

The authors' voice in health sciences written and video abstracts: How do modes combine to interact with audiences?

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Abstract. Video abstracts have emerged to supplement and support the information provided in written abstracts (Luzón & Pérez-Llantada, 2019). This new genre, characterised by the combined use of verbal and non-verbal semiotic resources, contributes to making content more accessible and visible to the audience (Plastina, 2017). A key aspect in this respect is how authors use various communicative modes not only to disseminate content but also to establish interpersonal meaning with their audience. The purpose of this study is to explore how authors in the field of health science orchestrate varied modes to enhance their own voice and effectively engage their audiences through written and video abstracts. For this purpose, a dataset of 10 written abstracts and their corresponding video abstracts are analysed from a multimodal discourse perspective. The study reveals the way authors take stance verbally (e.g. inclusive we, hedges, boosters) and enact engagement multimodally (e.g. self-mention, animations, photographs, reference to visuals), thus enriching the audience's experience.

Keywords: Written and video abstracts; multimodal discourse analysis; stance; engagement; ESP

[es] La voz de los autores en los resúmenes escritos y en los *video abstracts* de ciencias de la salud: ¿Cómo se combinan los modos para conectar con el público?

Resumen. Los vídeo resúmenes han surgido para complementar y apoyar la información proporcionada en los abstracts o resúmenes escritos (Luzón y Pérez-Llantada, 2019). Este nuevo género, caracterizado por el uso combinado de recursos semióticos verbales y no verbales, contribuye a hacer el contenido más accesible y visible para la audiencia (Plastina, 2017). Un aspecto clave en este sentido es el modo en que los autores utilizan diversos modos comunicativos no solo para difundir el contenido, sino también para establecer un significado interpersonal con su audiencia. El objetivo de este estudio es pues explorar cómo los autores en el campo de las ciencias de la salud orquestan diversos modos para potenciar su propia voz e involucrar efectivamente a sus audiencias a través de vídeo resúmenes y resúmenes escritos. Para ello, se analiza un conjunto de datos compuesto por 10 resúmenes escritos y sus correspondientes vídeo resúmenes desde una perspectiva de discurso multimodal. El estudio revela la forma en que los autores adoptan una postura verbalmente (p. ej., nosotros inclusivo, atenuantes e intensificadores retóricos) y promueven un involucramiento (engagement) multimodal (p. ej., automención, animaciones, fotografías, referencia a imágenes), enriqueciendo así la experiencia de la audiencia.

Palabras clave: Vídeo resumen; resumen escrito; análisis del discurso multimodal; posición; compromiso .

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1. Introduction

Health sciences are constantly evolving, experimenting, and contributing to progress and human welfare. In the medical community, having the tools and means for effectively presenting and disseminating new findings is critical. In this context, health-related knowledge needs to be rapidly transmitted and shared for the sake of medical

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advance. This drive, mainly supported by digital communication, results in the upsurge of a variety of academic genres that can complement and increase the potential of traditional ones as well as help disseminate knowledge fast and openly. One such genre is the video abstract (VA), which originates in its written counterpart but further complements it with a range of verbal and non-verbal semiotic resources. VAs permit researchers to make content more accessible and visible to the audience at the same time that it is spread rapidly and effectively. Today, online journals are increasingly offering authors/researchers the opportunity to supplement their written abstracts (WA) with VAs (Plastina, 2017). This is the case with some of the journals comprised in *The Lancet Group*. As described on their website, *The Lancet Group* aims to make the best science from the best scientists available worldwide in an attempt to have a real positive impact on health. In particular, this research platform offers a series of clinical speciality-based cutting-edge journals <https://www.thelancet.com/> where authors can publish their VAs along with their corresponding written articles. Digital genres, such as VAs, Clinical Pictures, and Research Footage among others, can be found on their official YouTube channel <https://www.youtube.com/c/TheLancetTV>.

Given the aforementioned emergence of new ways to construct science, in this study, we centre on VAs and WAs. Specifically, the aim of this study is to explore the way authors in the field of health science orchestrate varied modes to enhance their own voice and effectively establish interpersonal meaning with their audiences through WAs and their corresponding VAs. For this purpose, we first examine stance and engagement in WAs and VAs and then the different semiotic modes used by authors in the audiovisual version to making content more accessible and visible (Plastina, 2017) as well as more interactive and multimodal to the audience.

Due to copyright issues, images of the WAs and VAs mentioned throughout the study will not be shown. Instead, according to the multimodal nature of this study, references and links are shared to provide immediate access to these WAs and VAs.

In this study, the term voice is defined as “the sense of communicating an individual presence behind written [or spoken] words” (Narayan, 2012, p. 85). In this same line, authors tend to consider voice as the interplay between two complementary but often blurred entities: the stance adopted and the engagement strategies implemented. On the one hand, stance can be mainly upheld through the use of hedges, boosters, self-mentions (Biber, 2006; Hyland, 2004, 2005), as well as the organisation of rhetorical steps within genres (Swales, 1990). On the other, engagement may be instantiated by listener mentions, directives, questions, level of formality, or references to shared knowledge (Hyland, 2004, 2005). Among the varied linguistic resources authors can resort to voice themselves, hedges and booster may be foregrounded. Hedges and boosters can be understood as “communicative strategies for increasing or reducing the force of statements” (Hyland, 2004, p. 87). These metadiscursive resources are relevant in academic discourse as they can support not only the provision of ideational meaning but also the enactment of interpersonal relationships between the author and the audience (Hyland & Tse, 2004; Hyland, 2005, 2006). Hedges can be produced to show uncertainty, deference or respect for the research community while boosters may reflect commitment towards the information conveyed (Hyland, 2004). In addition, authors’ voices may be reflected in the selection they make of multimodal resources that in turn contribute to taking stance and promoting engagement.

