2) *Burnout is Real. Here's How to Spot It — and Recover* (PopSci2)
  (3) *Is Saliva the Next Frontier in Cancer Detection?* (Smith6)

  The realisation of these titles is typically the "how to" discursive type. Others make use of evaluating words such as *truth, real, improve* or *new*, thus highlighting the validity and reliability of the information provided:

  (4) *A New Tool Could Help Detect Breast Cancer Earlier* (Smith 7)

- Type 2. Titles that advance research findings by summarising them, following a deductive approach (Moirand, 2003; Luzón, 2013; Hyland and Zou, 2020; Lorés, 2024a), contrary to the inductive approach which characterises the research articles from which these feature articles emerge. The fact that findings are already presented in the title ends with the suspense created by Type 1 but triggers the audience's interest in other ways, by focusing on the path followed to achieve those results and on their justification.

  (5) *This Dissolvable Impact Could Revolutionize Pain Management* (Smith11)
  (6) *4-Day Work Week Shows Big Benefits for Both Workers and Employers in UK* (PopSci5)

- Type 3. Titles that problematise common beliefs (sometimes formulated as warnings), thus raising the interest of the reader:

  (7) *Muscle Memory Is Real, but It's Probably Not What You Think* (PopSci3)
  (8) *Millions of Americans Take Aspirin to Prevent Heart Disease — but Should They?* (PopSci7)

Questions in titles, which appeal directly to readers, serve various communicative purposes, such as problematising common beliefs, as shown in (8). Other communicative aims include creating expectations about solutions for medical conditions, as seen in (3) above, or expressing doubts that might be in people's minds, as shown in (9):

(9) *Should Parents Worry About New Research Linking Kind's Mental Health and Individual Sports?* (Smith14)

Questions address the reader directly and represent the most obvious strategy for dialogic involvement (Hyland, 2002). Their use in feature article titles underscores their primary "hooking function," projecting a question/answer structure onto the text and, consequently, suggesting that the text will provide solutions for the problems posed in the title.

The predominance of the first type of title over the others is shown in Table 2:

Table 2. Discursive types of titles. Raw numbers and percentages.

	1. Create expectations by announcing solutions or information about problems or worries	**2. Advance findings**	**3. Problematise common beliefs (formulated as warnings)**
Popular Science	6 (18%)	6 (18%)	3 (10%)
The Smithsonian Magazine	12 (36%)	2 (6%)	1 (3%)
Total	18 (54%)	8 (24%)	4 (12%)

As shown by the data, more than half of the titles (54%) obey to type 1 and strategically create expectations that contribute to enticing the readers' attention so that they end up reading the texts, sometimes even fringing the strategy of clickbaiting, a technique by means of which headlines exaggerate claims with the purpose of enhancing traffic to a particular webpage, as in the following title:

(10) *How Dangerous Is Myocarditis? The Truth About the Scary-sounding Condition* (PopSci14)

Assuming the limitation of the corpus, the data seem to point towards preferences hold by each publication as to the discursive type of title favoured. Whereas *Popular Science* formulates titles of type 1 (create expectations) and type 2 (advance findings) to the same extent, *The Smithsonian Magazine* clearly favours type 1. These divergences might point towards editorial and writer's preferences, which do not change the fact that mediators make use of a range of different discursive types to formulate their titles as open gates to the text.

ii) Narrative opening

There is a significant number of feature articles that start with the narration of a story, which is usually a common citizen's or a scientist's:

(11) *In the late 1950s, dentist and U.S. Navy Captain Kirk C. Hoerman, then a young man in his 30s, attempted to answer a bold question: Might the saliva of prostate cancer patients have different characteristics from that of healthy people? Could it contain traces of a disease that's so far away from the mouth? Without wasting more of their own saliva on elaborate discussion, Hoerman and his colleagues from the department of dental research at the Naval Training Center in Great Lakes, Illinois, got down to work.* (Smith6)

This strategy has also been identified in other popularised texts, such as newspaper articles (Moirand, 2003), and research digests (Lorés, 2024a). The writer creates a scenario at the beginning of the text, intending to arouse the audience's interest and providing a specific contextual setting for the scientific information presented in the article The strategy of opening the text with a narrative also "humanises" the scientist to the point of aligning them with the audience.

