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Multimodal interpersonal strategies in the new digital genre of clinical pictures: Exploring discourse and pedagogical implications for ESP-EMI team teaching

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Science communication is undergoing a digital shift that results in the remediation and emergence of genres that help bring science to expert and semi-expert audiences (Luzón & Pérez-Llantada, 2019, 2022). One such genre is clinical pictures (CPs), which consist of a written and an audiovisual version of a brief to-the-point presentation of a medical case/condition. This genre, as detailed in this study, may have a clearly stated pedagogical purpose aimed to promote diagnostic expertise. This study explores the structure of CPs, the variety of strategies authors use throughout these CPs to express stance and promote engagement with the audience, and the multimodal configuration of this genre. For this purpose, we draw on a dataset consisting of 10 CPs samples provided by *The Lancet*. Methodologically, we first conduct a linguistic analysis centred on rhetorical steps and interpersonal strategies, and subsequently, a multimodal analysis to identify the configuration of CPs. Overall, results show the use of interpersonal strategies throughout the two versions/formats, the added value of adopting a multimodal approach to explore data, and the complementarity of the two versions to disseminate medical knowledge among doctors and doctors in training. Pedagogically, the outcomes of the study support the incorporation of this innovative genre in ESP and EMI classes to enhance students' multimodal literacy.

Keywords: digital genres, clinical pictures, interpersonal strategies, multimodality, ESP-EMI team teaching.

1. Introduction

The evolution of science communication in recent years, driven by digitalisation and a greater interest in engaging broader audiences, has led to the emergence and adaptation of a variety of genres (Luzón & Pérez-Llantada, 2019, 2022). The notion of genre is understood in Swales' (1990) view as a set of communicative events shared by the members of a discourse community who have a series of communicative purposes in common. The digitalisation of genres is highly motivated by the growing use of technology and audiovisual resources, which also drives an increasing number of science outreach platforms. The dissemination of research through digital platforms offers a wide range of new communicative possibilities and affordances – understood as "meaning potentialities" (Halliday, 1978) – that are notably shaping research dissemination (Pérez-Llantada, 2022). In this sense, the increased digitalisation of dissemination genres also makes more evident the need to pay attention to the use and combination of semiotic modes (Pérez-Llantada & Luzón, 2023). In turn, this also demonstrates how relevant the use of these resources can be to effectively convey content and connect with the audience (e.g., Edo-Marzá & Beltrán-Palanques, 2023). In this sense, the use of multimodal resources is at the hub of any successful communicative event (e.g., Beltrán-Palanques, 2023; Mehlanbacher, 2017; Riboni, 2020), which can lead to what is known as intersemiotic relations (Lim, 2021). This refers to the relations that are established among modes, such as image and text (Bateman, 2014), mathematics, language and image (O'Halloran, 2005), or speech and visuals (Xia, 2023).

Owing to the growing number of platforms for knowledge dissemination, more and more digital genres are coming to the fore, becoming incredibly valuable sources for experts, semi-experts and even non-experts to gain access to science. Changes in communicative practices attract the attention of linguists who are gradually becoming more interested in exploring the construction of discourse in emerging genres (e.g., Carter-Tomas & Rowley-Jolivet, 2020; Hyland & Zou, 2021). In this study we focus on scientific dissemination practices in the field of health sciences, which can be of great interest to professionals and students, as well as to the general public. Health communication has possibly aroused even a major interest since the COVID outbreak (Luzón, 2022), and its dissemination is growing in popularity, for example, through social networks (Orpin, 2019; Luzón, 2023). As a result, reputable journals or academic platforms are also offering alternative ways of accessing science dissemination. This is the case of the prestigious *The Lancet Group*, widely known for its commitment to promoting scientific knowledge and addressing global issues. This group provides a space for sharing research in the form of journal articles, as well as through

other innovative visually-oriented genres on its YouTube channel (https://www.youtube.com/c/TheLancetTV).

From the palette of genres included in *The Lancet* platform, in this study, we focus on clinical pictures (CPs), which can be described as a complex genre that arises from high-quality images showing pathological or radiological signs. The genre is considered complex because it is constructed based on an image and combines both written and audiovisual discourse in the form of 1) an accurate written description (300-500 words) of the case/condition and 2) a short (2-3 minutes) video in which authors present the highlights of the written version. Both parts, written and audiovisual, are complementary to each other and acquire their full communicative potential when presented together. Unlike other genres that may recontextualise health science to reach a more general audience (e.g., Orpin, 2019), CPs seem to offer valuable medical information principally for professionals and scholars. CPs, as detailed in this study, are mainly characterised by their brevity and visual support. Somehow, this can enable potential health professionals to convey concise and visually enhanced information about medical conditions, including, for example, specific procedures and case studies. Thus, throughout this genre, professionals in healthcare can simplify or recontextualise medical content while maintaining the complexity of the topics.

In this study, we advocate for the introduction of CPs in the domain of English for Specific Purposes (ESP) and English-medium instruction (EMI), particularly in the healthcare fields. While ESP and EMI differ, there is also ample room for collaboration between specialists of each area (Dafouz, 2021). This may be articulated through, for example, the joint design of curricula (Lasagabaster, 2018), aiming to engage students in real-life tasks while promoting disciplinary literacies. Furthermore, interdisciplinary collaboration between ESP and EMI lecturers from different fields may serve to enhance mutually beneficial common grounds and establish synergies between them. The collaboration between ESP and EMI lecturers is also justified and strengthened by the need to foster professional communication skills in EMI settings and by the need to promote the development of students' disciplinary content in ESP contexts. This collaboration is thus intended to maximise the effectiveness of the entire curriculum by establishing a more explicit and reciprocally beneficial connection between ESP and EMI courses (Arnó-Macià & Mancho-Barés, 2015).