2. Methodology

2.2. Dataset

The data analysed in this study consists of 10 WAs and their corresponding VAs pertaining to the field of medicine. At the same time, VAs have been explored from a double perspective: the VA (video) itself (e.g., visuals) and their verbatim transcription. These abstracts were taken from journals belonging to *The Lancet Group*. Table 1 provides an overview of the samples that make up the dataset, which involves three data subsets: WA, VA, and VA *verbatim* transcriptions.

Reference	WAs length (No. of words)	VAs length in time	VAs verbatim transcription length (No. of words)
Article 1 Willemssen, et al. (2019). Challenges in the design and regulatory approval of 3D-printed surgical implants: a two-case series. <i>The Lancet. Digital Health</i> , 1, e163-71. https://doi.org/10.1016/S2589-7500(19)30067-6	480	00:02:59	567
Video abstract 1 https://www.youtube.com/watch?v=3gxiDo3ac0k			

<p>Article 2 Wilby, M. J. et al. (2021). Surgical microdiscectomy versus transforaminal epidural steroid injection in patients with sciatica secondary to herniated lumbar disc (NERVES): a phase 3, multicentre, open-label, randomised controlled trial and economic evaluation. <i>The Lancet Rheumatology</i>, 3, e347-56. https://doi.org/10.1016/S2665-9913(21)00036-9</p> <p>Video abstract 2 https://www.youtube.com/watch?v=KY70azGEZ0o&t=1s</p>	396	00:04:15	904
<p>Article 3 Tran, J. R. et al. (2019). Symptom-based stratification of patients with primary Sjögren's syndrome: multi-dimensional characterisation of international observational cohorts and re-analyses of randomised clinical trials. <i>The Lancet Rheumatology</i>, 3, e347-56. https://doi.org/10.1016/S2665-9913(19)30042-6</p> <p>Video abstract 3 https://www.youtube.com/watch?v=SXgMQ7i7m4c&t=174s</p>	308	00:05:06	1,026
<p>Article 4 Scott, J. G. et al. (2021). Pan-cancer prediction of radiotherapy benefit using genomic-adjusted radiation dose (GARD): a cohort-based pooled analysis. <i>The Lancet Oncology</i>, 22, 1221-29 https://doi.org/10.1016/S1470-2045(21)00347-8</p> <p>Video abstract 4 https://www.youtube.com/watch?v=gvyiNOPJ-14</p>	445	00:08:14	1,724
<p>Article 5 Hofman, M. S. (2020). Prostate-specific membrane antigen PET-CT in patients with high-risk prostate cancer before curative-intent surgery or radiotherapy (proPSMA): a prospective, randomised, multicentre study. <i>The Lancet</i>, 395, 1208-16. https://doi.org/10.1016/S0140-6736(20)30314-7</p> <p>Video abstract 5 https://www.youtube.com/watch?v=QKxPgEdLO2E&t=6s</p>	416	00:03:22	590
<p>Article 6 Williams, C. (2020). Exhaled Mycobacterium tuberculosis output and detection of subclinical disease by face-mask sampling: prospective observational studies. <i>The Lancet. Infectious Diseases</i>, 20(5), 607-17 https://doi.org/10.1016/S1473-3099(19)30707-8</p> <p>Video abstract 6 https://www.youtube.com/watch?v=G-8majbi2Y0</p>	356	00:03:03	560
<p>Article 7 Bharat, A. (2021). Early outcomes after lung transplantation for severe COVID-19: a series of the first consecutive cases from four countries. <i>The Lancet. Respiratory Medicine</i>, 9, 487-97. https://doi.org/10.1016/S2213-2600(21)00077-1</p> <p>Video abstract 7 https://www.youtube.com/watch?v=wpUNZRd1-Kg</p>	322	00:03:10	568
<p>Article 8 Schwalm, J. D. (2019). A community-based comprehensive intervention to reduce cardiovascular risk in hypertension (HOPE 4): a cluster-randomised controlled trial. <i>The Lancet</i>, 394, 1231-42. https://doi.org/10.1016/S0140-6736(19)31949-X</p> <p>Video abstract 8 https://www.youtube.com/watch?v=UeiuZpzoBJ0&t=8s</p>	424	00:03:07	461

Article 9 Atun, R. (2020). Sustainable care for children with cancer: a Lancet Oncology Commission. <i>The Lancet Oncology Commission</i> , 21(4), e185-e224. https://doi.org/10.1016/S1470-2045(20)30022-X Video abstract 9 https://www.youtube.com/watch?v=6ESTM9QJdys	224	00:05:32	957
Article 10 Lindan, C. E. (2020). Neuroimaging manifestations in children with SARS-CoV-2 infection: a multinational, multicentre collaborative study. <i>The Lancet. Child Adolescent Health</i> , 5, 167-77. https://doi.org/10.1016/S2352-4642(20)30362-X Video abstract 10 https://www.youtube.com/watch?v=8S7dkQdOFE8	378	00:04:04	701
Total	3,749	00:42:52	8,058

Table 1. Dataset information.

From our dataset we can establish that WAs have an average length of 374.9 words, VAs have an average duration of 04:18 minutes and VAs verbatim transcriptions have an average length of 805.8 words.

