

Dual voices, hybrid identities: the recontextualization of research in digital dissemination scientific discourse

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Recibido: 7 de julio de 2022/ Aceptado: 5 de agosto de 2022

Abstract. The current demands placed on scientists to increase public awareness of their findings involves recontextualizing highly technical research to be understood by diversified audiences. In the present study, a corpus of 20 online research digests drawn from the British Psychological Society website, which are condensed versions of recently published research articles, is quantitatively and qualitatively explored in terms of the (meta)discoursal features that the scriptwriter uses to foster comprehensibility, project a credible and authoritative voice and enhance engagement with their audience, as a way to bridge the existent knowledge asymmetries. The analysis revealed the existence of discoursal and pragmatic, as well as some multimodal, resources (i.e. code glosses, hyperlinking, evidentials, engagements markers) used by the scriptwriters to project a dual voice which aligns both with the expert and with the diversified audience, thus projecting a hybrid authorial identity.

Keywords: knowledge asymmetries; comprehensibility; credibility; engagement.

[es] Voces duales, identidades híbridas: la recontextualización de la investigación en la difusión digital del discurso científico

Resumen: Las demandas que se plantean a los científicos en la actualidad para que fomenten el conocimiento público de sus hallazgos traen consigo la necesidad de recontextualizar investigaciones muy especializadas para que sean entendidas por audiencias diversas. En este estudio, se explora de forma cuantitativa y cualitativa un corpus de 20 textos en línea extraídos del sitio web de la British Psychological Society, que son versiones condensadas de artículos de investigación publicados recientemente. El estudio se centra en la exploración de los recursos (meta)discursivos que los autores de estos textos utilizan para fomentar su comprensibilidad, proyectar una voz creíble y autorizada y potenciar el compromiso con su audiencia, como forma de abordar las asimetrías existentes entre el nivel de conocimiento de los autores de los artículos de investigación y el de los receptores de estos textos. El análisis revela la existencia de recursos discursivos y pragmáticos, así como multimodales (glosas, hipervínculos, marcadores de evidencialidad y marcadores de implicación entre otros), utilizados por los autores para proyectar una voz dual que se alinea tanto con el experto como con una audiencia diversa, lo que le lleva a proyectar una identidad autoral híbrida.

Palabras clave: asimetrías de conocimiento; comprensibilidad; credibilidad; implicación.

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Cómo citar: Lorés, R. (2023). Dual voices, hybrid identities: the recontextualization of research in digital dissemination scientific discourse. *Círculo de Lingüística Aplicada a la Comunicación*, 93, 69-84. <https://dx.doi.org/10.5209/clac.85566>

1. Introduction: Science communication

Science has been for centuries the realm of scientists. This truism has many more implications than it seems at first glance. As Bartling and Friesike (2014) explain, the publication of scientific journal articles meant a milestone in modern science, as it facilitated scientists' access to their colleagues' findings, which was the way they could advance in their research. However, the fact that science did not surpass the limits of the scientists' world meant that only scientists could do and learn about science, thus giving them privileged access to complex solutions. In our time, science has ceased to be the exclusive territory of scientists. The increasing demands for a science that is accessible to the general public are answered by institutions and organizations,

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as well as by scientists themselves, who see the open access to their research as an opportunity to comply with their compromise with citizenship. This movement for an “open science” might be taken to be a second milestone not only in the relationship between science and civil society but also in the history of science and science development. Labels such as Open Science, Open Research, Science 2.0, and eScience (Bartling and Friesike, 2014: 10) have been coined to welcome new modes of trespassing the firmly-established frontiers between expert knowledge and non-expert understanding. These modes, which take the form of new (or different) communicative practices, are mainly afforded by the technicalities that digital platforms offer and the wide dissemination that the Internet provides, which in Trench’s words (2008: 185), “[has turned] scientific communication inside out”.

If the publication of research articles ensured the dissemination of science among disciplinary peers, digital affordances are facilitating the communication of expert knowledge to, not necessarily, so expert audiences, and such digital dissemination frequently has the potential to blur the boundaries between expert (internal) and non-expert (external) science communication (Puschmann, 2015), thus favouring the development of a science communication ecology in response to significant changes in the science-society relationship (Kupper et al., 2021). In all, since the second half of the 20th century, the dissemination of science among a variety of non-specialized publics has been increasingly recognized as “an equally crucial responsibility of research scientists” (Banks and Martino, 2019: 185). As a result, a rising number of studies aim at transforming scientists into effective communicators and explore current instances of science communication, the “science of science communication”, in Bucchi and Trench’s (2021: 2) words.

Questions such as what science communicators are trying to communicate and why they are trying to do so, with whom they are communicating and which means and media they are using, as well as what new practices are emerging in the communication of science are all relevant issues without a ready-made, clearly identifiable answer. Several keywords frequently used in science communication research such as ‘engagement’, ‘participation’, ‘public(s)’, ‘expertise’ and ‘research visibility’ have acquired distinct new meanings which differ from earlier usages. To them, we might add others that are pervasive in science communication literature, such as ‘context collapse’ (Marwick and Boyd, 2011), ‘popularization’ (i.e. Banks and Martino, 2019; Calsamiglia and Van Dijk, 2004; Garzone, 2020; Gotti, 2014; Motta-Roth and Scotti-Scherer, 2016; Trench, 2008), ‘recontextualization’ (i.e. Bhatia, 2012; Bondi et al., 2015; Carter-Thomas and Rowley-Jolivet, 2020; Gotti, 2014; Luzón, 2013b) and ‘hybridity’ (e.g. Bhatia, 2004, 2012; Mäntynen and Shore, 2014). All of them share a view of science as highly connected with a society to which it owes its very *raison d’être*. As Bucchi and Trench (2021: 1) state, science communication is taken to be “the social conversation around science” and is perceived as being “communication from institutionalized science that is directed to society at large” (Fährnich, 2021: 2).