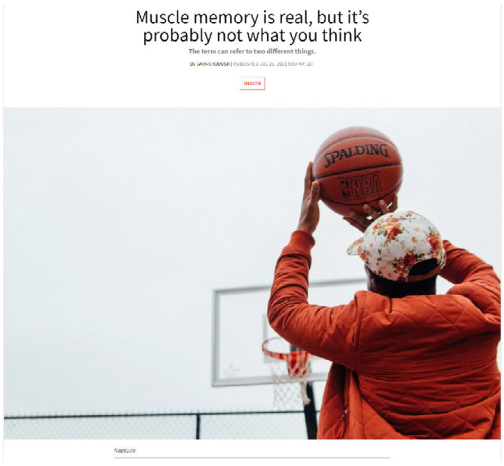
iii) Use of appealing visuals to contextualise the text and appeal to the audience's interest on the topic

Although feature articles do not appear to exploit multimodality and digital affordances as extensively as other digital forms (e.g., social media), they still benefit from and utilise the chance to incorporate visually appealing elements enhanced by technical improvements. All the digital feature articles analysed include a picture at the top, just below the title, and some of them include other visuals inside the text, mostly pictures, but also, in a few cases, videos, graphs and infographics.

Pictures at the top of the page and the preceding titles give way to a communicative ensemble which fosters understanding, reinforces meaning and, mainly, catches the readers' attention. In their book *Reading Images. The Grammar of Visual Design*, Kress and van Leeuwen (2021) establish the difference between narrative and conceptual representations. Whereas narrative representations picture participants in some kind of (inter)action, conceptual images represent a static concept and have a component of timelessness. The images represented at the top and interacting with the titles in the corpus of digital feature articles are mainly of a narrative representative type. The examples below illustrate both types:

(12) Narrative (Smith9)

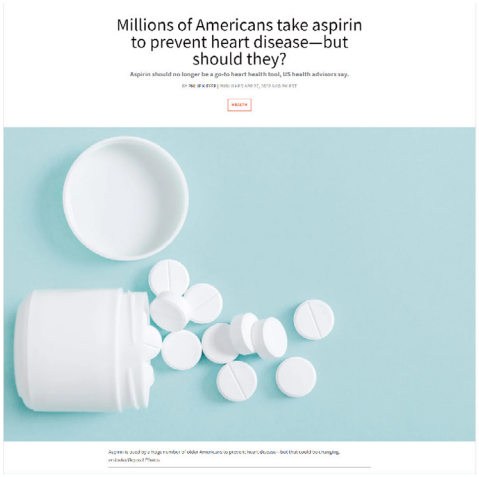
(13) Narrative (PopSci3)



(14) Conceptual (Smith11)


Researchers at Northwestern University created an implantable device that attaches to a nerve to deliver pain relief. Northwestern University

(15) Conceptual (PopSci7)



The overall use of narrative vs conceptual representations at the top of the text is clear: 22 narrative pictures out of 30, which represents 73.3%. This is in line with Mur-Dueñas's (2024) findings in her study of non-verbal explanatory strategies in three digital practices (30 texts from *The Conversation*, feature articles and research digests from three different fields, Health, Economy and Natural Sciences), in which only two textual instantiations of research digests included conceptual visuals. However, it seems relevant to indicate that the preference for conceptual or narrative representations does not seem to be linked to the genre or practice itself. The number of analysed texts is too small to make any claims about the distribution of types of picture; however, in the sample studied, this distribution does not seem to be homogeneous: whereas only 1 picture is conceptual in *The Smithsonian Magazine* feature articles (6.7%), 7 out of 15 (46.7%) include a conceptual visual in *Popular Science* texts (not used as a source in Mur-Dueñas, 2024), with no apparent connection between the type of picture and the type of title, as described in point ii) above.

Visuals are also present in the body of the text, namely, pictures, videos, graphs, and infographics, as well as drawings, sketches. The use of mid-text pictures is not very frequent in the digital feature articles analysed. Only 9 texts (out of 30) include them, with a total of 12 pictures, all of them narrative representations, which points towards the preference of a "telling a story" type of visual. Apart from pictures, other visuals are also found in mid-text position in the corpus under study, although to a much lesser extent. Only 4 feature articles include a video. One of the videos (PopSci1) is a recording of an experiment carried out with monkeys by a scientist in the 50's. The second one (PopSci4) is an extract from a TED Talk on the topic of the feature article (collective grief); the third one (Smith7) features the promotion of a device to self-detect breast cancer which has been awarded a prize, and, finally, a fourth video (Smith11) shows, in the microscope, how an implant dissolves to relieve pain. These four videos aim to illustrate technical aspects of the issues discussed, with more hands-on demonstrations for advancements in physical health.

Regarding graphs and infographics, there was a noticeable imbalance between the two publications: while only 1 feature article included a graph in *Popular Science*, *The Smithsonian Magazine* featured graphs in 5 texts, totalling 6 graphs and infographics. These visuals represented survey results and other quantitative data. Finally, 7 visuals such as drawings, not real pictures, were also included across 4 different feature articles from the same publication (*The Smithsonian Magazine*). These visuals, found exclusively in articles on physical health, depicted physical processes. *Popular Science* did not use this type of illustration, perhaps pointing at in-house preferences.

