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Undergraduate Dissertation

Trabajo Fin de Grado

Online Science Communication during the Covid-19 Pandemic: Recent Developments of an Emergent Genre

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1. INTRODUCTION

The recent Coronavirus outbreak (2019-20) has had a great impact on the world as we know it. It has not only changed the way millions of people live all around the globe, but these changes appear to be here to stay, at least until there is a viable cure or vaccine for the disease that the recently identified virus causes, Covid-19.

In a disease-stricken world, new problems and obstacles have arisen on an international level, which challenge our most evident axioms, and make compulsory certain social changes in order to save as many lives as possible. These abrupt changes have an effect on an individual level too, as many liberties and rights that were taken for granted by many have been put on hold.

On the 11th of March of 2020, W.H.O. Director-General, Tedros Adhanom, declared:

> "W.H.O. has been assessing this outbreak around the clock and we are deeply concerned both by the alarming levels of spread and severity, and by the alarming levels of inaction.
>
> We have therefore made the assessment that COVID-19 can be characterized as a pandemic."

As a consequence, many countries implemented critical measures to stop the disease from spreading, such as stay-at-home orders, curfews or complete lockdowns.

These social distancing and confinement policies have reinforced the popularity of two media platforms that were already popular in our society: traditional mass media and the Internet (Mitchell et al., 2016). In fact, these may have become even more important, for they constitute the link between official health authorities (both national and international) and people who are confined at home, making the use of these media rather compulsory under these extraordinary circumstances.

Moreover, as the British Office of Communications (OFCOM) asserts in 'Children and Parents: Media Use and Attitudes Report' (2015), the phone is substituting the

television as the main source of information, especially among younger generations who seem to prefer this kind of device. One direct consequence of this shift in device preference is that the Internet is the medium that younger generations choose to receive information. In particular, they mention the fact that "YouTube [is] becoming an increasingly important alternative to traditional TV" (2015, p.27).

Science dissemination and communication have become critical tasks due to the recent turn of events. The race towards a Covid-19 vaccine has stressed the importance of ongoing scientific research, becoming, since the start of 2020, a matter of life or death for many people. As a consequence, the popularization of said research plays a chief role in society, having an influence both on the potential individual measures that common citizens take to prevent the spread of the disease, as well as on the different measures that national authorities adopt to combat the disease, on a collective level.

Science communication is not an unequivocal term, but there are different interpretations and uses of the word. In this study, we have followed the European Commission's (2020) distinction between science communication and dissemination.

COMMUNICATION	DISSEMINATION
Covers the **whole project** (including results)	Covers project **results only**
Starts at the **outset** of the project	Happens only once **results are available**
Multiple audiences Beyond the project's own community, including the media and general public. Multiplier effect.	**Specialist audiences** Groups that may use the results in their own work, including peer groups, industry, professional organisations, policymakers
Informing and **engaging with society**, to show how it can benefit from research	Enabling the **take-up** and **use** of **results**
Legal reference Grant Agreement Article **38.1**	*Legal reference* Grant Agreement Article **29**

Figure 1. Science communication vs. dissemination (European Commission, 2020, p.4)

There is an extensive corpus of research on scientific dissemination (i.e., the spread of scientific information among experts or specialist audiences), focusing mainly on the different academic social networks, and their effects on scientific article production, impact and dissemination (cf. Orduña-Malea, Martín-Martín & Delgado López-Cózar, 2016; or Trueger et al., 2015) or the evaluation of scientific research (cf. Arencibia-De Moya, 2008).

However, there is a rather small amount of research on scientific communication and education (i.e., the transmission of scientific knowledge from experts to laypersons), especially through new technologies and the Internet, although it may be a fundamental task during the outbreak of newly identified diseases such as Covid-19.

Therefore, there is a certain need to turn from the 'academic sphere' to the 'public sphere': under the context of the Covid-19 pandemic, ongoing scientific research should not only reach experts or health authorities, but the common citizen too. That means taking a pragmatic and utilitarian perspective of science, for scientific research has, in the current situation, a direct impact on every aspect of society.

The aim of this study is to narrow this gap, carrying out a brief analysis of online science communication video on the video-sharing platform YouTube as a genre, in the context of the first wave of Covid-19, to define it in search of potential indicators of an emergent genre.

Some research alongside this direction has been conducted by health experts who focus on patient education, such as 'YouTube as a source of COPD patient education: A Social Media content analysis' (Stellefson et al., 2014), or 'YouTube videos as a source of medical information during the Ebola hemorrhagic fever epidemic' (Nagpal et al., 2015), and by academics who explore the possibilities of non-academic social media to

disseminate or communicate science, such as ‘Role of Twitter in the life cycle of a scientific publication’ (2013) by Darling, Shiffman, et al., or ‘Science Popularization Videos by Independent YouTube Creators and User’s Appropriation Strategies’ (2017) by Crawford-Visbal & Crawford.

In addition, there are some works on science communication such as ‘Public Communication of Science in Blogs: Recontextualizing Scientific Discourse for a Diversified Audience’ (Luzón, 2013) or ‘From the Cognitive to the Pragmatic: The Scientist as Communicator’ (Pérez-Llantada, 2001) that have been taken as models for this study.

2. METHODS

In order to define the science communication video as a web-mediated genre and explore its characteristics, 50 online science communication videos on YouTube were analyzed. The resulting model here offered is an approximated reconstruction of the common formal, discursive and contextual aspects to them.

It is important to note, however, that online science communication videos constitute, by no means, a perfectly uniform genre. Rather, there are different approaches to it, ranging from an informal style of communication that incentivizes engagement, to a formal style that transmits professionalism and expertise to the spectator.

The online science communication video genre model is to be studied along three different axes:

1) The syntactic axis: the study of the formal aspects, such as the average length of the videos, their rhetorical structure, the presence of bibliography, etc. In order words, this section aims to answer the question “how are online science communication videos structured?”

2) The semantic axis: the study of the ideas and concepts that are present in online communication videos. Some research questions that are to be answered in this section are "what ideas underlie online science communication videos?" or "what's the relationship between online science communication and society?"

3) The pragmatic axis: the study of how science communicators engage with their audiences, and of how they navigate through the information they provide in terms of involvement and behavior (stance). The question to be answered here is "how do science communicators use language in their videos, and why?"

These different axes encompass both quantitative (e.g., the average length of the videos) and qualitative variables (e.g., the rhetorical structure of them). As such, a mixed method is to be used for the purposes of this study, providing discrete and continuous data, that sheds light on the most important aspects of the genre.

Therefore, the study is not limited to a definition or categorization of the science communication video genre, but it also explores the potential reasons that lie behind the form and content of these.

3. DATA COLLECTION

For the present study, 50 science communication videos from YouTube were collected, belonging to different authors, both English and Spanish-speaking.

In order to choose these channels, the author of the study read online articles about popular science communication channels on YouTube, (e.g.: 'Top 10 YouTube Science Channels to Enlighten and Entertain' (Euroscientist, 2016)), and looked for videos that revolved around the coronavirus pandemic. Those science communication channels that did have videos about the Covid-19 pandemic were added to the sample. Moreover,

recommended channels that appeared on the platform as a consequence of watching videos by the aforementioned channels, were analyzed in order to discern whether they fulfilled the requirements to be part of this study (namely, whether the purpose of those channels was the popularization/communication of scientific knowledge and whether they possessed videos about Covid-19).

A salient feature of the sample is the presence of channels from different parts of the world: some channels that are English-speaking, and some others that are Spanish-speaking. The purpose of this geographical variety in the sample is to prove that scientific research and science communication are global enterprises that do not differ significantly in form nor in content between countries despite geographical or cultural distance.

The sample comprises 13 science communication channels: 8 of them are Spanish channels, 1 is from Germany (however, its videos are English-speaking), 1 is from Canada and 3 are from the United States. In the sample, 61,5% (n=8) of the channels are Spanish-speaking, while 38.5% of the channels make their videos in English.

