TESIS DE LA UNIVERSIDAD DE ZARAGOZA
2024
425

Miguel Ángel Vela Tafalla

Spoken Genres and the Role of Intonation in Research Communication in English

Director/es
Guillén Galve, Ignacio
Pérez-Llantada Auria, María Carmen

ISSN 2254-7606

Prensas de la Universidad
Universidad Zaragoza

Universidad de Zaragoza
Servicio de Publicaciones

ISSN 2254-7606

Universidad Zaragoza
1542

Tesis Doctoral

SPOKEN GENRES AND THE ROLE OF INTONATION IN RESEARCH COMMUNICATION IN ENGLISH

Autor

Miguel Ángel Vela Tafalla

Director/es

Guillén Galve, Ignacio
Pérez-Llantada Auria, María Carmen

UNIVERSIDAD DE ZARAGOZA
Escuela de Doctorado

Programa de Doctorado en Estudios Ingleses

2022

Spoken Genres and the Role of Intonation in Research Communication in English

Doctoral Thesis

Miguel Ángel Vela Tafalla

Supervisors

Carmen Pérez-Llantada

Ignacio Guillén Galve

2022

Universidad Zaragoza
1542

Vela Tafalla, Miguel Ángel https://orcid.org/0000-0001-6011-8500

Spoken Genres and the Role of Intonation in Research Communication in English

Unpublished doctoral dissertation

Universidad de Zaragoza

Zaragoza, Spain

2022

Acknowledgements

I would like to express my deep gratitude to my supervisors, Dr. Carmen Pérez-Llantada and Dr. Ignacio Guillén Galve, who have supported me throughout this journey with exemplar clarity and dedication. They have proved to be highly professional and humane for countless hours of counsel and feedback in these times when staying connected has been harder than ever.

This PhD project was funded by the Spanish Ministry of Education, Culture, and Sports under the FPU grant 16/04734 from October 23rd, 2017 to February 7th, 2022. I have also been part of the CIRES Research Group led first by Dr. Ignacio Vázquez Orta and then under the leadership of Dr. Rosa Lorés Sanz. I thank both as well as the members of the team for the chance given and the experience gained.

I also want to thank the members of the GLE and GENCI Research Projects, and especially their leaders Dr. Carmen Pérez-Llantada and Dr. María José Luzón. Being part of their team has been an exceptional opportunity for self-development both on a professional and personal level thanks to their closeness, trust, and commitment. I am also grateful to the Department of English and German for their assistance and encouragement, and especially to my fellow doctoral students with whom I have had the pleasure to share the joys and challenges of the PhD endeavour.

I am also obliged to the two researchers who helped me test the questionnaire in its initial stages, as well as the *Journal of Visualized Experiments* for their permission to reproduce screenshots from their website. Moreover, I must thank especially Pablo Gimeno from ViVoLab for his technical and personal support for the entire project.

My warmest thanks go to my family and close friends who have been beside me during these years, always ready to listen to my long explanations about academic life and my rants in moments of frustration. Out of them, my wife Marina deserves her own PhD title on how to encourage an excitable and stressed doctoral student with proverbial patience and endurance.

Finally, I am profoundly grateful to my parents who raised me in a loving atmosphere where I learned to be curious about literally everything and develop an appreciation for knowledge, languages, and cultures. Most importantly, they transmitted to me a sense of what really matters in life, which gave me light and led me in the right direction in moments of darkness and doubt. For this more than for anything else I will always be indebted.

Table of Contents

Chapter 2. Methodology

Chapter 3. Results

Chapter 4. Discussion

Tables

List of Figures

Chapter 1. Introduction

This dissertation looks into the role of spoken genres in academic activities and the way in which the linguistic system of intonation in English contributes to the enactment of social intentions in digital research communication. To this end, academic spoken English was investigated from the well-established and fruitful perspective of Genre Studies in the English for Specific Purposes (ESP) tradition (Hyon, 1996, 2018), both as a theoretical framework and as an analytical approach.

Today, English is in a privileged position worldwide, as reported by extensive research on ongoing processes of globalization, increasing mobility, international cooperation, and internationalization of research activities and higher education institutions (Carciu & Muresan, 2020; Lillis & Curry, 2010; Pérez-Llantada, 2012). This is especially evident in academic contexts, where research communication and science dissemination have come to be mainly English-mediated digital multimedia activities. This situation necessitates a deep understanding of the linguistic, discoursal, and rhetorical practices of scientists and scholars, in the interest of providing appropriate frameworks and strategies for the pedagogy of ESP and English for Academic Purposes (EAP).

In order to address these concerns, this chapter elaborates on the genre perspective and on the analytical approach to the phenomenon of intonation, which leads to the presentation of the research questions to be addressed.

1.1. Genre Studies

Genre as a general term usually refers to recognized types or classes of human production, whether it be artistic, textual, or other. Drawing from earlier theorization about genre in literary studies, a variety of scholarly fields have found it to be a very productive concept in studying the relation between formal language and social action in context: genres are relevant because of what they tell about the social and cultural milieu they are embedded in (Bazerman, 1994; Devitt, 2004; Hyon, 1996; Miller, 1984; Swales, 1990). Before looking into the perspective of the field of ESP, where EAP resides, it is possible to gain a more comprehensive picture by looking at two other scholarly traditions: rhetoric and composition studies and Systemic-Functional Linguistics.

1.1.1. Three Traditions

1.1.1.1. Rhetoric and Composition

From the perspective of rhetoric and composition studies, Miller (1984) identifies genres as recurrent responses to recurrent rhetorical situations. Since human activity in society requires language, the repetition of activities explains the similarities in discourse used in them. As Auken (2018) explains, these theoretical observations mark "the point when genre research moved from being a primarily literary and aesthetic to a rhetorical, linguistic, didactic, and, broadly speaking, interdisciplinary endeavour" (p. 15). This endeavour, to borrow the term, began with this original emphasis in genre as response to situation, a vision that connects language with its context of use and theorizes genre beyond mere classification or form observed by analysts or literary critics.

Devitt (2004) problematized the passive notion of response, reflecting on how the social action performed through genre does not simply consist in responding discursively to a rhetorical situation. Rather, genre is simultaneously and inescapably creating the recurring situation in an active manner. For instance, writing an email to a friend is not a direct consequence of being friends; rather, the act of email writing is at the same time mediating, establishing, and sustaining friendship. Genre is then seen as "nexus", the meeting point "between an individual's actions and socially defined context" (p. 31), as language and context are closely interwoven.

In fact, as Bazerman (1994) explains, it is precisely this recurrence of situation/genre that confers meaning to language use. Language is socially and culturally situated (Fairclough, 1992), and past events and genre knowledge are needed to interpret and understand present uses. When a student asks, 'Can we meet tomorrow in the morning?', teachers know they are not being asked out on a date, because they can understand their role as teachers as well as relate to previous uses of similar questions for similar purposes. For this reason, when discussing disciplinary communication, Berkenkotter and Huckin (1995) refer to genre knowledge as "situated cognition" (p. 4). This also helps explain why Bazerman (1994) calls genres "forms of life, ways of being, frames for social action" (p. 1), encapsulating the necessity of previous uses of typified forms (i.e., genres) for communicative success.

These seminal works emphasize the importance of contextual factors in genre theory, which requires effective means to tackle the complexity this brings about. To provide for this necessity, some genre theorists have incorporated Activity Theory and look at genres as tools in activity systems (Russell, 1995). From the perspective of

documentation sciences, Spinuzzi and Zachry (2000) appropriately define genres as a complex of "artifact types and the interpretive habits that have developed around them" (p. 172) that mediate in carrying out an activity. This perspective successfully integrates text, context, and socio-cultural situation, providing a framework for analysis and reinforcing the role of both social structure and social agents (language users) in genre use, in line with the sociological approach of Structuration Theory (cf. Giddens, 1984). These insights into the nature of communication from a socio-rhetorical perspective enable both practitioners and students to better understand and utilize linguistic resources for both social and personal ends.

1.1.1.2. Systemic-Functional Linguistics

The examination of the disciplinary development of linguistics reveals an analogous evolution towards socially and culturally situated analyses which have both influenced and been influenced by rhetorical thinking. Around the 1960s, linguistic analysis expanded its exploration of meaning and use beyond the sentence boundaries thanks to influential studies like Austin (1962) and Searle (1969), which already drew attention to language as (individual) action in a particular situation and not merely structured code. This allowed linguists to move beyond the structural model (Saussure, 1916) and turn their interests towards discourse, "the study of language in action" (Hyland, 2013b), developing functional analyses.

Halliday (1978, 1985) proposed the highly influential framework of Systemic Functional Linguistics (SFL), which sees language as a system of semiotic options where choices are made by the speaker in a social context (Halliday & Hasan, 1976; Halliday & Matthiessen, 2014). Linguistic variation can thus be accounted for by the functional uses speakers want to make in a particular 'context of situation' and their consequent selection of linguistic features, or 'register' in SFL terms. Beyond context of situation and registers, this model identifies 'context of culture', where users make choices in the system of available genres, understanding each as a "staged, goal-oriented, social process" (Martin et al., 1987, p. 59). As part of a wider conceptualization of language, the genres studied by SFL correspond to more general rhetorical functions, such as narrative or descriptive text types.

All in all, the different perspectives presented so far highlight how genres, as recognized/recognizable typifications of discourse use, grasp the relation of language with the socio-cultural context they inhabit, thereby allowing us to better understand how

social intentions are mediated through linguistic devices. As explained below, this is of relevance to the field of ESP and, consequently, to EAP and this dissertation.

1.1.1.3. English for Specific Purposes

ESP developed, within English Language Teaching, in response to "the expansion of demand for English to suit *particular needs* [emphasis added]" (Hutchinson & Waters, 1987, p. 8). For this reason,

> English for Specific Purposes (ESP) is largely a teaching-materials driven and learner-centered approach (Dudley-Evans and St John 1998). This focus has developed concurrently with the "social turn" (Gee 1990) in language and literacy studies, which considers that *language use cannot be properly described and understood outside its context of social use* [emphasis added]. (Dressen-Hamouda, 2013, p. 501)

If ESP is concerned with "particular needs" in the "context of social use" of language, we need a way into these, and genre is the key. Unlike general English pedagogy, ESP is concerned with the "target situation" (Hutchinson & Waters, 1987, p. 12) where English is going to be used, and genre studies are the appropriate apparatus to understand how language is going to be used and for what purposes, as genres mediate social action.

Genre conceptualization in ESP is nourished by the work of Professor Emeritus John M. Swales and, specifically, his seminal 1990 book *Genre Analysis*, where genre is defined as "a class of communicative events, the members of which share some set of communicative purposes" (p. 58). For Swales, then, what explains the repetition of linguistic features and rhetorical structure to different degrees of "prototypicality" (p. 49) is the communicative purpose that the producer or user of the genre instance attempts to achieve. This is of high pedagogical interest, as the teaching and learning of genres connects linguistic, discursive, and rhetorical practices with actual uses and functions.

However, later revisions of the concept highlighted the complex nature of the notion of communicative purpose: first, there may be more than one communicative purpose at stake, and different stakeholders may be performing different actions or be supposed by others to be performing different actions (Askehave & Swales, 2001; Auken, 2018; Freadman, 1994, 2002); plus, individuality and identity are subjacent to language use and expert genre users are able to use texts for unofficial or personal ends (Bhatia,

1993, 2004). In this sense, it is the genre analyst's task to investigate what the actual purpose/genre is and "repurpose" it through text analysis (Swales, 2004).

The social situatedness of genre is further emphasized by another important concept in Swalesian genre theory: "discourse community" (Swales, 1990, p. 24). Genres are validated because they are recognized by their users, who can acknowledge the usefulness of genres (i.e., tools, processes) in achieving particular ends specific to the activities and actions that a community of practice (Lave & Wenger, 1991) is organized to perform discursively. Thus, ESP makes use of genre studies for their applied pedagogical interests: English is not going to be used as a general communication tool in the target situations ESP is to provide for; rather, professionals like lawyers or researchers are going to use several genres for their own communicative purposes, as their context demands and as they choose to do so. Genres are therefore connecting language, users, and socio-cultural context (Johns, 1997), as "genres belong to discourse communities and arise to carry out the purposes of those communities" (Charles & Pecorari, 2016, p. 95).

Both the ESP and the SFL approaches to genre are originally characterized by a text-oriented perspective, especially in contrast with the rhetorician's emphasis on social contextual elements. They share an interest in understanding what stages a text typically goes through, as well as what linguistic features are deployed in efficiently realizing those stages. In the ESP framework, Swales (1990) argued for functional criteria within the wider communicative purposes of texts as the most informative way of identifying these stages, referred to as moves and analysed into smaller constituents known as steps. Move analysis has since been one of the most prominent characteristics of the ESP approach, since, coupled with linguistic analysis, this technique provides valuable data with implications for genre-based ESP pedagogy (Bhatia, 1993; Charles & Pecorari, 2016; Hyon, 2018; Moreno & Swales, 2018). Adding to this traditional approach, recent observations have noted an increasing expansion of investigations of genre contexts (Charles, 2021; Guillén-Galve & Bocanegra-Valle, 2021; Hyland & Jiang, 2021; Muresan & Orna-Montesinos, 2021; Riazi et al., 2020).

1.1.1.4. Conclusion

This overview of genre theory reveals genre as a complex phenomenon which can be described from different perspectives and emphasizing different aspects. Reviewing these approaches, Sunny Hyon (1996) referred to three traditions: North American Rhetorical Genre Studies, interested mainly in teaching advanced composition and

writing; Australian SFL, focused in school learning and acquisition of language skills; and Swalesian ESP, more oriented towards the teaching of English to speakers of other languages in professional and/or academic contexts. These correspond to the approaches presented in the above paragraphs, and their interests relate to their different explorations of genre.

Despite a moderate amount of objection from genre scholars (see Johns et al., 2006; and especially Swales, 2012) as well as a dichotomous proposal of linguistic versus non-linguistic approaches by Flowerdew (2002), Hyon's classification still holds and is reproduced in *Introducing Genre and English for Specific Purposes* (Hyon, 2018) and included in *Landmark Essays in Rhetorical Genre Studies* (Miller & Devitt, 2019). First, this classification helps make sense of an enormous body of literature and understand the place of genre in the curriculum of Languages/English for Specific (including Academic) Purposes. Second, by presenting traditions and not independent schools or separate theories, it leaves the door open to integration and synergy, as much of contemporary genre work shows to have done in what Hyon (2018) refers to as "coalescence" (p. 22).

Consequently, this dissertation continues the ESP tradition but does not leave out the important contributions of all genre practitioners in different disciplines. Rather, by looking at English intonation and spoken genres, it attempts to conjoin all their work to contribute to EAP's common goal of explicating the role of English and linguistic practices in academic communication in today's globalized research communities.

1.1.2. Useful Concepts Around Genres and EAP

As part of ESP, the field of English for Academic Purposes has applied these conceptualizations to communication in academia, as a community with great dependence on language use for the development of its professional activity. As an illustration of the inherently pedagogic orientation of EAP, Swales' foundational books do not just theorize but already provide informative analyses of research articles and "other research-process genres" (1990) and the PhD dissertation and defence (2004). Similarly, textbooks with a genre-based approach to academic literacy are central in EAP: *Academic Writing for Graduate Students* (Swales & Feak, 2012) and the four volumes of *English in Today's Research World* (Feak & Swales, 2009, 2011; Swales & Feak, 2009, 2011).

The ideas introduced in this section, which are not specific of EAP, intend to provide the necessary terminology and conceptualizations to discuss academic

communication through its institutionalized practices. The main point is that genres, and therefore genres in academia, cannot be seen as isolated, monolithic, or closed. First, genres are externally interrelated, forming constellations of genres with different values and functions; second, genres are internally complex, showing both convention and innovation. Both issues will be of interest to the present study, especially considering today's digitalized research communication scene. The section closes with a brief comment on language choice in academic activities, a relevant topic to EAP investigations.

1.1.2.1. Genre Relations

As genres constitute the context of other genres, they cannot be seen as isolated; quite on the contrary, it is through combinations of genres that social intentions are enacted. For this reason, the diverse relations among them have been conceptualized by many scholars, highlighting different aspects of this phenomenon. Let us first have a look at some concepts that incorporate this notion and then discuss more systematic approaches to genre assemblages.

In his discussion of research genres, Swales (2004) draws the attention to the fact that genres are not evenly distributed in the constellations where they coexist. For instance, academics in most disciplines would rank the research article over the abstract in importance, which shows different value attached to different genres in a hierarchy. In a similar manner, he also points to different degrees of visibility in his discussion of 'occluded genres' like the submission letter (Swales, 1996). Another good example would be his and Feak's volume (Swales & Feak, 2011) oriented to the writing of "supporting genres" in academia, such as diverse types of correspondence. These terms illustrate the diversity of relations that may exist among genres, dismissing the idea that all genres are equally distributed. Rather, genre relations depend on the social (cultural, disciplinary, professional…) context where they are found.

Groupings of genres could then be described along different parameters like chronological ordering in chains (Swales, 2004) or synchronic intertextual connections in networks (Tardy, 2003). Genre sets, originally described in Devitt's (1991) analysis of text types used by tax accountants, can be understood as the genres an individual deals with for professional practice. Bazerman (1994) defines genre systems by including in this definition not just an individual's share but the whole array of genres needed for a particular professional enterprise. In turn, Orlikowski and Yates (1994) widen the scope

to look at communication at a whole community level and they examine how knowledge is distributed among the common genre repertoire. It is possible to observe a movement in understanding beyond genres as sequential social actions to presenting the overlapping and evolving nature of genre relations.

Thus, understanding the shortcomings of the above concepts, Spinuzzi (2004), introduces the idea of genre ecology. Instead of seeing genres from the perspective of the individual or the community, he conceptualizes them as mediational tools in activity systems. Concepts such as sets, systems, and repertoires fail to capture this mediational function of genres, since they focus on communication itself as the action being carried out. For this reason, the three terms present a reality where individuals use genres, but genres do not act upon individuals because they are only communication forms. Similarly, they are foregrounding official, visible genres, leaving out of the picture interesting elements that mediate communication in a more dynamic manner, like ad hoc genres which are used in specific activities contingently, out of convenience. As Spinuzzi and Zachry (2000) explain:

> A genre ecology includes an interrelated group of genres … used to jointly mediate the activities that allow people to accomplish complex objectives. In genre ecologies, multiple genres and constituent subtasks co-exist in a lively interplay as people grapple with information technologies. (p. 172)

In sum, conceptualizing the activity system where the genres are the tools results in a much richer account of what is actually happening, where all genres are contributing to create the organizational system and not just reproducing it. Therefore, this dissertation investigates the place of different genres like the conference presentation or the lecture within the genre repertoire of scholarly practice, but mainly understanding them as mediational tools that work together in the activities of academic discourse communities.

1.1.2.2. Internal Complexity of Genres

Turning to the internal complexity of the genre artifacts in these groupings, as soon as genres are described as conventionalized, standardized, typified forms adapted to specific rhetorical situations, one starts to notice divergences from convention and standard. Genres are far from static or fixed; rather, as all kinds of linguistic expression (Martin et al., 1987), they often show fuzzy boundaries and different levels of hybridity and deviation from convention (Tardy, 2016). For this reason, Berkenkotter and Huckin (1995) characterize them as "inherently dynamic rhetorical structures that can be

manipulated according to the conditions of use" (p. 3). Consequently, the conceptualization of generic integrity, i.e., that which characterizes a given genre, must unquestionably include the idea of hybridity and innovation. The standardized frame itself is open to innovation and change by definition, not by exception. One of the reasons is that "configurations of situational and contextual factors do not always repeat in exactly the same form, and genre users often need to adjust their responses accordingly" (Bhatia, 2004, p. 132).

For this reason, Bhatia introduces the concept of genre colony, grouping together genres that share broader, more general communicative purposes. For instance, "promotional genres" may include primary promotional genres like the advertisement, but also hybrids where promotional features are mixed with those contributing to other specific communicative purposes, as happens in the grant proposal. Therefore, given this dissertation's interest in identifying the linguistic features contributing to the social action a particular genre mediates, it becomes necessary to consider communicative purpose as a complex, even composite and hybrid phenomenon (Auken, 2018; Hafner & Miller, 2019; Swales, 2004).

The discussion so far might give the impression that hybridity 'comes to pass', as it were, and that genre users must unavoidably respond to situations differently, or that specific genres sharing general communicative purposes necessarily exist to address different specific situations. However, more often than not, subversion of genre conventions entails users' active involvement and requires genre familiarity and expertise (Bhatia, 2004; Johns, 1997; Tardy, 2016). For this reason, Hyon (2018) chooses the term "genre play" to reflect elements of "novelty, intentionality, and fun" (p. 163) in deviating from standardized forms.

1.1.2.3. Genres and Languages

On a final note, one important concern in EAP involves the language ecology of science, i.e., the relationships between the different languages used for academic activity as professional practice (Pérez-Llantada, 2019). In recent decades, much discussion has tackled the issue of linguistic imperialism and the displacement of other languages in favour of English and English-speaking rhetorical norms, especially in relation to academic writing and research publication (Hyland, 2018; Mauranen et al., 2010; Phillipson, 1992).

In relation to EAP and genre studies, part of the question centres around the languages used for different academic activities. Research shows a tendency for local languages to be used in addressing local audiences through dissemination, teaching, and administrative tasks (Luzón, 2017; Pérez-Llantada, 2018), with English as a quasi-mandatory language for research publication as a result, inter alia, of institutional policies (Curry & Lillis, 2013; Pérez-Llantada, 2012; Villares, 2021).

As multilingualism permeates academic communication, scholars are regarded in EAP as competent language users (Corcoran, 2019) who are capable to resort to a diversity of languages (Gentil, 2011), including academic Englishes (Mauranen, 2012; Mauranen et al., 2010), in the different genres they engage with for the development of their professional activities.

1.1.2.4. Conclusion

This section has expanded an initial theorization of genre by providing the theoretical apparatus to tackle relations among genres and between genres and their social milieu. Moreover, it has introduced basic ideas about how languages and genres are related through linguistic practices. These ideas are useful and helpful in gaining insight into scientific knowledge creation practices and research dissemination processes, as genre configurations both reflect and consolidate institutional and professional academic practices.