Therefore, we consider it is necessary for ESP and EMI teachers to work collaboratively and from an interdisciplinary viewpoint to best understand what students require. While collaboration between both teachers is essential, the ESP teacher provides what could be described as a more supportive role, reflected in the adaptation of its curriculum to effectively address the academic requirements of the EMI course. This involves delving into the real academic and communicative

needs of the students to appropriately design and adapt the ESP syllabus. As the flow of times demands, ESP courses aimed at health professions must depart from such real needs and demands while adopting a professionalising prism. ESP in the medical field should aptly equip students for the communicative demands of their profession in the 21st century. This entails placing an emphasis on English interaction with fellow medical professionals, organisations, and patients. Additionally, it involves facilitating discussions and the dissemination of medical research by addressing the following: familiarising with various genres from the community of practice, refining reading skills to foster prospective doctors' comprehension of medical literature, honing writing skills tailored for medical purposes, acquiring precise terminology, and enhancing dissemination skills.

To craft learning experiences that involve students in familiarisation and production of genres, it is essential to discern their rhetorical structure and configuration. Particularly, in this study, we look at the organisation of rhetorical steps within the genre (Swales, 1990) of CPs. For this purpose, we draw on Swales's (2004) concept of steps understood as lower-level functional units that share a common communicative objective. Similar studies have been conducted applying this model to different sections of scientific journal research papers, for example, abstracts (Tseng, 2011), introductions (Joseph, Lim & Nor, 2014) or results and discussion (Amnuai & Wannaruk, 2012), among others. Then, we examine how authors' voice is represented through discourse strategies that allow them to show their position and engage the audience (Hyland, 2004, 2005). In this respect, both stance and engagement have been proven to be key in academic discourse as observed in the existing literature on research articles (Hyland, 2005), blogs (Luzón, 2023), and Three Minute Thesis (3MT) presentations (Carter-Thomas & Rowley-Jolivet, 2020). Finally, we adopt a multimodal lens to identify the variety of semiotic modes, other than speech, that are used in each version and how they contribute to the construction of meaning (Edo-Marzá and Beltrán-Palanques, 2023). For this purpose, we draw on a multimodal analysis following Systemic Functional Linguistics (SF-MDA) (O'Halloran, 2007), which attempts to understand and describe semiotic modes and their functions to analyse the meaning that arises from multimodal choices (Jewitt, Bezemer & O'Halloran., 2016). The results of the analyses will lend support to a pedagogical discussion on the implementation of CPs through an ESP and EMI team teaching proposal. Accordingly, the following research questions were posed:

RQ1. What rhetorical steps are used to construct CPs both in the written and audiovisual formats?

RQ2. What interpersonal strategies are used to show stance and promote engagement in CPs both in the written and audiovisual formats?

RQ3. How is the digital genre of CPs multimodally configured both in their written and audiovisual formats?

2. Methodology

2.1. Dataset

The dataset used to conduct the analysis of CPs consists of 10 samples of the genre, both with their written (text) and audiovisual (video) versions. All these samples have been obtained from the open research platform provided by the group *The Lancet*. As a medical journal, *The Lancet* was founded in 1823 with the purpose of promoting social and political change by furthering research and science. Today 24 journals are part of *The Lancet group*. Among the multimedia resources, the group offers infographics, podcasts, and videos. These innovative genres serve to disseminate cutting-edge research and global health issues to a broader audience.

Table 1 provides an overview of the samples that make up this dataset, their respective DOIs and links, their number of words (in the case of texts and video transcriptions), and their length in time (in the case of videos). The dataset thus involves three subsets: written CPs, audiovisual CPs and their corresponding transcripts.

Table 1. Dataset information.

Code	Written CPs	Words	Audiovisual CPs	Duration and words in the transcript
CP1	Muster, V. et al. (2019). Pulmonary embolism and thrombocytopenia following ChAdOx1 vaccination. *Lancet*, 397: 1842. https://doi.org/10.1016/S0140-6736(21)00871-0	702	https://www.youtube.com/watch?v=LdCbU0SKKBY	3'14" 626
CP2	Tzolos, E. et al. (2021). Typing a myocardial infarction using advanced scanning. *Lancet* 2021; 398: e9. https://doi.org/10.1016/S0140-6736(21)01329-5	619	https://www.youtube.com/watch?v=fKxhBylQ_K4	2'8" 447

CP3	Deshpande, A. A. et al. (2021). Tension pericardial abscess in a patient with tuberculosis: a rare cause of cardiac tamponade. *Lancet* 397: e15 https://doi.org/10.1016/S0140-6736(21)00711-X	616	https://www.youtube.com/watch?v=cwe10ejngig	2' 10" 495
CP4	Tsampasian, V. et al. (2021). Mitral valve disease in sarcoidosis diagnosed by cardiovascular magnetic resonance. *Lancet* 398: 1358. https://doi.org/10.1016/S0140-6736(21)01791-8	610	https://www.youtube.com/watch?v=LxDtkmpBvlw&t=3s	2' 05" 359
CP5	Razeen H. et al. (2022). Extraskeletal Ewing sarcoma of the duodenum presenting as duodenojejunal intussusception. *Lancet* 399: 1265. https://doi.org/10.1016/S0140-6736(22)00361-0	773	www.youtube.com/watch?v=KbM5fgjcdPk	1' 56" 336
CP6	Pogson, J.M. et al. (2022). Hearing but not understanding: word deafness from a brainstem lesion. *Lancet* 2022; 399: 756. https://doi.org/10.1016/S0140-6736(22)00191-X	942	www.youtube.com/watch?v=jyIhT1m6iKw	2' 394
CP7	Dehghan, N. et al. (2021). Vacuoles, E1 enzyme, X-linked, autoinflammatory, somatic (VEXAS) syndrome: fevers, myalgia, arthralgia, auricular chondritis, and erythema nodosum. *Lancet*; 398: 621. https://doi.org/10.1016/S0140-6736(21)01430-6	670	https://www.youtube.com/watch?v=ySw7K43XFm0	2' 4" 391