The VAs selected -published between 2019 and 2021- have either one or two researchers presenting. Yet, the chosen articles are authored by large research teams. The layout and organisation of the VAs analysed are the same in every case: the screen is divided into two parts. The left-hand side of the screen shows the authors presenting, either sitting down or standing up, while the right-hand side of the screen displays the visuals of the presentation (to visualise and an example, please refer to any of the VAs links provided in Table 1). In the case of WAs, their layout is recurrent and well-established in every case (to see an example, please refer to any of the articles listed in Table 1). WAs (called “summary” in the journal) are structured abstracts with 4 main subsections (moves) made explicit in the text: *background*, *method*, *findings*, and *interpretation*. Funding and copyright subsections are also included right after interpretation. On the right-hand side of the WA, the reference data for the article, the authors’ affiliation, and contact details are also provided. However, these subsections (i.e., funding, copyright, and author’s data) have not been considered in our study since these data do not allow for the analysis of interpersonal meaning and they have merely informative purposes.

2.2. Procedure

To shed light on how authors’ voice is expressed in WAs and VAs through different modes, we adopted a corpus-driven approach. The dataset was closely examined to determine the multimodal strategies the researchers instantiated to convey interpersonal meaning. For this purpose, we first identified the rhetorical steps in the WAs and in the VAs and subsequently looked at the varied strategies researchers used to construct this interpersonal meaning.

The qualitative software *Atlas.ti* supported the data analysis. We inductively developed a coding scheme of strategies that emerged from the dataset. Nevertheless, we considered previous literature on various linguistic features such as boosters and hedges (e.g., Hyland, 2004, 2005).

For the analysis of the WAs, we identified the rhetorical steps, boosters, hedges, and self-mentions (pronouns *I* and *we*). Regarding the pronoun *we*, two categories were distinguished, inclusive and exclusive (Hardwood, 2005). By using the inclusive *we*, the presenter also includes the audience. On the contrary, the use of exclusive *we* “merely” refers to the presenters’ sphere. Regarding the analysis of the VAs, due to their audiovisual nature, we expanded the codes and drew on the *verbatim* transcription and visual support. For the transcribed data, we identified the rhetorical steps, boosters, hedges, and self-mentions (pronouns *I* and *we*), possible references to the audience, common language expressions, and references to visuals.

Finally, the VAs were analysed according to what they visually represented and showed. The specific codes were as follows: written information, photographs, tables, animations (multimedia resources that provide pictures/images moving), images (static and animated (e.g., transitions, moving elements within the image), and graphs (static and animated).

3. Results and discussion

The analysis concerning the rhetorical organisation of the WAs and VAs shows that both are structured according to four well-established moves: background (move 1); methods (move 2); findings (move 3); and interpretation (move 4). However, in nine out of 10 VAs, two other moves can also be observed: one used by researchers to present themselves, and another one to close the speech and avoid abrupt spoken endings. The main purpose of these two moves is to reinforce the connection between the authors and their prospective audience. Thus, the moves identified in the VAs analysed are the following: presentation (move 1); background (move 2); methods (move 3); findings (move 4); interpretation (move 5); and closing (move 6). After having identified the moves of each text type, in the ensuing subsections, the results from the three data subsets already described in the methodology section are described.

3.1. Written abstracts (WAs) results

WAs represent the more traditional and less multimodally diverse version of the medical abstracts analysed. Readers know what they can expect from a written abstract and the WAs analysed accomplish these expectations both as regards content and organisation. Table 2 and Table 3 show a summary of the main linguistic resources the researchers use to establish interpersonal meaning with the audience (readers) in each of the WAs (across the moves), respectively.

	WA1	WA2	WA3	WA4	WA5	WA6	WA7	WA8	WA9	WA10	Total
Boosters	2	1	0	3	3	2	6	0	0	0	17
Exclusive <i>we</i>	4	2	4	9	3	3	4	1	0	1	31
Hedges	8	8	8	4	1	1	3	6	2	4	45
Self-mention <i>I</i>	1	0	0	0	0	0	0	0	0	0	1
Total	15	11	12	16	7	6	13	7	1	5	93

Table 2. Frequency of linguistic traits in the different texts of the WAs data subset

As shown in Table 2, the most recurrent linguistic traits found in the WAs data subset are hedges (n=45), followed by exclusive *we* (n=31), boosters (n=17), and first-person self-mentions (n=1). Hedges and boosters are two main strategies widely used in academic writing to increase or reduce the force of the statement (Hyland, 1998, 2004, 2005). Authors may choose both categories depending on the communicative purpose. While boosters may be chosen, for example, to show information with assurance and certainty, hedges, on the contrary, may be used to express a perspective on the statements and caution (Hyland, 1996). Instances of exclusive *we* are also found in the data. This type of *we* is understood as a group self-mention (Hyland, 2004) referring to the speakers or writers and their colleagues or research group, but not to the audience. On the contrary, the use of self-mention with *I*, as expected, is rarely found in the dataset.

Table 3 provides a summary of the frequency of the linguistic features found in each of the moves. Our results indicate that hedges are particularly prominent in the findings and interpretation moves. Move 1 refers to background, move 2 to methods, move 3 to findings, and move 4 to interpretation.

	Move 1	Move 2	Move 3	Move 4	Total
Boosters	3	1	9	4	17
Exclusive <i>we</i>	11	15	3	2	31
Hedges	11	6	13	15	45
Self-mention <i>I</i>	0	1	0	0	1

Table 3. Frequency of linguistic traits in the different moves of the WAs data subset

As regards the most frequent hedges and boosters found in the dataset, these are presented in Table 4. Asterisks (as in *show**) represent the flexive forms of verbs since *show*, *shows*, *shown* and *showed* have all been considered the same form.