In this context, the endeavour to bring science and scientific knowledge closer to citizens and stakeholders responds to the need to make them participate in advances, as well as to offer them simple answers to problems that may be complex for non-specialized audiences (Engberg, 2021), ranging from experts in other disciplines to relatively uninformed general public(s). To make science ‘popular’ does not simply imply reporting scientific facts to a less specialist audience. It means “[representing] phenomena in different ways to achieve different purposes” (Hyland, 2010: 119). In our online world, this implies enhancing processes of recontextualization of already existent textual instances into repurposed digital instantiations.

Recontextualization, which involves shifting a source text from one context into ongoing discourse for a different communicative purpose, has long interested linguists to explain how information can be appropriated and manipulated for different contexts (Bauman and Briggs, 1990; Bondi et al., 2015; Calsamiglia and Van Dijk, 2004; Carter-Thomas and Rowley-Jolivet, 2020; Gotti, 2014; Johansson, 2019; Linell, 1998). Recontextualization involves, among other things, writers making decisions regarding how best to restructure lines of argument, set out discourse purposes, signal text directions and manage rhetorical connections (Hyland and Jiang, 2018). It generally refers to the verbal mode, but it may also include other semiotic material (other modes) as well as other media, thus foregrounding the role played by multimodality. It involves various rhetorical processes which Bezemer and Kress (2008) summarize as ‘selection (of meaning material)’, ‘arrangement (of the meaning material selected)’, ‘foregrounding (of those elements that are of special significance in the new context)’ and ‘social reposition (or reconstruction of the interpersonal relationship between addresser and audience)’. In the particular case of science communication, where scientific researchers speak with different voices in different contexts and practices, recontextualization is the natural outcome: in the current scenario of Web 2.0 technical affordances are harnessed to allow scientists to communicate their research results among global, indeterminate audiences with dramatically different levels of expertise.

Together with recontextualization, hybridity is the most salient characteristic usually ascribed to digital texts (Barton and McCulloch, 2018; Kuteeva, 2016; Kuteeva and Mauranen, 2018; Mauranen, 2013). A very close connection exists between hybridity and recontextualization, as Mäntynen and Shore (2014) sustain. All kinds of recontextualization are reflected in hybridizing processes, understanding that hybridity is an umbrella term for a wide range of blending, mixing, and combining phenomena that occur in discourses, genres and texts. As Hebb (2002) states, Bakhtin is perhaps the first scholar in discourse theory to have used the word

'hybrid'. Bakhtin locates discourse on a continuum of language use that highlights the value of a variety of complex, purposeful utterances: the utterance belongs to a single speaker but "actually contains mixed within it two utterances, two speech manners, two styles, two 'languages', two semantic and axiological belief systems" (Bakhtin, 1981: 304 in Hebb, 2002: 22). Within the academic sphere, hybrid discourses are defined by Bizzell (1999: 11) as the blending of previously non-academic discourse with traditional academic discourses to form new, hybrid forms.

Institutional research digests, which are part of the ecology of digital science communication practices, might offer excellent ground for the understanding of both recontextualization and hybridity in digital science communication. My aim in the present contribution is, thus, to explore the discursive and pragmatic features that the scriptwriters of institutional research digests use as bridging mechanisms of the existent knowledge asymmetries between scientists and audiences with different levels of expertise, to foster comprehensibility, project a credible and authoritative voice and enhance engagement with their audience.

2. Institutional research digests: Bridging knowledge asymmetries

The existence of 'knowledge asymmetries' as a central issue in science communication has been pinpointed in several studies in the field (Bondi et al., 2015; Ditlevsen and Kastberg, 2011; Engberg, 2016; Gotti, 2014; Maier and Engberg, 2021). Knowledge asymmetries go hand in hand with the development of knowledge: as Ditlevsen and Katsberg (2011: 135) state, "knowledge asymmetries have probably always been a by-product of specialization in general and education and training specifically". Defined as "the communicative consequences of differences between individual knowledge in depth as well as in breadth" (Engberg, 2016: 37), knowledge asymmetries generate 'communicative efforts' (Maier and Engberg, 2021: 187), which attempt to face an important challenge of the knowledge society, that is, "how to transform ever more specialized knowledge into interactions in order for that knowledge to gain value outside of itself" (Ditlevsen and Katsberg, 2011: 135). These communicative efforts might entail "a wish to overcome, to fill, to reduce, to rectify whatever knowledge asymmetry is in question" (Katsberg, 2011: 138). Communicative efforts might be visible in various ways and at different levels in texts in which asymmetries between knowledge generators (scientists) and knowledge users (general public) are perceived. Institutional research digests, which emerge in the attempt to bring science closer to society, may well be a territory where such communicative efforts are visible.

Institutional research digests are part of a constellation of genres which stem from, or are related to, the traditional academic research article. Research articles (RAs) contain "primary output" (Puschmann 2015) which feeds the content of related genres such as blogs, highlights, research websites, and, of course, research digests, as well as social media platforms, especially Twitter. These practices emerge as a result of the ongoing evolution of digital academic and scientific discourse and respond to current social demands for public access to expert knowledge. The open access to scientific knowledge is often fostered by institutions seeking to empower citizens to participate and collaborate in the dissemination of scientific findings. The urge to make science open access may well explain as well as justify the interest to study these new genres and practices within the long-established field of language for specific purposes.

Within the constellation of digital scientific practices, institutional research digests and science blogs have many points in common. However, in contrast to the well-studied science blog (Bondi, 2018; Freddi, 2020; Hyland and Zou, 2019, 2020; Luzón, 2013a, 2013b; Mauranen, 2013; Zou and Hyland, 2019), usually written by the scientists themselves, research digests are put forward by an institution or a professional organization, and are published in their official webpages, sometimes as part of their institutional blog. They are usually written by science journalists, that is, scriptwriters who act as mediators between the scientist and the reader, combining expert and journalistic discourse to ensure the immediate dissemination of specialized knowledge. The research digest, as the individual scientific blog, aims to make scientific research understandable to potentially less expert audiences, using the authority of science for multiple, diversified audiences that may vary widely in their level of expertise (Zou and Hyland, 2019). These audiences might be scientifically literate and even experts themselves (Zou and Hyland, 2019; Herrando-Rodrigo, 2020). Thus, the 'diversification' of audiences is, perhaps, the most problematic aspect of digital science communication: the scenario of a homogeneous, compact, static type of audience has evaporated in digital writer-reader interaction in favour of a type of audience that is diverse, heterogeneous and changing, which makes taking discursive decisions very difficult for the science communicator. For the case of social media for research dissemination purposes, Pascual and Mur-Dueñas (2022: 63) offer a graphic description of the various types of audience involved in the Twitter used by international research groups, which include specialized academic audiences at one end and non-specialized lay audiences at the other, and which, with little adaptation, may well capture the complexities of digital science communication at a more general level.