CP8	Lodge, F. M. et al. (2021). Hydroxychloroquine-induced cardiomyopathy accelerated after gastric banding. *Lancet* 398: 1913. https://doi.org/10.1016/S0140-6736(21)02177-2	759	https://www.youtube.com/watch?v=F154ilkw9Ao	2' 8" 432
CP9	Theng, E. H. et al. (2022). Calvarial hyperostosis in primary hyperparathyroidism and other settings of increased cAMP signalling. *Lancet* 399: 956. https://doi.org/10.1016/S0140-6736(22)00149-0	770	https://www.youtube.com/watch?v=GZE79aQGEBQ	2' 15" 422
CP10	Di Maida, F. et al. (2021). A high prostatic-specific antigen with a large pelvic mass indicates a prostatic cystadenocarcinoma. *Lancet* 398: 1726. https://doi.org/10.1016/S0140-6736(21)02174-7	767	https://www.youtube.com/watch?v=XUz-h1moo6I	1' 20" 234
	Total	7,228		21' 20" 4,136
	Mean	722.8		2' 8" 413.6

The CPs comprising the dataset for this study have been published between 2019 and 2022 and have either one or two researchers presenting the audiovisual version despite being authored by a larger number of researchers.

The small yet representative sample size is attributed to two primary factors. Firstly, the study employs a multimodal approach that requires a meticulous and comprehensive analysis of each element within the sample. Secondly, there is a deliberate choice to validate the methodological approach before extending the analysis to larger samples. This ensures the reliability and effectiveness of the chosen approach before extending the study's scope. Furthermore, the dataset is found to be representative enough to offer sound claims about the CPs structure, the expression of interpersonal meaning, and the configuration of visual support.

The criteria for the selection of the CPs in the dataset were the following: the written and video documents showed a particularly well-crafted interrelation and

covered a wide range of medical topics; and the terminology used by the authors could be considered intelligible for students despite its specificity, which may be seen as a key aspect when designing learning experiences.

The layout and organisation of the CPs selected for this study are the same in every case. In the case of the videos, the screen is divided into two parts: on the left-hand side of the screen, viewers can see authors presenting, either sitting down or standing up; on the right-hand side of the screen, the visuals of the presentation are shown. In the case of texts, the layout of CPs is recurrent and systematic: the main text is presented as a block and not subdivided into sections, but "contributors", "declaration of interests" and "acknowledgments" appear either at a side or the end of such text. In addition, at least one image (and its corresponding caption) is also systematically included in CPs written versions, and authors' affiliation data and contact details can also be found in them. Although these non-medical-content sections have been considered in the data counts of Table 1, they have not been so in our analysis since they have merely informative or bureaucratic purposes. In the description of the findings, we will use the number assigned to each CP, from 1 to 10.

2.2. Analytical Framework

The analytical framework proposed in this study aims to respond to the three research questions posed. To do so, the procedure adopted for the analysis of the dataset focuses on the following main aspects: 1) rhetorical steps (RQ1), 2) interpersonal meaning strategies (RQ2), and 3) multimodal configuration (RQ3).

Since the dataset has a double component (written and audiovisual) a two-part analysis was performed. On the one hand, the analysis of the written CPs started with a familiarisation with the genre that involved observing and reading all the written samples of the dataset. Afterwards, a coding scheme was developed considering previous literature on rhetorical steps organisation (Swales, 1990) and linguistic features to show stance and promote engagement (Hyland, 2004, 2005). Regarding stance, speakers or writers can make use of hedges and boosters to increase or reduce the force of statements (Hyland, 2004, 2005). Boosters are normally chosen to show information with different degrees of certainty, whereas hedges express a nuanced perspective on the statements and caution (Hyland, 2005). Also, self-mentions can be used to show the speakers' or writers' position, expressed through the use of self-reference *I* and exclusive *we* (Hyland, 2004). In addition, speakers and writers can resort to the use of hearer mentions, appeals to shared knowledge, personal asides, directives, or questions to promote engagement (Hyland, 2005).

The categories of this coding scheme elaborated for written and audiovisual CPs are shown in Table 2. These categories were agreed upon and chosen for the codification and subsequent analysis of the CPs. The software *Atlas.ti* supported the data analysis.

Table 2. Coding schemes elaborated for the analysis of written and audiovisual CPs.

Coding scheme for written CPs	Coding scheme for audiovisual CPs
Additional material	Booster
Booster	Common language
Common language	Exclusive we
Complementary material	External reference
Exclusive we	Hedges
External reference	Reference to visuals
Hedges	Referential you
Reference to visuals	Self-reference I

In addition, a SF-MDA (O'Halloran, 2007) was followed to identify the way authors use and combine semiotic resources in audiovisual CPs to convey meaning. The SF-MDA permitted the identification of meaning that results from the use and combination of varied modes of communication (O'Halloran, 2008). That is, by recognising the range of modes that conform the audiovisual data, we can gain knowledge regarding how the communicative event is shaped and transmitted. In this sense, the multimodal resources analysed were:

— facial expressions (frowning; smiling…)
— gaze (eye contact (camera); reading movements…)
— head movements (nodding, refusing…)
— gestures (pointing, beats…)
— posture (seated, standing…)
— visual support (images, graphs...)
— setting (indoors, outdoors)
— intonation ("reading intonation": eye-reading movement, flat intonation; emphasis)

These categories were established after visualising in detail all the audiovisual CPs in the dataset. Both individual observation and pair discussion of the observations (double check) were necessary to guarantee the accuracy of the annotations and thus to validate the conclusion-drawing process. The multimodal analysis enabled the understanding of how various forms of expression come together so as to construct potentially richer and more compelling and engaging messages.