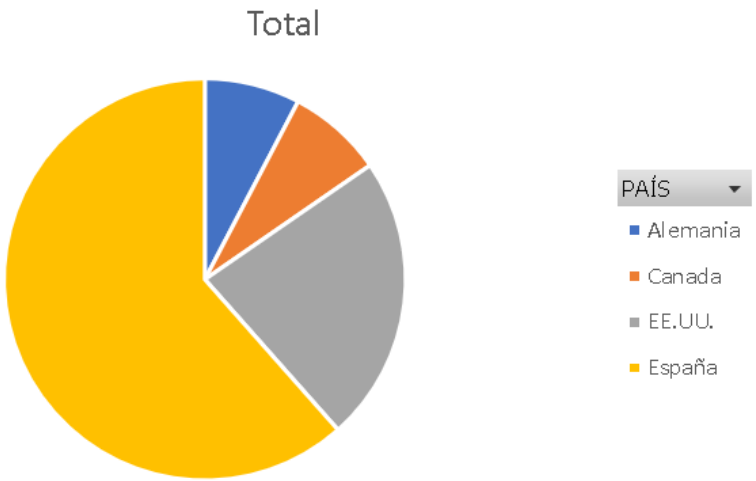

Figure 2. Geographical distribution of the channels in the sample.

The choice of these videos was made in accordance with their titles at first, choosing the ones that revolve around the Coronavirus crisis.

From these videos, the following information was collected:

- Title of the video
- Name of the channel
- Rhetorical structure
- Discursive aspects
- Presence of bibliography in the description box
- Video length
- Date of publication
- Number of likes
- Number of views
- Date of data collection

The collection of popularity and interaction data accounts for the fact that the present study considers the medium a crucial factor to understand digital genres: different aspects such as the title, rhetorical structure, video content or video length may result in different amounts of views, likes, comments, etc. Therefore, the science communication video genre is influenced by the medium. For example, the YouTube "recommendations algorithm" suggests videos to users according to different variables such as the preferences of users, user engagement, watch time, etc. (see section 4.3.2.).
Plenty of online information about this algorithm can be found online, because, unlike other platforms, YouTube owners have been rather transparent about how it works. In fact, they published a detailed research paper about it in 2016 (Covington, Adams & Sargin, 2016). This algorithm is, however, constantly being updated and changing, for it is a neural network. We will use Koul's (2019) research on "YouTube's algorithm" as a reference for our genre analysis, due to its simplicity and the fact that it is recent research.

4. RESULTS

4.1. Syntactic axis

4.1.1. Science communication videos: a web-mediated genre

According to Swales (1990, p.58), a "genre comprises a class of communicative events, the members of which share some set of communicative purposes. These purposes are recognized by the expert members of the parent discourse community and thereby constitute the rationale for the genre. This rationale shapes the schematic structure of the discourse and influences and constrains choice of content and style."

In order to study the online science communication video genre, we will employ Askehave and Nielsen's (2005) two-dimensional model of online genres, which is, in turn, a revision of the Swalesian genre model. As a consequence, the video is not studied as an independent text, segregated from its medium, but, rather, as part of a complex system of hypertexts that influence each other.

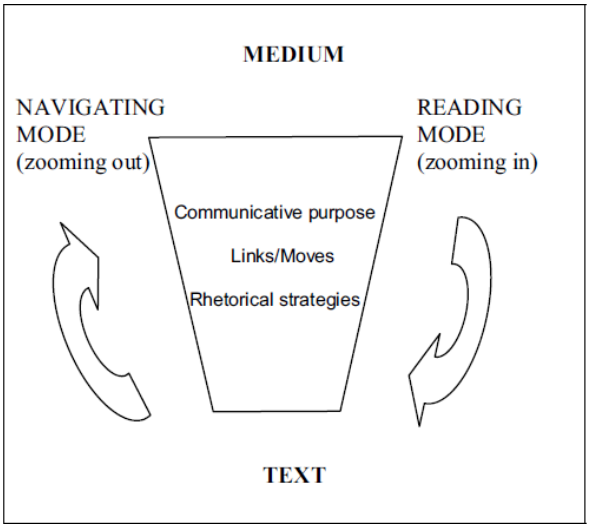

Figure 3. Two-dimensional genre model (Askehave & Nielsen, 2005, p.3)

The model follows the renowned genre model by Swales and its three-level analysis (communicative purpose, move structure and rhetorical strategies) and adds two

"modes" of interacting with the document: the *navigating mode* and the *reading mode* (represented on the sides). Askehave (2005, p.4) asserts: "When in the reading mode, the reader zooms in on the text and reads it as if it was a 'printed' text. (…) When in the navigating mode, the navigator zooms out of the text and uses the web document as a medium."

Therefore, the close interplay between medium and genre is highlighted: "media properties influence both the purpose and form of web-mediated genres and should therefore be included in genre identification." (Askehave, 2005, p.4)

On top of it, the influence of the medium on online genres may have recently increased for different reasons, such as new intellectual property policies, the inference of national governments on online data, or the mass-popularization of social networks that impose content guidelines, among others.

For example, YouTube established advertiser-friendly content guidelines that govern the content of uploaded videos, in the case the author wishes to earn money, as well as community guidelines with a more general character. These guidelines are updated regularly, and answer to the needs and wants of advertisers and users.

But, how do these guidelines influence science communication videos?

YouTube is an open platform: anyone can create an account and upload a video. As a consequence, misinformation, hoaxes and low-quality information about scientific or technical topics proliferate on the platform (Ohlheiser, 2020 & cf. 'YouTube as a Source of COPD Patient Education' (Stellefson et al., 2014)). However, social media companies such as YouTube generally try to get rid of blatant cases of misinformation (cf. 'Coronavirus: Facebook, YouTube race to squash fake '*Plandemic*' documentary' (2020)), while informing about authors who conduct fact-checking methods on their videos about certain sensitive topics ('See fact checks in YouTube search results'

(YouTube, 2020)).

Another problem that has recently been identified has to do with the monetization of videos that revolve around certain topics. In March 2020, different sources informed that YouTube automatically demonetized videos about Coronavirus ('En YouTube no se dice coronavirus, se dice "eso que empezó en China"' (Economía Digital, 2020)). The issue was that YouTube classified these videos as centered on "controversial issues and sensitive events". Nonetheless, this guideline was later corrected ('Monetization update on COVID-19 content' (YouTube, 2020)).

In addition, YouTube automatically adds a COVID-19 tab under every video that revolves around the disease, linking the viewer to different official medical sources, namely, W.H.O. and national health ministries, in order to provide quality information that may correct misinformation that stems from the video, as well as expanding or updating it if the information is obsolete.

Figure 4. YouTube's Coronavirus information tab.

4.1.2. Genre macro-structure.

Although in this study the YouTube video is considered a genre, it may be more precise to categorize it as a genre set, comprising a main genre (the video itself) and a variety of adjacent (sub)genres:

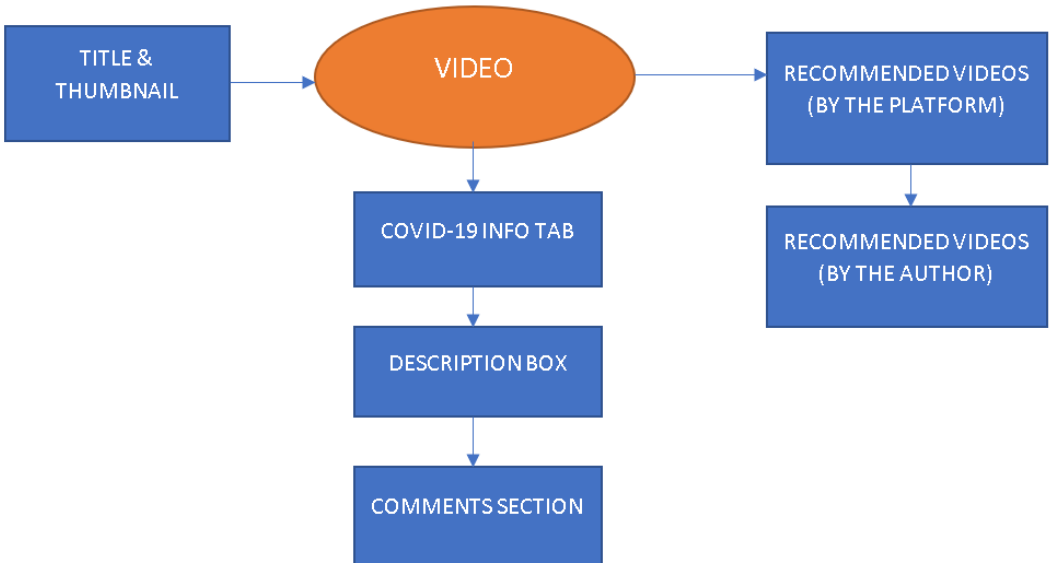

Figure 5. YouTube video genre-set.