Although the data are very limited, they may still point at certain trends in the use of visuals: 15 articles (50%) did not contain any visual apart from the header illustration, with 11 of these in *Popular Science*, whose articles were shorter (averaging 1,204 words per text versus 2,031 words in *The Smithsonian Magazine*). This difference may indicate that visuals not only contribute to comprehension but also to maintaining reader engagement. Thus, it can be hypothesised that longer articles have a greater need for visuals to capture reader attention and encourage engagement. Among the remaining texts, the inclusion of visuals varied: 4 contained one (13.3%), 7 contained two (23.3%), 3 contained three (10%), and 1 contained four (3.3%).

As shown, the strategy of "hooking the audience's attention" in mediated scientific popularisation relies strongly on conventional journalistic resources, such as opening the text with a narration or using "catchy" titles. The multimodal dimension is also part of the resources used in this strategy, with visuals of different format (pictures, graphs, infographics, videos) that attract the audience's attention and help to maintain it along the text. On a few occasions, multimodality, already present in offline feature articles, is exploited through affordances of the digital platform, such as incorporating videos, which serve the double purpose of hooking the audience's attention and enhancing their comprehensibility of the more technical issues.

5.2. Creating an emotional bond with the audience.

Appealing to the audience's emotions is an expected strategy that science journalists may use to engage them in rather technical issues. To fulfill this strategy, a combination of discourse and metadiscourse features has been identified.

i) Attitude markers to express writer's emotions

Interactional metadiscourse plays a significant role in establishing an emotional bond with the reader. More specifically, attitude markers, used to express the writer's attitudes to the propositional material they present (Hyland, 2005a: 32) are well represented in the digital scientific feature articles discussed:

(16) *You have to remove the cause of your stress, and that often requires structural changes in the workplace.* ***That was disappointing for me to hear.*** (PopSci2)
(17) And ***unfortunately***, our brains were not built for this (Smith3)

By expressing their attitude, the journalists empathise with the possible reaction that the research findings might have on the audience; that is, they act as part of the audience, which helps construct an emotional bond with their readers.

ii) Conversational style

As the literature on popularised discourse has already shown (Luzón, 2013; Gotti, 2014; Garzone, 2020; Sterk and van Goch, 2023; *inter alia*), popularisations are typified by features of conversational discourse, for instance, informal language, as the following examples show:

(18) *Applied in the context of the family unit, this research seemed to suggest that forceful detachment* ***on the part of ma and pa*** *were essential ingredients in creating a strong, independent future adult.* (PopSci1)
(19) *We can all use a chance to unplug and unwind, but* ***here's the rub:*** *Recovery from work tends to be the most difficult and elusive for those who need it most.* (Smith1)

A conversational style fosters proximity with the audience and, although unacceptable in more academic registers, it seems to be characteristic of the digital feature articles analysed, probably enhanced by digital media and consistent with the less formal style prevalent in popular science.

iii) Presentation of scientists as individuals

One way journalists have to engage audiences is to make them visualise scientists not (or not only) as experts in possession of the almost unreachable good of knowledge but also, and mainly, as individuals, offering a human dimension that may allow the audience to see them as members of the same community. This is clearly the case of the scientists who are not only introduced by name and affiliation but also through a link to their personal page, which usually offers a picture, taking advantage of the technical affordances facilitated by the digital platforms, on which scientific feature articles are nowadays disseminated. Presenting the scientist as a "real persona" fosters both their credibility as an expert in the field and a bond with the audience. The use of this strategy is illustrated in the following examples, where the names of the scientists are hyperlinked to their pages:

(20) *"They struggled with traditional forms of medical and therapeutical intervention," says Girija Kaimal, an art therapist at Drexel University and the president of the American Art Therapy Association (AATA).* (Smith2)
(21) *"This data is confirmation of that clinical observation," says Deborah Nagle, the chief of colon and rectal surgery at Stony Brook Medicine in New York.* (PopSci8)

Blurring the identity barriers between scientists, journalists and audience allows them all to enact other roles, and transit in both directions the bridges which connect expert sources, mediators and readers.

iv) Recount of personal or other's problems and experiences

As part of the engagement strategy of creating a bond with the audience, journalists and mediators may seek the empathy of their audience by sharing personal stories and hardships related to the topic of the feature articles, sometimes their own stories (see examples 22 and 23 below). This resource, which might be called "personalisation", has been identified in previous analyses of popularised science (Myers, 1991; Giannoni, 2008). Unlike the strategy of using a narrative style at the beginning of the article (see section 5.1 above), whose purpose is to offer a specific contextual setting for the scientific information presented in the text, the purpose of the strategy discussed here is to foster the audience empathy towards the problem, situation, or experience narrated. The different discursive positions of these strategies within the text also highlight their distinct communicative purposes. Given the personal nature of the topic of the feature articles included in the corpus (i.e. physical and mental conditions) this strategy may contribute to building trust and rapport between the writer and their audience:

(22) *I'll repeat it again and again until my friends get tired of hearing it. But in July of 2021, these responses started to feel hollow. I was burned out. "I feel like I sprained my brain," I told my friend over the phone. When I wasn't working, I felt fine; when I tried to use my head, it felt like putting weight on a bum ankle.* (PopSci2)

(23) *In 2017, Hennie Thomson checked herself into a hospital for six weeks of in-patient treatment for anorexia nervosa. She was compulsively over-exercising — running, spinning or cross-training three to four hours daily. She ate only one meal each day of the same four foods. And she felt she had hit the bottom of a deep depression.* (Smith4)

v) Humour and irony

The role played by humour and irony in human interaction has been widely explored from a linguistic and pragmatic perspective (Raskin, 1985; Attardo, 1994; Yus, 2016). The scientific feature articles, as instances of popularised discourse, are not devoid of it. Examples 24 and 25 illustrate some of the cases in the corpus:

(24) *Instagram. Medium. Facebook. The internet is even more of a sausage fest than usual.* (PopSci15)

(25) *A once-simple decision can morph into the kind of thorny equation that honors algebra didn't prepare me for.* (Smith3)

In the texts analysed, humour emerges as the result of unexpected comparisons or exaggerations of ordinary actions and experiences. The examples show that writers use humour to grab the audience's attention and make complex topics more understandable. Also, humour helps create a bond by sharing common experiences, thus enhancing the accessibility and, therefore, impact of the scientific information presented.

The strategy of "creating an emotional bond with the audience" is, as shown, a productive resource which exploits linguistic registers (combining conversational styles with a standard written style), metadiscourse features (attitude markers) and pragmatic resources (humour and irony as a way of establishing a bond with the audience). Moreover, this strategy leverages the affordances of digital media through hyperlinks, enabling scientists to adopt a more personal identity as individuals and citizens, thus fostering audience rapport.

5.3. Enhancing direct interaction with the audience

Audiences are directly addressed by writers as a way to make them feel part of the same group of interested people in the scientific issue under discussion. In this interaction, readers are perceived as individuals with whom the writer interacts at a one-to-one level. This direct appeal of writers to readers is a form of engagement that points to how writers recognise their readers' active participation, capture their attention, and address their concerns (Hyland, 2005a). In the texts analysed, this is done through three metadiscursive features, categorised in Hyland's (2005a) model as markers of engagement: questions, second-person pronouns and directives.

i) Use of mid-text questions

Although questions were previously addressed in section 5.1 regarding their role in hooking readers' attention as a recurrent structural element in titles, they are revisited here as strategic ways of fostering direct interaction with the audience when they appear within the text, suggesting potentially divergent or additional communicative purposes based on their discursive position. Examples 26 and 27 illustrate these uses:

(26) *Simple questions can help identify whether an older adult needs to be evaluated for anxiety, he and other experts suggested: Do you have recurrent worries that are hard to control? Are you having trouble sleeping? Have you been feeling more irritable, stressed, or nervous? Are you having trouble with concentration or thinking? Are you avoiding things you normally like to do because you're wrapped up in your worries?* (PopSci12)

(27) *When the Covid-19 pandemic emerged last year, physician* Lara Jehi *and her colleagues at the Cleveland Clinic were running blind. Who was at risk? Who were the patients likely to get sicker? What kinds of care will they need?* (Smith13)

ii) Direct address to the audience through second-person pronouns

Hyland (2005b: 133) states that second-person pronouns "function to elicit reader involvement and promote group solidarity". However, he notes that in academic writing in English, authors are generally advised to avoid these pronouns, as they are considered "inappropriately informal and conversational".