3. Results and Discussion

3.3. Rhetorical Steps

RQ1 centred on the identification of the rhetorical steps normally used to construct CPs both in their written and audiovisual formats. Results suggest that the rhetorical steps identified in each format appear to be rather similar even though some variation can be found. Specifically, the dataset reveals that all the CPs analysed are divided into three main rhetorical steps: Step 1) brief description of the clinical case, Step 2) clinical examination, and Step 3) diagnosis and clinical management.

This structure corresponds to both the written and audiovisual versions of the CPs. Step 1 serves to introduce the theme and provide background information that is necessary for the reader to understand the medical case. It consists of a brief description of the clinical case including the patient's data, medical history, signs, and symptoms. Step 2 focuses on the description of the clinical examination by referring to the medical evidence gathered. Step 3 involves the diagnosis and the clinical procedures adopted to approach the medical condition. In the case of videos, the analysis showed that Step 3 may be, in some cases, further divided into two other steps: 3.1) a preview of diagnosis and 3.2) diagnosis re-stated and clinical management explained. The former is found to take place before step 1, while the latter happened to occur right after step 2. In so doing, the authors seem to provide a preview of the diagnosis before describing the clinical case and finally present the diagnosis and clinical treatment after step 2. In addition to this, in the case of the audiovisual CPs, two other steps are identified, Step 0) self-introduction and salutation and Step 4) closing. The former serves the presenters to open the CP by, for example, making use of salutation forms, either formal or informal. Also, some authors refer to their affiliation at this point. The latter permits the authors to close the video presentation. While these two steps are not observed in the written format due to the conventions of the genre, in the video version they perhaps serve an engaging function that allows approaching the audience more directly, something that the written version lacks. Table 3 summarises the structure that has just been explained as well as the number of instances (*N*) of each rhetorical step in the written and audiovisual CPs analysed (10 in total for each version).

As shown in Table 3, all the authors follow the same rhetorical structure (steps 1, 2, and 3) in their written CPs. In the case of the audiovisual CPs, these three basic main steps are also observed, even though some differences are identified, probably for the ease of authors (when orally presenting their research) and audiences (when processing the information provided).

Table 3. Overview of the rhetorical steps and the number of instances.

N	Written CPs	Video CPs	N
		Step 0_Self-introduction and salutation	4
		**Step 3_a preview of diagnosis*	4
10	Step 1_brief description of the clinical case	Step 1_brief description of the clinical case	9
10	Step 2_ clinical examination	Step 2_clinical examination	8
10	Step3_diagnosis and clinical management	Step 3_diagnosis and clinical management:	6
		**Step 3_diagnosis re-stated and clinical management explained*	4
		Step 4_Closing	4

All the authors except one (CP 10) presented the clinical case (step 1). This author (CP 10) organised the speech by moving from step 0 to step 3 directly, thereby without commenting on the clinical examination (step 2). This is so because no specific case (from no particular patient) is presented. This CP is the shortest one and it merely shows, from a general to a specific and descriptive perspective, a condition related to prostatic cystadenocarcinoma. A similar situation is found in CP 5, whose author moved from the introduction of the case to the diagnosis and clinical management. Some authors seem to have decided to make some adaptations such as the ones aforementioned in the case of some audiovisual versions by directly presenting the diagnosis and clinical treatment. Anticipating diagnostic information may be considered a strategy aimed to organise discourse for better comprehension or simply as a way to engage the audience from the very beginning. Due to their affordances, audiovisual formats offer authors more chances to make some modifications/adaptations in the organisation of steps than the more traditional written formats. In this sense, authors appear to feel less constrained when conveying content in audiovisual formats. These modifications may also be related to the process of mediation from one genre to another. Mediating between genres is understood here as the process of adapting them to other media. This adaptation implies making decisions about the nature and format of the target genre, the content to be transmitted and the enhancement of interpersonal meaning. This concept is similarly applicable in the case of video abstracts, where authors must undertake a mediation process from the written

version to the digital video (Edo-Marzá & Beltrán-Palanques, 2023). In line with this, it should be noted that the phenomenon of mediating is addressed in existing literature. Particularly, Bezemer and Kress (2008, 2017) refer to the notion of recontextualisation, which reinforces that idea of transferring meaning in different forms of communication (see Pérez-Llantada & Luzón, 2023).

As previously noted, the organisation of Step 3 varies across the audiovisual CPs analysed. This is true for the authors of 4 of the CPs analysed, who previewed the diagnosis before presenting a brief description of the case (Step 1) and then, referring to the diagnosis itself. Furthermore, the analysis of the audiovisual CPs also reveals that some authors (n=4) took advantage of the format to introduce themselves as professionals and close the presentation. What follows is a series of examples[1] to illustrate the way steps are constructed in each of the formats.

(1) Step 0_Self-introduction and salutation.

Hello, my name is XXX from the Medical University of Crowds, Austria. Together with my co-worker XXX […] [CP 1, video]

(2) Step 1_brief description of the clinical case.

We here present a case of a 66-year-old gentleman who presented with an ounce of hospital cardiac arrest. He was found by the ambulance crew to be in ventricular fibrillation and was successfully shocked out of it. […] [CP 2, video]

(3) Step 1_brief description of the clinical case.

A 25-year-old woman presented to our hospital with a 2-week history of persistent vomiting, abdominal distension, and weight loss. 4 months earlier, she had presented to the local district hospital because her work colleagues had thought she looked pale. […] [CP 5, text]

(4) Step 2_clinical examination.

[…] laboratory investigations revealed chronically elevated inflammatory markers and persistent mild cytopenias he was initially given a diagnosis of relapsing polychondritis and was treated with oral prednisone […] [CP 7, video]

1 Verbatim transcriptions (with no further modification) are provided for the examples of the video CPs.

(5) Step 2_clinical examination.