1.1.3. Main Variables for the Classification of Genres in Academia

In order to narrow down the scope of research, this dissertation positions its interests in relation to genres in academia following a classification along three variables: pedagogy and research genres; written and spoken genres; and genres in online environments.

1.1.3.1. Pedagogy and Research Genres

The academic profession encompasses a range of activities directed towards teaching/learning processes and research processes, and these activities entail different demands and expectations (Gallego et al., 2016; Hyland & Shaw, 2016; Pérez-Llantada, 2018). Pedagogy genres in academia are those that mediate teaching and learning activities in higher education, such as the lecture, the textbook, or the student essay.

Research genres are those that mediate research processes, such as the conference presentation, the research article, or the grant proposal. They are all academic genres, as these categories are not in opposition, and we can find genres like the dissertation, which reports on original research while serving pedagogical purposes (Johns & Swales, 2002; Lei & Hu, 2019). Apart from being part of a basic division in academics' jobs, this distinction is moreover closely connected with their profiles as users of these genres, as research genres are typically produced by expert members of the academic discourse community, meaning researchers and scholars rather than students.

Indeed, this dissertation's interest is not in the genres as such but in how academic discourse communities mediate their activities through them. For this reason, research genres become an important focus of attention. Plus, research genres may be richer and more complex in the kind of communicative purposes and social intentions they are used to accomplish, while pedagogy genres often serve more general purposes, making it more difficult to be specific about their typified forms, functions, audiences, and expectations (Johns, 1997). For instance, a lecture is, primarily, delivering content and (hopefully) engaging students in the field of interest, while a conference presentation, due to the nature of its socio-cultural context and its typical audience, is, primarily again, promoting the researcher and their investigation, establishing social relations, and contributing new knowledge to a disciplinary field.

In sum, the importance of research genres in the furtherance of the aims of academic discourse communities and their richness as communicative events make investigating the meanings made by intonation in spoken research genres a worthwhile endeavour. Thus, this dissertation takes both pedagogy and research genres into account when investigating the place of spoken genres in the academic genre repertoire; however, it focuses on research communication when exploring the uses of intonation.

1.1.3.2. Written and Spoken Genres

The second axis sets spoken genres against written ones. This is an especially relevant distinction in academic settings where written genres dominate both the pedagogy and research repertoires, as they are perceived as "so important to academic achievement" (Charles & Pecorari, 2016, p. 153) and "more central to professional success" (Feak, 2013, p. 35). This has impacted genre research in ESP and EAP, and spoken academic English has been reported as comparatively under-researched (Barrett & Liu, 2016; Charles, 2021; Gollin-Kies, 2014; Hyland & Jiang, 2021; Riazi et al., 2020).

However, it would not be fair to say that academic spoken English has not been looked into, as the existence of important spoken corpora attests. The Michigan Corpus of Academic Spoken English (MICASE) features 1.8 million words and the British Academic Spoken English Corpus (BASE), 1.6. Still, when weighed against their written counterparts (MICUSP and BAWE), featuring 2.6 and 6.5 million tokens respectively, it is not possible to hold them comparable. Therefore, it is important to bear in mind that the sheer nature of the data investigated constrains and biases the investigations, and research on writing has greater validity as backed by much more abundant evidence. Hopefully, the development of machine learning and big data technologies will contribute to making spoken data processing and analysis a more manageable task.

Indeed, written English has been more accessible methodologically and, even today, written data are easier to process, store, and report on. However, media recording and playing technologies, enhanced by the affordances of the digital medium, are making audio-visual contents easier to produce and more easily available for researchers. For this reason, the inherent permanence of the written word, an advantage against the ephemeral nature of speech, is being challenged. Accordingly, recent literature observes an increase in research related to the spoken mode (Charles, 2021; Hirvela & Belcher, 2016; Mauranen et al., 2010; Swales, 2008).

At the same time, genres that incorporate more than the written mode are becoming more and more relevant for professional scholarly success (Crawford Camiciottoli & Fortanet-Gómez, 2015). Both the emergence and the spread of multimodal genres define our age: in general culture we find, e.g., the YouTube phenomenon (J. Burgess & Green, 2018; Kousha et al., 2012) or bold editorial moves like publishing an audio-novel without a print version (Ruiz Mantilla, 2019); in professional practices, the video resume is ever more common (Sambre et al., 2013); and, most interestingly for this dissertation, in academic communication, we find new classes of academic speech events like online instruction through webinars (Ruiz-Madrid & Fortanet-Gómez, 2017), contests about presenting doctoral research (Hu & Liu, 2018), or graphical abstracts for research articles (Sancho Guinda, 2016), to new but a few examples.

Furthermore, a relevant distinction in the oral mode of language is what Wichmann (2000) refers to as “speech styles”, in order to capture the difference between reading a script and wording a speech in situ. But rather than a dichotomy, this scholar acknowledges the existence of a continuum with different “degrees of preparedness”

(Wichmann, 2000, p. 20), as a speaker may be reading word by word or reading from notes, both of which would qualify as "prepared speech". Similarly, "unprepared" speech could range from total random talk to a relatively prepared intervention in a Q&A session. In any case, and for the purposes of this dissertation, it is understood that prepared speech coupled with the appropriate recording technologies is contributing to the positioning of spoken genres at a higher place in the academic genre hierarchy than they have ever been. As an example, traditionally a plenary speaker may have been invited to give another plenary at a different conference if the people in the audience enjoyed the talk; today, the plenary talk may be posted online that very day and the speaker may have impacted people who were not present.

Paralleling the approach to pedagogic versus research genres, this dissertation is concerned with academic spoken genres in their context, thereby including written genres, but specifically with speaking in research communication. Indeed, Swales (2018) pointed out that "another area that is ripe for further development is spoken academic English, especially in the ELFA era" (para. 1). The choice of "ripe" shows allowance and understanding for not having addressed the topic earlier in the development of the field, but also a sense of kairos, urging EAP practitioners not to delay it any longer.

1.1.3.3. Genres in Online Environments

Finally, it is necessary to position this study in relation to the impact of the digital medium on communication practices and the emergence of new genres that are non-linear complexes of multimodal matter, being, rather, text and medium at the same time (Askehave & Nielsen, 2005). New technological developments and, more specifically, the Social Web as a user-generated content platform (Kim et al., 2010) have been embraced by scientists and scholars to respond efficiently to changes in "community membership, audiences, disciplinary activities and methodologies, media and technology, disciplinary values or public attitudes to science" (Luzón & Pérez-Llantada, 2019, p. 2).

Studies have already shown that linguistic practices in the digital medium are not simply transferred from the non-digital but adapted or "re-mediated" (Bolter & Grusin, 1999) and that the ecologies of genres used to mediate research activities are incorporating new genres (Miller & Kelly, 2017; Rowley-Jolivet & Carter-Thomas, 2019). Furthermore, the affordances of the digital medium create space for new combinations of genres and new relations among them:

> The web offers platforms where genres already existing in printed media and new genres can co-exist and interact in complex ways in a single space. Many digital genres are multi-genres or hybrid genres, formed from combinations consisting both of already-existing and new genres which act together to mediate the researchers' activity, and usually involving multiple modes and media. (Luzón & Pérez-Llantada, 2019, p. 7)

This critical change in the target situation of English usage calls for the investigation of the nature of digital genres and online generic practices. Indeed, scholars have already stressed the need of both general English and EAP instruction to address digital literacy and include it as a cross-curricular skill in English pedagogy (Hafner, 2014; Hafner & Miller, 2019).

As with the previous two axes, this dissertation considers the whole repertoire of academic genres, digital or not, when dealing with the communication practices of academic discourse communities, but it chooses to focus on digital genres for detailed analysis, in an attempt to contribute to the scholarly discussion on digital literacy and to provide for the actual demands of the research career of today's academics.

1.1.3.4. Conclusion

In sum, while not disregarding the whole ecology of research genres, this dissertation pays particular attention to spoken genres, and looks in detail at a specific digital spoken research genre. As informed by the revision of the literature, these choices are expected to yield instructive and relevant results for the pedagogy of EAP in today's research world.

1.2. Intonation

Within the field of EAP, genre analysis has an especial interest in unveiling the relations between genres as social mechanisms and their typical linguistic realizations as texts. This entails a functional view of language, since it presupposes that linguistic variation can be accounted for by communicative purpose: different linguistic devices are used to provide for different communicative needs. The above section has provided reasons for focusing on research-related spoken genres online as the communicative acts of interest for this study. This section introduces the focus of linguistic analysis: the English intonation system.

In Prieto's (2015) words, "researchers are in full agreement that prosody constitutes an integral part of linguistic form, shaping its temporal and pitch characteristics to achieve communicative ends" (p. 379). Therefore, it is understood that the English intonation system functions rhetorically like any other linguistic system: genre provides restrictions and allowances in choices within the system according to communicative purpose, audience, and the formal constraints of rhetorical structure; simultaneously, the configuration of intonational patterns and phenomena contributes to genre construction and recognition.

The following sections deal with the place of intonation as part of academic discourse, review what research has integrated intonation and genre, and finally outline how the English intonation system is conceptualized for the purposes of this dissertation.

1.2.1. Intonation as Academic Discourse

This dissertation has a special interest in intonation as a relatively under-explored meaning-making device that constitutes part of the linguistic form of spoken genres, thereby actively contributing to the enactment of social intentions in research communication and the achievement of the communicative goals of academic discourse communities.

1.2.1.1. Investigating Academic Discourse

Intonation is an integral component of speech. In this sense, any enquiry into the intonation of academic spoken English is a contribution to the understanding of academic speaking as a wider phenomenon. In fact, academic speaking may be too wide a phenomenon to constitute a manageable subject for small-scale linguistic analysis. Generalizations about the oral mode as opposed to the written mode need to arise from sufficiently large corpora (e.g., Biber et al., 2002) and the implications that may arise might not necessarily suit the specific purposes of the EAP practitioner. For instance, a linguistic feature that may be found to be significantly common in a general spoken corpus, or even in a specialized academic corpus like MICASE, may need to be discouraged for a particular academic spoken genre. For this reason, the exploration of genre-specific linguistic features provides highly valuable insights into academic discourse variation.

In order to elicit these patterns and relations, ESP customarily resorts to the well-established practice of move analysis introduced above, in combination with text analysis (Hyland, 2013a). Pérez-Llantada's (2015) discussion of varied bibliographic sources on move analysis reveals that this technique's value resides in the fact that it "provides a detailed comparative account of the formal and functional properties of sentential and clausal constructions in genre-exemplars" (p. 5). The information yielded by these analyses is specific enough to be appreciated by ESP students, because it offers "linguistic options for communicating particular meanings within specific genres and situations" (Hyon, 2018, p. 51).

It is common to refer to the type of linguistic features that are usually investigated as "lexicogrammatical features" (e.g., Bhatia, 1993), encompassing "the vocabulary and grammatical patterns that help to express the genres' moves" (Hyon, 2018, p. 51). However, this term fails to capture the actual scope of textual analysis; for instance, in their introduction to EAP, Charles and Pecorari (2016) discuss under "academic discourse" such devices as theme and information structure, cohesion, nominalization, stance and evaluation, and intertextuality and source use. An interest in lexicogrammar might exclude intonation analysis, while the study of academic discourse must, sooner or later, address aspects related to how intonation contributes to express *spoken* genres' moves. Hyland (2013a) thus rightly refers to "lexicogrammatical and discursive patterns", rather than just lexicogrammatical features.

At this point, it is important to make two remarks: first, the existence of critical voices which single out EAP genre studies to the date as "too textual" (Swales, 2019, p. 75), meaning excessively focused on text-linguistic features; and second, the changing trend in EAP genre studies towards ethnomethodological and context-situated analyses (Dressen-Hamouda, 2013; Lillis & Curry, 2010; Paltridge et al., 2016), resulting from the coalescence of the traditions. Swales (2019) comments on these aspects by encouraging such explorations of the wider contexts of academic genres, while at the same time advocating for "truly informative" (p. 77) move analyses and studies with "well-articulated pedagogical applications" (p. 78). In Swales' view, the problem is not in the investigations dealing with or relying on the texts (i.e., language), but in their lacking practical application. Considering these observations, this dissertation incorporates the exploration of contextual factors regarding research communication and presents intonation as a discursive feature which merits attention as underexplored by EAP genre

analysis to the date and as potentially offering insights into its functional value for research communication.

1.2.1.2. Issues Concerning Intonation Research

As part of the study of academic speaking, research into EAP intonation is affected by similar hindrances but further afflicted by additional factors. First, regarding the methodological complexity of handling spoken data, the main difference is that while spoken words can be transcribed into conventional writing in a quite straightforward manner, intonation transcription will always entail a rather theory-loaded interpretation of the phenomena observed.

Second, the predominance of the written mode involves the predominance of the word and the sentence as units of analysis. Superordinate constituents like the paragraph or the text are considered as macrostructural and studied from the rhetorical or compositional point of view; subordinate elements like morphemes might be too specific to express meanings at a genre level. However, both paths for extension, above the sentence and below the word, have been explored. The problem with intonation is different, as it is related to the fact that intonation corresponds to a different domain of linguistic structure: phonology.

Belonging in the realm of phonology, intonation may have been associated with the usually better-known domain of word phonology. The problem is that phenomena like word stress or phonemics are a consequence of lexical choices, and they are, therefore, incidental in texts (cf. Saussure's, 1916, arbitrariness of denotation and Halliday's, 1978, language stratification metaphor). They offer no choice as a resource for the enactment of social intentions. For example, one would not ask the question whether there are typical phoneme configurations for conference presentations. Intonation, on the contrary, "is related systematically to meaning, as one of the resources for carrying contrasts in grammar" (Halliday & Matthiessen, 2014, p. 11). Because of its connection with lexically determined phenomena, intonation may be (wrongly) thought to be incidental too, even just a phonetic (i.e., physical) property of language, as though all sound-related features of speech were produced with a default intonation that cannot be adjusted for different purposes.

Furthermore, a second misconception affecting intonation research in EAP originates from traditional studies of intonation, which foreground its role in the expression of attitudinal meanings. As an example, O'Connor and Arnold's (1973) well-

known practical textbook *Intonation of Colloquial English* asserts that the use of certain falling intonation in statements is linked to a "detached, cool, dispassionate, reserved, dull, possibly grim or surly" (p. 106) attitude. It is true, of course, that intonation contributes to the expression of attitudes, as part of the expressive power of paralanguage (Chen et al., 2004; Gussenhoven, 2004, 2016; Ohala, 1983, 1984, 1990), but there exists no one-to-one correspondence between intonation patterns and attitudinal meanings: intonation is not a system (i.e., a linguistic system of paradigmatic meaning-making choices) of attitudinal expression. The expression of attitudes is by no means the main or the only function of intonation; and intonation is by no means the main or the only device for attitudinal expression. In his critique of O'Connor and Arnold (1973), Tench (1996) goes one step further to argue that their attitudinal inventory is the result of the sentences they used for exemplification and not of the intonation tunes themselves. This scholar maintains that attitudes are expressed and perceived by a combination of paralinguistic elements, not only intonation. Under these circumstances, EAP practitioners may have been deterred by the complexity of attitudinal analysis and the lack of a systematicity which, in fact, does not exist.

Finally, more recent approaches have being criticized as recognizing only a role for intonation as pragmatic marker or as contributing only local meanings (e.g., O'Grady, 2017, on the ToBI standard). Even if that were its only role, EAP's interest in target situation and learner needs should actually favour such investigations. Still, it is true that it is more practical to carry out analyses where a generalizable, standardized framework can be applied. In fact, it is mainly those scholars undertaking multimodal discourse analysis in EAP (see below) that have dared to deal with paralanguage and other non-systemic means of expression (e.g., visuals) in their explorations of academic genres.

These misconceptions are an impediment to the recognition of intonation as a linguistic system, and they have contributed to making the intonation research landscape a complicated panorama. One final problem is the absence of a canonical description of intonation. For instance, intonation analyses are not infrequent in SFL, where Halliday and Greaves' (2008) model is used, and some non-SFL multimodal studies resort to Brazil's (1975, 1997) influential model of Discourse Intonation. The field of ESP, however, lacks a reference textbook or tradition for intonation, besides these two approaches, and it is not uncommon to find differences between intonation manuals.

1.2.1.3. The Value of Intonation in Academic Discourse

Considering then intonation as part of the understanding of academic speaking, it is possible to bring up again the arguments in favour of studying spoken genres outlined above. In brief, the new research communication landscape, especially as a digitalized environment, is increasing the value of speaking and other modes of expression beyond the word, and contributing to this, we observe important technical advances that facilitate spoken data handling. Intonation is therefore also becoming more and more relevant as research communication migrates to online videos, podcasts, or recorded conference talks, a move that has been hastened by stay-at-home and remote-activity policies derived from the coronavirus pandemic.

Furthermore, Tench (1996) argues that word phonology is "readily accessible" while intonation is "less easy to talk about" (p. 7). In fact, this is, in a sense, where its value resides and whence its weakness emanates: its value, because it affects language at a message or discourse level; its weakness, because a traditionally sentence-centred grammar makes it less visible. However, being a fully formed linguistic system as it is, using intonation properly is just as important as other types of grammatical well-formedness. This is acknowledged by the fact that canonical accounts of English grammar do include references to intonation as contributing to grammatical meanings (e.g., Biber et al., 2002; Greenbaum & Quirk, 1990; Halliday & Matthiessen, 2014).

This relative lack of consciousness around intonation has been reported by researchers in interviews (Valeiras-Jurado et al., 2018) and also observed in studies of neurolinguistics reporting that the written and the oral mode activate different areas of the brain (Dehaene, 2009). In short, this latter author explains that writing is a more recent development and, consequently, the human brain has no specialized area for the processing of reading and writing; rather, it resorts to our non-specialized visual cognitive skills, resulting in a more conscious effort than speaking and listening, which we do without noticing.

This situation then raises the issue of L1 pronunciation transfer (García Lecumberri et al., 2010; Major, 2001), since speakers might assume their L1 intonation patterns to be universal, and this may lead to misunderstandings in an L2. Precisely in connection with this, O'Connor and Arnold (1973) present the other side of the coin, from the perspective of the native speaker listening to an L2 speaker:

> English speakers are able to make a good deal of allowance for imperfect sound-making, but being for the most part unaware of the far-reaching effects of

> intonation in their own language, they are much less able to make the same allowance for mistakenly used tunes. (p. 2)

Tench (1996) puts it more clearly by saying that, unlike mistaken allophones or word stresses, "a mistaken intonation still means something" (p. 11). The field of EAP, with an important focus on teaching communicative skills to speakers of languages other than English, should not fail to address such an important area of possible misunderstanding, especially as it puts at risk the success of research communication.

1.2.1.4. Conclusion

In order to understand the contribution of intonation to academic discourse, it is paramount to conceptualize it as a linguistic system capable of interacting with genre in the same way as other lexicogrammatical and discursive features, despite understandable theoretical and methodological issues. Thus, intonation can be understood as part of the textual (i.e., linguistic) realization of genres.

1.2.2. Intonation and Genres

This section comments on a selection of relevant literature about research genres and intonation. First, EAP studies that have dealt with genred research communication are discussed, leading to those that have considered intonation; then, intonation studies that have tackled genre-related issues are considered.

1.2.2.1. Intonation and EAP Genre Studies

At the centre of today's research communication practices, the journal article and its orbiting part-genres have received the greatest amount of research attention (see Pérez-Llantada, 2013). Studies have also frequently addressed diverse digital written genres like the academic blog post and its authors' techniques to address diversified audiences in a specially hybrid and interactional genre (Luzón, 2013a, 2013b; Zou & Hyland, 2019, 2020), as well as web-based texts for crowdfunding science (Mehlenbacher, 2017), online conference announcements (Lorés, 2018), virtual special issue introductions (Mur-Dueñas, 2018), or graphical abstracts (Sancho-Guinda 2016), to name a varied sample of new genres.

As to spoken academic communication, there are two central genres that have been explored in greater depth: a research genre, the conference presentation (e.g.,

Ventola et al., 2002); and a pedagogy genre, the lecture (see Crawford Camiciottoli & Querol-Julián, 2016). Other spoken genres that have been investigated from an EAP genre perspective include, for instance, the doctoral defence (Mežek & Swales, 2016), the interactive lecture (Morell, 2018), or the discussion session (Querol-Julián & Fortanet-Gómez, 2012). Emerging, often digital, spoken genres have been investigated in recent years for a variety of facets: online lectures, for multimodal metadiscourse (Bernad-Mechó, 2015) and interaction (Crawford Camiciottoli, 2020); three-minute theses, for move structure (Hu & Liu, 2018), recontextualization strategies (Carter-Thomas & Rowley-Jolivet, 2020; Rowley-Jolivet & Carter-Thomas, 2019), and stance and engagement (Hyland & Zou, 2021; Qiu & Jiang, 2021); and TED talks for move structure (Chang & Huang, 2015) and kinesics (Harrison, 2021), among others. Finally, Hafner (2018) studied the role of multimodality in genre innovation in video methods articles and Luzón (2019) looked into multimodal research dissemination to diversified audiences in online videos. This presentation shows the growing scholarly interest in spoken academic genres as well as the diversity of perspectives from which they have been approached.

Despite this, however, relatively few studies have dealt with the role of intonation in academic discourse. One exceptional early example is Thompson (2003), which discusses the role of intonation in structuring academic speech, an idea in line with the findings of Wichmann (2000, 2010) for general spoken monologue and which Bermúdez Sánchez et al. (2019) have recently explored for Spanish in academic lecturing. Beyond that, intonation has been considered by scholars carrying out multimodal discourse analyses of academic communication (cf. Kress & van Leeuwen, 1996, 2001). These researchers have successfully tackled intonation in their multimodal analyses of plenary lectures (Ruiz-Madrid & Fortanet-Gómez, 2015), conference presentations (Valeiras-Jurado, 2015; Valeiras-Jurado & Ruiz-Madrid, 2019), webinars (Ruiz-Madrid & Fortanet-Gómez, 2017), dissemination talks (Valeiras-Jurado et al., 2018), and research pitches (Ruiz-Madrid, 2021; Ruiz-Madrid & Valeiras-Jurado, 2020).