These (sub)genres are particular to the medium: the video-sharing platform establishes them to go along with the communicative act.

Subgenres that appear at the left and right columns in the genre-set scheme (fig.5), such as the title and thumbnail, belong to the navigating mode: the user "scans" the text in search of interesting content, rather than closely reading it. Therefore, the role of these (sub)genres is to capture the attention of users in order for them to click on the links and watch the video.

The ones that appear at the central column, such as the comments section, belong to the reading mode of the aforementioned model. As such, they are supposed to be read (or watched in the case of the video) attentively, when they are of interest.

Especially important for this study is the description box, where science communicators tend to include references to the cited works. In our sample, 66% of the videos (n=33)

have a complete list of works referenced in this section, usually via hyperlinks to the studies, instead of following a certain standard citation style.

The presence of a reference list may appear to be connected to the approach to scientific communication of every channel: some authors seem to focus on the popularization of scientific knowledge (usually involving some degree of entertainment or humor) for an uneducated audience, while other authors appear to be more rigorous and design their videos for an audience that is educated about the topic, the latter being more likely to attach a bibliography to their videos. However, the analysis suggests that science communicators tend to seek a balance between these two, appealing to both of them, instead of clearly separating expert audiences from laypersons.

From this perspective, YouTube communication videos can be seen as an evolution of an extant genre: science communication blogs, that, as Luzón (2013) argues, blends information "for public and specialized audiences in the same space." This way, "popularization is not a matter of simplification or 'translation,' but of recontextualization of scientific discourse into another domain" (p.2).

The presence of a bibliography, thus transforms the video into a 'gateway' into a genre chain from which other scientists or spectators with a scientific background may benefit, acquiring valuable information; whereas vulgar (in the etymological sense of the term, i.e., belonging to the *vulgus*) spectators do not necessarily follow the same path (see section 4.2.1.).

Besides, the Covid-19 information tab (fig.4) is particular to science communication videos or videos that revolve around the disease, which provides up-to-the-minute information and possesses links to official healthcare organizations, such as W.H.O. or the Spanish Health Ministry, as well as to recent news from mass media (such as the

most popular online newspapers in the country), considering the spectator's IP belongs to the Spanish territory.

4.1.3. Actors

Bucher (2020, p.64) argues that one of the main transformations that science communication has recently undergone is that "in a digital environment, scientists are able to communicate directly with an audience bypassing the gatekeeping of journalism."

Therefore, there has been a "suspension of traditional mediating communicators – journalists, scientists, experts – and addressees." As a consequence, the digitalized science communication process brings to the fore the role of the communicator and the interaction between him or her and the audience.

Science communication channels are commonly divided into two groups:

1. Individuals: some science communication channels are centered around one person (sometimes called 'youtubers') that is, if not the only designer and creator of the uploaded content, at least the visible face on most videos.

2. Institutions: another type of science communication channel is institutional profiles that upload content to the platform. These upload videos with different collaborators, not centered around any individual in particular.

In addition to individual (professional) science communicators, there are channels that belong to laypersons who upload what is commonly known as 'user-generated content'. This type of content is, according to Bucher, "significantly more popular on YouTube than professional generated content by scientists, research organizations or interest groups" (Bucher, 2020, p.66).

The prevalence of this type of content has given rise to a series of problems on different social media, especially concerning the validity and truthfulness of this kind of content, and, as a consequence, different platforms have recently implemented 'fact-checking' tools in order to prevent misinformation and hoaxes to proliferate (Alonso González, 2019).

In our sample there are 13 different channels, 3 of them belong to institutions (American Medical Association, Centers for Disease Control and Prevention, and Osmosis), whereas the other 10 are made by a particular person.

From our analysis, individual science communication channels are significantly more popular than institutional channels. In particular, the former had an average of 1,436,495 views per video, while the latter had an average of 20,732 views per video. Moreover, videos that revolve around a single person are traditionally subject to more interaction with viewers than the ones uploaded by institutions.

The possibility of interaction between science communicators and their audience is one of the advantages of the recent digitalization of the communicative process. As Bucher claims, "the dynamics of discourse has changed from one-way to interactive and recursive communication expanding its structure in temporal, spatial and social respects" (2020, p.64). As we will see later, this interaction shapes the discourse of science communicators, who pay attention to the questions and commentaries posted by their audience.

4.1.4. Video formats.

As stated earlier, science communication videos on this platform are not an absolutely uniform group, for there are different video formats that different authors make use of. In our analysis, 94% of the videos (n=47) follow a similar pattern, consisting in a direct communicative event, with the author/s (and collaborator/s) as the speaker/s referencing

the spectator as the hearer. This way, authors break the fourth wall to engage with their audiences, which is especially relevant when it comes to raising awareness about certain topics and giving medical/scientific advice, in particular.

The rest of the videos (n=3) consist in discussions between different experts on the field (n=2) and an interview with the Spanish Science Minister, Pedro Duque. These videos revolve around a conversation between different interlocutors, and, although the spectator is relegated to a secondary position in comparison to the other kind of video, speakers are aware of the purpose of the video, and refer from time to time to interactions between them and laypersons on social media to deduce what the intended audience may think or wonder (see 4.2.7. Social interaction)

4.1.5. Rhetorical structure.

Firstly, it is important to note that the rhetorical structure here analyzed is the one that belongs to Askehave's (2005) reading mode, i.e., the video itself. Another important aspect to mention is that, rather than a multimodal analysis, the study is focused on the textual realization of the videos (the spoken words), leaving the visual semiotic system aside.

One of the main problems that arise when analyzing science communication videos is that, in the great majority of them, there are not clear boundaries between parts of the video, nor clear outlines of the information provided. Instead, there is a preference for a dynamic organization of the video, with humorous asides and unconventional engagement strategies used by the authors. Nevertheless, there are three common moves, with their respective steps, to every science communication video that has been analyzed: introduction, body and closure (steps in brackets are optional).

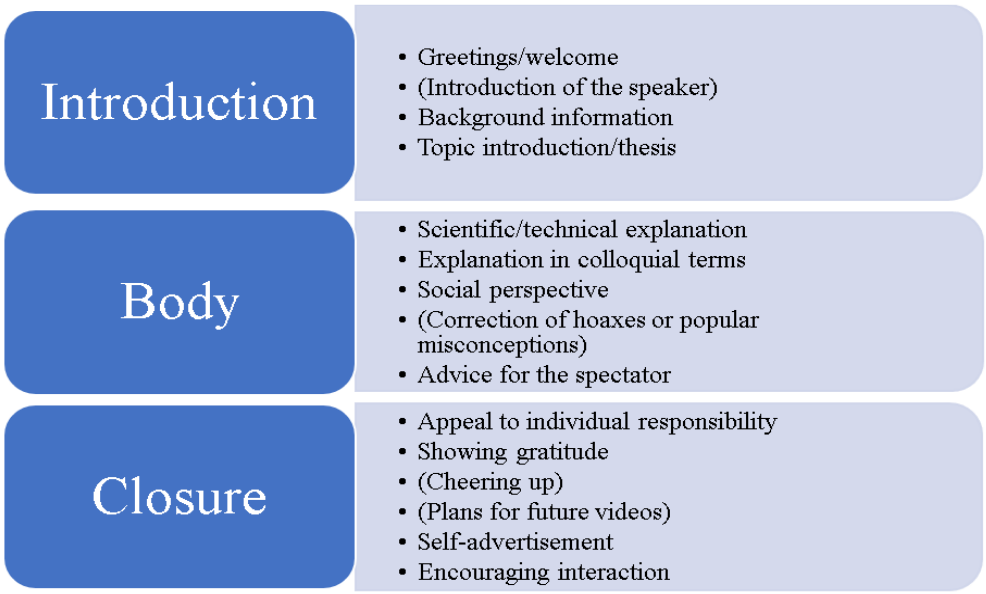

Figure 6. Rhetorical structure

In the introduction, the author welcomes the spectator, more or less effusively depending on the register used by the communicator, and sometimes, particularly when the video is more rigorous, interlocutors present their credentials to the audience.