On examination we found him to have a pan-systolic murmur, fine bilateral basal crackles on chest auscultation, heart rate 73 beats per min, and respiratory rate 17 breaths per min. […] [CP 4, video]

(6) Step 3_diagnosis and clinical management: a preview of diagnosis (conveyed before Step 1)

[…] the diagnosis of micro infarction can frequently be difficult in particular we have to differentiate type 1 from type 2 infarcts […] [CP 2, video]

(7) Step 3_diagnosis and clinical management: diagnosis re-stated and clinical management explained (conveyed after Step 2)

[…] this changed the diagnosis from a type 1 to a type 2 myocardial infarction due to thromboe thromboembolism in the context of atrial fibrillation and importantly it changed his treatment he now required anticoagulation. [CP 2, video]

(8) Step 3_diagnosis and clinical management.

[…] Hydroxychloroquine-induce cardiomyopathy is rare— although the true prevalence is unknown—and related to perturbed lysosomal autophagy. Risk factors—relevant to our case—include older age, female sex, and a high cumulative dose of hydroxychloroquine […] [CP 1, text]

(9) Step 4_closing

[…] hope you find these pictures instructive. [CP 9, video]

A few authors incorporated two additional rhetorical steps in the audiovisual CPs to open and conclude the presentation, also found in other novel genres such as 3MT presentations (Hu & Liu, 2018) and elevator pitch presentations (Daly & Davi, 2016). Accordingly, presenters greet the audience or give a self-introduction, as well as close the oration by thanking the audience or expressing hopes or expectations. In the written format, these two rhetorical steps are not observed as they centre on the description of the clinical case, report on the clinical examination, and finally address the diagnosis and clinical treatment.

In addition to this, it should be noted that a key characteristic of CPs is their briefness in terms of length, that is their condensed format, a feature also observed in other emerging genres such as in 3MT presentations and elevator or product pitch presentations. In the case of CPs, authors must elaborate on a short written text and a short video to straightforwardly disseminate knowledge in two different but complementary formats. It can be suggested that there seems to be a growing tendency to involve professionals/academics in communicative practices that, due to format requirements, oblige them to convey highly specialised content in a short time and without digressions.

3.4. Linguistic Features to Establish Interpersonal Meaning

RQ2 focused on interpersonal features, particularly strategies to show stance and promote engagement throughout CPs. In the case of written CPs (Table 4), the use of boosters is highly significant, especially in step 2 (with 60 instances) probably to highlight and reinforce the reliability of the medical evidence presented. Hedges are also very frequent, mainly in steps 2 and 3, probably to soften the authors' stance, to offer a humbler professional image, and not to compromise the author so much in case flaws are detected. The responsibility acquired when publishing findings, especially if they directly affect human welfare, is probably the main reason why authors "cover their backs" in steps 2 and 3.

Reference to visuals is also significant in step 2, which seems coherent with the fact that this is the step in which medical evidence in the form of visual elements is also presented. Moreover, the use of exclusive *we* is also relevant in step 2, probably to strengthen the sense of community of practice, so important in the scientific community and, particularly, in the medical one, in which collaboration and knowledge-sharing are the basis for advancement.

Table 4. Results of linguistic traits analysis in written CPs to establish interpersonal meaning.

Steps	Boosters	Common language	Exclusive *we*	External reference	Hedges	Ref. to visuals	Addit. material	Compl. material
Step 1	2	1	8	2	3	0	2	0
Step 2	60	1	22	2	28	24	12	1
Step 3	7	1	11	2	28	0	2	6
Total	69	3	41	6	59	24	16	7

In the case of videos (Table 5), the use of boosters is also especially relevant, mainly in steps 2 and 3, with 32 instances in total. CPs are characterised by the profusion of the medical evidence provided despite their short length. Through the use of boosters, it seems the authors intend to further legitimise and reinforce the quality and reliability of the data provided. The high number of reinforcers can also be attributed to the fact that the authors reported on past clinical cases, which allows them to demonstrate more confidence in the data and results provided.

Notwithstanding these results concerning the use of boosters, the dataset also revealed a large number of hedges. Hedges are particularly relevant also in step 3, with 33 instances, where the diagnosis is established, and the clinical management adopted is explained. This is so probably because, as occurs in written formats, these are sensitive aspects —often even vital— prone to error or interpretation, and caution in their expression is thus recommendable. In the case of exclusive *we*, it is once again particularly relevant in steps 2 and 3, with 29 instances in total.

Table 5. Results of linguistic traits analysis in videos (transcriptions) to establish interpersonal meaning.

Steps	Boosters	Common language	Exclusive *we*	External reference	Hedges	Ref. to visuals	Ref. *you*	Self-ref.
Step 0	0	10	2	1	0	0	0	13
Step 1	0	0	4	0	2	2	2	1
Step 2	18	0	13	2	18	4	4	0
Step 3	14	3	16	0	33	0	1	1
Step 4	1	1	2	0	0	0	2	0
Total	33	14	37	3	53	6	9	15

Examples 10 and 11 below provide an in-text (written) and in-transcription (video) vision of these quantitative results. Example 10 corresponds to the written CP 8, where we find one instance of exclusive *we*, one example of a hedge, one reference to visuals (in this case to a figure), and four boosters. One of these boosters is the verb "*to show*", which is a highly significant and frequent verb used mainly in steps 2 and 3. This frequent and significant usage is probably due to the authors' intention to reflect a strong stance on their part, which is reinforced by the factual nature normally associated with this verb.

(10)

[...] *we* suspected hydroxychloroquine-induced cardiomyopathy and stopped this medication. Right heart catheterisation **confirmed** pulmonary hypertension due to left heart disease. Right ventricular biopsy **demonstrated** marked vacuolation— **shown** on electron microscopy to be an excess of lysosomes *(figure)* containing electron-dense, phospholipid-rich lamellar bodies [...] and negative genetic tests for abnormalities of the GLA gene **excluded** the former. [...] [CP 8, text, step 2]	Linguistic features: **Booster** Exclusive *we* Hedges *Reference to visuals*

Example 11 corresponds to CP 1 in its video format, more specifically to its verbatim transcription. In this fragment, we find four instances of exclusive *we* (fostering the image of a solid community of practice), two instances of boosters (both with the verb *show*), three references to visuals, two examples of hedges, and four instances of referential *you*, in which the author directly addresses his intended audience thus creating rapport and (indirect) interaction.