The multimodal discourse analytical approach used in these investigations examines an array of semiotic resources in order to elucidate how different modes synergize to achieve communicative goals (Kress & van Leeuwen, 2001; O'Halloran, 2004; Querol-Julián, 2011). One of these modes can be pitch modulation, usually under the labels of intonation, spoken mode, or paralanguage, and taken together with other paralinguistic elements like voice quality, pauses, or rhythm. The seven studies referred

to above resort to Brazil's (1997) framework of Discourse Intonation, which will be reviewed below. However, despite a systematic approach to intonation analysis, this methodology entails paying similar attention to all the modes, with an intent to avoid privileging any one of them. This means that often these researchers' rigorous inquiries into intonation only show at a relatively shallow level in their explanations, mixed with other modes.

1.2.2.2. Genres in Intonation Studies

Intonation research dealing with genres is scarce and it seldom matches the conceptualizations expounded above. For instance, Crystal and Davy (1969) proposed a framework for the study of stylistics that contemplates a situational dimension called "modality" (p. 74). This dimension roughly corresponds to the Swalesian concept of genre, but it is far from one of the central driving concepts in the work of these authors. Johns-Lewis (1986) explores the prosodic characterization of "discourse modes", which refers to reading aloud, acting, and conversation, thus falling short of connecting intonation and rhetorical force.

More recently, Cheng et al. (2008) report on the creation and initial analysis of a large corpus of transcribed text annotated with Discourse Intonation conventions (Brazil, 1997) and featuring an academic sub-corpus that includes discourse types such as the student presentation and the lecture. However, their research interests are unrelated to genre representativity and their labels are closer to those of the "speech event types" of the MICASE corpus. Similarly, the few studies that specifically mention intonation and genre do so within the Systemic-Functional approach (cf. Martin et al., 1987). Thus, genre conceptualization in Rivas and Germani (2016) and Rivas (2017) refer to more general concepts like interviews and narratives.

This short review shows the existence of scholarly interest in explorations dealing with intonation in discourse and discourse types, as lately contended by O'Grady (2020) for register studies. In this context, the fields of ESP and EAP are at an advantageous position to contribute to the advancement of this type of knowledge, as they count on the appropriate theories and methodologies to understand the role of a linguistic device like intonation in the wider context of genre-mediated scientific communication.

1.2.2.3. Conclusion

In sum, despite the apparent scholarly interest in explorations of spoken academic genres and of genre-related issues in intonation studies, no study has yet investigated the specific potential of intonation to account for rhetorical structure and contribute to the accomplishment of communicative purposes in scientific communication. While intonation studies lack the richness of the EAP conceptualization of genre, EAP genre studies have not yet focused their attention on intonation, not as a mode among many, but as an independent linguistic element with a specific role in the meaning-making process.

1.2.3. English Intonation Systems

The fundamental frequency of sound is perceived by the human ear as pitch. Because pitch is unavoidable in spoken exchanges, its evocative potential is exploited in communication paralinguistically (Chen et al., 2004; Gussenhoven, 2004, 2016; Ohala, 1983, 1984, 1996). Additionally, it can be incorporated in a systematic fashion into the grammar of specific languages: thus, in tone languages, pitch has a primarily lexical status; in English, by contrast, pitch is manipulated for different semiotic purposes, constituting the linguistic apparatus which we call intonation.

Pitch variation in languages without lexical tone, i.e., intonation languages, has been widely studied. The approach that this dissertation takes towards English intonation falls under the scope of "traditional British analyses of intonation" (García Lecumberri, 1997, p. 103), also called "the British nuclear tone approach" (Cruttenden, 1997, p. 28) and "standard British" intonation transcription (Roach, 1994, p. 91). Specifically, this dissertation draws from the phonological model described in Tench (1996, 2011), which continues Halliday's (1963, 1967) identification of three systems that combine for intonational meaning: tonality, tonicity, and tone.

After these three alliterative terms, it is common to refer to the model as the Three Ts (e.g., Mott, 2011, pp. 242–243), thus conveniently doing away with the historical reference to "British analyses". Such terminology may be misleading for two reasons. First, it may create a false impression of uniformity in intonation analyses across Great Britain; second, an SFL approach to intonation falls within this category, and SFL is far from being a "British" phenomenon, being, on the one hand, widely spread across the globe, and on the other, highly influential in Australian literacy education.

Below, the model is introduced, followed by a comparison to the alternative model of Autosegmental-Metrical Phonology, and an explanation of its place in the British tradition.

1.2.3.1. Tonality, Tonicity, and Tone

The system of tonality deals with the segmentation of utterances of spoken discourse into successive Intonation Units (IUs) where tonal phenomena occur. These segments or divisions show the speaker's perception as to the progression of information transfer, understanding each new addition as an information update. The identification of boundaries between these pieces of information is usually complex, as, being phonological units, they do not necessarily correspond to pauses (Roach, 2009) even though exact placement can often be disregarded (O'Grady, 2017).

The system of tonicity entails the internal analysis of IUs by making choices related to the placement of the tonic syllable. The tonic syllable, also known as the nucleus (e.g., Cruttenden, 1997), is identified positionally as the last pitch-prominent syllable. Further analysis of the IU distinguishes between the post-tonic or post-nuclear stretch of syllables, known as the tail, and the pre-nuclear syllables. Any syllable before the first stressed syllable of an IU is known as the pre-head, with everything from the first stress to the nucleus referred to as the head of the IU. The analysis of pitch-prominent syllables, especially nuclei, is understood to indicate the focus of the information presented.

Finally, the system of tone allows for the paradigmatic choice of pitch sequences or contours associated with the nucleus. Although the specific phonologically relevant contours of English depends on the theories followed (García Lecumberri, 1997; Roach, 1994; Tench, 2011) and is still today a matter of debate (Prieto, 2015), most approaches recognize for the system of tone a role in the identification of information status, with different labels depending on the model.

Prieto (2015) and Westera et al. (2020) provide relevant summaries of current issues regarding the meanings and functions of intonation in discourse. Briefly, according to their reviews, the most recent advances in this field are providing pragmatic and semantic models that represent intonation's contribution to information flow as succinctly introduced above for each of the three subsystems. For practicality, this dissertation draws from Tench (1996, 2011), as explained above, and from Gussenhoven's (1984a, 2004) work, which conceptualizes intonation as providing different types of manipulations of

information variables in relation to background knowledge, or more accurately, to what is assumed to be background from the perspective of the speaker.

This approach is convenient for two reasons. The first one is of a practical nature: it presents a closed system of options that makes intonation analysis manageable. The second one is theoretical: the conceptualization that it presents lends itself to efficient discourse analysis. Indeed, it owes much to Halliday's (1963, 1967) and Brazil's (1975, 1997) work, which have always been aware of intonation's contribution to the situational/contextual juncture, being able to generalize the local meanings intonation contributes (cf. Cruttenden, 1997). Plus, the concept of background updates, in full communion with the more modern approaches reviewed in Prieto (2015), is reminiscent of the concept of Common Ground that van Dijk (2008) uses to model context from a sociocognitive perspective in order to tackle shared genre knowledge. Even though this claim might seem a bit far-fetched at first sight, it is necessary to acknowledge that despite dealing with different domains of communication, these approaches intersect in their efforts to understand the interface of context, information, and linguistic form.

Thus, the approach presented provides an analytical means to tackle intonation in a compartmentalized manner. While it is useful to distinguish three separate systems or subsystems, it is also important to recall that they are used to refer to one linguistic phenomenon. Indeed, some degree of circularity must be acknowledged in the definitions, as the processes of identification of IUs, nuclei, and tones depend on one another. This is not to discredit the model but to fully understand its scope and how it is of value to the particular interests of this project, mainly in providing an orderly account to discuss a complex phenomenon.

1.2.3.2. Autosegmental-Metrical Phonology

A well-established approach to intonation analysis is that of autosegmental-metrical phonology, which is connected with the development of the widely-used ToBI (Tones and Break Indices) standard (Silverman et al., 1992). Goldsmith (1972) drew from generative phonology to conceptualize phonological phenomena, e.g., tone, as independent tiers or "autosegments". This results in a successful transformational account of tonal phenomena, decomposed in pitch levels that can be mapped to metrical structure (cf. Chomsky & Halle, 1968). However, even if overcoming many of the problems of American structuralism (cf. Pike, 1945), this approach is ill-suited for the purposes of this dissertation, which seeks not to explicate surface linguistic forms or the internal grammar

of the brain but rather to describe the possible roles or functions of intonation in research communication as mediated by genre artefacts.

As means of illustration, when Hirschberg and Pierrehumbert (1986) explore the intonational structuring of discourse, they are actually referring to the systems of tonicity and tone but inspecting them as accent (placement) and tune (pitch contours). Commenting on a similar article by the same authors (Pierrehumbert & Hirschberg, 1990), Cruttenden (1997) clearly states that "even in this article, however, meanings are frequently attached to particular sequences of tones" (p. 64), i.e., pitch contours. After all, these authors are looking at the same reality from a different perspective. Another important observation is that they are not trying to be descriptive or analytical but prescriptive, since they are dealing with speech synthesis, and, as Chun (2002) points out, their examples are ad hoc "linguist-generated utterances and elicitations rather than … naturally occurring discourse or speech" (p. 31). In her dissertation, Pierrehumbert (1980) had already commented that "similarity of meaning is not in general a good argument for similarity of form" (p. 60) and she had labelled meanings as "extremely context dependent" (p. 61), justifying the limitations of her study to formal aspects.

Still, the significance of the ToBI standard for computer-mediated intonation analysis and synthesis must be recognized, and it must be acknowledged that while in line with the conceptualizations of autosegmental phonology, it is in itself not a theory but a transcription system, which means it can be adapted for the purposes of the discourse analyst (as Gussenhoven, 2004, does). Another important advance where the ToBI standard is the appropriate option, at least nowadays, is automatic speech recognition, with promising projects like AuToBI (Rosenberg, 2010) and more recently PyToBI (Domínguez et al., 2019), which have not been explored using other models so far.

1.2.3.3. Other Functional Approaches

Having argued for a functional, not structural, account of linguistic phenomena, it could be possible to resort to Halliday and Greaves (2008) as the canonical description within Systemic Functional Linguistics. Indeed the chosen models owe a lot to Halliday's (1963, 1967) work, as they are all systemic and functional in a sense, and to the category of the "British" nuclear tone approach. However, the SFL model has elaborated on intonation and other systems with a view to explaining their specific perspective of language as performing roles in three meta-functions. While it is true that it allows for adaptation, as any scholarly tradition should, the Hallidayan systems of intonation carry

with themselves an established set of systemic options and functions that it would not be wise to disregard, mainly because of the bulk of scholarship that backs them. Despite understanding the value of the SFL approach and taking elements from it, however, this dissertation is not part of the SFL tradition.

Finally, this dissertation could have taken the perspective of David Brazil's (1975, 1994) Discourse Intonation (DI), with a focus on communication and information management through intonation. Coulthard (1985) warns that, very much as happens in other accounts of intonational meaning, DI understands intonation choices as bound up with their immediate context, therefore complicating general interpretations of isolated stretches of speech. Still, Cheng et al. (2008) managed to use DI at a corpus-wide scale with successful outcomes.

Formally, Brazil's (1997) model pivots around choices in four systems: prominence, tone, key, and termination. Tonality in DI is taken for granted, not a system but a prerequisite of intonation, as the necessary division into structural units where phenomena occur. For American structuralism and generativists, intonation is sentence-oriented, while these approaches are discourse-oriented. Prominence in DI corresponds to Tench's tonicity. And key and termination articulate in a different manner what Tench (1996, 2011) and Halliday and Greaves (2008) include as secondary tones.

As a means of illustration, tone choices in DI are grouped into proclaiming and referring tones, thus establishing functions or meanings to the tones regardless of their context. Of course, Brazil does not establish these functions as the only possible ones and leaves room for local functions and meanings in different contextual configurations.

One reason why the DI model turns out to be a bit awkward analytically is the need to differentiate three pitch levels for the first and last prominent syllables of IUs, respectively known as key and termination. The problem is similar to that raised by other scholars for Pike's (1945) levels analysis (see Cruttenden, 1997, for a summary): the arbitrariness of establishing any number of levels and the relativity of the categories. For instance, it is methodologically questionable why the analyst should assign a high or a mid key to a speaker's first IU, without reference to previous IUs. Brazil's (1997) take was that it was only after a long time of perceptual training that the analyst was able to differentiate the three levels accurately, which leaves analysis dependent on personal auditory perception.

These two models that have just been briefly reviewed are presented because of their influence on the present project. Even if they are not followed as presented in their

canonical literature, their ideas and approaches need to be acknowledged as essential in this dissertation's understanding and conceptualization of language and intonation's contribution to context.

1.2.3.4. Conclusion

Intonation, as a linguistic device for meaning making, can be understood as constituted by three subsystems, tonality, tonicity, and tone, which together contribute to the speaker's management of information flow in speech. This approach, reflected in generalist manuals of intonation (e.g., Hewings, 2007; Mott, 2011; Roach, 2009), takes the immediate context into account to explain linguistic variation, and thus is expected to interact at the interface of genre constraints and allowances as theorized in this chapter.

1.3. Research Questions

Understanding genres as the central mechanisms for academic communication and conceptualizing intonation as a rich linguistic resource for the expression of meaning in context, this dissertation seeks to contribute to two main objectives: understanding the place of academic spoken English in professional communication in academia; and elucidating the role of intonation within these practices. To each of these objectives correspond three research questions:

- Objective 1: The Place of Academic Spoken English
  - RQ1a What language(s) do researchers use for spoken science communication?
  - RQ1b What is the place of spoken genres in the researchers' genre repertoires?
  - RQ1c What is the value and the degree of awareness of intonation for researchers?
- Objective 2: The Role of Intonation in Academic Spoken English
  - RQ2a What is academic English intonation like?
  - RQ2b What is the connection between intonation and genre?
  - RQ2c How does intonation contribute to academic discourse?

In sum, these questions are directed to advancing the knowledge about present-day research communication practices as evinced in the spoken genre-mediated professional activity of researchers and scholars working within today's English-medium internationalized scientific context.

Chapter 2. Methodology

This chapter outlines the methodological approaches adopted to tackle the research questions presented in the Introduction. Below, a reflection on the rationale for analytical choices is followed by the description of the two methodological tools employed, namely a questionnaire and a corpus, as well as data collection and analysis procedures.

2.1. Methodological Design

2.1.1. ESP Analytical Approaches to Genre

Genres can only be valuable to understand research communication practices if we have a way to interpret genre use in an analytical manner. This dissertation draws from Hyon's (2018) summary of approaches to ESP genre analysis: move analysis, lexicogrammatical analysis, and analysis of genre context.

1. A 'move' is defined as a "discoursal or rhetorical unit that performs a coherent communicative function" (Swales, 2004, p. 228). These functional units break down overall rhetorical structure into the stages or phases through which communicative purpose is fulfilled discursively. Moves are in turn seen as accomplished through different possible steps, which tend to correspond with units of linguistic analysis like the clause or the phrase. Move analysis is valuable to reveal the link between form and function but also to capture the flexibility of genre conventions by highlighting recurring functional elements and the different choices to enact social intentions through genre.
2. Analysis of lexicogrammatical features implies looking at statistically relevant incidences (high or low) of "certain linguistic features, be they lexical, grammatical, or even discoursal/rhetorical, in the texts under study" (Bhatia, 1993, p. 17). Bhatia (1993, 2004) argues for the importance of genre-based analyses of such elements, as opposed to studies of disciplinary discourse (e.g., chemistry) or language modes (e.g., spoken): two research articles of any two disciplines may have more in common than two different genres in either discipline. Lexicogrammatical analysis specifies the form component of the form-function relationship, conveniently enabling novices in a discourse community to understand how to pursue their shared communicative goals.

3. Analysis of genre context involves questions about social and cultural aspects surrounding the enactment of social intentions. This can be done by researching elements closely linked to the texts themselves, as in 'textography' (Swales, 1998) or 'reception studies' (Swales, 2012) or by studying the subjects using the texts and the institutions they inhabit, such as Lillis and Curry's (2010) eight-year study of circa fifty researchers. ESP and EAP research is usually closer to the former (Hyon, 2018), with questionnaire surveys as one of the most widespread tools (Hyon & Chen, 2004).

ESP benefits from the three approaches and adds to the observation of other fields in contemporary linguistics that an awareness of language context is fundamental to the study of language (Fairclough, 1992). Bhatia (2004) talks about a view of "discourse as text", i.e., just lexis and grammar, that was overcome by wider views of discourse "as genre", "as professional practice", and "as social practice". As if crossing the bridge from opposite banks, L. Flowerdew (2013) highlights the value of text-based studies to supplement ethnography, while Paltridge and Starfield (2016) encourage ethnographically-oriented studies to complement the body of already existing EAP text-based analyses. Swales (2019) sums it up as "the question of context", presented as an ongoing debate in EAP about how much context is needed to produce really informative lexicogrammatical and move analyses while at the same time keeping it feasible by not embarking in ethnography.

2.1.2. Methodological Outline

As is common in EAP, the nature of the phenomena of interest for this study necessitates a combination of approaches. On the one hand, discussing issues related to the situational/social context of spoken genres and intonation as linguistic expression necessitates ethnomethodology. On the other, the specificity of the genre-intonation interface requires corpus analytical procedures to deal with move structure and linguistic units.

The intent behind this design is to gain a wider perspective on digital research communication than what each approach would reveal individually. First, in the present study ethnomethodology materializes as a questionnaire designed to address the first objective about the place of academic spoken English by investigating the practices and attitudes of researchers in relation to the whole repertoire of academic genres, be they spoken, digital, and/or related to research processes, or not. Then, corpus-based research

is used to address the second objective about the role of intonation in academic spoken English by investigating exemplars of a digital research oral part-genre, namely the Researcher's Introduction section of video methods articles, in order to gain an understanding of the role of intonation in this genre type in relation to Hafner's (2018) categorization of moves for that genre.

Thus, the questionnaire is oriented towards uncovering practices and attitudes from an insider or emic perspective, while the corpus draws on outsider or etic categories to analyse the data. Because of this methodological design, the rest of the chapter is divided into two main sections: the first one presents the ethnomethodological research while the second one describes the corpus-based investigation.

2.2. Investigating Genre Context

A questionnaire was administered to tackle the questions corresponding to the first objective. Its original title in Spanish was "Estudio del uso oral del inglés en ámbitos académicos y de investigación", but for the sake of clarity it will henceforth be referred to as SEARSQ[1], standing for "Spoken English in Academic and Research Settings Questionnaire". The original questionnaire in Spanish is included as Appendix A. This section reviews the literature on ethnomethodology in EAP to present the rationale for methodological choices and ends by describing the SEARSQ tool itself and data analysis.

2.2.1. Ethnomethodology and Questionnaires in EAP

The analysis of contextual factors has been a key interest in ESP since its inception, as it is concerned with target situation language use and communication and characterized by an awareness of specific language and learning needs (Hutchinson & Waters, 1987). For this reason, ESP course design has led to the development and refinement of the practice of needs analysis, which refers to research carried out before, during, and after ESP instruction to prepare, implement, and asses such instruction as a means to adapt the teaching to real-life language and communication needs as well as to assure the quality of the pedagogical procedures and materials.

As such, this dissertation is not an example of needs analysis, since this concept is always linked to curriculum design and pedagogy (see, e.g., Bocanegra-Valle, 2016; Charles & Pecorari, 2016; L. Flowerdew, 2013): while the results of this study are

[1] Pronounced SEE-arsk / ˈsiː ɑːsk /.

expected to yield data that can inform EAP pedagogy, its motivation does not originate in an interest to develop materials but to understand the communicative practices of online research dissemination through oral genres, and this is where ethnomethodological techniques are required. At the end of the day, genre studies in EAP are also inexcusably linked to pedagogy: "much of the research carried out in ESP over the past decades has been done so with the express intent of improving teaching methods by improving our understandings of language use" (Dressen-Hamouda, 2013, p. 501).

The relevance of studying contextual factors, and in particular genre context, is accentuated when we consider present-day sociological processes. Specifically, L. Flowerdew (2013) points to technologization and transnationalization as the two main contemporary influences on needs analysis. Both processes are closely connected with this project's interest in online spoken research genres, touching on the digitalization of research dissemination and the widespread use of English by the international(ized) academic community.

Rather than needs analysis as such, this dissertation uses "ethnography as method" (Lillis, 2008) as a means to gain an emic or insider perspective into the phenomena studied. Going back momentarily to "the question of context" above, Dressen-Hammouda's (2013, p. 508) small survey of three key ESP journals shows that it is common for ESP scholars to include "a wide range of qualitative and ethnography-inspired methods in their research" while not implementing "full-blown ethnographies".

This also corresponds to what Hyon and Chen (2004, p. 238) recognize as "an EAP tradition of survey-based needs analysis" (in their case, of academic writing), to which this part of the dissertation contributes. This last study is especially relevant as its main contribution is the exploration of faculty writing as professional writing (in their words, "the academy as a workplace with its own set of 'business' genres"). In a similar vein, this study sees research as a profession but investigates the speaking practices used to conduct "business".

Specifically within EAP, it is possible to find a tradition of surveys exploring questions similar to those included in SEARSQ but oftentimes dealing with writing, like the different choice of language for different genres (J. Flowerdew, 1999; Li & Hu, 2017; McGrath, 2014), the feelings and attitudes towards such uses (S. Burgess et al., 2014; Ferguson et al., 2011; J. Flowerdew, 1999; Moreno et al., 2012), and specific genre repertoires (Chitez et al., 2015; Gallego et al., 2016).

The specific approach of these studies, and of this part of the dissertation, is theory-first or deductive. The theoretical assumptions presented in the previous chapter are to be contrasted against the opinions, beliefs and perceived/self-reported practices of the researchers that have answered SEARSQ. Although in the context of needs analysis it is common and even advised (L. Flowerdew, 2013) to undertake inductive inquiry first to gain some general ideas, it is possible to argue that here general ideas come from genre theory and intonation theory, and are somehow put to the test by incorporating a "social-use-centered orientation" (Dressen-Hamouda, 2013, p. 502) by means of a questionnaire.