Mediating between expert sources and a range of less expert audiences to bridge knowledge asymmetries has several implications for the kind of discursive choices that the research digest scriptwriter needs to make. Scriptwriters are requested to project an authoritative and credible voice (the voice of 'science') and, at the

same time, engage a variety of readers in the understanding of such science. How do scriptwriters manage to do so discursively? How is the polyphonic voice of the scriptwriter projected onto the text?

The features of the expert writer's voice in science and the academia have been explored in a significant number of studies (Belcher, 2014; Dressen-Hammouda, 2014; Hudson, 2013; Lillis and Curry, 2010; Matsuda and Tardy, 2007; Stapleton and Helms-Park, 2008; Stock and Eik-Nes, 2016; Tardy, 2012). As Dressen-Hammouda (2014: 16) states, "voice helps to create a co-constructed, shared sociocognitive space that allows readers and writers to situate one another". Thus defined, voice is understood as dialogical, as "the reader's impression of the writer's attempts to position her or himself by using a particular combination of discursive and non-discursive features" (Matsuda and Tardy, 2007: 239). However, the concept of voice remains elusive and has been approached from various perspectives which also include metadiscoursal engagement (Hyland, 2005b); interpersonality (Mur-Dueñas, Lorés Sanz and Lafuente-Millán et al., 2010); proximity (Hyland, 2010); evaluation (Hunston and Thompson, 2000) and stance (Biber and Finegan, 1989; Charles, 2006; Hyland, 2005b; Jiang, 2017; Sancho-Guinda and Hyland, 2012), among others.

My starting point for the exploration of the scriptwriter's voice is the assumption, in line with Maier and Engberg (2021), that to bridge knowledge asymmetries the scriptwriters need to make some 'communicative efforts'. According to Maier and Engberg (2021) these efforts are addressed to enhance comprehensibility (by means of simplification and easification) and engagement (through monoglossic or heteroglossic engagement). The way these communicative efforts are conceptualized has many points in common with Hyland's (2010) proposal of the concept of 'proximity' in the context of the popularization of science. In Hyland's words (2010: 117):

[P]roximity refers to a writer's control of rhetorical features which display both authority as an expert and a personal position towards issues aim an unfolding text. It includes responding to the context of the text, particularly the readers who form part of that context, textually constructing both the writer and the reader as people with similar understanding and goals.

Hyland (2010) discusses five facets (organisation, argument structure, credibility, stance and reader engagement) which writers use to negotiate proximity with readers. All these facets are of utmost importance in the exploration of writer-reader interaction.

Building on Maier and Engberg's (2021) notion of 'communicative efforts' and Hyland's (2010) conceptualization of 'proximity', I here propose three dimensions which are central for the exploration of the discursive features that scriptwriters use to recontextualize scientific knowledge in institutional research digests:

1. Comprehensibility of text, which refers to the discursive efforts made by the scriptwriter to facilitate the understanding of the text by audiences with different degrees of expertise.
2. Credibility and authority of the scriptwriter's voice, which reflects the extent to which their voice can be "trusted", as they are not researchers themselves.
3. Engagement with the audience, that is, the discursive mechanisms the scriptwriter uses to interact with the audience, fostering their interest in the information provided.

Each of these aspects is instantiated in the texts under analysis in various discursive ways which I will try to identify in the remaining of this article.

3. Corpus and methods

To explore the discursive features which characterize the scriptwriter's voice in institutional research digests, a corpus of 20 digital research digests (DRD hereafter), yielding a total of 15,334 words, were downloaded from the British Psychological Society (BPS) website (<https://www.bps.org.uk/>), the best well-known representative body of the profession in the UK. The topics in psychology are of major interest to society in general, thus making psychology a privileged field to explore how specialized knowledge is recontextualized to facilitate understanding to not so specialized audiences. On the About page of the BPS website the following statement is included:

Part of our mission is to create greater public awareness of psychology - sparking new interests and engagements, while increasing the knowledge and passion that exists for the discipline across a variety of settings.
[<https://www.bps.org.uk/about-us/>, last accessed 31 August 2022]

Several publications are released by the association, with various audiences in mind (<https://www.bps.org.uk/publications>). Publications range from the more specialized (BPS publishes 11 eleven academic journals

and facilitates access to online collections by other academic publishers) to the least technical (the research digest), including others such as academic books, the official monthly publication *The Psychologist*, only available for members, and other member network publications. As stated on the corresponding webpage:

The aim of Research Digest is to provide accessible, accurate reports on the latest psychological research and studies that are timely, novel, thought-provoking and relevant to real life, and which make an important contribution to our expanding knowledge of the world.

[<https://www.bps.org.uk/publications>, last accessed 31 August 2022]

Published on a weekday basis, DRDs have over 100,000 followers and another 65,000+ on email, and can be followed via a weekly email newsletter, an app, Facebook, Twitter and Tumblr.

The 20 texts which conform the corpus (see Appendix) were entries selected between January and October 2021 attending to an intended variation of subdisciplines (including topics as diverse as education and mental health) and scriptwriters.

To analyze the way the scriptwriter's voice is constructed, the three dimensions which contribute to its characterization (comprehensibility of the text, credibility and authority of the scriptwriter's voice, and engagement with the audience) have been explored in terms of a series of discursual features which, in my view, these dimensions use as instantiations. They are features which are also included in well-established approaches to the study of interpersonality such as metadiscourse, authorial voice, evaluation, and stance (see references in section 2 above). Thus, with regard to the first aspect under focus (comprehensibility of text) code glosses have been explored and three functional roles identified: explanation, exemplification and reformulation, all of them contributing to the understanding of the technical information provided. The use of evidentials, either as hyperlinks or as text cited, are the resources analyzed to explore the scriptwriters' credibility and authoritative voice. Finally, the pragmatic and discursual mechanisms used by the scriptwriter to engage with their audience have been explored, including in this analysis the use of the inclusive *we*, reader pronouns, questions and directives as well as appeals to shared knowledge and shared experience.