Boosters	Frequency per item	Hedges	Frequency per item
Show*	9	Can/could	7
Found	2	Observe	4
Essential, establish, evidence, known, offer, will	6 (6 items with a freq. of 1)	Estimate	3
		Substantially	3
		Around	2
		Evaluate*	2
		Consider*	2
		Hypothesise*	2
		Significant	2
		Alternative, common, evaluation, frequently, highly, implication, major, might, mostly, potentially, probability, propose, should, significantly, suggest, unlike, usual, would*	18 (18 items with a freq. of 1)
Total	17		45

Table 4. Most frequent boosters and hedges in the WAs dataset

Example 1 and Example 2 below illustrate the use of recurrent hedges in different moves of our dataset:

- (1) Example 1 (Background move, article 1)
Additive manufacturing or three-dimensional (3D) printing of metal implants **can** provide novel solutions for difficult-to-treat conditions [...]
- (2) Example 2 (Interpretation move, article 8)
A comprehensive model of care led by NPHWs, involving primary care physicians and family that was informed by local context, **substantially** improved blood pressure control and cardiovascular disease risk.

As numerical data appear to suggest, the use of cautious language seems appropriate in the specific moves of findings and interpretation, probably because the results and the contribution of the study are reported and interpreted there. The use of hedges especially in these two moves may be related to the writer's need to express caution, tentativeness (Hyland, 2005, 2006), and objectivity (Luzón, 2013). The Lancet only publishes reliable clinical evidence objectively and empirically obtained, yet, medicine is not an exact science and is error-prone. Therefore, cautious language is a highly-valued strategy for authors to mitigate and soften their messages. In turn, this would also explain why boosters are also frequent but less, since showing certainty and commitment, although necessary and beneficial, may be more complex and compromising for authors.

Hence, another key linguistic feature found in the dataset is boosters (n=17), which are especially frequent in the findings and interpretation moves, as well as hedges. In these moves, results are stated and discussed, and research claims are made. This use of hedges and boosters in the dataset may suggest that authors try to make their claims with caution while transmitting assertiveness regarding their research.

Researchers tend to select from a broad range of discipline-related rhetorical strategies to organise arguments, show evidence, and assess claims to persuade readers (e.g., Abdi et al., 2010; Hyland, 2005, 2006). Through the use of boosters, mostly in the findings and interpretation moves, authors attempt to enhance the illocutionary force of speech acts (Holmes, 1984), remark certainty or confidence in an assertion (Abdi et al., 2010), and convey an authorial commitment to a proposition (Crismore et al., 1993; Lafuente-Millán, 2008). This may justify the use of boosters in the aforementioned moves to strengthen the validity, reliability, and utility of the research outcomes presented. As Hyland (2005, p. 53) puts it, "by closing down possible alternatives, boosters emphasise certainty and construct rapport by marking involvement with the topic and solidarity with an audience, taking a joint position against other voices". Example 3 and Example 4 show the use of boosters in our dataset.

- (3) Example 3 (Findings move, article 7)
Chest imaging before transplantation **showed** severe lung damage [...]

- (4) Example 4 (Interpretation move, article 1)
Comprehensive and efficient interactions between medical engineers and physicians are **essential** to establish well designed frameworks [...]

The use of exclusive *we* (n=31), understood as a group self-mention (Hyland, 2004) referring to the speakers or writers and their colleagues or associates, but not to the audience, is especially relevant in our study in the background and method moves. In these moves, the researchers (even in those cases in which just one of them is presenting) introduce themselves as a research team (professional identity is enhanced) and contextualise the study regarding the design, procedure, assumptions, approach, and data (among others) adopted by the group. Example 5 and Example 6 illustrate the use of exclusive *we*.

- (5) Example 5 (Background move, article 4)
We aimed to test this hypothesis and investigate [...]
- (6) Example 6 (Methods move, article 3)
We did a hierarchical cluster analysis [...]

This is in line with Dogan-Ucar and Akbas (2022) thesis, in which “exclusive *we*” is a self-mention device used to refer to the writers as the agents and thus reinforce this authorial presence in front of the readers (Hyland, 2005, 2006; Wang et al., 2021). In addition, as results indicate and in line with Harwood’s conclusions (2005), the pronoun *we* tends to be used to create a self-promotional tone by personalising claims and highlighting procedural soundness, thereby indicating its relevance (and its high frequency) in the methods move.

Finally, first-person self-mentions are scarce and just one can be found in the methods move. This is probably because teamwork is generally the norm in the medical context and therefore the use of *we* is generally more convenient and expectable due to the nature of medical research itself. It is a fact that the sound management of human and material resources -which are limited- makes it necessary to work in well-coordinated teams. However, first-person self-mention tends to transmit an individualistic authorial presence, which differs from the above-mentioned and well-established research practices within the medical discourse community. In any case, and even though in our case the use of *we* clearly surpasses the use of *I*, it seems that the use of both pronouns in scientific writing is increasing, showing not only a more informal writing style but also stance and engagement (Hyland, 2006; Hyland & Jiang, 2017).

3.2. Video abstracts (VAs) results

VAs results focus on the multimodal aspects combined with the visual support provided (appearing on the right of the screen during authors’ speeches). Embodied actions performed by the researchers are not considered in this study. The linguistic strategies the researchers use to establish interpersonal meaning with the audience are discussed in section 3.3. (VAs *verbatim* transcription subsection).

Our close observation and analysis of these VAs show the common and recurrent use of varied resources, including animations (moving images), graphs, images (any visual representation -drawing, painting, or artwork- created on a computer), photographs (picture made using a camera), tables, and written information. Table 5 summarises the frequency of each of these elements in each of the VAs analysed.