The methodology employed, therefore, originates in a critical realist view of the phenomena under study as multi-layered (Riazi & Candlin, 2014), which justifies the wide discussion deployed in the Introduction chapter which presented research communication as complex and multi-faceted. However, at this juncture, I would like to avoid adhering to a single ontological or epistemological trend, not unaware of the possible inconsistencies that some authors have commented on (Dressen-Hamouda, 2013, for ESP; Harklau, 2011, for qualitative research; or Scollon, 2003, for the social sciences and the humanities in general), and rather adopt a pragmatic approach and "go beyond paradigmatic compartmentalization" (Dörnyei, 2007, p. 11).

The questionnaire was mainly conceived of as a quantitative tool for this reason, including mainly close-ended questions. Ethnography as such, on the contrary, usually takes a grounded or data-driven perspective by asking open-ended questions that may reveal whatever the respondents may want to disclose to the researcher. Indeed, Dörnyei (2007) advises qualitative analyses to explore emic perspectives, while quantitative methods were used for this project. The main reason is that the purpose of this questionnaire is to better understand the research community contacted and provide complementary information to the later corpus analysis, not to discover their practices from scratch. However, due to awareness of this limitation, the questionnaire leaves room for comments and researchers' perceptions at some points.

2.2.2. Sample Population

2.2.2.1. Research Institutes

The project followed a common practice of using a convenience sample of subjects from the same university as the researcher (e.g., Ferguson et al., 2011; Hyon & Chen, 2004), in this case the Universidad de Zaragoza (UZ) in Spain. Consequently, all the available emails of researchers from the websites of nine Research Institutes (known

in Spanish as “Institutos Universitarios de Investigación”, henceforth IUIs) at UZ were retrieved. As a means to counterbalance any possible difference in institution-specific practices, 50 emails were randomly selected from each IUI, totalling 450 researchers contacted.

According to the Statutes of UZ, IUIs are interdisciplinary institutions devoted to scientific, technical, and cultural development, innovation, and research; UZ IUIs may have agreements with external institutions, constituting joint IUIs, and, similarly, external IUIs may be associated to UZ, constituting attached IUIs. The selection for this study includes UZ IUIs as the main research-oriented units of UZ, leaving out the only existent attached IUI as well as research centres (small-scale, monodisciplinary units), project-related research groups (most integrated into IUIs), and other minor research units. IUIs were also selected in opposition to teaching-oriented structures at UZ like Departments, Faculties, and Schools. The research versus teaching division is far from clear-cut, as UZ Statutes recognize the role of IUIs in MA instruction and PhD studies, as well as the role of Departments in the support of research activities. That said, it is possible to refer to IUIs as the main research units at UZ.

Table 2.1 shows the official Spanish names of these IUIs together with English equivalents as found on their websites. Acronyms and websites are provided for easy reference and identification. For joint IUIs, the name of the collaborating institution is provided. Additionally, the number of member emails gathered from their websites is shown as an orientation to the size of the institution, understanding that the websites may display former members and fail to display new ones.

Since questionnaire administration in June 2018, two more IUIs have been established, and INA and ICMA have been integrated into one joint IUI in collaboration with CSIC (Spanish National Research Council). Thus, adding to their main orientation towards research and their default multidisciplinary nature, the creation of new IUIs may also point to their importance as research centres at a university scale. Furthermore, it is possible to find IUIs or similar structures in most other universities in Spain and other international campuses, making the sample comparable to an extent. Being also more recent in creation than other university institutions, IUIs follow international practices and policies for research institutions and have been less shaped by the more idiosyncratic nature of more traditional university institutions.

Even though this is a highly localized non-probability sample (Dörnyei & Csizér, 2012) and, accordingly, the results were not presumed to be highly representative, the

facts above point to some degree of comparability in similar research contexts. The choice of an equal number from each institute in an attempt to control the influence of institution-specific practices also contributes to this. In any case, the study is interesting to the specific context of the study, and its findings add to discussions of scientific communication practices and research contexts.

Table 2.1

Research Institutes (IUIs) at the Universidad de Zaragoza (UZ) Contacted for the SEARSQ Questionnaire

UZ Research Institute	**Acronym**	**Website**	**Emails**
IUI de Matemáticas y Aplicaciones *Institute of Mathematics and Applications*	IUMA	iuma.unizar.es	91
IUI de Ingeniería de Aragón *Aragon Institute of Engineering Research*	I3A	i3a.unizar.es	239
IUI de Biocomputación y Física de Sistemas Complejos *Institute for Biocomputation and Physics of Complex Systems*	BIFI	bifi.es	104
IUI de Investigación en Nanociencia de Aragón *Institute of Nanoscience of Aragon*	INA	ina.unizar.es	96
IUI en Ciencias Ambientales de Aragón *Institute of Research into Environmental Sciences*	IUCA	iuca.unizar.es	202
IUI Mixto Centro de Investigación de Recursos y Consumos Energéticos *Research Centre for Energy Resources and Consumption* Joint IUI with CIRCE Foundation	ICIRCE	icirce.unizar.es	71
IUI Mixto de Síntesis Química y Catálisis Homogénea *Institute of Chemical Synthesis and Homogeneous Catalysis* Joint IUI with CSIC (Spanish National Research Council)	ISQCH	isqch.unizar-csic.es	128
IUI Mixto de Ciencia de los Materiales de Aragón *Aragon Materials Science Institute* Joint IUI with CSIC (Spanish National Research Council)	ICMA	icma.unizar-csic.es	143
IUI Mixto Agroalimentario de Aragón *Agrifood Institute of Aragon* Joint IUI with CITA (Agrifood Research and Technology Centre of Aragon)	IA2	ia2.unizar.es	254

2.2.2.2. Response Rate

Out of the 450 emails sent, 99 responses were returned, which resulted in a 22.0% response rate. Similar response rates can be found in studies with similar interests and similar sample size, such as Hyon & Chen's (2004) survey of university faculty genres (106 out of approximately 453, i.e., 23.4% response rate) and Gallego, Castelló, & Badia's (2016) study of teaching and research genres at university (67 out of 311, i.e., 21.5% response rate).

Because of the proximity of the number of respondents to 100, the raw numbers can be taken as an approximation to the percentage scale. As an example, out of 99

responses, 25 is 25.3% while 75 is 75.8% of responses. For the sake of simplicity, percentages are only given below when missing data alter this calculation.

2.2.2.3. Respondents' Profiles

Section 1 of the questionnaire, Respondent's Profiles, asked about the respondents' profiles, which included basic biodata, a professional profile, and a language profile. Basic biodata is presented in Table 2.2, which displays a breakdown of respondents by sex and age (M = 44.34 years).

Table 2.2

Breakdown of SEARSQ Respondents by Sex and Age

	N
Sex	
Male	61
Female	37
Rather not say	1
Age	
Under 31	10
31-40	27
41-50	29
51-60	29
Over 60	4

For the professional profile, respondents gave information about their professional experience in years as well as their academic rank. Table 2.3 presents a breakdown of respondents grouped by years of research activity (M = 19.0) and years of teaching experience (M = 12.3). Since 19 respondents reported having no teaching experience, the percentage of people out of the remaining 80 is given for each group.

Table 2.4 presents a breakdown of respondents sorted by academic position. "Non-Tenured Staff" includes 3 part-time teaching staff ("Profesor Asociado"), 14 tenure-track positions ("Profesor Ayudante Doctor" and "Profesor Contratado Doctor"), and 9 predoctoral research fellows and PhD students ("Personal Investigador en Formación" and "Estudiante de Doctorado"). "Researcher" includes a great variety of research positions from collaborators for specific projects to tenured senior researchers at some IUIs. Respondents also gave information about their main research interest, teaching subject, and institutional affiliation (department or institute) but this is not reported as it is used only for data-internal checks.

Table 2.3

Breakdown of SEARSQ Respondents by Research Experience and Teaching Experience

	Research experience	Teaching experience	
	N	**N**	**%**
Years			
0	0	19	
1-5	10	28	35.0
6-10	12	8	10.0
11-15	17	6	7.5
16-20	18	10	12.5
21-25	15	9	11.3
26-30	17	12	15.0
30+	10	7	8.8

Table 2.4

Breakdown of SEARSQ Respondents by Academic Position

Academic position	N
Catedrático ***Full Professor***	11
Titular ***Senior Lecturer***	25
Profesor no permanente ***Non-Tenured Staff***	26
Investigador ***Researcher***	37

Finally, respondents gave information about their language and language training experience. As to mother tongue, 94 declared being L1 Spanish speakers and the remaining five were each one native speakers of Catalan, Galician, French, Italian, and Finnish, respectively.

Finally, Table 2.5 presents a breakdown of respondents sorted by self-reported English level, months of experience in research stays in countries where a language other than their mother tongue is spoken, and ESP training. Respondents indicated whether they had received EAP and/or ESP training, where ESP does not include EAP, but English for the Specific Purposes of their professional activity or research specialization, e.g., “Mechanical Engineering English”. All in all, 51 report to have received ESP-related training.

Table 2.5

Breakdown of Respondents by Self-Reported English Level, Research Stays in Non-L1 Speaking Countries, and ESP Training

	N
English level	
A1	0
A2	1
B1	19
B2	36
C1	40
C2	2
Research stays	
No	17
Under 3 months	17
3 to 6 months	15
Over 6 months	50
ESP training	
None	48
EAP but no ESP	20
ESP but no EAP	11
Both	20

2.2.3. Questionnaire Design

2.2.3.1. Piloting

Prior to administration, the questionnaire was piloted by two researchers: the first informant was an early-career researcher at I3A and the second one was a more experienced researcher in a research-only position at ICIRCE. The informants' comments and recommendations were taken into account and incorporated where appropriate, contributing to the questionnaire's validity. For example, some items were rephrased since the words used were either too technical or failed to point them to the concepts of interest. Thus, the Spanish word "tono" ("tone") was supplemented with "melodía" ("tune") after piloting, since both informants thought it referred to "tone of voice" or "the way you speak" (e.g., angry/peaceful, or loud/quiet) instead of intonational contours. The term "melodía" was suggested by the first informant as a layperson's word for the concept explained to them.

The second informant's comments were especially helpful as an insider in a research-only position, since the initial wording of some items contained some inexact etic assumptions derived from lack of familiarity with the research context at the time. For instance, it had been assumed that "area of expertise" was a straightforward concept;

the second informant, however, pointed out that researchers' investigations are often different from their areas of pedagogic expertise and that it was advisable to include a distinction between "research interests" and "teaching subjects". Furthermore, they also pointed out that "teaching subjects" should be an optional item, since research-only positions are common in some fields (e.g., engineering), and since no "teaching-only" positions were known.

Finally, both informants were helpful in providing their own terminology for some genres and speech events, while corroborating previous choices. For instance, the inclusion of "marketplaces" comes from the second informant's suggestions, as a research-related event they had often attended and which had not been included. All in all, the informants' comments were of great use to increase the validity of the questionnaire thanks to their perspective as insiders of the community to be explored.

2.2.3.2. Preliminaries

The final version of the questionnaire consisted of five sections plus a presentation email with the link, an initial section introducing the survey, giving credentials, and assuring anonymity and fair treatment of their data, and a final section to thank contributors and offering an email address for feedback or queries.

Section 1 (fourteen items), titled "Respondents' Profiles", was a personal profile of the contributor, asking about the data which have already been presented above. In the next sections, the questions were formulated with the following pivotal key ideas: the four skills of language proficiency; teaching and research speech events; and pronunciation and intonation systems. These ideas were used to elicit answers about technical aspects of genre studies, EAP, and pronunciation studies with more commonly known terminology.

The four skills of language proficiency, namely writing, reading, speaking, and listening, were helpful per se as important concepts in Second Language Acquisition (Hinkel, 2006) and therefore, in this case, in the pedagogical orientation of EAP, but also as a way to retrieve information about the written/spoken genres divide.

Teaching and research speech events like "lectures" and "conference presentation" were used to ask about pedagogic versus research genres, that is, in order to get information about the specific ecological distribution of these genres. They were referred to not as events but as "activities or tasks", reinforcing researchers' active involvement as partakers instead of attendees to an event.

Finally, in order to avoid the specific terminology related to the three systems of intonation, questions were made about "pauses" for tonality; "emphasis" for tonicity; and "tone (tune)" for the system of tone. Other concepts related to pronunciation like phonological structure, rhythm, and accent (i.e., particular pronunciation, not sentence stress) were also inquired about by asking, respectively, about "the pronunciation of words", "speed", and "the accent you use".

2.2.3.3. Main Sections

Section 2 (forty items), titled "Academic Spoken English Practices", asked about researchers' practices regarding the use of the written versus the spoken mode, the interaction of modes through genre, and the use of English, Spanish, or other languages in specific research and pedagogic genres. Time devoted to each skill was expressed in a 7-point Likert scale per skill from *none of my time* to *all of my time*. Frequency of interaction from different genres (e.g., "Your oral presentations are based upon previous texts written in English") was expressed in 5-point Likert scales from *never* to *always*. The change from 7 to 5-point scales was intended to disconnect from the previous answers. Language use for each genre was asked in three sets of questions: the first one asked about research activities; the second one about pedagogic activities; and the third one included less common genres like webinars, MOOCs, or research podcasts. For the two first sets, possible answers were: "mainly in Spanish", "mainly in English", "either in English or Spanish", "mainly in other languages", and "I do not do this". For the third set, answers were "in English", "in Spanish", and "I do not do this".

Section 3 (thirteen items), titled "Attitudes Towards English in Research and Teaching", enquired about researchers' attitudes towards the four skills, as well as their perceived importance of speaking and pronunciation for professional success. Two items asked respondents to choose what was the easiest and most difficult skill respectively, and then they were asked whether they felt anxiety or stress[2] for each skill. These last items, as well as the items related to the importance of English writing and speaking particulars (e.g., pronunciation, grammatical correctness, native-soundingness) for their careers, were expressed through 4-point ratings in order to avoid fence sitting in these more personal attitudinal questions, as opposed to the behavioural or practice-related questions in the previous section.

[2] These terms, in Spanish "ansiedad o estrés", are used with a general meaning to point to feelings of worry, not as elaborated constructs.

Section 4 (twenty-two items), titled "Spoken English Planning and Awareness", explored researchers' practices regarding pronunciation and intonation when using spoken genres. Three sets of items were presented: one for speaking, one for spoken interaction, and a final one for listening. For all three sets, respondents were required to indicate in 4-point Likert scales whether they were aware of seven elements: pronunciation in general, intonation in general, pauses (i.e., tonality), emphasis (i.e., tonicity), tone/tune (i.e., tone), speed (i.e., rhythm), and accent (i.e., spoken language variety). For the first set, dealing with speaking, there was also an item concerning the planning of specific lexical items, to indicate a general degree of preparedness.

Section 5 (six items), titled "Views on Training in Spoken English", finally, checked opinions on training in English, speaking, and intonation. The six items asked whether it is necessary to have training in these, whether the University should provide such training, and whether pronunciation and intonation should be included in the teaching of English for Academic/Research Purposes. The available options were "yes", "no", and "maybe".

2.2.4. Data Collection

The questionnaire was developed in Spanish on the Google Forms app for online distribution of surveys. In June 2018, an email was sent with a presentation letter and a link to SEARSQ on Google Forms; the email was sent directly to the 450 addresses randomly selected from those retrieved from the IUI webpages. One week later, a shorter version of the email was sent again as a reminder. Two weeks after the first email, a final call email was sent. No more responses were accepted after the end of June, so that they ranged from the 13th to the 28th of June. Biodata were checked for duplicates but none were found.

2.2.5. Data Analysis

The data were stored in a spreadsheet and later analysed using Excel and SPSS software for descriptive and inferential statistics as described below.

In Section 2, a one-way analysis of variance was applied to the data on time devoted to each skill. Percentages, mean, and standard deviation were calculated for the interaction of modes, as well as the items to do with languages used for each activity. For the latter, it was necessary to exclude the answers of those with no experience on the given activity. To achieve this, a score was assigned to the remaining responses: "mainly

English" scored 1, while "English or Spanish" were a score of 0.5. Both "mainly Spanish" and "mainly other languages" were scored as 0 as representing a choice different from English. Thus, the closer the score is to 1, the most commonly that activity is done in English, while the closer to 0, the most commonly in Spanish. Afterwards, an independent-samples t-test was carried out to compare the English/Not English mean scores for research and pedagogic activities. Finally, the items dealing with emergent activities were analysed in two ways, as they involved two factors: first, for the yes/no option, "no" scored 0 and the two "yes" options (i.e., in either language) scored 1; and second, for the English/Spanish option within the yes option, "no" responses were discarded, and English was 1 while Spanish was 0. Then, one-way analyses of variance were applied to each independently.

In Section 3, percentages are given to report on respondents' perception of difficulty of language skills. For the data regarding reported anxiety in relation to different language tasks, percentages, mean, and standard deviation were calculated, followed by a one-way analysis of variance. The same procedure was used for the data on the importance of different elements for researchers' professional success.

In Section 4, two groups of paired samples t-tests were carried out for each available element: one to compare prepared versus unprepared speech; and another one to compare speaking (combining prepared and unprepared speech) versus listening. Then, for the elements within each of the three situation types to be compared with one another, three one-way analyses of variance were carried out.

Finally, in Section 5, descriptive statistics were calculated for each question, i.e., percentages and mean. The mean was calculated by scoring 1 for "yes", 0 for "no", and 0.5 for "maybe".

2.3. Investigating Genre Exemplars

A corpus was compiled to tackle the questions corresponding to the second objective. This section introduces the genre, describes the corpus compilation, annotation, and the subsequent data analysis procedures.

2.3.1. Video Methods Articles

2.3.1.1. The Genre

Video methods articles (VMAs), published by the *Journal of Visualized Experiments* (JOVE), are videos in which researchers of different disciplines (presented

as different journal sections) show methodological procedures and techniques, which would traditionally be reported in written protocols. These videos were investigated by Hafner (2018) from the perspective of genre innovation, digital literacy and multimodal expression. As this author puts it, JOVE "presents an interesting example of specialized disciplinary communication that has adopted an innovative form of representation, i.e., digital video, in an attempt to solve a serious communication problem" (p. 19). His study concludes that VMAs exploit the audiovisual affordances of the digital medium for the communicative purposes of the methods report genre.

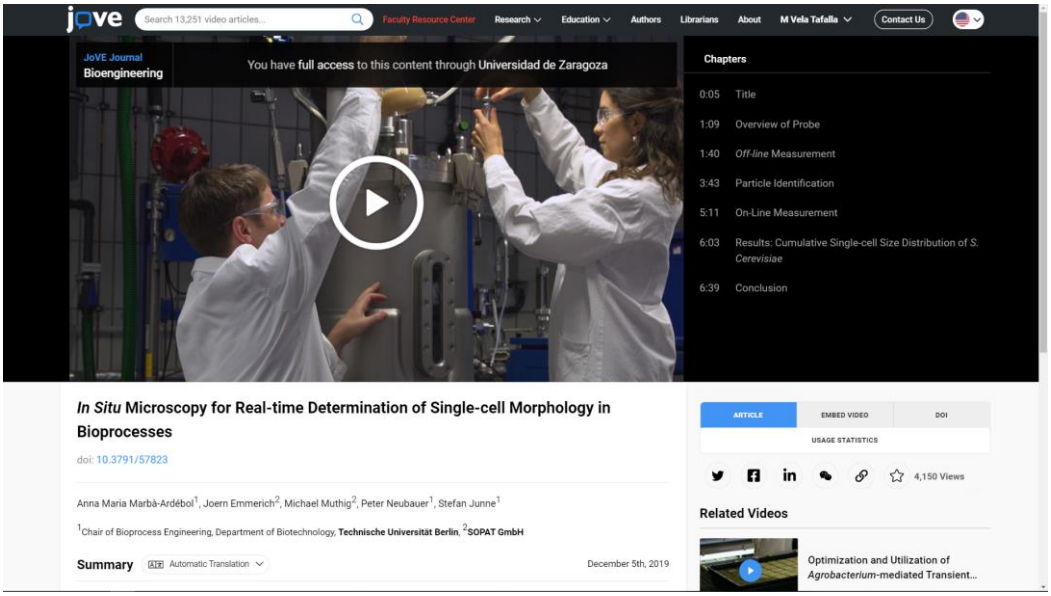
2.3.1.2. The *Journal of Visualized Experiments*

VMAs are integrated into a digital genre cluster on the multi-genre JOVE website, where to each article correspond two pages: one for the video and another one with an associated text article. An individual code (e.g., 57823) is used for identification of the videos in all materials associated with it, like the URL for the video page (e.g., jove.com/v/57823), the URL for the text article (e.g., jove.com/t/57823) and its DOI number (e.g., 10.3791/57823). This means that knowing the JOVE-specific code is enough to access all the relevant information relating to each specific VMA.

The page with the video (see Figure 2.1) includes a video player, a reference of chapters to its right that can be clicked to be directed to the specific part of the video, and below it the Title, Authors, Summary, and Transcript of the video.

Figure 2.1

Sample of a Page Displaying a Video Methods Article on the JOVE Website



The text article (see Figure 2.2), which can be accessed through the DOI number, is presented as a traditional written genre published online, consisting of Title and Authors, Summary, Abstract, Introduction, Protocol, Representative Results, Discussion, Materials, and References. At the right of the title, there is a snapshot of the video with a link to the page where it can be found.

Figure 2.2

Sample of a Page Displaying the Text Associated with a Video Methods Article on the JOVE Website

2.3.1.3. The Videos

Hafner's (2018) study explored 11 videos in the Biology section of the journal, with dates ranging from 2006 (first issue) to 2017 (last issue at the time of his study). His analysis identifies a stable generic structure subdivided in 8 sections (p. 27):

A) Video Intro
B) Overview
C) Researcher's Introduction
D) Demonstration
E) Representative Results
F) Researcher's Conclusion
G) Closing Credits

Looking at them with an interest in intonation, it can be observed that these sections vary in terms of typical speaking performers. Sections A and G do not make use

of spoken language. Sections B, D and E typically involve a professional voiceover narrator provided by the journal. Finally, and most interestingly to the aims of this dissertation, sections C and F feature the researchers-authors facing the camera and talking about their research. Consequently, these two sections are the most interesting to look into researchers' practices regarding intonation.