> "Welcome to the Osmosis Daily Report on the Coronavirus Pandemic. I am Rishi Desai, Chief Medical Officer at Osmosis. I am a pediatric infectious disease physician and I am a CDC viral disease detective." – Video #29, 'Pregnancy: Coronavirus Pandemic' by *Osmosis*.

In addition, this first section of the video contains some background information which introduces the topic and contextualizes the thesis of the video, as well as the upcoming scientific information that the communicator offers to their audience.

However, the outline of the video is normally not explicitly stated *a priori*.

In the second section, science communicators express the main information, while trying to explain technical and scientific concepts to the public, and explaining why the information is relevant.

The technical terms are usually explained through metaphors or similes, as we will see

in the pragmatic axis.

Although virtually every communicator informs about the social aspects of scientific research, the degree of importance that it is given in different videos varies. For example, video #43 ('BCG Vaccine: Coronavirus Pandemic') focuses on medical and epidemiological information, while video #47 ('African-Americans and COVID-19') focuses on the social problems that have been accentuated by the current pandemic, despite belonging to the same author.

Besides, the correction of popular misconceptions and hoaxes, as well as the scientific or medical advice to the audience could be framed as social actions, stemming from ethical convictions (i.e., aiming to preserve the life and well-being of other individuals).

In the last section, the closure, science communicators show gratitude to the audience, self-advertise, and encourage interaction with the spectators via commenting the video or on other social media. One particular move that takes place in science communication videos during the times of coronavirus is the repetition of slogans that remind the spectator of their individual responsibility, such as "stay at home", "flatten the curve". "raise the line", etc. These are usually part of a macro-discourse that surrounds the nation-state in which the video is made. For example, Spanish communicators repeat the slogan "quédate en casa" ("*stay at home*"), while North-American ones insist on "flattening the curve", which are, in essence, two different ways of sending the same message.

Finally, some authors tend to cheer up the audience and sending a message of hope and confidence in the ongoing scientific research. This kind of message responds to a particular discursive reality that will be studied later, namely, the defense of science as an institution (see 4.2.4.).

4.1.6. Video length.

The average video length of the analyzed sample is 09:28 minutes, ranging from 01:51 minutes to 33:34 as minimal and maximal absolutes. However, these ends are not representative, for 92% of the videos (n=46) last from 5 to 16 minutes.

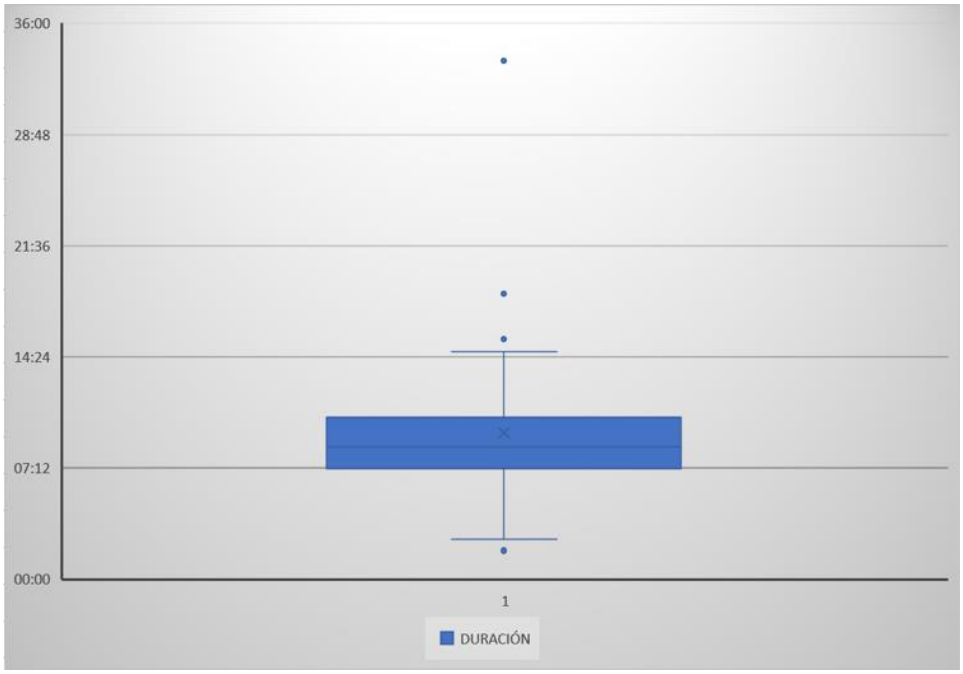

Figure 7. Video length

The reasons behind science communication video lengths are rather complex.

First of all, authors want to keep the attention of spectators, which seems to be increasingly difficult. In fact, psychiatric and psychological research has been recently conducted in this direction: Weiss et al. (2011) study the correlation between the ever-increasing use of electronic media and its impact on ADHD attention deficit in children, while Yen et al. (2009) claim that adult ADHD may be associated with Internet addiction.

Secondly, the longer the video, the more ads that can be placed on it. According to the platform, content creators can earn money through advertising revenue, merchandise or monetary support from other YouTube users (‘How to earn money on YouTube’ (YouTube, 2020)).

In order to be eligible to make ad revenue, authors must make sure their content meets the advertiser-friendly content guidelines that the platform establishes.

Thirdly, according to Koul's aforementioned research on the YouTube algorithm, the platform favors watch time (also called engagement) over other aspects of the video, such as number of views or likes (2019). As a consequence, making sure that spectators do not leave the video is a good strategy for channels to become more popular on the platform.

Finally, the need of communicating the intended information and messages may prevail over the rest of the aspects, as in video #6 'OS PIDO MIS SINCERAS DISCULPAS' ('*I sincerely apologize*'), which lasts 33:39 minutes and constitutes a very long message in comparison to other videos on the same channel. In other words, the relevance of the information expressed may rule over other secondary aspects such as the money the author makes, or the popularity of the video and channel.

4.2. Semantic axis

The aim of this section is to discuss the main ideas and discursive aspects that surround science communication videos on social media platforms such as YouTube, bearing in mind that the study is encapsulated in the context of the first wave of the Covid-19 pandemic, during the first half of 2020.

To guide our interpretation of the discursive aspects that are present in science communication videos, R.K. Merton's *Science, Technology and Society in 17th century England* (1970) has been used, for it extensively explores the interplay between science and society.

Firstly, science communicators have a double duty towards society in this situation:

• On the one hand, they have to inform about up-to-the-minute scientific research, update obsolete information, present new hypotheses that are under evaluation, correct common misconceptions or hoaxes, etc. This way, they establish links between the health authorities from international organizations (W.H.O.) representing the international scientific community to their own readers/spectators.
• On the other hand, they have a social duty to inform about the policies and measures that national and local governments adopt to prevent the spread of the disease.

These two responsibilities could become contradictory if the adopted measures by the government were refuted by scientific research. In fact, although many experts defended the adopted lockdown policies, some dissenting voices spoke against them, such as Johan Giesecke, an expert epidemiologist, in 'Swedish expert: why lockdowns are the wrong policy' (Sayers, 2020).

Anyhow, when we talk about the discursive aspects of science communication and the interplay between science and society, it becomes self-evident that science holds a privileged position in society.

In the context of the coronavirus pandemic, scientific research shapes, up-to-the-minute, the plans different countries follow to combat the disease: it plays a primary role that reorganizes the rest of society, as the whole of it (from the president to the average citizen) needs to follow medical advice and even set aside individual liberties and rights to act in furtherance of every other person's well-being. In other words, in such a critical situation, the ethical reason (supported by medical expertise) prevails over moral reason, the collective over the individual (cf. 'El primado de la razón ética ante la pandemia del coronavirus' (Navarro Crego, 2020)).