(11)

[...] **As you can see** here in the ct *scan* she was suffering a central pulmonary embolism which is detectable *with the two arrows **you see** what was the reason for this central pulmonary embolism it was a massive carbon range from poses *we* figured out in the mri the patient got an initial laboratory work up **as you can see* in this figure* we **show** *here* the results of the laboratory testing she **showed** initially a very severe thrombocytopenia with just 37000 of platelets [...] *we* had a certain concern of bleeding complications with these low platelets [...] and then **you see* here in the figure* the steady increase of the platelet counts together with the decrease of the d dimer levels [...] some also think that it might be linked to antibiotics [...] [CP 1, video, step 2]	Linguistic features: **Booster** Exclusive *we* Hedges *Reference to visuals* *Referential you*

Results suggest that a priority for authors is to show accuracy, reliability, and effective modulation of the responsibility attained (among other aspects) through

language. Authors seem to try to modulate and adjust the tone and force of their claims by the simultaneous use of boosters and hedges, which conveys both confidence when needed and caution when required. Medical professionals effectively mix these two seemingly "opposing" categories in a strategic and effective way in their CPs, and this seems to constitute a relevant feature of this genre in terms of language.

CPs intend to be highly informative, and terminological (conceptual) density greatly contributes to this informativeness and to the aforementioned accuracy. In general, the use of common language is occasional —although it is more frequent in audiovisual versions, as expected— and mostly employed to enhance audience comprehension and to foster a sense of proximity, and engagement that will presumably reinforce the relationship between the author and audience. The extensive use of the verb *show* transmits confidence and factuality. The verb *show* can be said to have been conventionalised and deeply assimilated by professionals due to its frequency of use, scope and potential when expressing evidence in health-related discourse. The use of exclusive *we* helps create a sense of community of practice (medical community). Finally, the frequent use of hedges serves to modulate the strength of the claims made, whereas the use of boosters helps reinforce the veracity and applicability of the medical evidence shown.

3.5. A Multimodal Vision of Clinical Pictures

RQ3 aimed to explore how the combined use of semiotic resources can contribute to the multimodal configuration of CPs. Each CP analysed follows the same layout: the author appears on the left-hand side of the screen while the slides are shown on the right. Content, visual support, and the physical presence of the author intertwine to provide full significance to the CPs and reinforce authorial expertise.

As regards the observed use of visual support, both static and animated images can be found in the CPs analysed. Among the static images, the most frequent ones are X-rays, CT scans, photographs, MRIs, electrocardiograms, and ultrasounds. Graphs/diagrams and tables are also used. Animated images are of great value in a digital genre such as CPs (see an example at https://www.youtube.com/watch?v=F154ilkw9Ao; minute 0:55 [CP 8]) as they contribute to best transmitting content to the audience. In fact, the possibility of including animated images in CP videos is probably one of the main affordances of the audiovisual format, making explanations and descriptions more explicit and illustrative.

Tables 6 and 7 show a quantitative overview of the use of visual support. Videos, obviously, allow for more diverse elements (some videos, like number 4,

including up to 10 static images, 1 animated image, and 2 graphs). Nevertheless, written CPs do also always incorporate at least two of these elements (of non-animated nature). Indeed, the very same name of the genre (Clinical Picture) indicates the importance of the visual component provided to illustrate content.

TABLE 6. Visual support in video CPs.

Visual support	**CPs – Videos**										
	1	2	3	4	5	6	7	8	9	10	**Total**
Static images	-	-	-	10	-	2	7	6	5		30
Animated images	-	-	-	1	-	-	-	1	-	-	2
Graphs/diagrams	-	-	-	2	-	2	2	-	-	-	6
Tables	-	-	-	-	-	-	-	-	-	-	-

TABLE 7. Visual support in written CPs.

Visual support	**CPs – Texts**										
	1	2	3	4	5	6	7	8	9	10	**Total**
Static images	-	-	-	3	-	1	2	2	4	-	12
Animated images	-	-	-	-	-	-	-	-	-	-	0
Graphs/diagrams	-	-	-	-	-	-	-	-	-	-	-
Tables	-	-	-	-	-	-	-	-	-	-	-

References to visual support are systematic in written CPs (see example 12 below, with a reference to a figure). Some examples of references to visual support can also be found in videos (see Example 13 below, with a reference to a figure). Along with this, the fact that most authors read what they want to explain —which can be perceived in factors such as tone, eye movement, and lack of hesitation— highlights the need to improve the mechanisms used to interact with the audiences.

(12)

A bone marrow aspirate and biopsy showed normal cellularity with mild morphological dysplasia —including prominent vacuolation of granulocytic and erythroid precursors (figure). [CP 7, text]

(13)

[…] and then you see, here in the figure, the steady increase of the platelet counts […] [CP 1, video]

Concerning embodied modes, our analysis has drawn on the observation of the multimodal resources listed in Section 2.2. Some instances of body language have been found, for instance, in the examples shown in Table 8.

TABLE 8. Instances of body language.

Link and minute to the video	Speech (transcription)	Body language explained
CP 6 https://www.youtube.com/watch?v=jyIhT1m6iKw 0:40	What's the problem with my ears?	Frowning for questioning ("question-face"). Gesture: pointing at the ear (reinforcing the image).
CP 6 https://www.youtube.com/watch?v=jyIhT1m6iKw 1:53	Remember that if a patient complains that he cannot hear, sometimes the problem is not in the ear.	Relaxed face expression for a final "informal" remark. Gesture: pointing at the ear (reinforcing the image).
CP 1 https://www.youtube.com/watch?v=LdCbU0SKKBY 1:35	Then you see, here in the figure, the steady increase of the platelet counts…	Hands showing "increase" (iconic gesture).
CP 1 https://www.youtube.com/watch?v=LdCbU0SKKBY 1:40	…together with the decrease of the…	Hands showing "decrease" (iconic gesture).