As for the methodology followed, the NVivo Pro software programme was used for qualitative data analysis, which also allowed to generate quantitative data.

4. Results and Discussion

The exploration of 'communicative efforts' to bridge knowledge asymmetries and the corresponding discursual features used by scriptwriters demanded a prior look at the rhetorical organization of DRDs. A three-stage rhetorical structure (Lorés, in press) was revealed, with a first stage in which scriptwriters create a scenario of common experience with their audience, a second stage where they present the research methodology and most significant findings, and a third stage in which they return to the scenario of common experience shared with their audience. Along these three stages the scriptwriter constructs a voice which needs to be comprehensible, credible, authoritative and engaging at the same time.

4.1. Comprehensibility of text

The enhancement of comprehensibility is one of the communicative efforts that Maier and Engberg (2021) mention as a way to bridge knowledge asymmetries. The research that digests popularize needs to be comprehensible for their intended audiences; that is, access to the 'science' needs to be facilitated discursively. How is this done?

In the texts under study, the combination of two modes, visual and verbal (Kress and Van Leeuwen, 2001, 2006) reinforces the meaning that each one of them, as a separate mode, portrays, as "the meanings in any mode are always interwoven with meaning in other modes co-operating in the communicative ensemble" (Jewitt, 2016: 70). Although the visual mode plays, no doubt, a most significant role in the comprehensibility of the message, the exploration of multimodality goes beyond the scope of the present study, so very general hints will be here included. The visual mode is instantiated in DRDs in the picture at the top of the page, helping to contextualize the topic of the research presented in clear interaction with the title of the DRD, highlighted in bold type and bigger letter case. Some of these pictures show a direct connection with the topic of the DRD (a close-up of a woman's hands in a DRD about hand gesturing in teachers' performance or the silhouette of a person holding a bottle in a DRD about drinking). Others are less obviously linked, such as the picture of a man with a mask to open a DRD about 'brain fog' in people with long covid or a picture of various stains of bright colour to illustrate a DRD about how blinded and sighted people understand colour. Visuals and text combine and interact giving way to a 'communicative ensemble' which enhances understanding and reinforces meaning.

Comprehensibility in the verbal mode is fostered in various discursual ways, the most salient of which will probably be the use of code glosses. Code glosses are taken to be metadiscursual features which, by means of explanations, exemplifications or rephrasings facilitate understanding in those cases which the writer deems necessary (Hyland 2005a, Thompson and Hunston 2019). As Hyland (2005a: 52) states, “they reflect the writer’s prediction about the reader’s knowledge base”. The identification of code glosses was here carried out attending to a functional criteria, in contrast with other studies in which the starting point are preconceived lexicogrammatical realizations (*i.e., in other words, in short, this means*) (i.e. Thompson and Hunston 2019).

Three functions of code glosses were identified: explanation, exemplification and reformulation

Types of code glosses	Frequency /1000 words	No. of occurrences
Explanation	2.74	42
Exemplification	2.22	34
Reformulation	0.72	11
Total	5.67	87

Table 1. Code glosses. Frequency of use (per 1000 words) and number of occurrences.

As shown in Table 1, explanation and exemplification are the communicative functions that code glosses tend to fulfill more frequently to facilitate the understanding of specialized knowledge. Example 1 below shows how a technical concept (‘self concept clarity’) is explained in more simple words for it to be understood by a non-expert audience.

Example 1

But this time, Haas and Omura also looked at scores on a measure of “self concept clarity” — essentially, how well people feel that they know themselves. (DRD 13)

The absence of an indicator in Example 1 does not have an impact on the explanatory function of the final clause, but it may affect the degree of explicitness with which such function is communicated to the reader.

Example 2 illustrates how code glosses are used in these texts with the function of exemplification to foster understanding, usually introduced by *i.e., for example, such as, etc.*:

Example 2

or the kids who were not given this extra task — i.e. those whose attention wasn’t already tied up —(DRD 6)

The function of reformulation, less frequently found in the corpus, is also found to refer to an entity, introduced with its technical label followed by an equivalent, non-technical term, as in example 3:

Example 3

The first is hedonistic wellbeing, often called simply “happiness” (DRD 15)

The high presence of code glosses in the corpus under study is in line with recent findings in research group websites (Murillo-Ornat, 2018, 2019), which have an informative and accountability function in the ecosystem of scientific genres for dissemination purposes to which DRDs also belong. Murillo-Ornat’s results show that there is a high frequency of code glosses in these websites (in comparison with RAs), mainly concerning processes of specification and explanation of content. Exemplifications as code glosses seem to predominate in both DRDs and research group websites, acting as a discursual strategy to ensure understanding of technical knowledge by not necessarily expert audiences. In this sense, they greatly contribute to the processes of simplification and easification (Engberg, 2021) that making scientific research comprehensible entails.

The presence of code glosses also indicates, as Thompson and Hunston (2019: 174) state, “a greater degree of interactivity and attention to reader needs”. Interestingly, in their study about code glosses in interdisciplinary written discourse Thompson and Hunston (2019) found that, sometimes, these code glosses (*in other words*) were used in RAs on environmental issues to reformulate a simple statement into longer phrases or more technical terms. This is never found in DRDs and it would be surprising to do so.

Also interesting is the use of the affordances that the digital platforms display, as is the case of hyperlinking. Hyperlinking is mainly used, as will be shown below, as a way to enhance credibility by bringing authorized voices onto the text. However, there are a few cases in which the affordances of hyperlinking are exploited for other ‘communicative efforts’ to bridge knowledge asymmetries, such as the explanation of technical terms. This use is illustrated in example 4:

Example 4

When asked about past vs future change, most people — no matter what their age — report more change over a period of time in the past than they predict for the same period into the future. This “[End of History Illusion](#)” has been well-documented, at least, among [WEIRD](#) populations. Now Brian W. Haas at the University of Georgia, US, and Kazufumi Omura at Yamagata University, Japan, report some cultural differences in susceptibility to it. [DRD 12]

This fragment contains two hyperlinks. Whereas the first connects the text with a report on the topic, the second (WEIRD) connects with a previous digest (“Psychology research is still fixated on a tiny fraction of humans — here’s how to fix that”) in which the meaning of this acronym is explained, thus acting by way of code gloss.