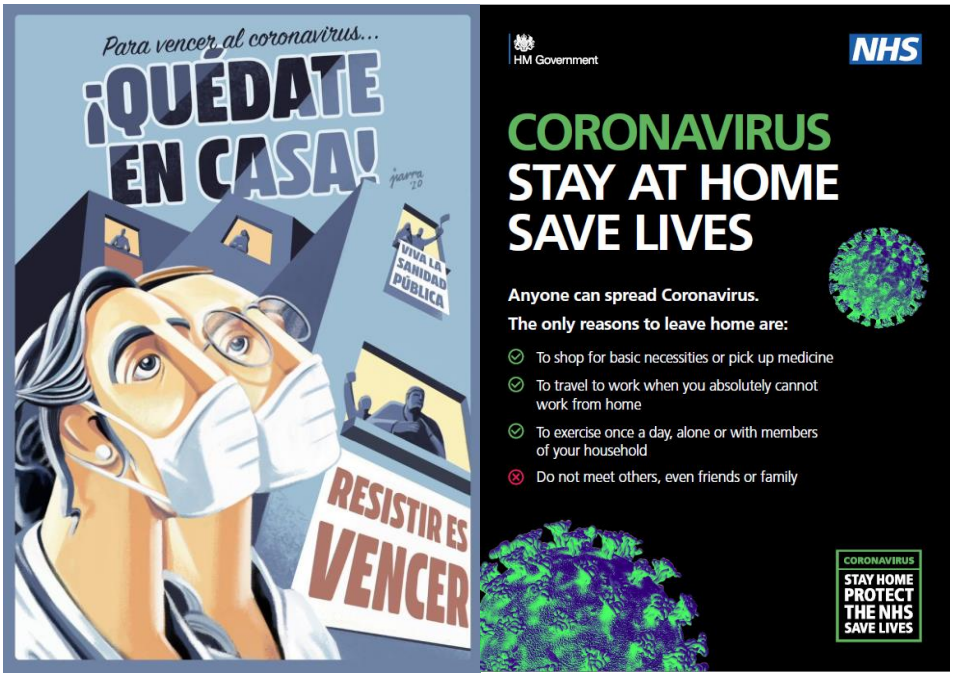

Figure 8. Spanish and British lockdown campaign posters

4.2.1. Spreading scientific knowledge: two levels of information.

For the main purpose of these videos is the communication of scientific knowledge, there is a constant presence of technical and scientific concepts that are explained as simply as the communicator can, frequently by the use of similes or metaphors (cf. 4.3.3. Other pragmatic aspects). As it was earlier mentioned (section 4.1.2), a superficial analysis of the sample could be misleading: although science communicators on YouTube appear to try to reach, for the most part, laypersons who may be interested in science-related topics, it is not quite the case. In fact, there are videos that are less focused on this 'recontextualization' that characterizes science popularization, and more on the dissemination of recent research to fellow researchers or practitioners. For example, in video #7 – 'GLOBAL EMERGENCY: New Skin Symptoms Related to #Coronavirus? –, the communicator alludes to fellow practitioners and healthcare professionals, referencing very recent research; while video number #5 – 'The Coronavirus Explained & What You Should Do' – is geared towards providing general information to the common citizen.

In essence, these two are entwined, as communicators try to find a balance between them, providing two levels of information in the majority (66%, n=33) of the videos that have been analyzed: firstly, the video is normally oriented towards a general public, with frequent explanations and the use of colloquial language; secondly, the presence of references in the description box constitutes the second level, aimed at the portion of the audience that possesses a scientific background or education, who can receive more rigorous information directly from the sources that the communicator used to make the video. In other words, as Luzón defends in her article, there is no sharp separation between audiences when it comes to science communication, but a recontextualization of the information by virtue of the intended audience (2013). And we may add: in online science communication videos, it just constitutes the first layer of a bigger genre-chain that starts with the communication or popularization of science to the general public and becomes more specialized as the reader delves into it.

Nevertheless, these two levels of information are not always present: only 66% (n=33) of the analyzed videos had an explicitly written bibliography. Videos that did not have it could thus be categorized as strictly science popularization videos, while the number of videos that could be categorized as instances of science dissemination (i.e., aimed at only educated audiences) is very scarce.

4.2.2. Science as a global enterprise.

Every analyzed video shows a degree of concern with the current situation of the pandemic and its consequences on the world as a whole. In fact, many videos try to explain of the reasons that have led to these, as well as the possible solutions, for example, through comparisons between the measures adopted by different countries in order to prevent the disease from spreading and their results.

As we can see, a global perspective is adopted, transcending the national dimension,

which recalls the idea of science crossing the different cultural and geopolitical borders. In our sample, as stated in section 3. (Data collection), there are 13 different science communication channels: 8 from Spain, 1 from Germany, 1 from Canada and 3 from the United States. Channels that referenced the sources of the information provided in their videos, linked the audience to research that was conducted in different countries such as China, Italy, the U.S., Spain, England or Germany, among others. In other words, there is a sense of science as a universal enterprise, citing works that communicators consider valuable or interesting, irrespective of their origin.

This conception of science is opposed to certain political discourses, such as the distrust and tension between two global powers such as the U.S. and China (see section 4.2.3.) or the use of science for partisan political purposes.

In addition, science communication tends to be uniform: according to our sample, there are no clear differences in terms of form nor in terms of content between videos originated in very distant places. However, some extrasomatic differences can be found, such as the geographical point of focus or the cultural background of different science communicators (e.g., *AsapSCIENCE*, a Canadian channel, talks about the problems that have arisen in the U.S. and Canada as a consequence of the pandemic; while a Spanish channel such as *Dateunvlog* shows concern about the potential consequences of the pandemic in Latin American countries).

4.2.3. Social and philosophical critique.

Many channels do not only offer a scientific explanation of the pandemic, but also a philosophical one, that often implies a social critique: the consensus is that selfishness, together with a lack of empathy and solidarity have led to the current situation in many Western countries, giving rise to the following dilemma: should the individual rights and liberties prevail over the collective well-being, or the other way around?

Science communicators, in general, defend the second proposition, arguing that all of us must work together to prevent as many deaths as possible, overcoming a deeply rooted individualism.

For example, Javier Santaolalla (from *Dateunvlog*, in video #2, argues that there is a lack of ethical reason in Western countries, stemming from a "romantic individualism" that is closely linked to capitalism. Moreover, this science communicator opposes Western individualism to the "socially conscious culture of different Asian countries", whose citizens were generous and responsible, sacrificing their own individual freedom in order to prevent the disease from spreading.

Analogous to Santaolalla's critique are the ones by other science communicators, such as Rishi Desai (from *Osmosis*), who is concerned with the inequalities present in the United States, and how these have an important effect on the health of citizens, especially those communities that are more vulnerable. In addition, José Miguel Gaona (from *La Reunión Secreta*) wonders how can people who need to work daily in order to earn a living cope with the lockdown.

Moreover, science communicators pay attention to another important social aspect of the sanitary crisis: due to the present uncertainty around the genesis and lack of clear information about the early spread of the recently identified coronavirus, some countries such as the U.S. and China have thrown suspicion-fueled claims to each other (cf. 'US government report assesses China intentionally concealed severity of coronavirus' (Sands et al., 2020)), and 'A conspiracy theory linking the US army to the coronavirus now has official Chinese endorsement' (Li, 2020)). These political tensions, along with the use of certain terminology such as the "Chinese virus" by U.S President, Donald Trump, have led to a degree of social unrest on the part of certain social groups, such as Asian Americans in the U.S. (Loffman, 2020).

4.2.4. The defense of science as an institution.

"Science, as all large-scale activity which involves the continued interaction of many persons, must above all be countenanced by society if it is to find any systematic development. Otherwise put, the very existence of science and scientists presupposes that they occupy some positive level in the social scale of values which is the final arbiter of the prestige attached to various pursuits." (Merton, 1970, p.584)

Another discursive aspect that is present virtually in every video is the defense of science as an institution, and its opposition to apparently uninformed statements by non-scientific communities or individuals. For example, in video #39, by *GlóbuloAzul*, there is a reference to a French minister who spread false information, claiming that ibuprofen worsens the symptoms of the disease. Another politician who is frequently critiqued in our sample for spreading false information is U.S. president Donald Trump, who suggested injecting disinfectant as a treatment for Covid-19 in late April 2020. ('Coronavirus: outcry after Trump suggests injecting disinfectant as treatment' (2020)). As we can see, science communicators sometimes take an antagonistic position towards politics, denouncing the spread of false information, as well as the lack of public funding for scientific research.

As R. K. Merton recalls, Francis Bacon, at the beginning of the 17th century, had introduced a utilitarian philosophy with regards to knowledge, claiming that "the essential end of knowledge is the improvement of man's estate." (1970, p.589)

But one the best summaries of utilitarianism was articulated by Lord Shaftesbury: "if there are any sciences that are worthy of esteem, they are what must relate to the well-being of mankind in societies."