Overall, the results obtained lead us to conclude that, in general, the use of body language modes in CPs' videos is not fully exploited, regardless of the possibility authors have to transmit and reinforce information. A possible explanation would be related to the constraints imposed by the size of the screen, which could prevent authors from using their bodies more effectively as communicative resources. It is common in the majority of the audiovisual samples analysed (7 out of 10) that presenters remain in the same position all through the recording, with just some nearly unnoticeable head movement or eye movement showing they are reading what they are saying. Moreover, there is a tendency for flat intonation with no pitch or emphasis. It seems the authors may be more focused on the transmission of content, the organisation of ideas, and the expression of interpersonal meaning. Nevertheless, further research is needed to elucidate whether this is truly due to the aforementioned constraints of the medium.

In addition to this, we should also refer to the intersemiotic relation that is established among communicative modes throughout the CPs analysed. As

described, CP authors use visual support to construct and convey meaning through written and audiovisual formats. Due to the affordances that digital and audiovisual genres offer, new types of intersemiotic relations can be established. Focusing on the video CPs, a major affordance in the audiovisual format is the possibility of physically viewing and listening to the author using visual support and reinforcing meaning. This combination helps authors succeed in transmitting authorial expertise and sharing disciplinary knowledge within their communities of practice. CPs are thus configured by the interaction of embodied modes (e.g., speech, facial expressions, gestures) and audiovisual modes, in which the use of the latter comes to the fore as a key source to illustrate content. In this sense, it can be claimed that the increased use of technology allows for more multimodally-oriented dissemination of knowledge (Pérez-Llantada & Luzón, 2023), allowing researchers to, for example, better exploit visual aids. Nevertheless, this also poses new challenges for researchers, who are faced with the need to make decisions about the selection and combination of visual support.

It seems clear that the choices authors make to effectively construct multimodal discourse and interact with the audience are highly dependent on the digital affordances of each format. The use and combination of visual support in the video version may be more challenging as authors must wisely decide what aid would be best for them to transmit content. Moreover, the possibility and way of orchestrating varying modes within each of the CPs formats, especially in the video, may have an impact on the audience in terms of understanding, reception, and engagement (Edo-Marzá & Beltrán-Palanques, 2023). Establishing appropriate intersemiotic relations among modes can boost the audience's understanding of content (Mirović, Bogdanović & Bulatović, 2019) and increase engagement (Edo-Marzá & Beltrán-Palanques, 2023). Furthermore, co-occurring or reiterated information (e.g., having facts both visually presented and orally described) may ease the audience's understanding of content, despite its complexity.

In CPs, the same authors have to construct and negotiate meaning in two different formats: written (text) and audiovisual (video). In both cases, the authors are expected to meet the requirements of the genres as well as the guidelines of the journal. While most authors may be relatively familiar with producing and presenting a written version of a manuscript (e.g., a CP), producing a video can be more challenging. The authors themselves should undertake a process of reflection on how to mediate from an existing text (e.g., written CP) to an audiovisual text that offers specific affordances (e.g., visual prompt) and perhaps also some constraints. These constraints include, for instance, the screen layout above mentioned, as well as the fact that CPs, as shown in our dataset, are about

3 minutes. At the same time, the strict observation and compliance of these norms contribute to the correct definition, identification, and consolidation of genres, thus promoting genre awareness (Rowley-Jolivet & Carter-Thomas, 2005; Katsampoxaki-Hodgetts, 2022).

4. Pedagogical implications

The outcomes of the study lend support to exploring pedagogical implications for the field of ESP and EMI in health studies. ESP has much to offer to EMI programmes in terms of language support and literacy. Expanding new didactic horizons for ESP can be challenging as it requires a re-examination of what language for specific purposes can do for EMI. In this sense, we consider that ESP teachers should be called on to participate, for example, in co-teaching methodologies. Collaboration between ESP and EMI teachers (e.g., Aguilar, 2018) can be fundamental to supporting students to best meet the academic objectives in their multilingual programmes. Therefore, ESP teachers should go a step further to devise and adapt courses to the disciplinary needs of students (Arnó-Macià & Mancho-Barés, 2015). This can be done through the lens of ESP-EMI collaborative teaching (Lasagabaster, 2018; Querol-Julián & Crawford Camiciottoli, 2019), which can offer new opportunities for ESP teachers to be part of an interdisciplinary team (Stewart, 2018). By implementing a well-designed and planned ESP-EMI team teaching, it is possible to establish guidelines to work towards the promotion of, for example, students' academic and multimodal literacy (Liu, Lo & Lin, 2020; Querol-Julián and Beltrán-Palanques, 2021), and even confidence and involvement when undertaking specific projects in EMI settings.

What follows is a pedagogical approach that encourages team-teaching between ESP and EMI teachers. In this case, teachers collaborate by delivering subject-specific content within their respective courses, namely ESP and EMI. This entails the coordination of two distinct courses. Despite being focused on CPs, our teaching proposal can be extended and applied to other professional and academic genres. In the case of CPs, it is important not only to promote students' communicative competence but also their multimodal literacy. This has already been observed in previous research where there is a common claim to promote students' multimodal literacy to best prepare them for effective communicative practices (e.g., Lim, 2018).

We propose an ESP-EMI team teaching perspective to deal with the genre of CPs to aid students presenting a medical diagnosis. A central justification for emphasising the presentation of medical diagnoses is to nurture the growth of students' communication skills and critical thinking, enabling them to effectively communicate information that is essential in their field.