Hyperlinks have also been studied in other digital scientific practices. Research group websites (Pascual, 2020, Lorés, 2020) and Twitter accounts for scientific dissemination purposes (Pascual, 2020) are a case in point. In research group websites, hyperlinks have been found to be of various types (external, internal and peripheral, linking to social media). Whereas external links (linking to sites outside the web) address research-related content, internal and peripheral links offer a “navigating mode” for the audience and foster a certain degree of “communal” identity (the research team and the disciplinary community they belong to). As for hyperlinks in DRDs, they seem to be at the service of credibility of the scriptwriter’s voice and understanding of the scientific knowledge provided.

The enhancement of comprehensibility is thus achieved by combining various discursual and non-discursual ways which make the most of the interactivity and the technical affordances of digital texts.

4.2. Credibility and authority of the scriptwriter’s voice

In DRDs scriptwriters need to recontextualize expert knowledge to make it accessible (digestible) for not so expert (or lay) readers. However, credibility should not be lost in the process of making knowledge comprehensible. ‘Digested’ knowledge should still be credible: as in digests information does not come directly from the scientists, the audience needs, more than ever, to trust the source from which this knowledge emerges. Credibility goes hand in hand with the authority of the voice that projects the message. They are two sides of the same coin. How does the scriptwriter’s voice become credible and authoritative? How is it discursively built?

Two discursual features have been identified that scriptwriters use to confer the requested credibility and authority to their voices so that even though the knowledge is not expressed technically, it is still assumed to be expert (authoritative) knowledge. These two features are evidentials and references to the researcher’s persona.

Evidentials are discursual ways of reporting ideas from other sources (Aikhenvald, 2004; Mushin, 2001). The most salient feature of evidentials identified in the present study is their reliance on hyperlinking and its interactive affordances. Hypertextual interactivity, which fosters the creation of knowledge through the user’s dynamic navigation options, is seen by Engberg and Maier (2015: 52) in terms of knowledge expansion and knowledge enhancement processes. Whereas knowledge expansion is activated through hyperlinks to background or supplementary information, knowledge enhancement works by introducing knowledge usually appearing in other formats (i.e. visuals). In the case under study, an example of knowledge expansion would be the hyperlinks to the RA which is being ‘digested’, this being the type of hypertextual interactivity that predominates in DRDs.

A classification of the evidentials found in DRDs is offered in terms of both the type of source from which they report ideas (i.e. the RA they ‘digest’, previous research digests or outside sources) and the resource that is used for that purpose (either hyperlinks or text cited). Table 2 shows the data gathered:

	Hyperlinks	Text cited (quotation)	Total
RA	1.43 (22)	3.33 (51)	4.76 (73)
Previous research digests	1.11 (17)	0 (0)	1.11 (17)
Outside sources	0.91 (14)	0.13 (2)	1.04 (16)
Total	3.45 (53)	3.45 (53)	6.91 (106)

Table 2 Evidentials. Frequency of use per 1000 words and number of occurrences in brackets.

Table 2 shows, as expected, that evidentials mainly refer to the RA from which the information included in the DRD derives (4.76). In a much lower proportion, evidentials are used to bring information into the text from two other sources: previous research digests already published on the same website (1.11) and sources outside the website (1.04). Concerning the realization of the evidential, a perfect balance exists between

the use of hyperlinks and the quotation of extracts from various sources (3.45). If we attend to the sources of information, the distribution of these resources yields a different picture. The quotation of extracts from the RAs which originate the DRD predominates (3.33) in comparison with the use of hyperlinks (1.43). In contrast, hyperlinks are the way evidentials are mainly instantiated when outside sources are cited (0.91), as compared to the text cited (0.13). These outside sources may include not only digital texts but also other media, as is the case of film clips to illustrate the topic under discussion. Finally, hyperlinks are the only evidential used to report information from previous DRDs. The different use of evidential may cater for a variety of discursual strategies used by scriptwriters to increase their credibility. Thus, the hyperlinks to another research digest (example 5) or to an external source (example 6) enhance the credibility of the scriptwriter's voice by bringing other voices to support their views, as part of an effort to expand knowledge. The direct (example 7) or indirect (example 8) quotation from a text, however, reinforce the scriptwriter's credibility by moving back to the original text and incorporating the researchers' voice into the text. Both are complementary ways used by scriptwriters to be considered "a trustable source".

Example 5

Research has variously suggested that learners [don't actually benefit from their preferred style](https://digest.bps.org.uk/2021/02/04/the-learning-styles-myth-is-still-prevalent-among-educators-and-it-shows-no-sign-of-going-away/), (DRD 1, hyperlinked to a previous DRD: <https://digest.bps.org.uk/2021/02/04/the-learning-styles-myth-is-still-prevalent-among-educators-and-it-shows-no-sign-of-going-away/>)

Example 6

Women's Aid [noted that home is often an unsafe environment](https://www.womensaid.org.uk/impact-of-covid-19-on-survivors-experiencing-domestic-abuse/) for those experiencing abuse, while earlier this year Refuge [stated that they'd seen a 60% increase in monthly calls](https://www.bbc.com/news/uk-56491643) to their National Domestic Abuse helpline. (DRD 14, hyperlinked to a Women Aid's report <https://www.womensaid.org.uk/impact-of-covid-19-on-survivors-experiencing-domestic-abuse/> and to a BBC piece of news <https://www.bbc.com/news/uk-56491643>)

Example 7

In fact, the new results "provide little direct support that early training has a specific, causal effect on later performance and achievement," the researchers write. (DRD 2)

Example 8

The authors say that the increase in people's boundaries even in virtual reality, where there was no infection risk, may be indicative of changes to neural representations of the "safety zone" around our bodies, as well as sensorimotor circuits in the brain involved in maintaining our safety. (DRD 12)

Also significant is the fact that extracts from the RA are quoted when the scriptwriter is explaining what the research is about in terms of methodology and results, whereas hyperlinks are mainly used to introduce the topic and provide contextualization for it, that is, at the beginning of the text.