Science communicators link recent discoveries to their potential applications in everyday life. Therefore, they take a utilitarian approach to scientific knowledge,

highlighting its positive consequences on society.

This aspect of science has been subject to radical changes throughout history: although, as we have seen, in 17th century England there was a positive assessment of scientific advance, C. Madrid, in his conference 'La ciencia y el relativismo' (2012), observes that the I and II World War showed the "dark side of science," through the development of chemical weapons (such as mustard gas, phosgene or Zyklon B), biological weapons, or the atomic bomb, among others. As a consequence, many people held negative opinions towards science.

In essence, from a utilitarian perspective, science communicators need to portray science in a positive light so that it maintains its social status, which is closely linked to the following discursive aspect.

4.2.5. Scientific progress

Science communicators try to send audiences a message of optimism, usually at the end of their videos (n=32). They defend that science progresses firmly, working against the clock to find a solution to the pandemic. This way, they encourage the audience to be patient and responsible in order to save lives: that is, to have confidence in scientific advancement and confidence in official scientific institutions, which is stressed in the great majority of videos (n=48), urging their audiences to follow the recommendations of both national and international healthcare organizations.

Still, science communicators cannot promise a miraculous or immediate cure. As a consequence, they take a realistic stance: a 'moderately optimist' perspective that gives hope to the audience, while recognizing the obstacles that scientists face.

Merton asserts that "the periods in which science and technology have notably advanced have likewise been times when theories of progress were widely accepted.

The awareness of contemporary advances in certain fields may tend to induce the acceptance of a progressivist outlook; the success of the recent past makes certain accomplishments appear to be imminent probabilities." (1970, p.595)

However, Merton warns that the belief in scientific progress must be of a certain kind: "the type prevalent in the seventeenth century, which states the possibility or probability of progress, but not its inevitability." The problem of conceiving progress as inevitable is that it can lead to "a fatalist or quietist attitude" that hinders scientific advancement.

4.2.6. Skepticism

Although it may seem to be in contradiction to the previous discursive aspect, science communicators defend a skeptical view of new research and developments, as well as the need to closely inspect them in a critical way, avoiding dogmatic approaches. Scientific knowledge and especially non-consolidated novel research, from this perspective, is open to change, further improvements, or even refutation.

All in all, although defending the reliability of science and official scientific organizations, science communicators acknowledge the temporary nature of pioneering scientific research.

In fact, there is a recurrent mention of the uncertainty that surrounds scientific research, especially in the context of the Covid-19 outbreak. Therefore, they argue, information needs to be updated daily (e.g., video #9 'ACTUALIZACIÓN sobre el CORONAVIRUS') and old research needs to be constantly re-evaluated under the light of new developments.

4.2.7. Social interaction.

"A high degree of social interaction involves a number of processes which facilitate cultural change generally, and development of science specifically.

(…) Thus, both travel and communication stimulate and foment cultural change. Conversely, the relative lack of interaction is associated with what Teggart calls "the processes which are manifested in fixity, persistence, stagnation and conventionality." (Merton, 1970, pp.575-6)

In this day and age, when people have an unprecedented access to information and social networks, the challenge is to provide valuable, scientific information by establishing quality channels between science and the common person.

Therefore, science communicators not only have the task of expanding novel and relevant scientific research, but also to collect feedback from non-academic audiences, and adapt scientific communication to the desires and needs of society.

The digitalization of science communication allows science communication to be a many-to-many channel, where interaction is possible between both parts, unlike traditional science communication through other media.

Many communicators engage with their audiences in order to receive feedback, usually at the end of videos, incentivizing them to comment on the video. This way, they can know what to talk about, how to talk about it and the preferences of their spectators in general.

As we have already seen, a particular step in the body of the videos is frequently the correction popular misconceptions and hoaxes, which they come to know reading the comment of users on their videos and other social media. This is yet another example of the increasing relevance of interaction between both parts in the communicative event.

4.3. Pragmatic axis

In this section, a summary of the most important contextual aspects, together with the linguistic features of the online science communication video genre is offered.

K. Hyland (2005) explains the interaction between the writer and reader of academic texts through two macro-functions: s*tance* and *engagement*.

- Stance is defined as the "textual 'voice' or community recognized personality" (2005, p.176). It concerns "*writer-oriented features* of interaction and refers to the ways academics annotate their texts to comment on the possible accuracy or credibility of a claim, the extent they want to commit themselves to it, or the attitude they want to convey to an entity, a proposition, or the reader" (2005, p.178).

  Hyland lists four key linguistic resources that define the stance of an academic text: hedges, boosters, attitude markers and self-mentions.

- Engagement is defined as the ways "writers relate to their readers with respect to the positions advanced in the text" (2005, p.176). Authors "make predictions about how readers are likely to react to their arguments" and shape their texts in order to persuade readers or make points clear, among other functions (2005, p.182).

  Hyland remarks five key linguistic devices that are used by writers to engage with their audiences: reader pronouns, directives, questions, shared knowledge and personal asides.

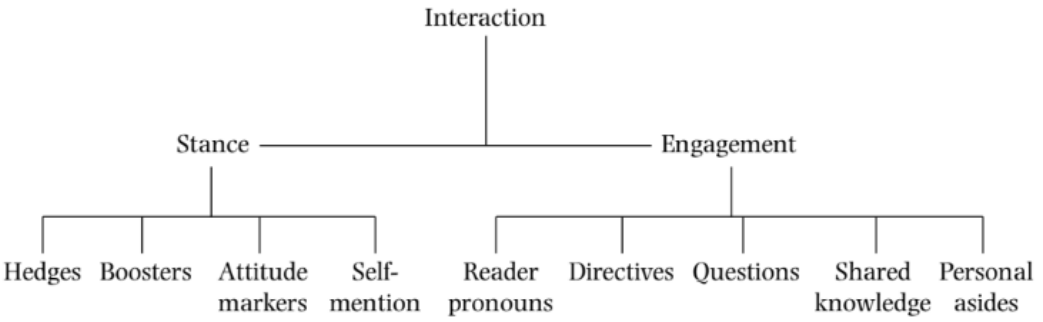

Figure 9. Writer-reader interaction. Retrieved from Hyland (2005, p.177).

One of the patterns that stands out in the analysis of the videos is that stance and engagement strategies are localized in particular sections of the video: devices that define stance are very frequently located at the introduction of the video; while engagement resources are commonly found at the end (closure) of the video.

4.3.1. Stance

In the introduction, communicators tend to make use of self-mentions, particularly when the channel belongs to an institution, in order for the speaker to offer his/her credentials.

> "I'm doctor Rishi Desai, I'm the chief medical officer at Osmosis. I'm also a pediatric infectious disease doctor and I used to work at the CDC in the division of viral diseases doing viral outbreak research." – Video #28, by Osmosis

Another move at the start of the videos is the introduction of the topic or thesis statement. This, in turn, is usually the repetition of the title of the video, although it is sometimes nuanced.

In spite of the proliferation of "clickbait" titles in this day and age, science communication video titles are, for the most part, informative about the content of the

video.

In our sample, we found that the stance (in terms of attitude towards the information provided) of the communicator is not always inferable from the title of the video. Rather, science communicators sometimes exaggerate or add strong attitude markers to their titles to spark the interest of potential spectators on the navigational mode. In addition, 28% (n=14) of the videos formulate the title as a question, in order to conceal stance and promote engagement in a similar manner.

> "Estoy harto. La CUARENTENA: ¿Funciona?" – Video #1, by *DateunVlog*
>
> "Is Hydroxychlororoquine The New Coronavirus Cure?" – Video #46, by *AsapSCIENCE*

Another interesting aspect of video titles in our sample is that 52% of the videos (n=26) in the sample contain capitalized words such as 'COVID-19', 'QUARANTINE' or 'CORONAVIRUS' in their titles. Although this may be an engagement strategy, it may also be linked to YouTube's recommendation algorithm or search engine.

A device that is sometimes used to indicate stance is the presence of a 'disclaimer' at the introduction of the video, acting as a hedge. Sometimes, the disclaimer may be found in the body of the video, or, in many videos, it can be found in the description box, together with the bibliography.