	VA 1	VA 2	VA 3	VA 4	VA 5	VA 6	VA 7	VA 8	VA 9	VA 10	Total
Animation	4	0	0	0	1	0	0	0	0	0	5
Graph_animated	0	0	2	3	3	1	0	2	0	0	11
Graph_static	0	0	1	4	0	2	1	2	5	0	15
Image_animated	4	0	2	1	0	7	0	0	1	3	18
Image_static	10	0	0	1	2	3	3	1	3	6	29
Photograph	0	0	0	0	0	4	0	0	0	0	4
Table	0	0	1	0	0	0	0	0	0	3	4
Written information	3	0	2	3	2	0	8	11	4	11	44
Total resources	21	0	8	12	8	17	12	16	13	23	130

Table 5. Frequency of the multimodal elements included in the visual support of the VAs

As can be seen in Table 5, written information stands out as the element with the highest presence (n=44) among the visual elements. Written information summarises, reinforces, and visually supports the key ideas

explained by authors in their speeches. Therefore, it may be suggested that the authors use this strategy primarily to reiterate the most outstanding disciplinary content. As can be seen, for instance, in VA5 (minute: 3:23), written information is visually used to reinforce speech.

Regarding images, we have considered two recurrent types in VAs: static and animated. Static images (n=29) are the most frequently used purely visual element included in VAs (see VA1, minute 0:33). Animated images (n=18) are found to be employed less repeatedly compared to static ones, yet their use is also frequent probably because they represent one of the main affordances offered by the digital medium (see VA4 from minute 0:32 to minute 1:14). This type of image helps make content more dynamic and visual, enhancing the presentation of all kinds of clinical evidence to its full potential. Animated images can be more didactic than static images and, at times, they are the only way of providing a comprehensive view of all the information/data researchers attempt to convey. Furthermore, animated images are found particularly useful in those cases in which the evolution of certain maladies can be visually represented (e.g., in the case of skeletal affections whose evolution wants to be studied or simulated) or a diagnosis needs to be confirmed. What seems evident is that purely visual elements tend to be presented together with written information that reinforces the input orally provided by authors, thus complementing, and supporting authors' speech. In conclusion, an intersemiotic relationship among varied resources is observed as a way to construct authors' discourse and enact interpersonal meaning with their audiences. Graphs, both static (n=15) and animated (n=11) are elements with a high presence in the visual support included in the VAs analysed. Graphs are capable of portraying big amounts of data in an illustrative way that allows the audience to establish connections and better understand and compare data. Authors usually focus on specific aspects or elements of the graphs, which are the ones they normally comment orally or the ones they highlight by means of animation. These two types of graphs are best illustrated in the following: static graph (see VA3, minute 1:33) and animated (see VA8, from minute 0:26 to minute 0:29).

In addition, researchers also use other resources such as animations (n=5), tables, and photographs (both n=4) as visuals in their VAs. Even though researchers exploit them with a lesser overall frequency, these multimodal resources represent important visual elements in our dataset that contribute to making the meaning clearer and more dynamic. See the following: animations (see VA1 from minute 0:13 to minute 0:30), tables (see V10, minute 0:50) and photograph (see VA6, minute 0:35).

Table 6 provides a summary of the distribution of the multimodal resources identified in the dataset to co-express meaning in each of the moves in which they occur. Move 1 corresponds to presentation, move 2 to background, move 3 to methods, move 4 to findings, move 5 to interpretation and move 6 to closing.

	Move 1	Move 2	Move 3	Move 4	Move 5	Move 6	Total
Animation	0	3	0	2	0	0	5
Graph_animated	0	2	4	7	0	0	13
Graph_static	0	2	5	5	0	0	12
Image_animated	2	4	5	8	1	0	20
Image_static	7	7	3	9	1	0	27
Photograph	0	4	0	0	0	0	4
Table	0	0	4	1	0	0	5
Written info.	8	7	10	10	7	2	44
Total	17	29	31	42	9	2	130

Table 6. Frequency of multimodal traits in the different moves of the VA data subset

Researchers in this study seem to exploit visual resources within the background (n=29), methods (n=31), and especially findings (n=42) moves. This result may point to the importance of best illustrating and supporting the context of the investigation, the procedures followed to carry out the study as well as the outcomes of the research. Among the varied resources, written information prevails (n=27), particularly in the methods and finding moves. Images, both static (n=19) and animated (n=17) appear to be widely used to illustrate content, followed by static graphs (n=12) and animated graphs (n=13). It is likely that visuals in the form of images have great relevance within the medical field, for example, to provide additional information, enhance accessibility to content (Cluley, et al. 2021), visually support relevant content, and even engage the audience.

The use of visual support to transmit complex disciplinary content may be useful to best illustrate the information and to meaningfully reach the intended audience. However, the numerous additional multimodal resources offered in VAs contribute to democratising specialised knowledge, resulting in the possibility of "extending" the genre's intended audience to healthcare professionals in training. In this context, the use of technology and digital affordances allow for a different kind of research dissemination that serves to maximise visibility. In any case, through the digitalisation, remediation, and emergence of new genres (Luzón & Pérez-

Llantada, 2019, 2022), authors' voice seems to have gained the possibility of being heard by a broader range of audiences, which is also what researchers and professionals intend when publishing their works. In addition, medical researchers seem now to be able to account for a broader range of resources to disseminate knowledge more rapidly, effectively, and visually.

3.3. Video abstracts (VAs) *verbatim* transcription results

To further explore the way medical researchers can express their voice in VAs, we also analysed the *verbatim* transcriptions of each VA. Specifically, adopting a data-driven approach, we have explored the different linguistic traits through which researchers show stance and enact engagement. From a quantitative perspective, Table 7 shows in a summarised fashion the frequency of all these linguistic traits in the 10 VA *verbatim* transcriptions under analysis.