The reference to the researcher's persona is taken to be another way by means of which scriptwriters gain credibility and give shape to an authoritative voice. References are made to the authors of the RA as 'the team', 'the writers', 'the authors', 'the pair', 'the researchers', or they are addressed by their proper name (i.e. Morris and colleagues). These references help scriptwriters impersonate their voice in a genre in which self mentions are generally absent from the text. In fact, only in two texts (out of 20) do scriptwriters use first-person pronouns, the purpose always being one of building a common territory of experience with readers:

Example 9

Like countless other parents across the UK, I'm finding it pretty hard to maintain enthusiasm for my kids' home-schooling lessons. (DRD 6)

Example 10

Looking over that list, I certainly know some people who I'm sure think of themselves as being extremely liberal but who would score pretty highly on the anticonventionalism dimension, at least. (DRD 8)

In sum, a credible and authoritative voice is built by 'borrowing' these features from the researchers themselves, appealing to their role as creators of knowledge and to the scriptwriters' duty to rely on trustworthy information.

4.3. Engagement with the audience

As part of the efforts to bridge knowledge asymmetries, the aim of engaging the audience goes hand in hand with that of making information comprehensible and the one of constructing a credible voice. A wide range of pragmatic and metadiscursual features are used to foster the reader's interest in the information given, so that

an image of the scriptwriter and the reader as people “with similar understanding and goals” (Hyland, 2010: 117) is projected. Thus, especially salient is the appeal to knowledge that is shared by both scriptwriter and audience, as shown in the following example:

Example 11

People often think of drinking issues as binary — you either have one, and by extension are an alcoholic, or you don't have any issues with alcohol consumption. (DRD 10)

Appeals to shared experience (i.e. popular culture) is another resource employed by scriptwriters to engage readers and build rapport. This is shown in Example 12, where engagement is enhanced through the digital affordance of hyperlinking to clips from well-known popular films.

Example 12

So while it might be fun when a schlocky Bond villain [falls from the top of the Golden Gate Bridge](#) or Samuel L. Jackson [gets eaten by a shark](#), there are scores of other examples that speak to people on a level that goes far beyond entertainment, and that may even help them understand their own grief. (DRD 10)

The enhancement of newsworthiness is another strategy which scriptwriters use to engage readers. Newsworthiness is fostered through a combination of various rhetorical, discursual and metadiscursual strategies. To begin, it is associated, among other resources, with the use of attitude markers, which indicate the writer's affective response to the information provided and which highlight the importance of certain topics and of research findings.

Example 13

This change is [fantastically illustrated](#) by a new preprint from Daphne Halt and team based in Boston, Massachusetts. (DRD 12)

Example 14

[It's worth noting here](#) that our understanding of long Covid is relatively immature, and that cases of brain fog triggered by other conditions can persist for years on end. (DRD 18)

Newsworthiness is also fostered by other rhetorical and discursual resources, which, in combination, contribute to promoting audience engagement in the text. One of such resources is the deductive pattern followed in DRDs, where the main claim is foregrounded at the beginning (Lorés, in press). This deductive pattern, also found in blogs (Luzón, 2013a, 2013b), engages the lay reader by highlighting, at the very beginning, the immediate value of the research findings or the potential benefit for readers, instead of attending to the inductive pattern followed in expert writing and the RA it derives from (Hyland, 2010).

Finally, the phrasing of DRD titles plays a most significant part in highlighting newsworthiness and engaging readership. A close look at the 20 titles included in the corpus suggests that they respond to two main types:

1. Titles which summarize results, as in “Study Suggests There Is Not A “Sensitive Period” For Developing Musical Skills” (DRD 2) or in “Having Hope For the Future Could Protect Against Risky Behaviours” (DRD 5). This type of title, which conforms with the deductive pattern identified in the text, is identified in most of the texts included in the corpus (17 out of 20).
2. Titles which create expectations about the information included in the report, without disclosing the research results, as in “Here's How Personality Changes In Young Adulthood Can Lead To Greater Career Satisfaction” (DRD 3), “What Makes For A “Meaningful” Death In Fiction?” (DRD 4), and “Immature Jokes: What Kids' Humour Can Tell Us About Their Ability To Empathise” (DRD 11). They resort to a journalistic style of attracting readers' attention by, for instance, formulating a question whose answer will be found in the text (3 out of 20).

These titles operate in combination with the pictures placed at the top of the page, which, as mentioned above, function as an ensemble with the verbal mode, enhancing understanding and reinforcing meaning. Thus, a third role ascribed to these pictures will be one of fostering audience engagement, by offering a visual context for a verbal message.

Several discourse devices are also used as engagement features which foster interactivity and dialogicity, as two of the most salient characteristics of digital discourse. The more significant are, by far, inclusive *we* pronouns, reader pronouns, questions and directives. Table 3 shows quantitative data which reflect the use of these engagement markers in the corpus under analysis.

Engagement features	Frequency / 1000 words	No. of occurrences
Inclusive <i>we</i>	3.92	60
Reader pronouns	1.36	21
Questions	0.98	15
Directives	0.2	3

Table 3 Engagement markers. Frequency of use (per 1000 words) and number of occurrences.

By far, the most frequent engagement marker used is the inclusive pronoun *we* (*our*, *us*). Inclusive pronouns are the most obvious devices used by scriptwriters to align themselves with their audience, presenting writer and reader as members of the same (lay) community, sharing the same experiences and having the same expectations, binding them together in a similar way of looking at the world. The subject pronoun *we* is the most frequent form used (1.96 per 1000 words), followed by the possessive pronoun *our* (1.5). Inclusive pronouns as objects (*us*) are much less common (0.46), which, in a way, shows the active role as agents assigned to readers.

Inclusive *we* is mainly found at the beginning of the text (when the topic of the research is being presented and its general interest is stressed) and at the end, once the research (methods and results) have been stated, at a point at which the scriptwriter highlights the implications that the findings presented might have for the lay public.

