

**Dissertation: “Emerging Digital Multimodal Genres for Research Funding: The Rhetoric of Science Crowdfunding Videos” Ana Cristina Vivas-Peraza, Universidad de Zaragoza, Spain**

## 1 Introduction

In line with the Open Science agenda and following the digital media culture prevailing in modern societies, online science communication has become one of the core competencies that scientists need to develop in order to engage society with science and encourage public participation in scientific research (Luzón/Pérez-Llantada 2019, 2022). This dissertation examines the characteristics of online science communication in the current digital landscape through the analysis of the genre of Science Crowdfunding Videos (SCVs) (Vivas-Peraza 2022, forthcoming), consisting in short videos embedded in specialised crowdfunding platforms to promote a research project in need of funding. In particular, the focus is on the persuasive strategies used by scientists in these videos to convince Internet audiences to donate money to their projects.

Based on the analytical framework of Multimodal Genre Analysis (Bateman 2014) and a sample of 50 SCVs from the crowdfunding platform Experiment.com, persuasion in this genre is examined on three levels: (i) the organisation of verbal content through the generic structure (Swales 1990, 2004); (ii) the use of rhetorical strategies (Bawarshi/Reiff 2010, Pullman 2013); and (iii) the semiotic modes that realise those strategies as well as the combination of those modes into multimodal ensembles (Jewitt 2009, Kress 2010). For the analysis of each level, different concepts and methodological aspects are borrowed through which quantitative and qualitative results are derived.

To gain a better insight into the context of production of this genre and understand better the formal devices used to persuade the audience, a collection of texts from Experiment.com were reviewed and qualitative interviews were conducted with the author scientists of three SCVs from the sample. In addition, the computer software Ffmpeg, Transcribe by Wreally, and Atlas.ti 8 were used for the collection, preparation, and quantitative analysis of the data.

Persuasion has received little attention from a multimodal genre perspective, and the methodology proposed in this dissertation can potentially inspire other scholars to explore other digital genres and discursive practices. Furthermore, the results obtained contribute to broadening the knowledge of new digital practices involving persuasive science communication, which may prove valuable from a pedagogical point of view.

## 2 Theoretical framework

With multimodal genre analysis (Bateman 2014) as the umbrella framework, the theoretical foundation of the study is multidisciplinary and draws on three main approaches: genre analysis, classical rhetoric and multimodality. Combining several approaches was necessary to examine quantitatively and qualitatively the formal manifestations of persuasion in SCVs at the three levels mentioned previously (i.e., generic structure, rhetorical strategies, and semiotic modes).

The genre tradition of English for Specific Purposes (ESP) allows examining the persuasive organisation of content through the generic structure, adopting the methodology of move analysis (Swales 1990, 2004). According to this methodology, a text is divided into rhetorical segments or “moves” that realise the overall communicative purpose of the genre (Swales

2004: 229), which in the case of SCVs is to persuade the audience. In addition, noting how those moves are sequenced in time can also inform about a potential persuasive ordering of content (Spang 2005).

Classical rhetoric and the genre tradition of Rhetorical Genre Studies (RGS) (Miller 1984, 2015) provide a foundation for the interpretation of rhetorical strategies that aim to persuade. Following the Aristotelian persuasive appeals of ethos, pathos, and logos (Bawarshi/Reiff 2010, Pullman 2013), those strategies can be identified and classified. This way, an ethos strategy appeals to the speaker's credibility and authority; a pathos strategy appeals to the emotions of the audience; and a logos strategy appeals to logical reasoning and needs to be backed up with the necessary evidence or proof (Pullman 2013).

Beside genre theory and rhetoric, another fundamental pillar to this study is multimodality, which offers an understanding of how the rhetorical strategies can be materialised into different communicative modes or "socially organized set of semiotic resources for meaning making" (Jewitt/Bezemer/O'Halloran 2016: 71); such as the use of images, words, body language, or music. At the same time, multimodality is used as a framework to study how different modes can be combined into multimodal ensembles to make meaning (Jewitt 2013).

### 3 Data and methods

The 50 SCVs were collected from the science-specialised crowdfunding platform Experiment.com, and are associated to successful crowdfunding campaigns on Biology, Ecology, and Medicine running from 2017 to 2021. These were downloaded with media transcoder Ffmpeg and transcribed with web-based software Transcribe by Wreally. Then, they were analysed with research software Atlas.ti 8 (Friese 2019) to find common patterns of generic moves, rhetorical strategies, and semiotic modes. This latter software also facilitated the identification of videos using the largest number of rhetorical strategies and semiotic modes, three of which were used for the analysis of multimodal ensembles.

The analysis of formal features was triangulated with a revision of texts taken from Experiment.com and three semi-structured qualitative interviews with the scientists involved in the production of the three SCVs chosen for the analysis of multimodal ensembles. The texts were taken from relevant pages of Experiment's website (e.g., "About Experiment", "Our mission", "Researcher Guide") that explain the processes involved in the production of the genre and provide relevant data about its contextual framework and the social exigences it responds to. This information was relevant to understand the scientist's individual intentions in producing this genre, as well as to explain to some extent the organisational, rhetoric, and semiotic choices made by them. As for the three interviews, they shed light on the scientists' personal experience with crowdfunding and the production of SCVs, and helped to validate the findings obtained from the analyses, too, in particular the multimodal analysis.