Notably, a part of Hafner's analysis focused on Section C, Researcher's Introduction (RI), "because in it the researcher faces the camera, engaging with the audience in a novel way that illustrates the hybrid nature of this genre" (p. 28). This author further observes that this section mixes "the discourse of hosted popular media programmes and the discourse of spoken scientific instruction" (p. 31) and that it allows the researchers to engage the audience in an innovative way. Thus, the RI section offers great potential to investigate the interface of intonational features and these complex communicative purposes. It is arguably possible to expect greater variability in function and form in this section than in, for example, the Demonstration section, where there is abundance of imperative sentences giving straightforward instructions as to how to carry out the procedures which are visually demonstrated.

In an exploratory study, Guillén Galve and Vela-Tafalla (2020) examined the possibilities of looking at intonation from a genre perspective in biology VMA RIs. The findings of that study suggested not only the suitability of using genre to explain certain intonational phenomena, but even its indispensability to justify deviations from the descriptions found in traditional pronunciation handbooks. Drawing from the conclusions of these studies, a larger corpus of JOVE VMA RIs was compiled.

2.3.2. Corpus Description

This section discusses the criteria considered for the creation of the JOVE Researcher's Introductions Corpus (JOVE-RI-C[3]), the data collection process, and the raw data obtained in this manner.

2.3.2.1. Collection Criteria

To ensure the internal homogeneity of this opportunistic corpus (McEnery & Hardie, 2011, pp. 11–13), two criteria for collection were followed: discipline (journal

[3] Pronounced JOVE-uh-rik / ˈdʒəʊv ə rɪk /.

section) and date (journal issue). The first is relevant to avoid influence of possible discipline-specific practices (Berkenkotter & Huckin, 1995; Hyland, 2018), while the second is intended to elude questions of genre evolution (Bhatia, 2004; Hafner, 2018; Tardy, 2016). Both disciplinary variation and genre evolution are interesting topics that could be explored in future, but they are not part of this project's research aims, so it was considered better to try to keep the impact of those variables as low as possible.

Biosocial factors like age, gender, nationality, mother tongue, or English proficiency were intentionally overlooked with the idea of researchers conceptualized as genre users/producers with a legitimate role in their speech community and making legitimate use of the available tools in a successful manner. In other words, the status of VMAs as peer-reviewed journal-mediated published material makes all the observed uses valid/authentic despite unquestionable diversity due to individual differences.

The discipline/section selected was Bioengineering because (a) it is related to Biology as explored by Hafner's (2018) study, (b) it was accessible thanks to the institutional subscription at UZ, and (c) it is of relevance to the United Nations Sustainable Development Goal 3 "Good Health and Well-Being", to which this dissertation contributes as part of a National Research Project (PID2019-105655RB-I00).

As to time, JOVE organizes its articles in monthly issues, disregarding the section where they are published and the number of articles per issue. This means that issues are a mere formality, not a real organizing device beyond indicating the month of publication.

Data collection started from the latest completed issue at the time, 154 (December 2019), and went backwards six months, to 149 (June 2019). Since that last issue only contained two VMAs in the Bioengineering section, Issue 148 (June 2019) was also included. These 7 issues totalled 48 VMAs. However, one final practical criterion needed to be considered: the availability of subtitles. Since intonation is necessarily connected to verbal expression, it was highly convenient that the videos had transcripts ready that could be accessed and stored. Just one of the published VMAs (id 60189) was discarded because subtitles were not available at the time of the data collection. The final selection of VMAs is presented in Appendix B.

2.3.2.2. Data Collection

The data were collected in a semi-automatic manner. First, the URLs for each of the 47 videos were taken manually from the journal search engine using the criteria explained above.[4]

The procedures described in this section were carried out in February 2020. Some aspects of the JOVE webpage design may have changed since then, making some features obsolete. For instance, the Transcript section was not available at the time, so effort was devoted to getting the subtitle file which would have been gathered much more easily now.

Once the URLs were listed in a .txt file, the JOVE-specific codes were easily extracted, so scripts were written in Python and Bash to automate the following tasks:

- Using the FFmpeg[5] tool, the videos were downloaded in .mp4 format from a .m3u8 playlist and stored in the appropriate directory.
- Using the FFmpeg tool, mono audio .wav files were extracted and stored in the appropriate directory.
- The initial and final times of the VMA Chapter of interest were extracted, since the RI section always corresponds to Chapter 2 in the JOVE Chapter index. Those times were then used to clip the audio files with the SOX[6] tool so that just the section of interest can be processed separately.
- The subtitle files in .srt format were downloaded and stored in the appropriate directory.
- From the subtitle file, the text was extracted, normalized, and written to a .txt file. Normalization is intended to prevent typographical information (e.g., commas or uppercase letters) from influencing the analyses and to verbalize non-word entities (e.g., numbers and symbols). For this reason, later references to word count take originally hyphenated compounds as more than one word.
- The following information about each of the VMAs was extracted: journal code, journal issue, video URL, text article URL, access status (open access or subscription required), title, summary, abstract, number of words in the RI section,

[4] URL of the search with the criteria applied: https://www.jove.com/research/bioengineering?from=2019-06-01&to=2019-12-31
[5] https://ffmpeg.org/
[6] http://sox.sourceforge.net/

length in seconds of said section. These data were written into an Excel spreadsheet for reference.

A code was generated for each VMA including an absolute number in the corpus, the journal issue, the relative number in the issue, and the code specific to the journal. The code for the example was 001_154_01_57823, meaning that it is the first of the 47 items, it can be found in Issue 154 (December 2019), it is the first of the total of items in the issue, and its JOVE code is 57823. This code was also included in the Excel spreadsheet for reference.

2.3.2.3. Corpus Summary

The final version of the raw data of JOVE-RI-C amounted to 40 minutes and 14 seconds of audio and 5,067 words of transcripts, corresponding to 47 RIs from VMAs in the Bioengineering section from 7 different JOVE issues (June to December 2019). Even though data for the whole VMAs were compiled, only information about RIs is reported due to the scope of this project.

2.3.3. Data Annotation

This section problematizes previous claims on corpus annotation, presents the solution proposed and summarizes the steps leading to the raw version of the corpus.

2.3.3.1. Challenges Faced

A methodological difficulty inherent to the design of this study was finding a way to annotate both intonation and move analysis simultaneously in a way that facilitated joint interpretation of the data.

The most widespread model for intonation analysis is that of the ToBI Standard (Silverman et al., 1992), which depends on specific computer software and requires visualization tools. More importantly, it necessarily implies taking on its theoretical assumptions. Annotation in the British tradition, on the other hand, typically consists of rather ad hoc signs and marks that very much depend on the specific aims of the transcriber, the investigation underway, and the different points to be proved. Also, it traditionally stems from pencil-on-paper mark-up upon a printed version of the utterance to analyse. These analyses are typically dependent on specific categories specified in each work and it is necessary to have a reference at hand to interpret them.

The models of Halliday & Greaves (2008) and Brazil (1975, 1997), reviewed in the Introduction chapter, have been especially influential. The former is the model used by intonation analysts in the SFL tradition, including SFL multimodal analysis (O'Halloran et al., 2019), while the second is used in multimodal discourse analysis studies in EAP (Querol-Julián, 2011). One remarkable feature of these two models is that their categories are mainly functional, so there is relatively little room for exploration of innovative uses and meanings. This is at the same time a limitation and an asset. As to annotation itself, Halliday's model is relatively easily transferable to computer analysis, while Brazil's is a bit more complex. However, Brazil's model has been computerized into the Hong Kong Corpus of Spoken English (Prosodic) (Cheng et al., 2008), which will be described in section 2.3.4.

As to move analysis, there are no specific conventions. For instance, software for qualitative analysis like Atlas.ti or Nvivo can be used to annotate moves just as it can be used for any other interpreted categories. In all, the main issues related to available options for annotation are that they are too specific and would require additions to incorporate information regarding move structure.

2.3.3.2. HTML

For the reasons above, it was deemed that the best option was to develop an annotation protocol that could incorporate different types of data in a flexible manner. The chosen tool was HyperText Markup Language (HTML). HTML is a standard of annotation conventions that is mainly used for the display of data as webpages. Typically, when the intention is to record data without specific information about display, this is done in the Extensible Markup Language (XML), which is very similar to HTML, facilitating conversions if wanted (Baker, 2006). Because the analytical aim of this dissertation is not just to store data but to annotate text and describe documents, HTML was chosen.

Below, a succinct introduction to HTML conventions is followed by the arguments for using it. Full reference of the latest version of HTML can be found in Web Hypertext Application Technology Working Group (n.d.). This summary only deals with the most basic elements that are especially relevant to the text mark-up task, therefore intentionally leaving out important elements (e.g., document type declaration) that are not relevant to the analysis itself.

The most basic elements of most types of computer annotation are tags, which are indicated by angle brackets: `<tag>`. A start tag is used to indicate the beginning of an element, and an end tag with the same name and a forward slash is used to indicate that that element is finished. For example, we can indicate what words are in the same intonation unit using a non-existent example tag `<iu>`:

```
<iu>This is example text</iu>
```

One important characteristic of tags is that they can contain and be contained in other tags:

```
<article>
<iu>This is example text</iu>
<iu>And here is some more</iu>
</article>
```

In the previous example, there are two intonation units which are part of the same article. Also, we can annotate just a part of the text:

```
<iu>This is example <nucleus>text</nucleus></iu>
```

This would indicate that one word is the nucleus within the whole intonation unit.

However, to follow HTML conventions, the names of the tags that can be used is limited, even though they are sufficiently varied. This is important to avoid tag names that are too specific and would complicate migration across platforms. For instance, a web browser can always identify a division by the `<div>` tag and treat all of them in the same manner, no matter what type of division the specific webpage is using that tag to indicate. This means that we need a way to differentiate the tags, and for this purpose start tags can contain further information. This is done by including keys (i.e., keywords) followed by an equal sign and information in inverted commas:

```
<article id="57823" title="example">
```

Even though there are pre-set keys like “id” and “title”, new keys can be created as long as they begin with “data-”:

```
<article id="57823" title="example" data-length="48" data-issue="158">
```

In this example, adding to the information about the id number and the title, two keys have been included about the length of the audio file and the issue in which this article appears.

As already stated, HTML is far more than what has been explained. However, it is possible to argue that just by following these and a few more well-formedness criteria, the arduous work of annotation and analysis can enjoy considerable benefits. The main idea is that a basic HTML document can, thanks to its well-known syntax, be easily utilized for later applications by both its original creator and other researchers for different purposes. Having a corpus as such document makes it easily parseable by computer, with as many tools and utilities to interact with it as there are for any webpage. This means that it is easy to extract information from it in an automatic or semi-automatic manner (for it is both human- and machine- readable, unlike XML) without any software that is too specialized, since this is a text document after all. Also, it is easy to check for formal mistakes like missing opening or closing tags, missing data, or extra characters.

Another important reason why HTML is convenient for the type of analysis underway is that it is text-dependent: most tags need to be attached to characters or words, they cannot stand on their own (except for those which can by default). This has the conceptual implication that both moves and intonation are tied to words. In the case of intonation this is not a problem but in fact necessary, as it may be more problematic to try and analyse it in relation to non-verbal modes. In the case of move analysis, this may be a problem since Hafner's (2018) analysis did consider more than verbal information and moves may be realized, for example, visually. The assumption is therefore that for the RI section the verbal mode is preeminent and therefore sufficient to identify moves. This might not be the case in other sections, especially Demonstration, which rely on visual display on camera.

Also, in analyses of other modes, it is necessary to know the exact times of the phenomena annotated (e.g., a gesture that takes 3 seconds). This has not been included for intonation analysis, but HTML would allow to extract that type of data through forced alignment, a speech signal processing task by which it is possible to determine the starting and finishing times of words and even phonemes given an audio input and its transcription. This means that knowing that there is a specific intonational or generic

phenomena at a specific word is enough to know where in the audio track that can be found and, therefore, how it interacts with other modes that may be possibly analysed in studies of a different nature.

Of course, the most important reason to use HTML is that this type of tagging and element nesting/embedding allowed for simultaneous analysis of both intonation and rhetorical structure. This means that it was needed to conceptualize linguistic elements as constituents of one another. The following sections present the tags and keys used for the annotation of JOVE-RI-C. For now, it is necessary to highlight that it was decided to treat rhetorical moves as units at an upper range than intonation units. This means that intonation units are presented in the corpus as constituting or contained in moves. Even though they are categories of a different nature (phonological versus rhetorical), this was decided because of the theoretical reasons presented in the Introduction of this dissertation where intonation is hypothesized as influenced by genre constraints. Intonation is therefore conceptualized as linguistically enacting the social intentions inherent to the VMA genre. In the Results chapter, the adequacy/appropriateness of this decision will be reconsidered in light of the actual experience of tagging and analysis.

2.3.3.3. Data Preparation

In addition to audio clipping, text normalization, and code generation as explained above, pre-processing included automatically extracting the required data from the Excel spreadsheet and preparing an HTML file with the whole collection. Each RI was written as an `<article>` element, and the whole text of the corresponding VMA was pasted inside the tags. The following information was appended to the opening tag of each article:

- An HTML class defined as “jove-ri”, common to all.
- An id corresponding to the code that was generated as explained above.
- Its length in seconds.
- The full title of the VMA.

Finally, a first listening to the whole corpus took place carrying out the following tasks manually:

- Text that did not correspond to the RI section was deleted.
- Typographical errors in the subtitles, as well as forthright mistakes, were registered as HTML comments. E.g., where the audio said a word and the subtitle said something else.

- In RIs with more than one speaker, switches from one researcher to another were marked up with the standalone `<br>` tag.

The specific tags and elements used for intonation and move analysis are explained in their corresponding section below.

2.3.3.4. Intonation Analysis

The complexity of intonation analysis has been widely observed (e.g., Cheng et al., 2008; Roach, 2009; Wichmann, 2000). Most often, this type of analysis relies not only on auditory impressions, i.e., listening, but also on instrumental acoustic observations through pitch visualization tools where the fundamental frequency of sound is represented graphically. However, pitch as visualized in speech processing software has a twofold problem. First, there are known to be special cases where the computation fails and doubling or halving errors may occur. Second, what is represented in a frequency line is the phonetics of intonation, i.e., the actual physical realization of the linguistic system that is to be interpreted phonologically. As an illustration, it is well known that a nasal at the end of a falling contour makes the fundamental frequency to be higher and consequently the tracing may appear to be rising. Johnson (2012) provides a useful summary of these technical issues, which have been followed when looking at pitch tracings with the Praat software (Boersma & Weenink, 2019) for this project.

The phonological model presented in the Introduction presented three subsystems: tonality, tonicity, and tone. Utterances are divided in IUs (tonality), identified by the `<span>` tag in the corpus, each of which has just one nuclear accent (tonicity), identified by the `<em>` tag. These nuclear accents may be of three types (tone): falls, rises, and fallrises. This has been incorporated to the HTML annotation as a class of the `<em>` tag. Thus, a word with a falling nuclear accent is marked up as

```
<em class="fall">word</em>
```

For the system of tonality, Cruttenden (1997) discusses a variety of cues to boundary identification: shortening of IU-initial unstressed syllables (i.e., anacrusis); lengthening of IU-final syllables; pitch changes in unaccented syllables; and internal structure of the IU. These cues were combined and understood in their context of occurrence, since they do not necessarily imply the presence of a boundary.

As to the systems of tonicity and especially tone, trying to identify phonological categories among the subtle phonetic movements of fundamental frequency proved to be as complex as the literature anticipated. In order to find a solution to the different problems encountered in classification, the work of Gussenhoven (1984, 2004) turned out to be very helpful, especially in relation with the variables in the system of tone. The main forte of his work is that it presents an autosegmental account of intonation that continues the British tradition: while acknowledging the existence of prenuclear pitch accents, it insists on the importance of the nucleus as defined positionally (the last pitch accent); it manages to systematically represent the traditional contours in terms of compositions of pitch targets (high, H, vs low, L) by looking at the movements *from* the nuclear syllable instead of *leading to* the nuclear syllable as Beckman and Pierrehumbert (1986), Pierrehumbert (1980) and the ToBI (Silverman et al., 1992) analyses do (see Gussenhoven & Rietveld, 1991); and it keeps an eye on the functional status of pitch accents and their contribution to meaning making in a line that is very close to Brazil (1997) (see Prieto, 2015; Westera et al., 2020).

Gussenhoven's (2004) grammar presents the composition of the fall (H*L L_ι)[7] and the fall-rise (H*L H_ι), equivalent to Tench's. Further, he deals with the high rise (H* H_ι) and the low rise (L*H H_ι) only to end up saying that it is "hard to discern any meaning differences" (p. 299) between them, so that both can be considered just rises. Except for a special case, the remaining contours of his repertoire can be grouped[8] as one of Tench's: the high level (H* }), the half-completed rise (L*H }), and the low low rise (L* H_ι) can be taken to be variations of the rise, while scathing intonation (L* L_ι) and the low level (L* }) can be subtypes of fall.

This leaves the half-completed fall, consisting of an H*L pitch accent on the nuclear syllable without a boundary tone: H*L }[9]. This contour is recorded elsewhere as an uncommitted mid fall (Crystal, 2019), a fall to "not very low" (Brown, 1977) or a "stylized fall-rise" (Lindsey, 2019)[10]. Wichmann (2000, p. 56) explains that "the truncated fall signals a degree of non-finality" and is therefore grouped with rises and

[7] In Gussenhoven's (2004) notation, an asterisk indicates that the preceding tone is aligned with the stressed syllable, a subscript iota indicates boundary tones, and curly brackets mean the absence of boundary tones.
[8] Cruttenden (1997) discusses "abstract meanings" of intonation via reduction of tone inventories like Tench (1996) and in fact Gussenhoven (1983) do, in opposition to approaches to "local meanings" with larger inventories like his own or Crystal's (1969).
[9] Corresponding to ToBI H* L- without an intonation phrase boundary tone.
[10] Stylization is presented as a modification in other works (Gussenhoven, 1984b; Gussenhoven & Rietveld, 1991; Ladd, 1978), but those do not really correspond to Lindsey's contour. Unfortunately, Lindsey does not provide further clarification.

fallrises. This shows that this contour does not allow for straightforward interpretation or classification. For this reason, it was decided to keep it as a separate category in the analysis, so that it is possible, experimentally, to count it with either falls or fallrises or just to segregate it. In the annotation protocol, it is reflected as the "hcfall" class for `<em>` tags.

Gussenhoven's autosegmental model has been especially useful in clarifying the distinction between tones that may both sound (auditorily) and appear (acoustically) similar, but which experimental observation proves to be different. There are mainly two of these. First, a low rise (L* H_t) may sound and look like the last part of a fallrise (H*L H_t). It is necessary to look at the stressed syllable and see whether it actually has a H or just the drop to L* from the previous higher pitch in preceding syllables. Second, the half-completed fall (H*L }), because of its lack of boundary tone, is liable to be confused with a regular fall (ending L_t) or a fallrise (ending H_t). It is necessary, therefore, to pay close attention to the movement in the post-nuclear segment.

Even so, there are still cases where the analyst cannot be certain about the categories assigned. In these cases, the class "unsure" was used, whether or not in combination with the classes for tones: e.g., `<em class="unsure">` or `<em class="fall unsure">`. Uncertainty about tonality or tonicity was recorded with HTML comments: `<!---unsure tonality--->` and `<!---unsure tonicity--->` respectively.

Importantly, the difficulty in identifying IUs, nuclear accents, and tones does not imply that they are flawed categories. While it is unquestionable that phonological science still needs to be further developed in this direction, it can be argued that the very nature of linguistic categories creates this difficulty. In fact, this is related to Swales's (1990) concept of genre prototypicality: the fact that it is not easy to identify a category (be it a bird, a genre, or a tone) does not mean that the category itself does not exist. Rather, there will be very clear examples of the category while others will be problematic, as with any type of observations of natural phenomena.

The actual process of going through the whole corpus and annotating the RIs intonationally was carried out in three phases. In the first one, the problems described were identified. In the second one, the solutions were tested experimentally. The third one took place in a short frame of time (two days) to ensure homogeneity of categorization. Comparing the three of them, there is a progression towards (a) fewer "unsure", (b) fewer fallrises in favour of rises and half-completed falls, (c) more half-completed falls, and (d) more (and therefore shorter) IUs.

2.3.3.5. Move Analysis

Moves were marked with the `<div>` tag, with information about class conveying each of the different possible types. Through qualitative, multimodal genre analysis, Hafner (2018, p. 27) identified five moves in the RI section of VMAs:

1. Introducing Self
2. Forecasting the Demonstration
3. Explaining Significance
4. Introducing Additional Researchers
5. Inviting the Audience

The corresponding classes for tagging are: 1is, 2fd, 3es, 4ir, and 5ia. Also, an uncertain category "unsure" (0uns) is used in a special case where it was not possible to elucidate the communicative purpose of the passage due to unintelligible words.

It was sometimes problematic to identify some of the moves. Significance is often explained (3es) by forecasting the demonstration (2fd); these cases were tagged as the former, while the latter was left for simple enunciations of the procedure without evaluation. Also, "significance" was found to be quite a broad but useful term since it may not only refer to the significance of the procedure or method presented but also to the demonstration itself.

One further problem was that after the first period of annotation, some passages did not quite correspond to the available categories but to something that had been identified as "giving advice". Conveniently, Hafner's analysis of Section F, Researcher's Conclusion, included a move labelled "Giving Tips", which properly conveyed the communicative purpose of these problematic excerpts. Therefore, in the second period of annotation, it was incorporated as 6gt, keeping his nomenclature for simplicity's sake:

6. Giving Tips

2.3.4. HKCSEP as a Reference Corpus

In order to allow for comparisons and generalizations of intonational data, Cheng et al.'s (2008) Hong Kong Corpus of Spoken English (Prosodic) (henceforth HKCSEP) was taken a reference corpus (see McEnery et al., 2006, on reference corpora). This corpus is a 0.9-million-word extract of the full Hong Kong Corpus of Spoken English (Cheng & Warren, 1999), made up of four sub-corpora: Academic, Business, Conversation, and Public. The prosodic annotation of the corpus follows David Brazil's DI model (see Introduction).