But what may be deemed inappropriate in one communicative context, such as academic discourse, can be entirely suitable in another (i.e. popularised discourse). Thus, the use of second person forms (*you, your)* is very frequent in the corpus under study, as example 28 shows:

(28) ***You** need 13 vitamins in order to live, and though **you** can actually get most of them from eating a variety of meats, **you**'re going to miss out on some crucial ones if **you** totally forego flora.* (PopSci15)

The normalised frequency of second-person pronouns in the corpus is 4.43 per thousand words. However, when examining each publication individually, this frequency varies significantly, with 8.58 in *Popular Science* but only 1.97 in *The Smithsonian Magazine.* Given that the texts were authored by diverse writers, which ensures variability of writing styles, one of the explanations points at the existence of distinct in-house styles, each favoring and employing different engagement and (meta)discourse resources.

iii) Use of directives to invite the audience to perform some kind of action

Directives "instruct the reader to perform an action or to see things in a way determined by the writer" (Hyland, 2005a: 184). These direct appeals to the reader seem to be a popularising feature identified also in other texts, such as journal editorials (Giannoni, 2008), and research digests (Lorés, 2023, 2024a, 2024b), their main function being "to link up with the readership and audience and to get it involved dialogically" (Giannoni, 2008: 225). These actions might be physical (29) or cognitive (30):

(29) *Definitely **don't consume** your caffeine with other drugs like cocaine, which can magnify the worst heart effects of both substances.* (PopSci10)
(30) ***Imagine** you're running late and tempted to speed.* (Smith3)

Enhancing direct interaction with the audience seems to be a rather "metadiscursive" pragmatic strategy, due to its heavy reliance on engagement markers as described in the metadiscourse model.

5.4. Establishing a common territory of experience

To create a common ground of experience seems to be another pragmatic strategy used by scientific mediators to encourage their audience to step into a territory of new knowledge. This strategy has been identified in the metadiscourse framework as "appeals to shared knowledge", that is, markers that explicitly indicate that the reader should "recognize something as familiar or accepted" (Hyland 2005a: 184). In the metadiscourse model, typical engagement markers indicating appeals to shared knowledge are the use of the inclusive pronoun *we* and polyphonic discourse markers such as *of course*. This metadiscoursal strategy aligns with Brown and Levinson's (1987) conceptualisation of linguistic politeness, particularly its instantiation through politeness strategies and their linguistic and discursive markers. Thus, both the metadiscourse category of appealing to shared knowledge and the positive politeness strategy of claiming common ground can encompass and explain the use of certain discursive resources identified in these texts, to make the audience participate in a shared territory.

i) Research applications to real-life situation

Apart from the use of the lexicogrammar, writers resort to other discursive devices which also contribute to the pragmatic strategy of establishing a common territory of experience, such as the explicit presentation of applications to real-life problems or situations, as in example 31:

(31) *Perhaps, for instance, someone would accept a free indoor dinner at a favorite restaurant this weekend instead of opting for a free dinner-and-dessert combo in a month or two, when case rates might fall. Our minds tend to either dismiss or overinflate small risks, with no middle ground.* (Smith3)

Thus, the appeal and comprehension of specialised knowledge are enhanced by relating it to everyday experience, shown in the following:

(32) *That could mean signing up for a virtual painting class, "sharing" a fancy bottle of wine during a Zoom happy hour, or investing in outdoor recreation (*PopSci4)

ii) Inclusive we *to appeal to shared experience, beliefs and knowledge*

As Hyland (2005a: 182) indicates, the use of the inclusive pronoun *we* "sends a clear signal of membership by textually constructing both the writer and the reader as participants with similar understanding and goals". First-person plural forms (*we, us, our*) are widely found in the texts under analysis with an inclusive function, as illustrated in examples 33 and 34:

(33) *Emerging evidence suggests that interactions between saliva and food may even help to shape which foods* **we** *like to eat.*(Smith10)

(34) *Cortisol helps the body run from whatever is threatening it; it raises* **our** *heart rate and helps* **our** *body harvest energy from glucose.* (PopSci2)

Some quantitative data of the use of inclusive *we* in the corpus under study are the following:

Table 3. Use of inclusive first person plural pronouns. Raw numbers and frequency per 1,000 words.

	We	***Us***	***Our***	**Total**
Popular Science	7 (0.39)	16 (0.88)	34 (1.88)	57 (3.16)
The Smithsonian Magazine	32 (1.05)	4 (0.13)	26 (0.85)	62 (2.03)
Total	39 (0.8)	20 (0.41)	60 (1.24)	119 (2.45)

Apart from the general use of inclusive *we* as an engagement device, the interesting point here seems to be the different use of this device in one publication and the other, with *Popular Science* (3.16) making a slightly more frequent use of it than *The Smithsonian Magazine* (2.03). Moreover, each publication shows preferences for distinct forms: *Popular Science* for the possessive adjective *our* and *The Smithsonian Magazine* for the inclusive pronoun *we* as subject. These preferences for distinct grammatical categories of the pronoun in each publication reveal a more nominalised function of the inclusive *we* in the former publication and a more agentive role in the latter.