	VA 1	VA 2	VA 3	VA 4	VA 5	VA 6	VA 7	VA 8	VA 9	VA 10	Total No. of instances
Booster	7	8	11	36	5	3	1	0	2	2	75
Common language	4	0	2	11	0	0	0	1	2	1	21
Exclusive <i>we</i>	16	13	18	38	9	5	2	6	15	2	124
Hedge	5	20	15	29	2	8	3	2	10	6	100
Inclusive <i>we</i>	0	0	0	10	0	0	0	0	1	0	11
Reference to the audience	0	1	0	10	0	0	1	0	0	0	12
Reference to visuals	0	1	12	22	0	4	0	0	1	0	40
Self-mentions	0	2	2	7	0	1	0	0	1	0	13
Total resources	32	45	60	163	16	21	7	9	32	11	396

Table 7. Frequency of the linguistic traits analysed in VA *verbatim* transcriptions in each video

Table 8 shows the frequency of the same linguistic traits included in the previous table according to the different moves.

	Move 1	Move 2	Move 3	Move 4	Move 5	Move 6	Total
Booster	1	19	8	36	11	0	75
Common language	2	8	0	6	5	0	21
Exclusive <i>we</i>	5	20	40	42	17	0	124
Hedge	4	29	15	42	10	0	100
Inclusive <i>we</i>	0	0	0	11	0	0	11
Reference to the audience	0	5	0	6	0	1	12
Reference to visuals	0	7	4	29	0	0	40
Self-mentions	10	1	0	2	0	0	13
Total resources	22	89	67	174	43	1	396

Table 8. Frequency of linguistic traits in the different moves of the VA *verbatim* transcriptions data subset

Results in Table 7 indicate that exclusive *we* (n=124) is the top-frequent trait in VA *verbatim* transcriptions. Also, as observed in Table 8, the pronoun *we* is primarily observed in the methods (n=40) and findings (n=42) moves, even though it is also widely used in the remaining rhetorical steps except for the closing one. Exclusive *we* does not include the audience and its significantly frequent use in VAs is probably due to the authors' intention to reinforce their research group identity and value within the medical community. As has already been conceded throughout this paper, this discourse community is very much rooted in the need to disseminate knowledge rapidly and effectively to its members. This may be observed in the examples found and analysed in this study, where health researchers share their methods, experience, and research outcomes by presenting relevant clinical cases, innovative diagnostic methods, and new therapies. In addition, authors always try to choose the most reliable medium to disseminate the results of their research, and this implies journals or publishing houses with the reputation, means, and scope necessary to effectively project the authors' voice and knowledge throughout the discourse community. When doctors publish their research there is an obvious

willingness of sharing one's work for attaining a greater good: human health and improved living conditions. Nonetheless, there is also an obvious and practical need, and a well-deserved right among scholars to reclaim their own contributions through their authorial self (Hyland, 2004).

Instances of inclusive *we* are also found in the dataset (Table 7), even though to a lesser extent (n=11). Interestingly, inclusive *we* is observed in the findings move (Table 8), probably as a way to involve and engage the audience in the discourse. The use of self-mentions with *I* (n=13) is observed in the dataset (Table 4), regardless of the broad use of *we* in its exclusive use to reinforce group identity. The use of self-mention *I* is mainly found in the presentation move (n=10), where researchers introduce themselves as presenters of the VA. It seems the instances of self-mention *I* in our data may be attributed to the presenters' need to enhance their persona and role as researchers but mainly as presenters or representatives of their research groups.

The following examples (Example 7, Example 8, and Example 9) serve to illustrate the use of the three linguistic traits commented above.

- (7) Example 7 (Background move, video 8, exclusive *we*)
[...] **we** conducted two systematic reviews and two health system appraisals in Colombia and Malaysia to help identify context-specific barriers [...]
- (8) Example 8 (Findings move, video 9, inclusive *we*)
[...] so as **we** have seen there is a compelling case for investing in childhood cancer addressing diagnosis treatment and comprehensive care [...]
- (9) Example 9 (Findings move, video 3, self-mention *I*)
[...] **I** would dare to have several important in clinical implications with regard to clinical management drug development and clinical trial design [...]

As mentioned in the introductory section, stance can be mainly upheld through the use of hedges, and boosters (Biber, 2006; Hyland, 2005, 2006). 75 boosters and also 100 hedges have been found in the VA abstracts verbatim transcriptions (Table 7). Regarding their distribution, as shown in Table 8, boosters (n=36) and hedges (n=42) are particularly recurrent in the findings move. The use of these metadiscourse features may allow researchers to increase or reduce the force of the statements produced to report the results.

Table 9 shows the frequency of the boosters and hedges that appear in the VAs verbatim transcriptions.

Booster	Frequency per item	Hedges	Frequency per item
show*	17	can	23
find*/found	13	significant	9
really	12	highly	6
know*	8	will, estimate*	10 (2 items with a freq. of 5)
actually	6	consider*, may, significantly	9 (3 items with a freq. of 3)
never, total, demonstrate*, real	8 (4 items with a freq. of 2)	main, observe*, predict, proven, relative, report*, roughly, show*, sometimes, widely	20 (10 items with a freq. of 2)
always, clearly, confirmed, course, essence, essentially, evidence, fact, precisely, true, work	11 (11 items with a freq. of 1)	able, almost, approximately, assessment, classified, common, commonly, conclusion, disabling, idea, impact, implications, indicated, likely, major, might, note, plausible, possible, severely, small, take, uncommon	23 (23 items with a freq. of 1)
Total	75		100

Table 9. Frequency of the boosters and hedges found in VA verbatim transcriptions

The two top-frequent boosters in the VAs *verbatim* transcriptions analysed are the verbs *show* and *find*, whereas the adverb *really* occupies the third position. In the case of *show* (with its flexive forms *shows*, *shown*, *showed* and *showing*), it is the most frequent booster in our data with 17 instances. This verb reinforces in front of the audience the authors' belief in the veracity and validity of the information presented and contrasts, for

instance, with the possible choice of “softer” or more cautious (hedging) verbs such as *suggest* on the part of the authors. Example 10 illustrates the use of *show* in VAs.