A Python script was written to convert the HKCSEP annotation to the annotation used for this project so that the same type of data appears and the same tools and approaches can be used. Because of the absence of divisions to do with articles or moves, the task was mainly to extract all well-formed IUs and the information to do with the nucleus and the contour. This means that information provided in the HKCSEP, such as speaker, interruptions, or pitch range (Brazil's key and termination), were not preserved.

In such a large corpus, it is not surprising to have found ill-formed IUs with missing or extra opening or ending indices as well as missing or extra nuclear tones, to name a few possible mistakes. Importantly, these data were not corrected manually (e.g., inserting a missing opening index in an IU that unequivocally lacks it at a precise point). For one thing, the investment of time and effort in the task would not have probably altered the actual numbers much. But, more importantly, this makes the process replicable: if someone wants to know exactly what has been done, it is possible to provide the Python script and run it again. Also, it is possible to experiment by changing it to see whether data can be improved. This would not be possible had the data been modified manually. This was considered of greater value than having a few more well-formed IUs.

According to Cheng et al. (2008, p. 62), there are 323,703 IUs and 900,124 words in the HKCSEP corpus. During the processing to convert them to the HTML tagging of this project, 323,648 candidates to IU were found. After cleaning, 4,723 IUs were discarded as ill-formed, meaning that the final HTML version of the corpus had 318,925 IUs and 881,513 words, which corresponds, respectively, to 98.52% and 97.92% of their reported amount. These percentages show that the loss due to intervention is negligible.

2.3.5. Data Analysis

Once the corpus annotation process was finished, the HTML file where the data were stored was analysed using Python scripts and text processing tools for descriptive statistics.

As to move analysis, absolute and relative percentual frequencies were computed, as well as their distribution across RIs. The move structure of each RI was extracted and processed separately. This data was then used to compare the analyses of the three systems of intonation.

As to tonality, absolute and relative frequencies were computed measuring the length of IUs in number of words. Exact combinations of words appearing together as

independent IUs more than once were extracted. Finally, these data were contrasted across RI moves.

As to tonicity, the most frequent nuclear words were extracted, and all IUs were checked through close reading for special cases of emphasis. The positions of nuclear words were calculated for both JOVE-RI-C and HKCSEP. They were expressed in negative numbers from the end, as -1 for the last word of the IU, -2 for the previous word, and so forth. These data were then contrasted across moves.

As to tone, absolute and relative frequencies were computed for JOVE-RI-C and HKCSEP. Due to the difference in tone inventories across corpora, the calculation was also made applying two modifications: (a) disregarding HKCSEP level tones and grouping its risefalls with falls, which are considered variations of the same morpheme in this project's analysis, following Gussenhoven and Tench; and (b) counting JOVE-RI-C half-completed falls as belonging to the broader category of fall, as Gussenhoven introduces them. Furthermore, successions of two tones were extracted by calculating absolute and relative frequencies of a given tone following another one, disregarding those marked as "unsure" and disregarding speaker shifts and move boundaries. Finally, the frequency distribution of tones across moves was calculated.

Chapter 3. Results

This chapter reports on the analysis of the data yielded by the two methodological tools of this project, namely the SEARSQ questionnaire and the JOVE-RI-C corpus.

3.1. SEARSQ Questionnaire Results

The sections below correspond to the main sections of the SEARSQ questionnaire as described in the Methodology chapter.

3.1.1. Academic Spoken English Practices

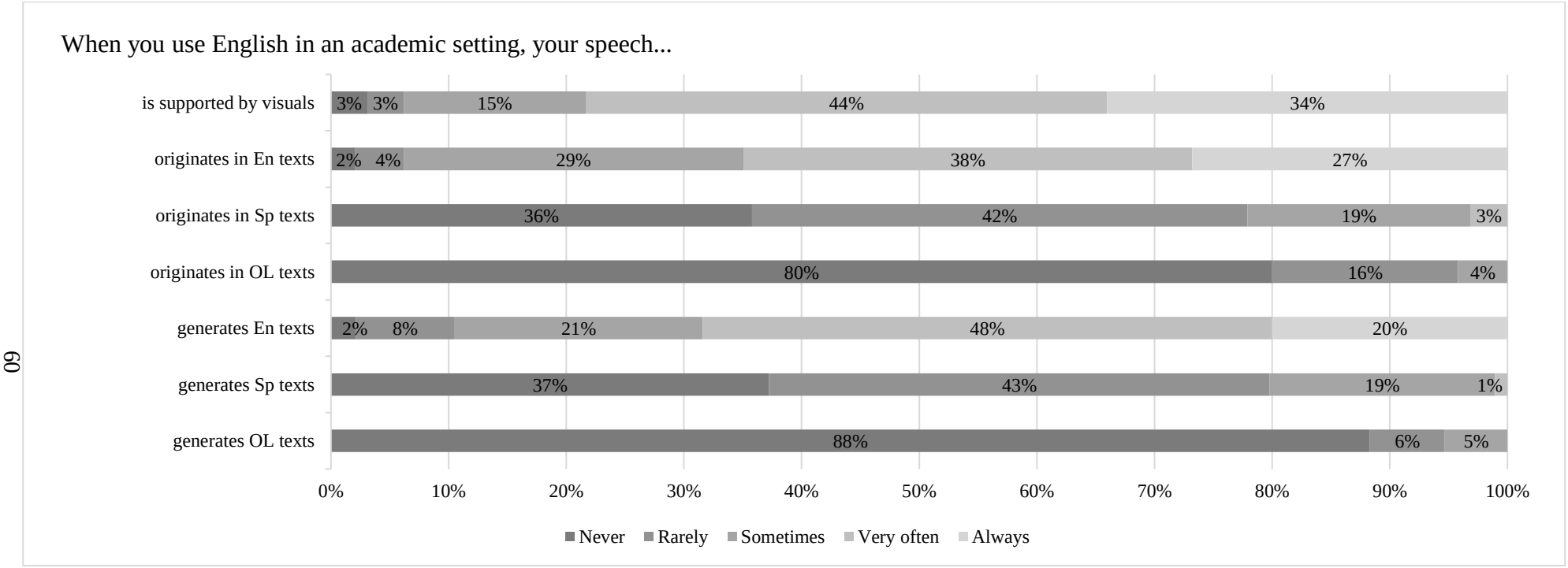
On average, respondents report using English in 61% of their activities as researchers and teachers. A one-way analysis of variance indicated that there was a significant difference in time devoted to reading (M = 5.28, SD = 1.11), writing (M = 4.05, SD = 1.45), listening (M = 2.84, SD = 1.24), and speaking (M = 2.46, SD = 1.21), $F(3, 392) = 101.55$, $p < .001$. The effect size was large ($\eta^2 = .44$). S-N-K post hoc tests confirmed all means to be significantly different from one another, $p < .05$. The high scores for standard deviation show the lack the homogeneity in individual answers.

As seen in the responses, researchers spend more time in reception activities than in their production counterparts, and the written mode takes precedence over the spoken one, being the main mode for English use in the research profession. However, while training often focuses on production skills (i.e., the least frequent), it usually deals with the written mode rather than speaking (also the least frequent). The fact that speaking is less often practiced than the other skills may in fact lead to the argument that more specific training is needed, as the opportunity for practice is limited, while the value attached to writing, rather than the frequency of practice, already ensures sufficient training in that area.

The interaction of language modes can be an indicator of possible genre relations as well as of the weight of writing for the spoken mode. The data displayed in Figure 3.1 and summarized in Table 3.1 show these relationships. 78% of respondents report using visuals as support for academic English speaking always or very often. 65% produce spoken activities that are based on English texts always or very often, while, similarly, 68% generate texts written in English afterwards with the same reported frequency. Thus, these data add to our knowledge about the pre-eminence of writing, hinting to the idea

Figure 3.1

Respondents' Reported Interaction of Language Modes



Note. En = English, Sp = Spanish, OL = Other Languages

that in scientific communication the spoken mode is dependent of the written mode, as researchers' speech is not often spoken-only; rather, there is always some kind of written support, whether in the form of visuals on screen, or prior or future writing. From the data it can be deduced that spoken genres are ecologically connected with related written genres in what could be genre chains. This might cause the English used for spoken research communication to be more written-like than other types of speech, especially as most speaking in research communication (i.e., spoken research genres) typically allows for preparation.

Table 3.1

Summary of Respondents' Reported Interaction of Language Modes

Question	M	SD
When you use English in an academic setting, your speech…		
is supported by visuals	4.0	1.0
originates in En texts	3.8	0.9
originates in Sp texts	1.9	0.8
originates in OL texts	1.2	0.5
generates En texts	3.8	0.9
generates Sp texts	1.8	0.8
generates OL texts	1.2	0.5

Note. En = English, Sp = Spanish, OL = Other Languages

For instance, even if conference presentations tend to be formal and delivered with careful language (Ventola et al., 2002), they are often followed by more colloquial Q&A sessions (Querol-Julián & Fortanet-Gómez, 2012, 2016), while part of the same speech event. The main differences in the generic structure and linguistic features of the presentation itself and the Q&A might be the degree of preparedness and the closeness to a written genre, as well as the tenor or speaker-audience relationship which is also a genre-specific factor. While the words used in a conference presentation are usually read or remembered from slides or personal notes (or even an already written article) and possibly continued in a proceedings or fully-fledged journal article, there is no written counterpart for the Q&A session, where the audience has the opportunity to put into question some of the presenter's claims in a way which may not have been anticipated (i.e., prepared).

As shown in Table 3.2, the use of language repertoires in research activities was related to a distinction between national (1 and 7) versus international (2 and 8) events. The former present a varied language distribution while the latter take place, primarily,

in English; in fact, they are the most likely to take place in English according to the informants. However, national conference presentations are reported to be given just as much "in Spanish" as "in English or Spanish", while national research workshops are more often carried out in Spanish, which may be related to the fact that they may be events aimed at more local audiences. This is backed by the fact that the only Finnish-speaking informant ticked "other languages" for this activity as well as research meetings, the latter showing no default language preference according to the data probably for the same reason (i.e., being rather local events). These data contribute to the problematization of the landscape of scientific languages as far from monolingual, i.e., English-only.

Table 3.2

Languages Mainly Used for Research Activities

Activity	Mainly English	English or Spanish	Mainly Spanish	Mainly Other Languages	N/A
1 National conference presentations	23.2%	36.4%	36.4%	0.0%	4.0%
2 International conference presentations	83.8%	6.1%	1.0%	0.0%	9.1%
3 Conference posters	70.7%	23.2%	3.0%	0.0%	3.0%
4 Round tables	30.6%	25.5%	15.3%	0.0%	28.6%
5 Sponsor interviews (face-to-face)	11.2%	42.9%	22.4%	0.0%	23.5%
6 Sponsor interviews (telephone or video)	15.3%	50.0%	17.3%	0.0%	17.3%
7 National research workshops	4.1%	37.8%	51.0%	0.0%	7.1%
8 International research workshops	74.2%	14.4%	2.1%	1.0%	8.2%
9 Marketplaces	13.8%	25.5%	11.7%	0.0%	48.9%
10 Research meetings	19.2%	58.6%	19.2%	1.0%	2.0%

Concerning the language repertoire of pedagogy-related activities, Table 3.3 shows a less frequent choice of English as the main language, implying that these activities often take place in Spanish or alternatively in English or Spanish. The highest scores for Spanish are found in face-to-face, less formal activities like tutoring sessions, teaching meetings, and service encounters. Within these activities, English appears to be used more often for assessment tasks like vivas and their respective boards, as well as seminars. Importantly, as not all respondents are teachers, the number of N/A answers is higher for this question.

Mean values for these activities without N/A responses can be observed in Table 3.4. Inferential statistics showed a significant difference in scores for research (M = .59,

SD = .23) and pedagogic activities (M = .16, SD = .10), t(12) = 5.46, p < .001. The magnitude of the difference in the means was moderate (η^2 = .61), with the type of activity (research or pedagogic) explaining 61% of the variance in English/Not English means.

Table 3.3

Languages Mainly Used for Pedagogy Activities

Activity	Mainly English	English or Spanish	Mainly Spanish	Mainly Other Languages	N/A
11 Lectures	4.1%	21.4%	59.2%	0.0%	15.3%
12 Seminars	8.2%	43.3%	44.3%	0.0%	4.1%
13 Tutoring sessions	1.0%	14.3%	71.4%	0.0%	13.3%
14 PhD Vivas	12.4%	26.8%	53.6%	1.0%	6.2%
15 PhD Board	7.3%	30.2%	37.5%	0.0%	25.0%
16 Undergrad Vivas	1.1%	18.9%	67.4%	0.0%	12.6%
17 Undergrad Board	1.0%	16.5%	61.9%	1.0%	19.6%
18 Class presentations	3.1%	22.7%	62.9%	0.0%	11.3%
19 Teaching meetings	1.0%	5.1%	78.8%	0.0%	15.2%
20 Audits	1.0%	8.2%	35.1%	0.0%	55.7%
21 Service encounters	1.0%	2.0%	88.9%	0.0%	8.1%

Table 3.4

Scores of Frequency of English Used for Research and Pedagogy Activities

Activity	M	SD
Research activities	.59	.23
1 National conference presentations	.43	.39
2 International conference presentations	.96	.16
3 Conference posters	.85	.26
4 Round tables	.61	.39
5 Sponsor interviews (face-to-face)	.43	.33
6 Sponsor interviews (telephone or video)	.49	.32
7 National research workshops	.25	.29
8 International research workshops	.89	.25
9 Marketplaces	.52	.36
10 Research meetings	.49	.32
Pedagogic activities	.16	.10
11 Lectures	.17	.29
12 Seminars	.31	.32
13 Tutoring sessions	.09	.21
14 PhD vivas	.27	.36
15 PhD board	.30	.33
16 Undergrad vivas	.12	.23
17 Undergrad board	.12	.23
18 Class presentations	.16	.27
19 Teaching meetings	.04	.16
20 Audits	.12	.24
21 Service encounters	.02	.13

This indicates that it is possible to generalize that research activities are usually carried out in either English or Spanish/other languages, with English being slightly more likely, while pedagogic activities are very likely to be carried out in Spanish/other languages. The limitations of the data must be recognized, as these scores depend on the specific activities that SEARSQ enquired about, i.e., valued and common activities but not encompassing the whole of researchers' professional practices. Still, the findings highlight the importance of studying the use of English in research genres not only to gain a better understanding of the practices but also the needs of researchers for efficient scientific communication in a highly internationalized profession where English is needed more and more often.

Furthermore, Table 3.5 shows descriptive statistics for language use in activities that are emergent, mainly online, spoken genres, be they related to research or teaching. TED-like talks are the most commonly engaged with in English, with other online-only activities like webinars and MOOCs. As to Spanish, it seems to be used especially for podcasts, but also webinars and scientific monologues, showing that there is language variation in emergent activities as well as in more traditional ones above. Still, the great incidence of N/A answers needs to be acknowledged.

Table 3.5

Languages Mainly Used for Emergent Activities

Activity	English	Spanish	N/A
Webinars	27.7%	11.7%	60.6%
MOOCs	27.7%	9.6%	62.8%
TED talk or similar	51.1%	2.2%	46.7%
Podcasts	18.8%	17.7%	63.5%
Scientific monologues	8.2%	13.4%	78.4%
Short research talk contest	2.1%	11.6%	86.3%
Flipped classroom	0.0%	7.4%	92.6%
Audioslides	8.3%	3.1%	88.5%

Comparing which activities are engaged with by researchers (see Table 3.6 for a summary), a significant difference was found, $F(7, 749) = 14.16$, $p < .001$. The effect size was small ($\eta^2 = .12$). S-N-K post hoc tests showed that there was a significant difference ($p < .05$) between TED talks as the most common, then Webinars, MOOCs, and Podcasts having similar means, and finally the remaining four as being rather seldom practiced by researchers.

Table 3.6

Scores of Engagement with Emergent Activities

Activity	N[1]	M	SD
Webinars	94	.39	.49
MOOCs	94	.37	.49
TED talk or similar	92	.53	.50
Podcasts	96	.36	.48
Scientific monologues	96	.21	.41
Short research talk contest	95	.14	.35
Flipped classroom	94	.07	.26
Audioslides	96	.11	.32
Total		.27	.45

[1] Respondents did not fill in all the items.

As to the use of English in emergent spoken research activities (see Table 3.7 for a summary of means), the second analysis indicated that there was a significant difference, $F(7, 200) = 11.36$, $p < .001$. The effect size was small ($\eta^2 = .28$). S-N-K post hoc tests showed significant differences ($p < .05$) to exist: TED talks stand out as virtually always in English, without significant difference with MOOCs, audioslides, and webinars which are also typically done in English; these three lean towards the central values of podcasts (51% in English) and scientific monologues (38% in English) having similar means and distributions; finally, short research talks and flipped classroom stand out as mainly done in Spanish.

Table 3.7

Scores of Frequency of English Used for Emergent Activities

Activity	n[1]	M	SD
Webinars	37	.70	.46
MOOCs	35	.74	.44
TED talk or similar	49	.96	.20
Podcasts	35	.51	.50
Scientific monologues	21	.38	.50
Short research talk contest	13	.15	.38
Flipped classroom	7	.00	.00
Audioslides	11	.73	.47
Total	208	.65	.48

[1] Subsamples including only those who do engage with these activities.

It is interesting that TED-style talks are both the most often engaged with by researchers and also the most often in English. They are a very clear example of prepared speech in an English research dissemination setting (Chang & Huang, 2015; Wingrove,

2017). On the contrary, the most likely to be carried out in Spanish are local events like flipped classrooms (i.e., a pedagogy-related activity) and short research talk contests (usually done for local audiences). Although MOOCs and webinars are also pedagogy-related activities (Bernad-Mechó, 2015; Ruiz-Madrid & Fortanet-Gómez, 2017), they are often carried out in English. This might be related to their online nature, in contrast with rather in-situ events like scientific monologues and short research talks, which got lower scores.

Finally, informants were asked whether they wanted to mention any other important spoken activity that was not covered in the previous questions. Two respondents mentioned dissemination activities taking place indistinctly in Spanish (both), English (one of them) or Portuguese (one of them). Another respondent brought up listening to video tutorials both in English and Spanish, and one last person referred to lab practice sessions in English as part of their teaching. These hint to the wider genre ecology of scientific communication, with a great number of rhetorical mechanisms being deployed in different languages. Still, although English might be the common language used in many activities, the data present a more varied picture where it is far from being the only scientific language.

3.1.2. Attitudes Towards English in Research and Teaching

The respondents' perceptions regarding the difficulty of the different language skills for their professional purposes is shown in Table 3.8. Reading is perceived as the easiest skill, while speaking and listening combined add up to 86.6% in the "hardest" category, suggesting that the spoken mode is perceived as the hardest, with not much difference between production and reception.

Table 3.8

Perceptions Regarding the Difficulty of the Different Language Skills

Skill	Easiest	Hardest
Writing	3.1%	13.4%
Reading	85.7%	0.0%
Speaking	7.1%	40.2%
Listening	4.1%	46.4%

Still, it is interesting to observe that while reception skills are considered easier for the written mode (i.e., reading is easier than writing), they are seen as harder for the spoken mode (i.e., listening is harder than speaking), although the two are very close. All

those who did not choose listening or speaking selected writing, which, despite being a quite frequent activity for researchers, as shown at the beginning of the previous section, is still considered difficult to some degree. In any case, the data suggest that speaking and listening are perceived as the most challenging, inviting further research into processes of acquisition and learning of spoken research genres and their pedagogy.

The data on difficulty perception is complemented by reported feelings of anxiety or stress when using English, as displayed in Figure 3.2 and summarized in Table 3.9. Statistical analysis indicated that there was a significant difference in reported stress levels for these four different tasks in English, $F(3, 392) = 38.67$, $p < .001$. The effect size was small ($\eta^2 = .29$). S-N-K post hoc tests showed all four skills to be different from one another, $p < .05$.

In general, a low level of stress is reported, always below the medium level of 3. Reading causes significantly less anxiety, followed by writing. Regarding the spoken mode, researchers report feeling more anxiety in prepared speech than in unprepared speech, which might seem contradictory at first thought. However, this may be related to the kind of expectations required in prepared speech events like conference presentations or round tables. It may be understood that more mistakes or slips of the tongue are allowed in unprepared situations, which are also usually more friendly and informal, although not necessarily. Therefore, these data seem to point to the fact that training is needed for both prepared and unprepared speech to attempt to reduce stress levels. Prepared speech may be considered more "teachable" than unprepared speech due to the existence of such expectations and restrictions connected with established formal spoken genres and also their greater proximity to the written modes explained above.