iii) Appeal to popular culture or everyday knowledge and habits

The final discursive resource to be discussed is the journalists' appeal to popular culture, as a way to create a common ground with their audience. This strategy, also used in other popularising practices such as the research digest (Lorés, 2023, 2024a, 2024b), is a form of intertextuality. As defined by Bazerman (2004:86), intertextuality points at "the explicit and implicit relations that a text or utterance has to prior, contemporary and potential future texts", weaving other voices into the discourse (Kristeva, 1986; Fairclough, 1992). However, the effectiveness of this intertextual strategy lies on the writers' careful assessment of the audience's familiarity with the popular culture references. A lack of recognition can be counterproductive, potentially widening the gap it is intended to bridge. Examples 35 and 36 below illustrate the use of this resource in the digital practices under study:

(35) *In 1946, Dr. Benjamin Spock (no relation to Dr. Spock of Star Trek) authored* Baby and Child Care*, the international bestseller, which sold 50 million copies in Spock's lifetime.* (PopSci1)

(36) *The process starts with the blue bubble of a texted invitation or a date flagged on the calendar—a party Saturday, a sibling's high-school basketball game, a second cousin's middle-school Quidditch match, a cross-country flight for a grandparent's 90th birthday.* (Smith3)

The analysis of engagement strategies that foster a common ground of experience in popularised science writing reveals the importance of establishing a common territory of experience to connect with readers. This approach, exemplified by the use of inclusive pronouns, real-life applications, and references to popular culture, plays a significant role in bridging the gap between scientific knowledge and everyday understanding.

6. A quantitative analysis: discussion of data

Although this is primarily a qualitative analysis and the limited data prevent robust generalisations, a quantitative analysis has also been conducted, as it provides an overview of the distribution of the four major audience-oriented pragmatic strategies identified in the corpus, as well as their associated (meta) discursive resources.

The four pragmatic strategies identified were present in all the texts included in the study. However, a more fine-grained analysis of the (meta) discursive resources yields more nuanced results:

Table 4. Presence of (meta)discursive features in texts. Number of texts and percentages.

Pragmatic strategies	**(Meta)Discursive resources**	**Raw numbers**	**Percentage of use**
1. Hooking the audience's attention	Popular press titles	30	100%
	Narrative opening	15	50%
	Appealing visuals	15	50%

2. Creating an emotional bond with the audience	Attitude markers	21	70%
	Conversational style	8	26.6%
	Scientists as individuals	8	26.6%
	Recount of personal problems	7	23.3%
	Humor/Irony	6	20%
3. Enhancing direct interaction with the audience	Mid-text questions	13	43.3%
	Second-person pronouns	10	33.3%
	Directives	4	13.3%
4. Establishing common territory of experience	Research applications to real life	9	30%
	Inclusive *we*	8	26.2%
	Appeal to popular culture	5	16.5%

Table 4 offers an overview of the data presented in section 5. As observed, a pervasive feature was the use of titles emulating those found in the popular press, designed to captivate the readers' attention. Attitude markers, a metadiscursive resource, were highly prevalent, appearing in 70% of the texts. Equally noteworthy was the presence of a narrative style (especially at the beginning of the text) and the use of engaging visuals, both of which were present in 50% of the texts. The strategic insertion of mid-text questions, fostering a question-and-answer rhetorical structure, was also significant, occurring in 43.3% of the feature articles. The remaining (meta)discursive resources were also employed to different degrees, serving engaging purposes. These ranged from purely metadiscursive interactional features, such as second-person pronouns and the inclusive *we*, to more pragmatic devices like humour, irony and references to popular culture. The affordances of digital media were leveraged through the inclusion of hyperlinks to researchers' webpages, emphasising scientists as individuals.

When placing the lense on the distribution of features, we observe that some articles display a high number and range of engagement resources (between 9 and 13 resources used out of 14) and others, very few (1 or 2), show that popularising, at least as far as engagement is concerned, is a matter of degree.

Differences are also identified between the two publications in some of the features, whereas the use of others is very similar, as Table 5 shows:

Table 5. Presence of (meta)discursive features in each publication. Number of texts and percentages between brackets.

Pragmatic strategies	(Meta)Discursive resources	***Popular Science***	***The Smithsonian Magazine***
1. Hooking the audience's attention	Popular press titles	15 (100%)	15 (100%)
	Narrative opening	6 (40%)	9 (60%)
	Appealing visuals	4 (26.6%)	11 (73%)
2. Creating an emotional bond with the audience	Attitude markers	11 (73.3%)	10 (66.6%)
	Conversational style	4 (26.6%)	4 (26.6%)
	Scientists as individuals	3 (20%)	5 (33.3%)
	Recount of personal problems	1 (6.6%)	6 (40%)
	Humor/Irony	3 (20%)	3 (20%)
3. Enhancing direct interaction with the audience	Mid-text questions	6 (40%)	7 (46.4%)
	Second-person pronouns	7 (46.4%)	3 (20%)
	Directives	3 (20%)	1 (6.6%)
4. Establishing common territory of experience	Research applications to real life	5 (33.3%)	4 (26.6%)
	Inclusive *we*	5 (33.3%)	3 (20%)
	Appeal to popular culture	3 (20%)	2 (13.3%)