As observed, then, the use of an inclusive *we* as subject pronoun stands for exactly 50% of the cases recorded, used to refer to general knowledge shared by writer and readers:

Example 15

We already know that we can change our personality and increase how outgoing, agreeable, or open we are. (DRD 3)

Example 16

Yet we all know that when an instructor is enthusiastic, those sessions are more enjoyable — and we remember more. (DRD 6)

Or to refer to behaviour shared by writer and audience:

Example 17

We sob over the demise of a beloved character, cheer at the comeuppance of our favourite villain, or sit at the edge of our seats, shocked at deaths we didn't see coming. (DRD 4)

Example 18

we might give strangers a wide berth on the pavement, yet end up shoulder to shoulder on trains (DRD 12)

Or to shared experience:

Example 19

Maintaining a physical distance was one of the few things we could do for many months to limit the risk of infection, so for many of us, the personal space boundaries we were used to suddenly became no-gos. (DRD 12)

The possessive adjective *our* is frequently found also in connection with common experiences and shared knowledge:

Example 20

It's worth noting here that our understanding of long Covid is relatively immature, and that cases of brain fog triggered by other conditions can persist for years on end (DRD 18)

Example 21

A good teacher can make a huge difference, but effective teaching techniques can add new dimensions to our ability to really take on what we're being told (DRD 20)

Next on the scale of frequency of use is the reader pronoun (*you*, *your*), used to address readers as 'participants in an argument' (Hyland 2005a: 54), as in Example 22, or even allow the writer "to stress that the

readers may find themselves in the situation presented in the text and thus the information may be relevant to them” (Luzón 2022: 13), as in Example 23.

Example 22

How have you changed, in terms of values, life satisfaction and personality? (DRD 13)

Example 23

It can be difficult to feel satisfied with what you’ve got, especially if those around you appear to be thriving financially, socially or romantically. (DRD 5)

Also rather frequent is the use of direct questions. Questions are perhaps the clearest signal of interactivity and one which invites readers to engage in a conversation with the writer. In DRDs, direct questions place readers in a position either to provide a (mental) answer to a question addressed directly to them, as in Example 24:

Example 24

Do you think you’ll be just as different then as you were a decade in the past? (DRD 13)

Most often, direct questions are formulated as addressed to any reader, as in Example 25:

Example 25

What is it that makes someone feel that theirs is a “good life”? (DRD 15)

Or they might contain very general, even rhetorical questions, as in Example 26:

Example 26

does it actually matter if the myth is perpetuated, and does it have a serious impact on how people learn? (DRD 1)

The last engagement marker to be discussed is the directive, which only presents three cases, gathered in two texts. Thus, addressing the reader using directives does not seem to be a characteristic feature of research digests, at least on the BPS website. In two of the three cases recorded (both found in the same text), directives are used to invite readers to imagine themselves in a certain situation. Then, these directives are combined with questions addressed to readers. This combination of various types of engagement markers is a very effective way to situate readers in context and works as an introductory paragraph for the research presented:

Example 27

Think about what you were like 10 years ago. How have you changed, in terms of values, life satisfaction and personality? Now picture yourself 10 years in the future. Do you think you’ll be just as different then as you were a decade in the past? (DRD 13)

In the third example (Example 28), the directive is used by the scriptwriter to foster the feeling of friendliness and close relationship with her readers:

Example 28

But if you’re worrying that perhaps you’ve missed a critical window of greater brain responsiveness for your own child to start musical training, the lesson from the new work seems to be: don’t. (DRD 2)

As happens with other discursual features, very few studies have specifically focused on the use of engagement markers in digital genres. Among these few, the studies carried out in research group websites (Mur-Dueñas 2021) and Twitter for research dissemination purposes (Pascual and Mur-Dueñas 2022) yield similar results to the present one in terms of the saliency of the use of engagement features in science recontextualization purposes. Engagement devices in general are shown to be much more frequent in these websites than in RAs, attending to the results gathered in previous studies on scientific written production (Hyland 2001). Personal pronouns are shown to be the most frequent realization with an engaging function in research group websites, followed by directives. In websites, these directives have been found to have an instructional role or they facilitate navigation among pages, which are communicative functions absent from DRDs. Twitter accounts for scientific dissemination purposes also use directives as main resources, followed by reader mentions.

Although DRDs share with research group websites and Twitter accounts their aim to communicate and disseminate expert scientific knowledge, they seem to reinforce the strategic use of engagement features,

including some pragmatic resources (i.e. appeals to shared knowledge and shared experience as well as enhancement of newsworthiness) which boosts the dialogicity of this digital practice.

In all, engagement devices by way of discursal and pragmatic resources are found to be used by the scriptwriters to align with an audience which presumably lacks the expert knowledge that researchers have but holds a genuine interest in understanding the science that the research output might provide.

5. Conclusion

This study has intended to be a contribution to the understanding of the processes of recontextualization that take place when specialized knowledge is addressed to an audience for which it was not initially conceived, and which might not be an expert in the field. Based on the concept of ‘knowledge asymmetries’, which refer to the differences in the individual knowledge that writer and reader hold, the study has focused on the ‘communicative efforts’ (Maier and Engberg, 2021) that science communicators do to bridge potential knowledge gaps existent in the particular case of the digital research digest (DRD), where research outcomes previously published in a research paper are summarized and ‘digested’ for an audience who most likely will lack sufficient specialized knowledge to understand the technicalities of the research. DRDs, as explained above, are published by institutions and professional organizations to give light to the advancements made in their discipline and which might entail a significant contribution to society. To do so, the science communicators (or scriptwriters) face the dilemma of having to project a credible authoritative ‘trustable’ voice while fostering a dialogic interaction with the reader, engaging the audience in a conversation in which both, writer and audience, are portrayed as sharing similar level of understanding, expectations and goals.

The exploration of the efforts that science communicators make to bridge knowledge asymmetries in the particular case of the DRDs has identified three aspects which these efforts cater for: comprehensibility of text, credibility and authority of the scriptwriter’s voice, and engagement with the audience. Several discursal, metadiscursal and, to a lesser extent, multimodal features have been identified as resources used by the scriptwriters to instantiate these efforts.