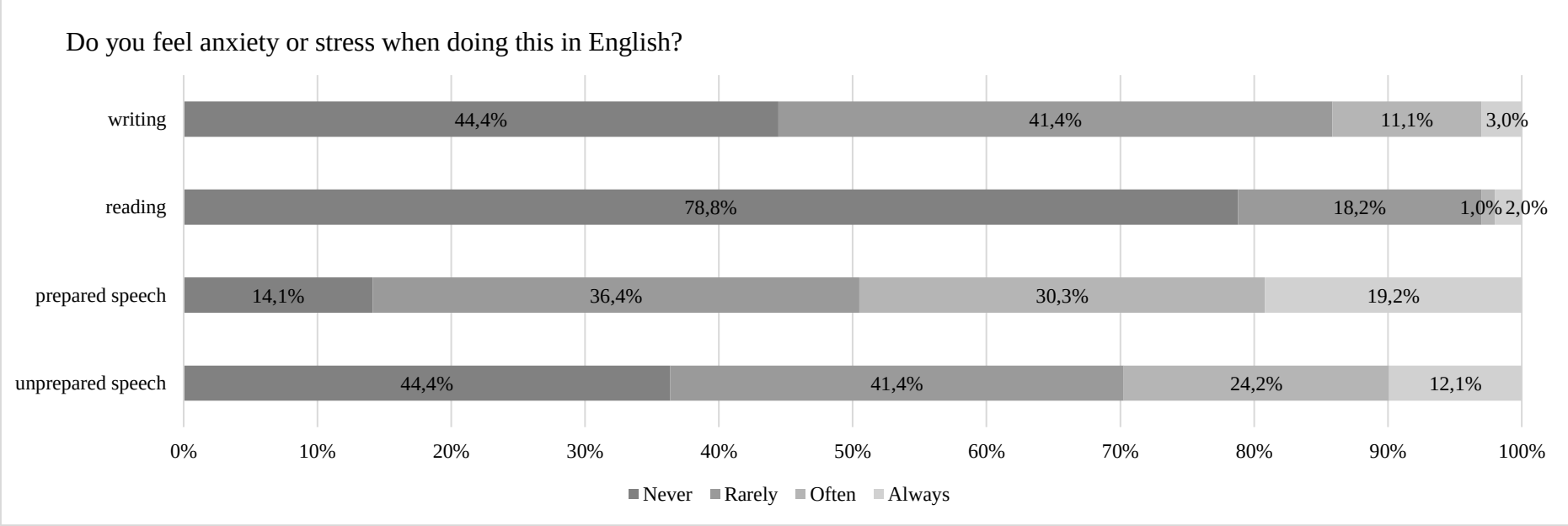
Table 3.9

Summary of Respondents' Reported Anxiety or Stress for Different Tasks in English

Task	M	SD
Writing	1.76	0.88
Reading	1.28	0.68
Prepared Speech	2.74	1.28
Unprepared Speech	2.40	1.20

Figure 3.2

Respondents' Reported Anxiety or Stress for Different Tasks in English



Finally, the perceived importance of different elements for researchers' professional success is displayed in Figure 3.3 and summarized in Table 3.10. Statistical analysis indicated that there was a significant difference in attached importance for the seven categories, $F(6, 685) = 68.06$, $p < .001$. The effect size was large ($\eta^2 = .37$). A S-N-K post hoc test proved the significance, $p < .05$, of the differences between the means of all groups except two pairs: native-like intonation and native-like pronunciation are not significantly different between each other, and neither are correct pronunciation and grammatical correctness.

It must be noted that the categories in this question are highly dependent on the specific judgment of each respondent, as there is, for example, no objective "good written English" and different criteria might be used. In fact, that category and "good spoken English" are the higher, but it must be recognized that they are not very specific categories, as it could be generally agreed that "good English" is important without implying much.

The items in the list appear to be in descending order of importance, as grammatical correctness is more valued than pronunciation, which is, in turn, deemed more important than intonation. The least important, according to the data, is to sound like a native, whether it be word pronunciation or intonation, and these two values are the only below the middle level of 2.5. This might imply that perceptions of good pronunciation/intonation are not connected with native-likeness but with other factors such as communicative efficiency. These findings are in line with the view that English is the default academic language not as a national language from English-speaking countries but as a language spoken for research purposes (similar conceptually to what is found in the literature as English as a Lingua Franca). This is the reason why EAP/ESP exists within the pedagogy of English as a Foreign Language with different goals and audience. The findings also suggest that there may be an interest in training in the reception and production of spoken research genres, but not necessarily in native-like performance, as one can be proficient in research communication without sounding like a native.

Figure 3.3

Respondents' Reported Importance of Different Linguistic Elements for Professional Success in a Research Career

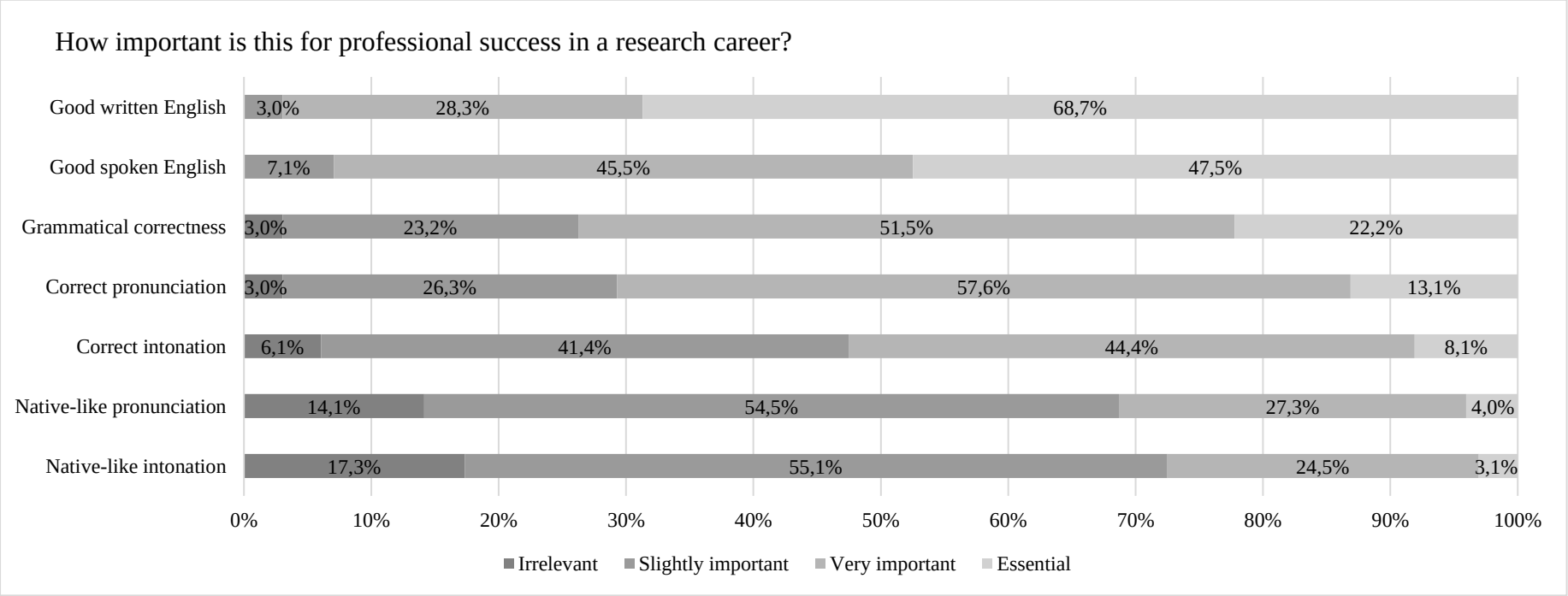


Table 3.10

Summary of Respondents' Reported Importance of Different Linguistic Elements for Professional Success in a Research Career

Linguistic element	M	SD
Good written English	3.66	0.53
Good spoken English	3.40	0.62
Grammatical correctness	2.93	0.76
Correct pronunciation	2.80	0.70
Correct intonation	2.55	0.73
Native-like pronunciation	2.21	0.73
Native-like intonation	2.13	0.72

3.1.3. Spoken English Planning and Awareness

As to the respondents' degree of planning or awareness of linguistic elements, Table 3.11 shows a summary of paired samples t-tests which show the difference between prepared and unprepared speech to be statistically significant. For all elements except accent, awareness is higher for prepared speech, as one may be more conscious of what is being done and, as argued above, there are greater expectations for the genre and less tolerance for mistakes because of the preparedness itself. The greatest difference is in the mean attention paid to the pronunciation of individual words, but it is still very close to the difference between the scores for other elements.

Table 3.11

Paired Samples T-Tests of the Researchers' Awareness Scores of Spoken English Elements in Prepared and Unprepared Speech

Linguistic element	M	SD	d	T	Cohen's d
Words			98	6.10**	.61
Prepared Speech	3.5	0.9			
Unprepared Speech	2.9	1.0			
Intonation			98	5.49**	.55
Prepared Speech	3.0	1.0			
Unprepared Speech	2.5	0.9			
Pauses			98	5.15**	.52
Prepared Speech	2.8	1.1			
Unprepared Speech	2.3	0.9			
Emphasis			98	5.60**	.56
Prepared Speech	3.1	1.1			
Unprepared Speech	2.5	1.1			
Tune			98	3.56**	.36
Prepared Speech	2.6	1.0			
Unprepared Speech	2.2	1.0			
Speed			98	4.92**	.49
Prepared Speech	3.1	1.1			
Unprepared Speech	2.6	1.0			
Accent			98	2.57*	.26
Prepared Speech	2.0	1.0			
Unprepared Speech	2.2	1.0			

* $p < .05$ ** $p < .001$

As shown in Table 3.12, analyses also showed a significant different in awareness during speaking and listening. In this case, all means are significantly higher for listening than speaking. When one is listening to another one, there appears to be greater awareness of what the other is doing, due to the passive role taken. Again, the greatest difference is in word pronunciation, but for this case the difference in attention paid to the tune is also

important. The existence of greater awareness in listening could be used to argue that training in efficient academic speaking is needed to avoid the listener's judgement, while similarly the relatively lower degree of consciousness in speaking might highlight the need for training in an important area which puts the speaker unknowingly at risk of being misunderstood or misjudged.

Table 3.12

Paired Samples T-Tests of the Researchers' Awareness Scores of Spoken English Elements in Speaking and Listening

Linguistic element	M	SD	d	t	Cohen's d
Words			98	4.71***	0.47
Speaking	3.2	0.8			
Listening	3.6	1.0			
Intonation			98	4.88***	0.49
Speaking	2.7	0.9			
Listening	3.2	1.1			
Pauses			98	2.44*	0.25
Speaking	2.6	0.9			
Listening	2.8	1.1			
Emphasis			98	2.99**	0.30
Speaking	2.8	0.9			
Listening	3.1	1.2			
Tune			98	5.14***	0.52
Speaking	2.4	0.9			
Listening	2.9	1.1			
Speed			98	2.75**	0.28
Speaking	2.9	0.9			
Listening	3.1	1.1			
Accent			98	10.58***	1.06
Speaking	2.1	0.9			
Listening	3.1	1.1			

* p < .05 ** p < .01 *** p < .001

Finally, as shown in Table 3.13, the differences among the seven elements for the three data sets were proved to be significantly different, although effect sizes are small. The pronunciation of individual words is the most conspicuous elements in the three situations proposed, always leaving intonation-related elements behind. The second with the highest mean is also for the three situations speed, which relates to prosody and ease of language processing. Accent also coincides with the lowest score three times, which may reinforce the idea that sounding more or less native is less important, since accent is connected with the personal history/profile of the speaker, hinting to mother tongue, geographical origin, social class, and education/training. Academic and research settings

seem to mitigate the effects of these indices, at least from the perspective of the researchers in our study, who do not have English as their L1.

Within the elements related to the three systems of intonation, emphasis (i.e., tonicity) is reported as the most conspicuous. The difference lies in the fact that while pauses (i.e., tonality) come next for both prepared and unprepared speech, for listening researchers gave a higher awareness score to tune (i.e., tone). This might be related to the fact that one can more easily plan pauses in speaking while they often go unnoticed in listening, while conversely a good command of tune is difficult since one needs to develop a great awareness as it usually comes out spontaneously, while in a listening task it is possible to pay attention to the tunes of the speaker and it is not uncommon to identify some tunes as strange to one's own perception.

Table 3.13

Summary of One-Way Analyses of Variance of the Seven Linguistic Elements for the Three Situation Types

Situation	Words		Intonation		Pauses		Emphasis		Tune		Speed		Accent		F(6, 682)	η^2
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD		
Prepared speech	3.49	0.93	2.99	1.04	2.84	1.13	3.09	1.13	2.58	1.04	3.12	1.13	1.96	1.01	21.02*	0.16
Unprepared speech	2.89	0.97	2.49	0.93	2.30	0.93	2.47	1.06	2.23	0.99	2.60	1.03	2.16	0.97	6.34*	0.05
Listening	3.65	1.00	3.18	1.10	2.79	1.15	3.05	1.17	2.89	1.14	3.13	1.11	3.10	1.13	5.95*	0.05

* $p < .001$

3.1.4. Views on Training in Spoken English

As to the importance and necessity of training in spoken English skills, respondents' scores were quite high for all questions, summarized in Table 3.14. This suggests that researchers are interested in speaking training and that they consider it worthwhile. The lowest score concerns intonation training due to a shift of many respondents from "yes" to "maybe", which might be connected with their lack of awareness above. Finally, the question with the lowest score was the one concerning each respondent's personal need for training. This can show that even though they think their level might be sufficient, they still think training is helpful in general as expressed in the other questions.

Table 3.14

Respondents' Opinions on Training in Spoken English

Question	Yes	No	Maybe	Average
Is training necessary to improve English speaking?	90.8%	2.0%	7.1%	.94
Do you need training or personal counselling on English speaking?	63.6%	11.1%	25.3%	.76
Should university offer researchers training on English speaking?	92.7%	0.0%	7.3%	.93
Should university offer researchers personal counselling on English speaking?	81.8%	5.1%	13.1%	.88
Should an EAP course include training on English speaking?	94.9%	2.0%	3.0%	.96
Should training on English speaking cover/include intonation?	63.6%	2.0%	34.3%	.81

3.2. JOVE-RI-C Corpus Results

This section reports the results of the analysis of the JOVE-RI-C corpus. First, the data from move analysis are presented to draw an updated picture of the rhetorical structure of RIs and their communicative purpose. Then, intonation is discussed in connection with the corpus as a whole and the move structure in detail.

3.2.1. Move Structure

The 47 RIs in the corpus are made up of a total of 101 moves (see Table 3.15). However, only three out of Hafner's (2018) five optional moves for RIs were identified in JOVE-RI-C, since there are no instances of 1is (Introducing Self) and 5ia (Inviting the Audience). The most common move is 3es (Explaining Significance), which constitutes more than half the moves of the whole corpus and appears in all but one RI. This is especially significant as the next most frequent move, 2fd (Forecasting the

Demonstration), is found in under 50% of RIs. Despite the prevalence of 3es, the one exception found means that it is not possible to contradict Hafner's finding that all moves are optional. Still, it would not be too bold to say that 3es is quasi-compulsory and highly expectable. This appears to suggest that the main communicative purpose of this part-genre is of a promotional nature and that researchers make the most of their chance to address their audience to highlight the importance of the methodology they present.

Table 3.15

Moves in Researcher's Introductions throughout JOVE-RI-C and Across Researcher's Introductions

Move	**JOVE-RI-C (N = 101)**		**Across RIs (N = 47)**	
	n	%	n	%
1is	0	0.00	0	0.00
2fd	21	20.79	20	42.55
3es	55	54.46	46	97.87
4ir	9	8.91	9	19.15
5ia	0	0.00	0	0.00
6gt	15	14.85	15	31.91
0uns	1	0.99	1	2.13

Hafner (2018) analyses 1is, 4ir (Introducing Additional Researchers), and 5ia as innovative "engagement-oriented moves" (p. 30-31) and reports the incidence of at least one of them in 81.82% (9 out of 11) of the videos in his corpus. It is therefore striking to find that 1is and 5ia are non-existent in this larger, more recent corpus, and that 4ir is only retained in 19.15% of the corpus. Although 4ir still "highlights the collaborative, team-based nature of scientific study, drawing attention to the different roles adopted by different authors, again in a way that is not seen in written RAs" (Hafner, 2018, p. 32), which confirms its innovative currency as an engagement-oriented move, it still means referring to a third party and not the speaker or the audience. By comparison, 1is would be more personal and 5ia more interactive.

Even taking 6gt (Giving Tips) as engagement-oriented and departing from traditional RAs, there are no more than 23 (48.94%) RIs with one of these two. However, the appearance of 6gt in almost one third of the RIs would confirm the appropriateness of its inclusion in the pool of possible moves for this section of VMAs. In all, these data suggest that moves with a focus on engagement may have been left to a secondary place in favour of a more traditional approach focusing on describing the procedures (2fd) and underscoring their relevance (3es).

In average, each RI consists of 2.13 moves. Table 3.16 shows the move structure of the 47 RIs in the corpus, ordered according first to the number of moves and then to frequency of the specific move structure. The 16 one-move RIs (34.04%) consist of only 3es, supporting the argument that it is an essential move of this part-genre. Two-move RIs amount to another 34.04% of the total. A similar frequency (6) is found for 2fd-3es and 3es-6gt, which suggests that moves are in a sense subordinated to 3es, the main move. Three-move RIs seem to strengthen the idea that 2fd-3es is a common succession that can then be complemented by a final 4ir (4) or 6gt (3). Four-, five- and six-move RIs are mainly the result of 3es being intersected by other moves. One final important observation is that, if present, 4ir always goes last and, inversely, that 6gt never opens an RI and tends to go last, but not necessarily.

Table 3.16

Move Structures of Researcher's Introductions in JOVE-RI-C

RI	Move structure	
One move		
001_154_01_57823	3es	
003_154_03_60434	3es	
004_154_04_60538	3es	
008_153_01_60399	3es	
010_153_03_60493	3es	
011_153_04_60307	3es	
012_153_05_60038	3es	
016_152_03_60383	3es	
020_152_07_60250	3es	
023_151_02_60078	3es	
025_151_04_59676	3es	
027_151_06_59951	3es	
028_151_07_60202	3es	
032_150_03_59838	3es	
036_150_07_60103	3es	
037_150_08_60054	3es	
Two moves		
019_152_06_60251	2fd	3es
022_151_01_59752	2fd	3es
031_150_02_59668	2fd	3es
035_150_06_58900	2fd	3es
038_149_01_59900	2fd	3es
045_148_06_59768	2fd	3es
002_154_02_60423	3es	6gt
009_153_02_60486	3es	6gt
018_152_05_60280	3es	6gt
026_151_05_60185	3es	6gt
030_150_01_59520	3es	6gt
034_150_05_60125	3es	6gt
014_152_01_60088	3es	4ir

RI	Move structure					
Two moves (cont.)						
046_148_07_59682	3es	4ir				
017_152_04_60415	2fd	4ir				
041_148_02_59364	3es	2fd				
Three moves						
005_154_05_59860	2fd	3es	4ir			
033_150_04_59976	2fd	3es	4ir			
042_148_03_59474	2fd	3es	4ir			
044_148_05_59462	2fd	3es	4ir			
024_151_03_59399	2fd	3es	6gt			
039_149_02_59647	2fd	3es	6gt			
047_148_08_59831	2fd	3es	6gt			
021_152_08_60238	3es	6gt	3es			
029_151_08_60334	3es	6gt	3es			
013_153_06_59857	2fd	3es	2fd			
043_148_04_59814	3es	2fd	4ir			
Four moves						
040_148_01_59906	2fd	3es	6gt	3es		
006_154_06_60545	3es	6gt	0uns	3es		
Five moves						
015_152_02_59655	3es	2fd	3es	6gt	3es	
Six moves						
007_154_07_59678	3es	2fd	3es	6gt	3es	4ir

3.2.2. Tonality

3.2.2.1. Tonality in JOVE-RI-C

The annotation of the corpus yielded 1,425 IUs, 40 (2.81%) of which were marked as unsure for tonality. In relation to the length of IUs, Table 3.17 shows the distribution of IUs according to number of words, the average being 3.55 words per IU. IUs under 6 words amount to 88% of the total. The most common is the three-word IU, while HKCSEP shows a decrease in frequencies from the one-word IU as the most frequent as words increase. This pattern can be observed from the three-word IU upwards in JOVE-RI-C.

Cruttenden (1997), however, states that "the average [IU] seems to be about five words, with very few … over seven words. Longer groups are tolerated in reading than in conversational or rhetorical speech" (p. 72). Indeed, the language of RIs is closer to reading than to other types of delivery, and thus arises the contrast with HKCSEP, since this latter corpus includes interjections and hesitations, as well as repetitions, short questions, and other interactional devices typical of conversational styles.

This can be observed in that the most common one-word IUs (1wIUs) of HKCSEP are: "er", "yeah", "okay", "and", and "mm". In JOVE-RI-C, the only 1wIUs that appear more than once are: "and" (appearing four times), "angiogenesis", "epithelial", "here",

“however”, “induced”, “is”, and “prototyping” (each appearing twice). Out of the thirty most common 1wIUs in HKCSEP, only “and”, “that”, “because”, and “is” appear as 1wIUs in JOVE-RI-C.

Table 3.17

Distribution of Intonation Units Along Word Count (N = 1425)

Length in words	n	%
one	107	7.51
two	298	20.91
three	387	27.16
four	291	20.42
five	171	12.00
six	89	6.25
seven	42	2.95
eight	21	1.47
nine	10	0.70
ten	3	0.21
eleven	5	0.35
thirteen	1	0.07

There is a tendency, however, in HKCSEP’s Public sub-corpus for IUs to be longer, which the authors explain by saying that it contains more monologic speech and that

> the fact that the Public sub-corpus shows a tendency, albeit quite weak, to contain longer tone units is probably due to the fact that some of the discourses are prepared speeches that might be read fully or partially from a script. Such discourses can be expected to contain longer tone units than those which have no pre-planning due to the real-time constraints of the latter. (Cheng et al., 2008, p. 66)

Cruttenden (2014), whose work is not based on a specific corpus, also makes a note on this issue:

> In conversation and in lectures around half of the intonational phrases will be 3-4 words in length and only in under 10 per cent of cases will they be over 8 words in length. In reading aloud from prepared texts, intonational phrases are likely to be longer and are likely to be at least partly governed by punctuation. (p. 186)

First, his observation about percentages appears to be corroborated by the findings of this study, with 3- and 4- word IUs amounting to 47.58% and +8-word IUs to a meagre 1.35%. Then, the idea that prepared texts exhibit longer IUs is also confirmed. The difference between Cheng et al.’s and Cruttenden’s observations might be related to the fact that the

former is based on a heterogeneous corpus of naturally occurring data while the latter derives from more traditional observations and studies of intonation which may have commonly incorporated speech events that are closer to those founds in HKCSEP's Public sub-corpus and JOVE-RI-C, i.e., text read out in controlled circumstances.

Some word sequences appear as one IU more than once in the corpus, thus standing out as typical IUs, understood as the speaker's "unit of planning" or "unit of presentation" (Cruttenden, 1997, p. 72). These IUs are reproduced in Table 3.18 ordered by number of words and grouped by number of times they appear.