Publications display notable differences in the use of certain elements: visual content, second-person pronouns, and the discursive feature of sharing personal problems. In contrast, the two publications display striking similarities in numerous (meta)discursive features identified as realisations of audience-oriented

pragmatic strategies within the corpus: the adoption of a conversational style, the use of humour and irony, of attitude markers and inclusive *we*, the inclusion of research applications to real-life scenarios, the references to popular culture, and the inclusion of mid-text questions. Therefore, the similarities in the presence and utilisation of these (meta)discursive resources, which typify the popularised discourse of digital feature articles, outweigh the differences between the two publications. This commonality suggests a broader trend in the genre, which goes beyond individual publication styles.

Finally, another comparison of quantitative data has been carried out on the basis of the discipline, as shown in Table 6:

Table 6. Presence of (meta)discursive features in each discipline (mental and physical health). Number of texts and percentages between brackets.

Pragmatic strategies	(Meta)Discursive resources	Mental Health	Physical Health
1. Hooking the audience's attention	Popular press titles	15 (100%)	15 (100%)
	Narrative opening	4 (26.6%)	10 (66,6%)
	Appealing visuals	6 (40%)	9 (60%)
2. Creating an emotional bond with the audience	Attitude markers	10 (66.6%)	11 (73.3%)
	Conversational style	5 (33.3%)	3 (20%)
	Scientists as individuals	4 (26.6%)	2 (13.3%)
	Recount of personal problems	6 (40%)	4 (26.6%)
	Humor/Irony	4 (26.6%)	1 (6.6%)
3. Enhancing direct interaction with the audience	Mid-text questions	6 (40%)	7 (46.4%)
	Second-person pronouns	6 (40%)	4 (26.6%)
	Directives	2 (13.3%)	2 (13.3%)
4. Establishing common territory of experience	Research applications to real life	5 (33.3%)	3 (20%)
	Inclusive *we*	6 (40%)	2 (13.3%)
	Appeal to popular culture	2 (13.3%)	3 (20%)

The contrastive analysis of quantitative data across health disciplines also revealed interesting differences in four main features: the use of a narrative opening and visuals, more prevalent in physical health articles, and the use of inclusive *we* and the discursive resource of sharing problems, more frequent in mental health content, thus pointing at the specificities of the disciplines, with physical health dealing with tangible aspects of the body, diseases and treatment, and mental health dealing with internal, more sensible experiences which may demand a more subtle, more supportive and empathetic way of presenting and approaching the problems. The remaining (meta)discursive and textual devices appeared with similar frequency across both health disciplines, suggesting the existence of a consistent realization of engagement strategies characterising the popularised discourse of digital feature articles in this field.

Finally, by combining quantitative results per publication and discipline, we can identify a set of (meta) discursive features that define the engaging style in feature articles published online. These key elements include titles mimicking popular press headlines, a conversational style, attitude markers, strategically placed mid-text questions, references to real-life situations, hyperlinks to scientists' webpages, and mentions of popular culture. This core set of features is likely to appear in feature articles in other fields, a hypothesis that future studies may further confirm.

7. Conclusions

The present study has explored the pragmatic strategies and associated (meta)discursive resources used in digital feature articles to mediate scientific information and engage diversified audiences. The analysis shows a purposeful use of audience-oriented strategies that work to create a horizontal relationship between writer and reader as peers within a field community. With regard to the first research question posed (what audience-oriented pragmatic strategies are used in digital feature articles on scientific topics to foster engagement), four major pragmatic strategies have been identified: hooking the audience's attention, creating an emotional bond with the audience, enhancing direct interaction with the audience and establishing common territory of experience. All these strategies aim to foster engagement, thereby bridging knowledge gaps between expert sources and general audiences.

Following the identification of audience-oriented pragmatic strategies, the second research question was meant to explore the (meta) discursive resources that realise these strategies in scientific digital feature articles. The results suggest that popularised scientific discourse leverages journalistic strategies to attract and

retain the audience. Titles similar to those of popular media were consistently used to draw readers into the text. Moreover, attitude markers and narrative styles were prevalent, particularly at the beginnings of articles, serving the purpose of humanising scientific subjects, and enhancing their accessibility. Multimodal components were not exploited to quite the degree seen in other digital practices such as social media; however, in spite of their ancillary role in this digital genre, they still contributed to audience engagement with visuals serving to both attention-getting and comprehensibility purposes.