(10) Example 10 (Findings move, video 2)

[...] our health economic analysis **showed** that the cost of gaining one quality-adjusted life here by using surgery as the first line treatment over injection was close to forty thousand pounds.

The verb *find* (with its flexive forms *finds* and *found*) is the second top-frequent booster (n=13) and its use also shows an intention on the part of authors to demonstrate that the results obtained and the conclusions reached have been “found” (not just come across) after a rigorous research process. Example 11 illustrates its use in our data:

(11) Example 11 (Findings move, video 3)

We also **found** that objective clinical and laboratory parameters differ between the four subgroups [...]

The adverb *really* occupies the third top-frequent position (n=12) among boosters. Example 12 illustrates the use of this adverb to emphasise the importance of taking action against prostate cancer, thus intensifying the meaning conveyed.

(12) Example 12 (Presentation move, video 5)

Defining the extent of prostate cancer spread in men with newly diagnosed prostate cancer is **really** important for therapeutic decision-making.

As regards hedges, the modal verb *can* (n=23), the adjective *significant* (n=9), and the adverb *highly* (n=9) occupy the three top-frequent positions in our data. Hedging is a linguistic strategy the researchers use to somehow protect the claims they make by making their statements more “cautious”; for example, *can* does not express the same degree of certainty as *is* or *must*, and *significant* is purposefully less precise than *major* or *main*. Example 13, Example 14, and Example 15 illustrate the use of the top-frequent hedges found in our data.

(13) Example 13 (Background move, video 2)

[...] so this **can** be a severely disabling condition sometimes affecting patients well over a year with symptoms [...]

(14) Example 14 (Findings move, video 7)

[...] due to **significant** plural scarring hilar lymphadenopathy pulmonary hypertension and consequent right ventricular pressure overload increa increased blood transfusion was required during the transplantation in all of these patients

(15) Example 15 (Background move, video 6)

[...] the quantity of bacteria aerosolized by individuals in a single sample is known to be **highly** variable as is the infectivity of individuals [...]

The lack of variability is also observed in the linguistic trait common language, found to be recurrent in these VA *verbatim* transcriptions (n=21) (Table 7), primarily in video 4, and especially in the background move (n=8) (Table 8). As indicated in the methodology section, the length of video 4 is 08:14’, which nearly doubles the length of the rest of the videos (mean=04:18). The use of common language (even though the expected overall level of formality is always maintained throughout the VAs analysed) may also contribute to connecting and engaging with the audience (Example 16). Including some instances of common language from time to time in the discourse helps listeners reconnect with presenters and adopt a more relaxed and proactive position towards what is being reported.

(16) Example 16 (Background move, video 10)

[...] the American Society of pediatric neuroradiology **put out a** call to colleagues for cases of children with encephalopathy [...]

The fact of explicitly referring to the visuals shown in their discourse is a linguistic strategy normally used to better guide the audience throughout the VA and recapture their attention. In this study, this is observed in 5 videos with a total of 40 instances (Table 7). Some authors likely choose not to make explicit reference to the visuals since both visuals and speech are coordinated and provided simultaneously. Relevant aspects are highlighted, and moves are also normally explicitly stated in the visuals shown. In so doing, the authors facilitate content transmission and organisation without constantly referring to visuals so that the audience

can follow the presentation. However, those aspects that presenters find particularly relevant are normally highlighted in the visuals (e.g., colour and typography choices) and also made explicit by authors in the speech (e.g., a particularly revealing trend in a graph is normally explained). The distribution of references to visuals across the different moves (Table 8) shows that they are especially used in the findings move (n=29), probably to effectively refer to and present the results of the study (Example 17).

(17) Example 17 (Findings move, video 3)

[...] **we observe** similar differences in an independent cohort and some of the biggest differences [...]

In addition to this, instances concerning direct reference to the audience are also found in the VA *verbatim* transcription (n=12) (Table 7). This linguistic strategy is found to be more recurrently used in the background (n=5) and findings (n=6) moves (Table 8). However, despite the potential value this engagement marker has, and especially in this case in coordination with reference to visuals, researchers do not use it frequently. This is probably due to the fact that VAs are recorded (not face-to-face genres) and direct references to the audience to keep their attention and interest do not seem so necessary as in “live” genres.

(18) Example 18 (Background move, video 4):

[...] a real cohort of patients who received some small range of radiation dose **as you can see** on the left [...]

Overall, this study shows the way researchers establish interpersonal meaning with their audiences through written and audiovisual abstracts. As shown, the written data reflect less frequent use of interpersonal strategies as compared to the spoken data, where a more dialogic and interactive discourse is constructed. Thus, the researchers’ voice is promoted in both text types even though the affordances of each medium (WA vs VA) may differ greatly. These two genres are complementary one to another; although they can be understood separately. Yet, the VAs, due to their nature, can provide further visual information that may be of paramount interest to the audience (e.g., images, photographs). That is, having the opportunity to visualise medical evidence can serve not only informative and illustrative purposes but also interpersonal communicative purposes. In addition, throughout VAs authors may show proximity and their voice can be more straightforwardly transmitted to their audience.