> "Now, before we get into it, we want to make clear that this video is in no way intended to spread fear or oversensationalize the severity of the coronavirus." –
>
> video #35, by *AsapSCIENCE*

Moreover, in the introduction and closure, many communicators clearly indicate their affective attitude to the information expressed through attitude markers. This way, they emphasize the relevance of following professional advice in order to stop the spread of the disease. It is interesting to note that these attitude markers are entwined with engagement devices, such as directives and reader pronouns.

> "It's important that we do not repeat those racist notions that happened here in Toronto, and we all need to be aware of this when we talk about the current coronavirus." – video #35, by *AsapSCIENCE*

In our sample, there were very few hedging devices, which contrasts with Hyland's research on academic genres (2005, p.186). One possible reason for this could be that science communicators present tend to focus on established research rather than ground-breaking research, whose results and premises may be under scrutiny. Another possible reason is that science communicators, in their defense on science as an institution (see section 4.2.4.), tend to portray scientific knowledge as more reliable than it may effectively be.

However, there are instances of videos where an abnormal amount of hedges are present, in comparison to other science communication videos. These videos are usually oriented towards a more educated audience, and revolve around current research or the state-of-the-art of a certain topic.

4.3.2. Engagement

In modern science communication, because of the affordances in terms of interaction between content creators and audiences that online platforms such as YouTube offer, engagement has become increasingly important.

For example, the aforementioned correction of hoaxes or misinformation (in section 4.1.4.) is often born out of the interaction between communicators and laypersons on the platform where they upload their videos or on other social media.

In addition, science communicators incentivize interaction at the end of their videos, so that spectators comment, like and subscribe to their channels.

In addition to the information that they directly receive from the audience, content creators on YouTube have access to plenty of information about indirect information

that is not given – consciously – by spectators, on a tab called 'YouTube Studio'. Here, they can overview a wide variety of variables (fig.10), such as the average time spectators spend watching their videos, the gender of spectators who visit their videos, the type of device used to reproduce them or the location of their spectators, among many others.

Based on this data, authors can choose what topics to talk about, the approach to the information that they may want to take, an appropriate length for their videos, etc.

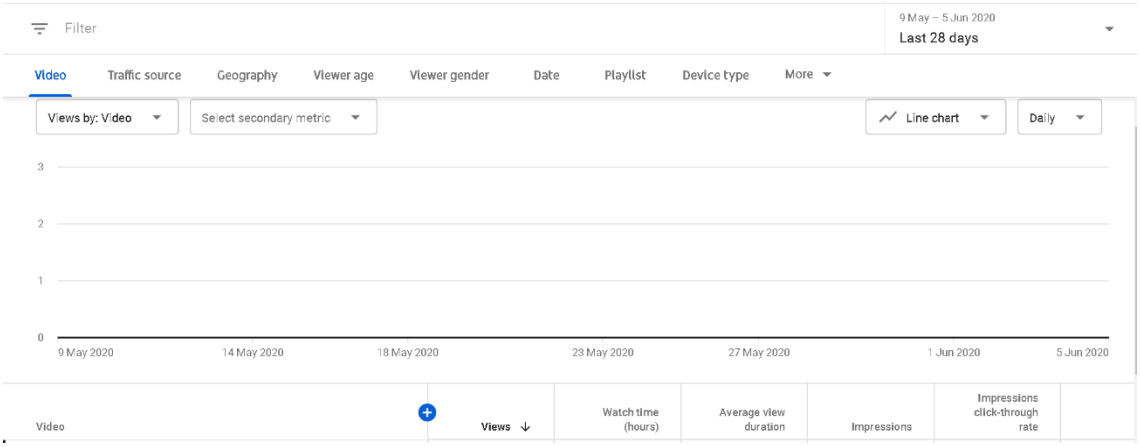

Figure 10. YouTube Studio data.

At the end of videos, communicators employ a wide variety of engagement devices, such as reader pronouns and directives, for example, when appealing to individual responsibility or giving advice to the spectators.

> "We need to listen to and trust public health professionals, and we need to not overreact, and we need to not use this as an excuse to be racist." – video #35, by *AsapSCIENCE*
>
> "Remember to help us by flattening the curve and raising the line. We are all in this together." – video #27, by Osmosis
>
> "Let's work together to be a step ahead of this situation, and, while we're at it, let's be very, very strong." – video #19, by *LaReunión Secreta*

In addition, as we have seen in the previous section (4.3.1.), many communicators use questions to engage with their audiences, in the title of the video and/or the introduction.

> "This virus is the Severe Acute Respiratory Syndrome-Related Coronavirus 2 that causes the disease called Covid-19, and that everyone simply calls coronavirus. What actually happens when it infects a human and what should we all do?" – video #5, by *Kurzgesagt.*

Another kind of engagement device that is commonly used by science communicators is the personal aside. This does not necessarily appear at the end, but within the body of videos is frequently found too, and its commonly used to exemplify arguments with individual experiences of the speaker.

> "Ok, so, for me personally, I know that all my stress goes to my lower back. (…) For me personally, I'm going to be doing a lot of stretching to stretch those lower muscles in my back." – video #28, by *Osmosis*
>
> "We live in Toronto, where the SARS virus got world-scale attention. That's because the only people who died outside of Asia from that virus were in Canada and most of them were in Toronto." – video #35, by *AsapSCIENCE*

Finally, communicators appeal to shared knowledge so that spectators are involved in the arguments they make. The main purpose of these is to get readers to identify with the communicator's perspective, and, therefore, be more persuasive, as well as, sometimes, establishing the context at the start of the video.

> "But, if you think about it, we invented the phone, fax, e-mail, texting, tweeting… (…) All those technologies allow us to collaborate at a distance." – video #28, by Osmosis.

> "We are all aware of the global spread of a new virus that is called Sars-Coronavirus2 that causes the disease Covid-19."- video #16, by *WillDiv*.

4.3.3. Some other pragmatic aspects

Some other pragmatic aspects that were identified in the sample, but unfortunately cannot be described in detail are the following:

- The use of similes and metaphors to explain scientific or technical concepts so that laypersons can understand them is very frequent. In particular, similes that compare biology to society and technology are very common.

> "You can think of the outer layer of the virus like a key. And if the virus has found the right cells, in the right species, its keys are able to open the lock on these cells. As a result, the virus is able to enter, where it now has access to all the cell's machinery." – video #35, by *AsapSCIENCE*

- The mixture of a colloquial and an academic/specialized register is closely linked to the previous point: science communicators inform about technical concepts, which are by nature specialized, that are then recontextualized for a wider audience, that is, using colloquial terms.

- The use of warlike language in relation to the coronavirus pandemic: many science communicators refer to the virus as an enemy to fight, and even depict the interplay between the immune system and the virus as a battle. This can be seen as a metaphor that is used to recontextualize scientific concepts, or as an attitude marker (related to stance) on the part of the science communicator.

> "Coronavirus causes infected immune cells to overreact and yell *bloody murder*. In a sense, it puts the immune system into a fighting frenzy and sends away more soldiers than it should, wasting its resources and causing damage." – video #5, by *Kurzgesagt*.

5. CONCLUSIONS

Online science communication videos are an increasingly popular genre that can perform a central task under adverse circumstances such as the Covid-19 outbreak. These constitute an emergent genre: a development of the traditional science communication article in journals and newspapers (also known as science journalism). This way, online science blogs can be considered a half-way point between science journalism, and the online science communication video.

Firstly, in section 4.1. we studied the most important formal aspects such as the macro-structure (fig. 6), together with the navigational possibilities that the Internet offers as a medium: a virtually illimited amount of linked information through which users navigate in search of relevant or interesting data. However, because anyone can upload content to many social media and online platforms, misinformation and hoaxes proliferate on them.

This constitutes the main disadvantage of online science communication when compared to traditional science journalism: on the net, there is no clear indicator of the quality of the information that a content creator provides, in spite of the fact that different social media have been recently implementing 'fact-checking' tools.

Still, the direct interaction between science communicators and users, bypassing the gatekeeping of journalism has proven to be fruitful, for science communication has shifted from a one-to-many model to a more plural and recursive one.

In addition, it was found that most science communication videos on YouTube follow a similar pattern: 94% (n=47) of the videos consisted in the science communicator directly talking to the spectator, while the other were discussions between experts and an interview with the Spanish Science Minister, Pedro Duque.