### 4 Findings

The results show that the verbal content of the SCVs analysed is developed in seven persuasive generic moves. They first *Claim Competence* (Move 1) by stating their credentials and qualifications in order to gain people's trust. Once they introduce themselves, they *Contextualise the Research* (Move 2) and *Indicate a Gap or Problem* (Move 3) to justify the urge of carrying out the proposed research project and encourage people to get involved. Then, they *Present the Research Goals* (Move 4) and *Outline the Means* (Move 5), to indicate how they are going to

fill the gap in literature or solve the problem stated in the previous move. After that, they *State the Project Benefits* (Move 6) that the research has the potential to bring in order to convince the audience that the project is worth participating in. Finally, they make an *Appeal for Support*, (Move 7) where they directly ask the audience to donate money, share the campaign on social media, or follow up the latest updates on the project. The seven moves are all intended to persuade the audience to contribute to the scientific cause being presented. A salient finding is the fairly stable order that these moves follow in the 50 SCVs analysed. Scientists build on ethos at the beginning to capture the audience's attention, explain the key parts of the research project in the middle to justify the need for funding, and call the audience to action at the end, which is a typical manifestation of persuasive text arrangement (Spang 2005). Persuasion is thus conveyed not only through each communicative move, but also through the order chosen for those moves.

Likewise, persuasion is established through six rhetorical strategies, classified according to the three Aristotelian persuasive appeals:

1. Ethos (two strategies): *Showing Expertise* and *Showing Enthusiasm*.
2. Pathos (three strategies): *Establishing Rapport with the Audience*, *Encouraging Positive Attitudes towards the Project*, and *Appealing to Negative Emotions*.
3. Logos (one strategy): *Showing Evidence*.

The frequencies of use obtained for these strategies show that ethos is the most frequent persuasive appeal of the sample, closely followed by pathos, and logos is rather infrequent compared to the other two appeals. These findings demonstrate that scientists producing SCVs invest most of their efforts in providing a reliable self-image and connecting to the audience's emotions to persuade, leaving a significantly smaller space for persuading through logical reasoning. This low percentage of persuasive strategies using logos may be explained by the para-scientific nature of SCVs and by the non-specialised audiences that may watch them, to whom proving the veracity of the arguments given in such a short time may be not so relevant as it is the case in traditional research genres, addressed to specialised audiences. At the level of the moves, it can also be observed that ethos is obligatory in the first moves (*Claiming Competence*, *Contextualising the Research*) and pathos becomes more obligatory in the last two moves, suggesting that as the video moves forward, the discourse adopts a more emotional tone to win the sympathy of the public.

In terms of semiotic modes, the most frequently used to realise the above-mentioned rhetorical strategies are speech, camera shot and angle, and clothing. Speech is evidently more used than writing, which indicates that the SCV draws on the communicative immediacy that writing is unable to convey. Regarding visual modes, the predominance of close camera shots, frontal camera angles and scientists' dress codes further suggests that when the scientists appear on screen, they do it in a persuasive way; that is, by creating a space for intimacy and dialogue with viewers and by building a credible scientific persona. The use of images is essential to illustrate the research object and context, thus showing their pedagogical and engaging potential, as other scholars have also remarked (Rowley-Jolivet 2004, Engberg/Maier 2016). As for gestural modes (smile, hand gestures, eyebrow raising and head movements) are fundamental to convey persuasion through emotions as they are used to emphasise the message and show enthusiasm.

It is also observed that these semiotic resources can be strategically combined for greater persuasive effect in eight different types of multimodal ensembles. Ensembles type 1, 2, and

3 combine speech, gestural modes, camera shot and angle, setting, clothing, and in the case of types 2 and 3, writing and overlay images respectively. These are the modes that involve the scientist appearing on screen and therefore aim to persuade through the presence of the speaker. Ensemble type 4 combines writing and static images and aims to persuade through the verbal message or text. And ensembles types 5, 6, 7, and 8 combine speech and static or moving images, with types 6 and 8 also incorporating writing.

Through ensembles 1, 2, and 3, scientists show expertise by uttering statements on their credentials, qualification, and experience, at the same time that their clothing and the setting from which they speak are in accordance with their scientific persona, with some of them also providing text on screen to emphasise their credentials in written form. Rapport with the audience is established through the combination of linguistic engagement devices (directives, inclusive pronouns, viewer mentions, etc.; Hyland 2005) with direct gazes, close shots, and eye-level and frontal angles, which together help building an atmosphere of dialogic involvement and closeness with the audience.

As for ensembles type 4, 5, 6, 7, and 8, these combine linguistic modes with static and moving images to persuade the audience. The combination of speech and image is ideal to convey as much information as possible in a short time slot, which is fundamental in a time-constrained genre like the SCV. Image and verbal language extend and elaborate meaning on each other: they add new meanings and restate meanings on each other simultaneously. Through verbal language, ethos is built, since by providing utterances or statements on the research background, gap, means, etc., the scientist shows expertise in the field. Images, on the other hand, are orchestrated to illustrate what is being said, make the SCV content more appealing and engaging, and show evidence of a proposition. In addition, images can play a powerful role in persuading through pathos, when chosen to prompt an emotional reaction in the audience and predisposing them to persuasion.

## 5 Implications

The present dissertation offers new insights into the field of genre studies. On the one hand, it shows new generic trends in science communication with a focus on persuasion, necessary to engage diversified audiences in scientific research. On the other hand, it proposes a methodology for the study of innovative digital genres, whose dynamic and multimodal character presents a challenge for genre analysts.

In addition, a number of pedagogical applications can be derived from the results, not only to train scientists in the creation of this genre, but also to inform future ESP and EAP programmes aimed at digital and persuasive science communication. The ability to persuade is a very necessary tool for communicating science online and engaging the public, so this study aims to help scientists to develop this competence and, ultimately, to enhance their communication and dissemination skills on the Web.

The results of this dissertation offer a limited perspective, as the material focuses only on SCVs from the platform Experiment.com on specific hard-science fields. Future research might also focus on videos from other crowdfunding platforms and fields of knowledge.

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