Each teacher should be responsible for addressing specific content to effectively prepare students for successful communication. The EMI teacher will set the guidelines in terms of content whereas the ESP teacher will present students with appropriate (adapted to their needs) learning scenarios to develop their communicative skills and multimodal literacy through the chosen genre. To implement the genre of CPs and promote students' multimodal literacy, we suggest drawing on a multimodal-centred genre-based pedagogy (Querol-Julián & Fortanet-Gómez, 2019), shown to be effective for such purpose (e.g., Fortanet-Gómez & Edo-Marzá, 2022).

In the ESP class, we propose involving students in a genre-based pedagogy approach (Dreyfus et al., 2015) consisting of three well-known phases, 1) modelling and joint deconstruction; 2) joint construction; and 3) independent construction. The first two phases tend to be more teacher-supported (scaffolded) and the last one is more autonomous. The first phase serves to explore students' prior knowledge, and the main characteristics of the genre (e.g., content and structure), as well as to encourage students' reflection and sample analysis. The teacher presents students with a few samples to be explored in terms of content (e.g., diagnosis), structure (i.e., rhetorical steps), and enactment of interpersonal meaning (e.g., way of addressing the audience). A step further can be taken by asking students to identify semiotic modes (e.g., images, graphs, diagrams), other than speech, as well as their relevance in the meaning-making process. The second phase is aimed at promoting critical and creative thinking through the elaboration of the genre. At this point, the ESP teacher and students can collaborate in the design of some guidelines based on the sample analysis conducted in the previous phase (e.g., rhetorical steps, interpersonal resources, visual support). These guidelines will permit students to better understand how to organise discourse in rhetorical steps, design visuals, and orchestrate modes of communication to effectively convey content and interpersonal meaning. Teachers' provision of feedback and support will be key to best aiding students in the preparation of the first CPs versions. Finally, the third phase is intended to make students work independently to finalise their projects and present them, both in written and video formats. Both teachers are responsible for the assessment of students' performance, which can be done through a jointly developed rubric (Querol-Julián & Beltrán-Palanques, 2021). While the EMI teacher focuses primarily on content aspects, the ESP teacher addresses the way content is organised and expressed along with the expression of interpersonal meaning. A multimodal viewpoint should be adopted, thereby the rubric should account for a variety of communicative modes, including, for example, the visual representation of content and embodied actions.

Embracing a multimodal genre-based approach enables ESP teachers to enhance students' understanding of the organisation of rhetorical steps, the

use of language to establish interpersonal connections, and the diverse semiotic modes interacting to construct CPs in both written and spoken formats. Through the implementation of this negotiated curriculum design, we foster collaboration among faculty, promoting greater involvement and participation of all parties to effectively enhance academic and professional communication.

5. Conclusion

Clinical Pictures (CPs) represent a new genre for rapid medical knowledge dissemination that also shows great pedagogical potential, mainly when it comes to promoting diagnostic skills. This paper invites reflection on the way the digital genre of CPs, with both their written and audiovisual versions, is constructed. In this study, we have explored how authors organise written and audiovisual CPs in a variety of rhetorical steps, showing three main steps –1) brief description of the clinical case; 2) clinical examination; 3) diagnosis and clinical management– even though in the video version some variation was found. This study has also examined the variety of linguistic interpersonal strategies (e.g. exclusive *we*, boosters and hedges) that characterise this new digital genre to better understand the way authors express their ideas and establish rapport with their intended audience. Finally, this research study has shed some light on the way authors make use of visual support and embodied modes to elaborate on each of the CP formats to construct meaning. In this same line, we have explored the intersemiotic relations that serve the authors to effectively reach such a communicative purpose. Thus, results show the value of adopting a multimodal approach to explore data, and the complementarity of each of the formats —written and audiovisual— to effectively disseminate medical knowledge through CPs among doctors and doctors in training.

Overall, the findings highlight the potential and necessity of utilising and integrating diverse communicative modes to effectively convey specialised content. This is particularly observable in the video version of CPs, where the significance of both embodied and audiovisual modes becomes pronounced. Results also suggest that presenters should make more extensive and conscious use of multimodal and interactive resources to effectively express content and interpersonal meaning. In addition, the outcomes of the study lend support to exploring pedagogical implications, formulated in terms of EMI-ESP team teaching.

This study centres on the perspective of the ESP teacher, while also emphasising the role of the EMI teacher in cultivating students' multimodal communication skills and the construction of disciplinary knowledge. By focusing on the ESP teacher's perspective, the study aims to dissect the nuances of purposeful language teaching, ensuring a targeted and effective approach. At the same time, the

involvement of the EMI teacher is crucial, not as a mere complementary agent, but as an integral part of the pedagogical proposal. The intention is to create an educational environment in which collaboration between teachers acts as a catalyst for the holistic development of students. Particularly, throughout the proposed collaboration, the EMI teacher becomes a collaborator in the broader goal of equipping students with the ability to articulate complex ideas within the context of their academic disciplines. This study envisions a synergistic partnership between ESP and EMI teachers, in which their collaborative efforts serve as an avenue for students' overall holistic learning growth. This growth extends beyond their role as language users to encompass competence as effective communicators and expert knowledge builders within the domains of their specific fields of study.

In addition to this, it should be noted that while this proposal is intended to support students in EMI contexts, the same could be devised for L1 medium instruction programmes. Despite the absence of a tradition of specific language courses in the first language (L1), collaboration between the ESP teacher and the content teacher, who uses the L1, is feasible, provided that the language itself is not an obstacle to achieving the intended pedagogical objectives. That is, collaboration between teachers, irrespective of the language of instruction, can be encouraged and serve to promote students' knowledge. In doing so, this approach enables students to transfer the knowledge gained in the ESP course, or vice versa, to other subjects, regardless of the language chosen for instruction.

This study is not without limitations, many of them due to its preliminary nature. A major one is the limited number of CPs conforming to the dataset despite its representativeness. Further studies should expand the dataset to explore the tentative claims made in the present study. In addition, in future studies, it would also be important to explore the modal density of the slides.

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