Of specific interest is the use of semiotic resources researchers use to voice themselves and engage the audience through VAs. Researchers make use of a variety of communicative modes to foster interpersonal meaning with the audience. A particularly prominent intersemiotic relationship appears to exist between speech and visuals. These two communicative modes intertwine making the message conveyed richer, clearer, and more engaging for the audience. The genre itself and the medium determine the modes that shape VAs and WAs. On the one hand, in the VAs researchers visually depict content so that the audience can better understand it. While presenting, researchers are limited in terms of space and they are in a bare stage with visual support being shown on their left side (Carter-Thomas & Rowley-Jolivet, 2020). Furthermore, they make use of gestures to share content knowledge while keeping constant eye contact with the webcam. On the other hand, through WAs researchers orchestrate fewer communicative modes so that authors’ possibilities to express their voices through linguistic, organisational, and typographical choices are less varied. We can thus conclude that VAs involve a complex of varied semiotic modes, other than speech. Specifically, in VAs, researchers can express their voice and establish interpersonal meaning through a combination of facial expressions (e.g., frowning; smiling, raising eyebrows); gaze (e.g., eye contact with webcam, reading movements); head movements; gestures (e.g., beat, iconic); posture (e.g., sitting down, standing...); use of space (e.g., indoors, close-up, background); and setting (e.g., background).

What seems clear is that the digital medium offers some very convenient affordances to medical researchers, but also some constraints. In any case, authors seem aware of the possibilities and limitations of the medium chosen. Therefore, the authors’ discourse is organised and conveyed according to not only to genre conventions but also to the medium characteristics. In addition, what seems to be a reality is that the WAs and AVs used for presenting research on The Lancet platform are complementary. In fact, this complementarity can be considered one of their main potentialities since the written content in WAs, as well as authors’ voices, are reinforced by the speech, image, and visuals found in their corresponding VAs, thus making the text more engaging for the audience. Yet, after having analysed the data, it may be stated that researchers tend to focus more on the expression of ideational and textual meanings rather than interpersonal ones. In this respect, results suggest that authors seem not to be fully aware of the importance of establishing interpersonal meaning with the audience. This is especially relevant in the VAs, where not only stance and engagement come to the fore, but also multimodality. That is, despite the increasing interest given to multimodality in digital genres, the dataset examined in this study cannot determine whether this is due to a purposeful determination to focus on content knowledge or to the need to further develop multimodal interactional competence.

4. Conclusion and pedagogical implications

This preliminary study has centred on examining the way researchers establish interpersonal meaning with the audience through WAs and VAs. For this purpose, we have selected 10 WAs and their corresponding VAs from the research platform *The Lancet Group*. Specifically, this study has analysed three datasets: written data (WA), audiovisual resources (VA), and VA *verbatim* transcripts. Each source of data has provided significant information about the way researchers enact interaction and promote engagement and take stance. However, despite the importance given to interpersonal meaning, ideational and textual meanings yet seem to occupy a more prominent position within the genre.

As findings suggest, the researchers have taken stance verbally and enacted engagement verbally and non-verbally. On the one hand, stance has been adopted mainly through the use of hedges, boosters, self-mentions, and exclusive *we*. On the other hand, engagement has been fostered through the use of linguistic strategies such as inclusive *we*, references to both the audience and the visuals, and common language expressions. In addition, engagement has also been promoted mainly by making use of illustrative images and graphs. Overall, this study demonstrates that researchers tended to resort to a variety of multimodal resources to establish an interpersonal relationship with the audience. The choice of interpersonal strategies, in each of the text types, contributed also to making content knowledge clearer and more accessible.

This paper invites reflection on how to express voice and engage audiences in the field of health sciences. It has also helped us better understand the way *The Lancet Group* is bringing innovation to the effective dissemination of quality medical knowledge. The dataset explored in this study suggests that health sciences WAs and VAs are complementary genres, and researchers should be familiar with the particularities and potentialities of each of these text types and the digital medium that hosts them. We can thus conclude that authors are very much aware of the fact that by combining both genres, they have more opportunities to rapidly disseminate knowledge and reach broader audiences. Furthermore, the audiovisual format allows researchers to have access to an increased number of digital affordances (e.g., spoken messages reinforced by visuals), rehearsal and editing possibilities.

Some pedagogical implications can be discussed in line with the outcomes of the study, particularly concerning ESP and EMI realms in the field of health studies. The rationale behind our pedagogical suggestions is based on the need to best prepare students to effectively communicate in EMI settings (Arnó-Marcia & Aguilar, 2018). In today's academic and research dissemination contexts, it becomes essential for ESP students to learn not only what to transmit (ideational and textual meanings) but also how to effectively reach communicative purposes multimodally (Morell, 2015). This implies that ESP teachers should also prepare students to properly express their voices and convey their intended meaning by being fully aware of the stance transmitted and the level of engagement established.

For this purpose, we consider that a team-teaching proposal between the ESP and EMI teachers may be useful (Lasagabaster, 2018; Querol-Julián & Beltrán-Palanques, 2021). The EMI teacher, based on the course curricula, should determine the content of the proposal whereas the ESP teacher should address the specific rhetorical and linguistic conventions and the way interpersonal meaning can be established. To equip ESP students with specific communication skills, we propose adopting a multimodal genre-based approach (Querol-Julián & Fortanet-Gómez, 2019). Throughout the implementation of this approach, ESP students can become familiar with the text types and learn how to effectively convey ideational, textual, and interpersonal meanings. Multimodality is included in this proposal to make ESP students aware of the varied semiotic modes they have at their disposal to craft and construct meaning, stance, and engagement.

This preliminary study is not without limitations. Ideally, more samples should be included to enlarge the dataset and obtain more representative results. The scope of the multimodal analysis could be complemented by also dealing with researchers' body language in-depth. This is so because in this study we have focused on the visual and linguistic elements as the main articulators of authors' voice. Broadening the multimodal analysis would shed light on the varied embodied actions most qualified presenters use and combine when constructing meaning.

CRedit author statement

Nuria Edo-Marzá: Conceptualization, Methodology, Data Curation, Data Analysis, Discussion, Conclusion, Writing Reviewing and Editing.

Vicent Beltrán-Palanques: Conceptualization, Literature Review, Data Curation, Data Analysis, Discussion, Writing Reviewing and Editing.

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