In all, this study contributes to the characterization of the digital ecology of scientific genres by identifying the features which characterize these texts as a kind of “transition discourse” between the offline RA from which they stem and a fully popularized text which might be found in other online platforms and sites (i.e. social media). This transitional character is given, above all, by the recontextualizing discursal and pragmatic features which the scriptwriter uses to bridge the assumed knowledge gaps between the original source (i.e. the researcher) and an unpredictable audience. Bridging knowledge gaps in the communication of science means, in DRDs, giving shape to a dual voice that, on the one hand, echoes the scientist’s expertise and, on the other, engages the audience in the full understanding of complex problems. This dual voice is weaved into a hybrid authorial identity which seems to be central to all recontextualization processes. Although the discursal resources identified have many points in common with those found in recent studies in other digital scientific practices (i.e. research group websites and Twitter accounts for research dissemination purposes), aspects such as the variety and frequency of use of such devices in DRDs point towards an idiosyncratic use which deserves further exploration. Future studies which incorporate DRDs from other sources might help to make more reliable claims about their generic features. Moreover, it would be interesting to closely compare the use of these discursal features as used in the RA from which they stem and in their “digested” form: different strategic uses can already be foreseen, as is the deployment of engagement markers in RAs to foster in-group disciplinary membership (Hyland 2001) and in DRDs, to arouse readers’ interest in what they feel might be technical, complex, knowledge. It is also deemed interesting to deepen into the multimodal component of these texts, which is proving to be a definitory feature of all kinds of digital practices. All in all, further explorations of the communicative efforts that are discursively made to bridge information asymmetries between the scientific community and the civil society will certainly contribute to a much demanded (right to) public access to knowledge.

Acknowledgements

This research is a contribution to the Intergedi research project (<https://intergedi.unizar.es/>). Grant PID2021-122303NB-100, funded by MCIN/AEI/ 10.13039/501100011033 and by “ERDF A way of making Europe”, as well as by Gobierno de Aragón (H16_20R), Spain.

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Appendix. Corpus of reserach digests analysed (with links)

1. **The “Learning Styles” Myth Is Still Prevalent Among Educators — And It Shows No Sign of Going Away**
<https://www.bps.org.uk/research-digest/learning-styles-myth-still-prevalent-among-educators-and-it-shows-no-sign-going>
2. **Study Suggests There Is Not A “Sensitive Period” For Developing Musical Skills**
<https://www.bps.org.uk/research-digest/study-suggests-there-not-sensitive-period-developing-musical-skills>
3. **Here’s How Personality Changes In Young Adulthood Can Lead To Greater Career Satisfaction**
<https://www.bps.org.uk/research-digest/heres-how-personality-changes-young-adulthood-can-lead-greater-career-satisfaction>
4. **What Makes For A “Meaningful” Death In Fiction?**
<https://www.bps.org.uk/research-digest/what-makes-meaningful-death-fiction>
5. **Having Hope For the Future Could Protect Against Risky Behaviours**
<https://www.bps.org.uk/research-digest/having-hope-future-could-protect-against-risky-behaviours>
6. **School Kids’ Memory Is Better For Material Delivered With Enthusiasm, Because It Grabs Their Attention**
<https://www.bps.org.uk/research-digest/school-kids-memory-better-material-delivered-enthusiasm-because-it-grabs-their>
7. **Liberal Americans’ Distress At 2016 Election Result Shouldn’t Be Labelled “Depression”, Study Argues**
<https://www.bps.org.uk/research-digest/liberal-americans-distress-2016-election-result-shouldnt-be-labelled-depression>
8. **Left-Wing Authoritarianism Is Real And Needs To Be Taken Seriously In Political Psychology, Study Argues**

<https://www.bps.org.uk/research-digest/left-wing-authoritarianism-real-and-needs-be-taken-seriously-political-psychology>

9. Blind And Sighted People Understand Colour Similarly

<https://www.bps.org.uk/research-digest/blind-and-sighted-people-understand-colour-similarly>

10. Threat To Identity Stops Harmful Drinkers Recognising Their Alcohol Issues

<https://www.bps.org.uk/research-digest/threat-identity-stops-harmful-drinkers-recognising-their-alcohol-issues>

11. Immature Jokes: What Kids' Humour Can Tell Us About Their Ability To Empathise

<https://www.bps.org.uk/research-digest/immature-jokes-what-kids-humour-can-tell-us-about-their-ability-empathise>

12. The Pandemic Has Left Us Wanting More Personal Space — Even In Virtual Reality

<https://www.bps.org.uk/research-digest/pandemic-has-left-us-wanting-more-personal-space>

13. We Think We've Changed More In The Past Than We Will Change In The Future — And Americans Seem Particularly Susceptible To This Illusion

<https://www.bps.org.uk/research-digest/we-think-weve-changed-more-past-we-will-change-future>

14. Domestic Violence Increased During Lockdown In The United States

<https://www.bps.org.uk/research-digest/domestic-violence-increased-during-lockdown-united-states>

15. We've Neglected The Role Of "Psychological Richness" When Considering What Makes A Good Life, Study Argues

<https://www.bps.org.uk/research-digest/weve-neglected-role-psychological-richness-when-considering-what-makes-good-life>

16. Young Australians Who Couchsurf Experience High Levels Of Psychological Distress

<https://www.bps.org.uk/research-digest/young-australians-who-couch-surf-experience-high-levels-psychological-distress>

17. The Medusa Effect: We Ascribe Less "Mind" To People We See In Pictures

<https://www.bps.org.uk/research-digest/medusa-eff>

18. First-Hand Reports Of "Brain Fog" Highlight Struggles Of Those Living With Long Covid

<https://www.bps.org.uk/research-digest/first-hand-reports-brain-fog-highlight-struggles-those-living-long-covi>

19. Negative Media Coverage Of Immigration Leads To Hostility Towards Immigrants And In-Group Favouritism

<https://www.bps.org.uk/research-digest/negative-media-coverage-immigration-leads-hostility-towards-immigrants>

20. Hand Gestures Help Students Mentally Organise New Information

<https://www.bps.org.uk/research-digest/hand-gestures-help-students-mentally-organise-new-information>