The frequent rhetorical structure of the videos that follow the same pattern was explored and summarized in section 4.1.5.

Finally, it was concluded that the great majority of the videos in the sample (92%, n=46) last from 5 to 16 minutes, and some plausible reasons why this is the case were presented, such as keeping the attention of the spectators or the particularities of YouTube's algorithm, among others.

Secondly, in section 4.2., the semantic axis, a summary of the main ideas and discursive aspects of online science communication videos is offered. There is an emphasis on the central role that science communicators play in the context of the coronavirus pandemic: providing scientific information becomes a matter of ethics, for it helps preserve the lives of individuals while working hand in hand with both national and international health care authorities who try to raise awareness about the disease and to communicate infection prevention practices to the common citizen.

A close analysis of the sample indicates that the audience of the videos is mixed: online science communication videos do not try to reach only laypersons, but individuals with certain degree of expertise are also taken into account, for the majority of the videos in the sample (66%, n=33) possess a reference list in the description box of the video. From this perspective, the online science communication video is the first genre of a genre chain that invites individuals with different degrees of expertise to navigate through it in accordance with their capabilities or desires.

This supports the argument that science communication constitutes a

recontextualization rather than a translation from experts to laypersons, and that there is no clear separation between expert and non-expert audiences (Luzón, 2013).

Moreover, science communicators consider science a global enterprise that crosses borders, and, from this perspective, critique national authorities who do not follow the advice of experts or try to use science for partisan political purposes. This can be certified by analyzing the sample: it indicates that videos from different parts of the world do not differ substantially, but, rather, that they constitute a uniform genre, and, thus, science communication may be considered a universal enterprise.

Many online science communication videos that revolve around the coronavirus pandemic also contain a social and philosophical critique. Interestingly, there seems to be a consensus among distant science communicators: traditional Western values such as individualism go against the empathy and solidarity that is needed to combat the spread of the disease.

Science communicators defend that science as a social institution should be prestigious and occupy a high place on the social scale. The proliferation of false and non-scientific information in the public sphere and the lack of public funding for scientific research are envisioned as symptoms of a society that does not support scientific research enough.

Closely linked to this is the idea of scientific progress, which, according to the conducted analysis, surrounds the discourse of many online science communication videos. A ‘moderately optimist’ perspective is adopted by the majority of science communicators, encouraging spectators to have confidence in official scientific and medical institutions, and, at the same time, admitting that science communicators cannot promise a permanent solution to the pandemic.

Another discursive aspect that was identified is skepticism: science communicators acknowledge the temporary nature of ground-breaking research, that has to be subject to further scrutiny in order to become established work. To do this, they recurrently mention the uncertainty that surrounds scientific research in the context of the coronavirus pandemic and update their own past information in accordance with recent findings.

The last discursive aspect that was commented on is the importance of social interaction for science communicators to make their videos: they pay attention to social media in order to find frequently asked questions or misinformation about the disease in order to answer and correct them. As a matter of fact, encouraging user engagement has been identified as a central step in the 3rd move of the rhetorical structure (closure), which proves the importance that is placed on this kind of interaction.

Finally, in section 4.3., the pragmatic axis, an analysis of the main linguistic resources that science communicators use to engage with their audiences (engagement) and to express their attitude towards the information that they provide (stance) was conducted. In terms of stance, our analysis indicates that there is a high number of self-mentions at the beginning of videos, especially when speakers present their credentials to the spectator, as a well as a significant amount of attitude markers both at the beginning and at the end of science communication videos.

Nonetheless, there is a limited number of hedges, which contrasts with traditional academic genres. A hedging device that is commonly used by science communicators is the disclaimer, which can be found either within the video or in the description box. This may balance the overall lack of hedges in individual propositions.

Furthermore, the collected data suggests that video titles do not faithfully represent the stance of science communication videos: through the use of capitalized letters, strong

attitude markers or formulating titles as questions, communicators conceal stance and promote engagement in an attempt to spark users' interest in the video.

In terms of engagement, the study brings to light the relevance of the interaction between online science communicators and spectators: through direct messages or comments on the platform, or indirect information that is automatically collected by the platform for content creators.

In contrast to stance strategies, engagement devices are abundantly used, and evidence of every engagement device that Hyland (2005) mentions, namely, reader pronouns, directives, rhetorical questions, appeals to shared knowledge and personal asides, was found in the great majority of videos. This corroborates the initial argument: that interaction has become a fundamental aspect of online science communication.

Some other pragmatic aspects that were mentioned in the study for their frequent occurrence are the use of similes and metaphors to recontextualize specialized information for a wider audience, which entails a mixing of academic and specialized registers within the same genre, and the use of warlike language when talking about the coronavirus pandemic, which could be considered an attitude marker or another metaphor to recontextualize technical knowledge.

In sum, online science communication videos can be considered an emergent genre, for significant changes from traditional science journalism or even science communication blogs to online science communication on social media platforms such as YouTube can be identified. In other words, the main finding of this study may be that online science communication constitutes an adaptation to the needs and desires of the common person in a growingly digitalized society, and will need to continue adapting to new circumstances and obstacles that will be found along the way.

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7. LIST OF VIDEOS.

- Video #1: https://youtu.be/3PAjtykux7s
- Video #2: https://youtu.be/9pWr4hLSzyo
- Video #3: https://youtu.be/VbT0m7197yQ
- Video #4: https://youtu.be/MCP0GEcVE0M
- Video #5: https://youtu.be/BtN-goy9VOY
- Video #6: https://youtu.be/zJU40cNU_lE
- Video #7: https://youtu.be/JnmX_2m7fN8
- Video #8: https://youtu.be/xXyon5Tefsw
- Video #9: https://youtu.be/Hb6YaR1BWPM
- Video #10: https://youtu.be/hX-eqjjA5Gw
- Video #11: https://youtu.be/wlFMhJbitSY
- Video #12: https://youtu.be/2IRK-NUgjbg
- Video #13: (!) This video seems to have been taken down for some reason, it is no longer available on the platform.
- Video #14: https://youtu.be/hcothdcEtgk
- Video #15: https: //youtu.be/D7uQwQTRDew
- Video #16: https://youtu.be/gK19b14YCpQ
- Video #17: https://youtu.be/wRtEPeRAdKg
- Video #18: https://youtu.be/ZejCx19DF-o
- Video #19: https://youtu.be/8TbGn-NVWJE
- Video #20: https://youtu.be/E2GwoNisZj0
- Video #21: https://youtu.be/UMcYqxWrk2o
- Video #22: https://youtu.be/HfS7sTzuz1c
- Video #23: https://youtu.be/MOfkHkMC9Jc
- Video #24: https://youtu.be/K2wrvLdzI6o
- Video #25: https://youtu.be/2YtiKVNPNc8
- Video #26: https://youtu.be/j4DTCuHui_4
- Video #27: https://youtu.be/8A11hj72pio
- Video #28: https://youtu.be/IwplTl5zQrA
- Video #29: https://youtu.be/WxPymzAu70Q
- Video #30: https://youtu.be/eRF8hjq8gmo
- Video #31: https://youtu.be/NPQFlm5aK-g
- Video #32: https://youtu.be/oqtfqVsFaqc
- Video #33: https://youtu.be/yWUHQaeTf9U
- Video #34: https://youtu.be/SSuxVwMkcpA
- Video #35: https://youtu.be/OTYfke545vI
- Video #36: https://youtu.be/upikj7hrsWc
- Video #37: https://youtu.be/VCLQ8QYXjcw
- Video #38: https://youtu.be/cNHRlvpl0XI
- Video #39: https://youtu.be/rOGrMVpVTWY
- Video #40: https://youtu.be/iIuuvCqbeEc

- Video #41: https://youtu.be/ULYDSuPGELI
- Video #42: https://youtu.be/ZkIp9i3LrMs
- Video #43: https://youtu.be/ZHq5wSdg4HE
- Video #44: https://youtu.be/vcoYOdshpzM
- Video #45: https://youtu.be/9pVy8sRC440
- Video #46: https://youtu.be/p0Su-xQHffM
- Video #47: https://youtu.be/igoi0Q05BiI
- Video #48: https://youtu.be/8OKiOPsyN0M
- Video #49: https://youtu.be/vp4KTQNy-aU
- Video #50: https://youtu.be/pUudYkUMcLY