The quantitative analysis suggests partially consistent patterns across publications and disciplines. While both *Popular Science* and *The Smithsonian Magazine* shared a core set of strategies for audience engagement, some differences were observed in the frequency and variety of resources used, perhaps reflecting editorial preferences. The comparison of mental and physical health articles indicated that, while both contexts deployed similar engagement strategies, there were variations in narrative voice, use of visuals, and personal storytelling, pointing to some specific communicative necessities for each discipline. Overall, these findings suggest that these forms of engagement in scientific communication share an underlying rationale and a high degree of adaptability shaped around the genre, but also around what audiences are likely to expect.

Finally, the third research question aimed to determine how the concept of *discursive interpersonality* could enhance our understanding of the discursive action taken in scientific digital feature articles. This study has intended to show the role of propositionality and other discursive resources in fostering audience engagement and interaction. Thus, since the metadiscourse model falls short in fully explaining the discursive action taken by mediators to engage their audiences in specialised knowledge, the more encompassing concept of discursive interpersonality (Suau et al., 2021) may account for the wide variety of features that combine pragmatic, discursive, multimodal and lexicogrammatical levels to motivate and facilitate audiences' access to knowledge.

The present study has certain limitations. The dataset, comprising a small selection of texts, offers limited information about the quantitative distribution of strategies and their associated resources. Moreover, the disciplines selected, although of significant public interest, may also introduce a bias to the results. However, this close analysis has provided interesting insights into the diversity of pragmatic strategies used by mediators to foster public understanding of complex issues and the variety of (meta)discoursal resources that instantiate these audience-oriented strategies. Further research could explore the effectiveness of these strategies across different online contexts and across diverse audiences. Understanding the interplay between pragmatic strategies, (meta)discursive resources, and audience reception is crucial for advancing effective science communication in the digital age.

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Appendix

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2. How Making Art Helps Improve Mental Health
   https://www.smithsonianmag.com/science-nature/can-art-therapy-help-patients-deal-with-mental-health-struggles-during-the-pandemic-180980310/

3. Why It's So Hard to Make Risk Decisions in the Pandemic
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4. The Search for a Better Treatment for Eating Disorders
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5. How Exercise Boosts the Brain and Improves Mental Health
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6. Is Saliva the Next Frontier in Cancer Detection?
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7. A New Tool Could Help Detect Breast Cancer Earlier
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8. Could Getting Rid of Old Cells Help People Live Disease-Free for Longer?
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9. Why Did the First Human Patient to Receive a Pig Heart Transplant Die?
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10. How Saliva Changes the Flavor of Food
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11. This Dissolvable Implant Could Revolutionize Pain Management
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12. This Implant Could One Day Control Your Sleep and Wake Cycles
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13. How Doctors Are Using Artificial Intelligence to Battle Covid-19
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14. Should Parents Worry About New Research Linking Kids' Mental Health and Individual Sports?
https://www.smithsonianmag.com/science-nature/playing-individual-sports-associated-with-mental-health-struggles-in-kids-180980174/
15. Can a Mental Health App Help You Deal With Anxiety?
https://www.smithsonianmag.com/science-nature/can-a-mental-health-app-help-you-deal-with-anxiety-180980300/

Popular Science

1. These 1950s experiments showed us the trauma of parent-child separation. Now experts say they're too unethical to repeat—even on monkeys.
https://www.popsci.com/1950s-experiments-attachment-unethical/
2. Burnout is real. Here's how to spot it—and recover.
https://www.popsci.com/health/how-to-recover-from-burnout/
3. Muscle memory is real, but it's probably not what you think.
https://www.popsci.com/what-is-muscle-memory/
4. How to cope with collective grief — and even turn it into action
https://www.popsci.com/health/collective-grief-coping-guide/
5. 4-day work week shows big benefits for both workers and employers in UK
https://www.popsci.com/health/four-day-work-week-study-uk/
6. Two decades-long studies link ultra-processed foods to cancer and premature death
https://www.popsci.com/health/ultra-processed-foods-cancer-and-premature-death/
7. Millions of Americans take aspirin to prevent heart disease — but should they?
https://www.popsci.com/health/aspirin-heart-disease-task-force-recommendation/
8. Colon cancer cases in younger generations are rising. When should you get screened?
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9. Hacking diabetes at home
https://www.popsci.com/diy-diabetes/
10. It's easier than ever to die of a caffeine overdose
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11. Social media really is making us more morally outraged
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12. Seniors are struggling with chronic anxiety, but don't seek treatment
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13. Citizen science is another great form of natural therapy
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14. How dangerous is myocarditis? The truth about the scary-sounding condition.
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15. Please do not try to survive on an all- meat diet
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