Table 3.18

Sequences of Words Appearing as an Intonation Unit More Than Once

Length in words	Intonation Units	n
One word	AND	4
	ANGIOGENESIS, EPITHELIAL, HERE, HOWEVER, INDUCED, IS, PROTOTYPING	2
Two words	THIS PROTOCOL	8
	THIS METHOD	6
	OUR PROTOCOL, THESE METHODS, THIS TECHNIQUE	3
	BIOCHEMICAL GRADIENT, ENVIRONMENTALCONDITIONS, FOR EXAMPLE, IN HOUSE, IS THAT, TO DETERMINE, TO VISUALISE, VISUAL DEMONSTRATION	2
Three words	THE MAIN ADVANTAGE	6
	CAN BE USED, OF THIS TECHNIQUE	3
	AND WE USE, CAN BE APPLIED, DEMONSTRATING THE PROCEDURE, FROM OUR LABORATORY, IN SITU MICROSCOPY, IN THIS VIDEO, OF THE HUMAN, TRACTION FORCE MICROSCOPY, WILL BE DEMONSTRATED	2
Four words	FOR THE FIRST TIME	3
	CAN ALSO BE USED, PLAYS AN IMPORTANT ROLE	2
Five words	DEMONSTRATING THE PROCEDURE WILL BE	2
Six words	THE MAIN ADVANTAGE OF THIS TECHNIQUE	5

When compared to HKCSEP's 30 most frequent single word IUs, JOVE-RI-C strikes as unusual in that it includes not only functional words (e.g., conjunctions and fillers) but also words full of lexical meaning like technical or discipline-specific terminology. This is the case not only with individual words but also with multiword IUs being repeated across the corpus, therefore working together intonationally. The two longest repeated IUs, among which stands out the six-word "the main advantage of this technique", can be found in pieces in the smaller IUs in the table (e.g., "the main advantage" or "demonstrating the procedure"). Instances of IUs that only appear twice do not really seem to be very significant, but they show that the language used is not very rich in the sense that repetitions are frequent even in these rather short texts.

3.2.2.2. Tonality and Move Structure

RIs in the corpus have an average of 30.32 IUs, although the data are distorted by a very long RI at 107; the next largest RI has 54 IUs, while the smallest one has 13. The average number of IUs for each move in the corpus is 14.11, which is about half of the average IU count for the whole RI at an average move count of 2.13.

Table 3.19 summarises the number of IUs and words that constitute each move in the corpus. 3es clearly gets the largest share with over two thirds of the corpus, confirming its status as a major move in the part-genre. 2fd gets a modest share which nevertheless confirms its importance, while 6gt and 4ir turn out as minor moves that, as discussed above, are not always found. In terms of words per IU, the slight difference between 2fd on the one hand and 6gt on the other could be related to the fact that the former would require the careful explanation and introduction of concepts and specific elements while the latter would imply adding extra pieces of information to what has already been said. In this sense, it is understandable that discourse is chunked into shorter or longer units respectively.

Table 3.19

Distribution of Intonation Units and Words Across Moves

Move	Intonation Units N = 1425		Words N = 5067		IU length in words
	n	%	n	%	M
2fd	263	18.46	850	16.78	3.23
3es	984	69.05	3521	69.49	3.58
4ir	40	2.81	136	2.68	3.40
6gt	128	8.98	534	10.54	4.17
0uns	10	0.70	26	0.51	2.60

Table 3.20 shows the distribution of IUs according to number of words (cf. Table 3.17) for each move (cf. Table 3.19). The general pattern of 3-word IUs as the most frequent is unbroken, with 3es having a very similar distribution to the whole corpus because of its weight in the total share of IUs. 2fd, however, shows a greater concentration of short IUs, especially in opposition to 6gt, which could be explained by the reasons discussed in the previous paragraph. Interestingly, 4ir exhibits less variation and no one-word IUs, since it consists of straightforward assertions presenting the researchers where not much needs to be explained or elaborated upon.

Table 3.20

Distribution of Intonation Units Across Moves According to Length

Length	2fd		3es		4ir		6gt		0uns	
in words	n	%	n	%	n	%	n	%	n	%
One	30	11.41	70	7.11			7	5.47		
Two	51	19.39	212	21.54	8	20.00	22	17.19	5	50.00
Three	80	30.42	254	25.81	19	47.50	30	23.44	4	40.00
Four	67	25.48	199	20.22	5	12.50	19	14.84	1	10.00
Five	17	6.46	131	13.31	5	12.50	18	14.06		
Six	10	3.80	61	6.20	3	7.50	15	11.72		
Seven	3	1.14	32	3.25			7	5.47		
Eight	3	1.14	13	1.32			5	3.91		
Nine	1	0.38	6	0.61			3	2.34		
Ten			2	0.20			1	0.78		
Eleven	1	0.38	3	0.30			1	0.78		
Thirteen			1	0.10						

3.2.3. Tonicity

3.2.3.1. Tonicity in JOVE-RI-C

The analysis of the last prominent syllable, i.e., the nucleus, of the 1,425 IUs of the corpus resulted in 57 (4%) marked as unsure for tonicity. Table 3.21 presents the words most frequently carrying the nuclear syllable and how many words are repeated least often.

General words related to the purpose of the whole genre (sharing methodological information) appear very often, such as “protocol”, “technique”, and “method(s)” (22 times if added together). Interestingly, “cells” is also a relevant word, but this is related to the field of study chosen, bioengineering. Finally, it is also significant that “advantage” appears often, as it is related to the purpose of the part-genre, that is, introducing the demonstration (2fd) and highlighting its importance (3es).

Table 3.21

Repetitions of the Same Word in Nuclear Position (N = 1425)

Nuclear word	n
PROTOCOL	19
TECHNIQUE	18
CELLS	16
METHOD, METHODS, USED	11
ADVANTAGE	10
TIME	9
MICROSCOPY, MODEL, PROCEDURE	7
CONTROL, DEVICE, SAMPLES	6
18 words	5
39 words	4
40 words	3
142 words	2
1172 words	1

It is infrequent for function words like conjunctions or personal pronouns to appear as the nuclear word of an IU unless they are emphasized for a particular effect. Often chunks are too small, and no other better word is available to get the nucleus, e.g.,

1. `<span>IT <em class="hcfall">IS</em> </span>`
2. `<span>WILL <em class="rise">BE</em> </span>`
3. `<span>OF <em class="hcfall">THEIR</em> </span>`

Or of course the aforementioned one-word IUs like

4. `<span><em class="fall unsure">AND</em> </span>`
5. `<span><em class="unsure">WHILE</em> </span>`

The only cases of real emphasis of this type of words are:

6. `<span><em class="hcfall">MY</em> ADVICE </span>`
7. `<span>THE KEY QUESTION WE WANT TO ADDRESS WITH THIS METHOD <em class="hcfall">IS</em> </span>`

For 6, it seems reasonable that the speaker has decided to emphasize his personal take on the approach, showcasing the innovative aspect of RIs having researchers addressing the audience. In a written report, this would be more likely to appear as an

impersonal sentence like “It is advisable that…”. As to 7, the sheer length of the IU might have prompted the speaker to produce an unwanted emphatic form because of the difficulty of planning such long units.

3.2.3.2. Tonicity and Move Structure

Since the nucleus is defined positionally as the last accented syllable of the IU, it can also generally be expected to be the last word. Words following the nuclear word might not be prominent for two main reasons: either they are function words which would not typically take an accent, or they are words that have been deaccented for pragmatic reasons (generally, because they have already been mentioned or referred to in some way whether directly or indirectly). Table 3.22 shows the frequencies of IUs with different positions of nuclear accents in HKCSEP. The data shows an unbroken decreasing pattern as the nucleus departs from the end of the word, with IUs with the nucleus in last position (-1) amounting to over 50% and over 90% at fourth place from last (-4) or less.

Table 3.22

Distribution of Intonation Units in HKCSEP According to Nuclear Word Position (N = 313179)

Nuclear word position	n	%
-1	158451	50.59
-2	63840	20.38
-3	36632	11.70
-4	23640	7.55
-5	13916	4.44
-6	7955	2.54
-7	4313	1.38
-8	2275	0.73
-9	1145	0.37
-10	565	0.18
-11	268	0.09
-12	104	0.03
-13	53	0.02
-14	11	0.0035
-15	5	0.0016
-16	4	0.0013
-17	1	0.0003
-18	1	0.0003

Table 3.23 shows the frequencies of IUs with different positions of nuclear accents in JOVE-RI-C and their distributions according to moves. The first thing that strikes is

the high percentage of -1, with 86.39% of IUs having the nuclear syllable in the last word. This is necessarily connected with the different nature of the speech found in the two corpora. RIs are rather short texts where there is little room for anaphora and deaccenting of words already alluded to, since they are densely packed with information that intends to be relevant and to the point. Spontaneous data may be therefore more likely to include repetitions. Additionally, the conversational nature of a good amount of HKCSEP means that it is not uncommon to come across sentences that are not finished and where function words may be stranded at the end of IUs without any type of accent. In this sense, RIs may make use of more canonical tonicity as described in traditional manuals. Since they are prepared texts, their intonation can be expected to conform to the anticipated or generalized patterns that are taken as unmarked.

Table 3.23

Distribution of Intonation Units in JOVE-RI-C Across Moves According to Nuclear Word Position (N = 1425)

Nuclear word position	n	%	2fd n = 263		3es n = 984		4ir n = 40		6gt n = 128		0uns n = 10	
			n	%	n	%	n	%	n	%	n	%
-1	1231	86.39	225	85.55	854	86.79	35	87.50	107	83.59	10	100.00
-2	145	10.18	36	13.69	95	9.65	3	7.50	11	8.59		
-3	34	2.39	1	0.38	22	2.24	2	5.00	9	7.03		
-4	12	0.84			11	1.12			1	0.78		
-5	2	0.14			2	0.20						
-6	1	0.07	1	0.38								

When looking at the distribution across moves, they all get a similar share of -1, although 4ir is slightly higher and 6gt slightly lower. Indeed, as already commented on, 4ir is a straightforward short presentation of additional researchers where sentences mainly say their names and who they are, so there is no expectation of repetitions or references to previous concepts. On the other hand, 6gt is usually completing what has already been said in 2fd or 3es by adding extra information, so that it is expected that allusions are made to the previous pieces of information that are already shared/known.

The appearance of other positions seems to be rather anecdotal with very low numbers except for 3es. This might be related to the fact that 3es includes significantly more words and IUs and is therefore more likely to, first, include repetitions and allusions to aforementioned items, and second, exhibit a tendency towards a distribution statistically more similar to the generalist corpus because of the sheer number of IUs.

3.2.4. Tone

3.2.4.1. Tone in JOVE-RI-C

Table 3.24 shows frequencies of nuclear tone types in JOVE-RI-C, as well as what proportion of them were marked as unsure. The most frequently selected tone is the half-completed fall, followed by the fall and the rise which are very close to each other, and far from the fallrise, the least frequent. Taking half-completed falls as modifications of falls, 67.37% of nuclei are falling.

Table 3.24

Tone Types in the Intonation Units of JOVE-RI-C (N = 1425)

Tone			Unsure	
	n	**%**	**n**	**%**
fall	350	24.56	9	2.57
fallrise	80	5.61	8	10.00
hcfall	614	43.09	44	7.17
rise	336	23.58	15	4.46
unsure	45	3.16		

Note. hcfall = half-completed fall.

These data contrast with those in the converted version of HKCSEP, with levels and falls at 53.59% and 32.89% respectively, and a remarkably lower incidence of the other tones (e.g., 6.19% rises). The fact that the tone inventory of the two corpora is different makes comparisons difficult. This is especially noticeable as the problematic tones (i.e., those that are not part of the other's analysis) are the most frequent and it is not possible to know either how many level tones there are in JOVE-RI-C or how many half-completed falls there are in HKCSEP.

In DI, the level tone is associated with truncated IUs, lack of commitment as to the status of information, and routine (pre-coded) expressions (Cheng et al., 2008, p. 125). It makes sense, therefore, that a large corpus of relatively spontaneous speech has a high number of false starts, repetitions, interjections, and formulae which may receive a level tone. On the contrary, it is hardly to be expected in RIs, where researchers are reading highly informational scripted text and everything is said at the first go, with time to prepare and without phatic expressions.

At the same time, it makes sense to find half-completed falls to be very frequent, as they are used to add IU after IU in the rather long sentences of RIs that are being chunked up for ease of delivery and understanding. Following Gussenhoven's

interpretation that falls make additions to common ground (which corresponds to Brazil's idea of "proclaiming"), it makes sense that minor additions are implemented with a toned-down alternative (through half-completion), to clearly indicate what are the major additions as realized by fully-fledged falls.

After the pertinent groupings to make the corpora comparable, the data in Table 3.25 show that tones in JOVE-RI-C seem to present a close distribution to that of HKCSEP; however, it should not be forgotten that the level tone, in fact the most frequent tone, has been removed from the calculation. Thus, it would seem, speculatively, as though the prepared speech of RIs had similar features to spontaneous speech where hesitations, truncations, and routines are deleted.

Table 3.25

Comparison of Tone Types in JOVE-RI-C and HKCSEP

Tone	JOVE-RI-C N = 1425		HKCSEP N = 96347	
	N	**%**	**N**	**%**
fall[1]	964	67.65	68310	70.90
fallrise	80	5.61	5133	5.33
rise	336	23.58	12856	13.34
unsure	45	3.16	10048	10.43

[1] For JOVE-RI-C, this category includes falls plus half-completed falls; for HKCSEP, this category includes falls plus risefalls.

The number of rises, nevertheless, is still higher in the specialized corpus. The explanation could be related to the fact that speaker interventions in RIs are monological and uninterrupted. According to Gussenhoven's proposal, rises present information as "testing" (with the idea of "checking") for a variable of the background, which may refer metaphorically to the narrative structure of the locution. What this means, in practical terms, is that rises are used to indicate that the locution is not still an "addition" (for which the fall is used) but that there is more to come to the "story". This is explained in other models like Tench's as "non-finality", opposing falls for "finality", or "minor information", falls being used for "major information". In short, this justifies that in the elocution of long pieces of information, as happens in RIs, it is possible to present the non-final pieces of discourse as indicating that the contribution has not finished and thus *asking* for the listener to bear on with the speaker and somehow creating narrative suspense. Naturally, the idea of "narrative" has to be understood widely here as the

"story" that is being told, in this case the research procedures and comments about them to fulfil the communicative purpose of the part-genre or even the specific move.

On a final note, Gussenhoven's idea of metaphorical manipulations includes reference to the locution itself, with children learning to read and non-native speakers reading aloud as examples. That is, rises would here be indicating either testing whether the contribution is appropriate, asking for confirmation of the hearer or of the speaker themself: this could also be the case in a context of videos recorded by international researchers whose level of English need not be native-like. In any case, this variable was not considered for this analysis.

This explanation could justify the number of rises, but it must not be forgotten that half-completed falls are the most frequent tones and therefore they seem to be the default option for long sentences chunked up in successive IUs, which also makes sense understanding them as toned-down additions, whether metaphorically referring to the narrative structure or literally concerning the focused element, i.e., the whole message of the IU or the accented word/part positionally highlighted as nuclear.

Regarding successions of two tones, Table 3.26 shows the tones to follow a given tone ordered by relative frequency. These data confirm that successions of two half-completed falls are the most likely to occur (49.36%), even though successions of two rises are also likely (40.08%). What is remarkable is that even though half-completed falls are very frequent and therefore appear as the most frequent follow-up tone to falls and fallrises, rises however are more likely to be followed by another rise than by a half-completed fall. Then, at a similar percentage, rises are usually followed by either half-completed falls or falls, presumptively completing the additions that they fail to provide.

Finally, turning to fallrises, they do not appear to be very significant for RIs, against what intuition may suggest. According to Gussenhoven, fallrises imply the selection of a variable that is already in the background. Reference to previously mentioned ideas and concepts would appear to be helpful in explaining the significance of the methodologies of VMAs, but apparently this is not so. It could be speculated that the brevity of the interventions does not allow for excessive repetitions and reference to previous elements (for Brazil, fallrises are the default device for "referring").

There are still two other possible explanations for the scarcity of fallrises. First, it could be argued that it is a feature of native English, and thus the international context would not seem to favour its use. Then, it could be argued that fallrises are usually stylized into successions of two tones, the second one falling to mid-range of the speaker's pitch,

and thus appearing with the same surface form as half-completed falls (Lindsey, 2019), which would in turn explain the abundance of this latter tone.

Table 3.26

Two-Tone Successions in JOVE-RI-C

Tone succession		n	%[1]
Tone 1	**Tone 2**		
hcfall	**hcfall**	233	49.36
fall	**hcfall**	88	47.06
fallrise	**hcfall**	29	43.28
rise	**rise**	105	40.08
hcfall	**fall**	139	29.45
rise	**hcfall**	75	28.63
rise	**fall**	73	27.86
fallrise	**rise**	17	25.37
fall	**rise**	46	24.60
fallrise	**fall**	13	19.40
fall	**fall**	36	19.25
hcfall	**rise**	78	16.53
fallrise	**fallrise**	8	11.94
fall	**fallrise**	17	9.09
hcfall	**fallrise**	22	4.66
rise	**fallrise**	9	3.44

Note. hcfall = half-completed fall.

[1] Percentages relative to the sample of two-tone successions starting with each tone: 472 for half-completed falls, 262 for rises, 187 for falls, and 67 for fallrises.

3.2.4.2. Tone and Move Structure

Table 3.27 shows the distribution of tone frequencies across RI moves (cf. Table 3.24). 3es presents a very similar distribution to that of the whole corpus, since, as explained above, it makes up the greatest proportion of it. Interestingly, 2fd shows a slightly higher frequency of rises and a decrease in falls. Taking again the idea of rises fulfilling a function of "testing", it would appear that 2fd has rather factual content and the researcher can therefore afford to make it look like they are not done or not making additions. On the contrary, in 3es it is more important for the researcher to be clearly indicating the fortes and advantages of their research protocols by marking their contributions as additions.

4ir has a peculiar distribution of almost the same number of falls, half-completed falls, and rises. The number of IUs in this move is too low to draw relevant conclusions but this distribution could precisely by related to the fact that this move consists of one or two sentences with simple syntax and clear meaning, so that there are no successions of rises or half-completed falls. Quite on the contrary, 6gt presents a higher number of

half-completed falls and fewer falls, and virtually no fallrises. This can be related to the fact that it is mainly about stating recommendations that are straightforward additions and again not very long.

Table 3.27

Distribution of Tones Across Moves

Tones	2fd n = 263		3es n = 984		4ir n = 40		6gt n = 128		0uns n = 10	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
fall	52	19.77	239	24.29	13	32.50	39	30.47	7	70.00
fallrise	15	5.70	60	6.10	2	5.00	3	2.34		
hcfall	111	42.21	428	43.50	12	30.00	62	48.44	1	10.00
rise	71	27.00	232	23.58	13	32.50	18	14.06	2	20.00
unsure	14	5.32	25	2.54			6	4.69		

Note. hcfall = half-completed fall

Chapter 4. Discussion

This chapter summarises the most relevant aspects of the results presented and discusses them in relation to the broader literature and the two objectives and their associated research questions brought up in the Introduction.

4.1. The Place of Academic Spoken English

The framework presented in the Introduction allows for the conceptualization of science communication as a discursive activity where genres are the rhetorical tools or mechanisms enacting social intentions. As linguistic practices instantiate these tools, the languages and modes used become indexical of the genres and therefore of the communication activities. With this understanding, the first objective was set; the following sections address each of the specific research questions connected with it.

4.1.1. What Languages Do Researchers Use for Spoken Science Communication?

In connection with the language ecology of science, the findings of the present study point to a statistically significant difference in the language used for spoken research activities, most often English, as opposed to a higher probability of the local language, in this case mainly Spanish, for spoken pedagogy activities. This reflects the fact that "teaching and research appear to be two distinct activities (Leisyte, Enders, & De Boer, 2009) with different policy, contextual demands, institutional expectations and cultures (Deem & Lucas, 2007)" (Gallego et al., 2016, p. 1). These findings are in accordance with Pérez-Llantada's (2018) report that English is used for research publication while Spanish is a language for teaching and administration. However, this author also notes that in settings involving multilingual participants, speaking is more likely to take place in languages other than English, alongside possible translanguaging; the results of this dissertation additionally show that variation within spoken activities is to be expected and may be, to some extent, connected with the general purpose of the activity, i.e., the typology of research versus pedagogy.

Luzón's (2017) exploration of multilingualism in research blog posts, also a written activity, indicates the use of both English and local languages depending on the purpose and the intended audience of the posts. It is possible to relate the research/pedagogy division to this, as the activities included in the research type are those that are often addressed at the international research community instead of the local

audience as in dissemination talks. In this sense, the design of the SEARSQ questionnaire may have foregrounded oral genres at the upper tiers of the academic genre hierarchy (Swales, 2004), thus, understandably, leaving out research dissemination activities or minor genres that are nevertheless part of the ecology of academic genres (Pérez-Llantada, 2019; Spinuzzi & Zachry, 2000). At the same time, the activities under the pedagogy label are aimed, in general, at a local audience of students and colleagues of the same academic context as the partakers in these activities, which could correspond to those blog posts that Luzón identified as intended to serve as knowledge dissemination to local audiences. These data reflect the idea that a difference between international and local intended audiences is an important factor in language choice (Hynninen & Kuteeva, 2020; Kuteeva & Mauranen, 2014; Smirnova et al., 2021).

Nevertheless, the data of the present study do not mean that there is a clear-cut divide in language use between these two activity types; rather, the significant data showed that many of the activities were reported as being carried out both in English and in Spanish, confirming the idea that multilingualism is the default in academic communication (Luczaj et al., 2022; Pérez-Llantada, 2021) and supporting the results of studies which have shown other scientific languages to be used in research publication (Curry & Lillis, 2019; Giannoni, 2008; Pérez-Llantada et al., 2011; Smirnova et al., 2021).

With this in mind, a biliteracy framework conceptualizing the development of advanced language skills simultaneously in two languages, as proposed by Gentil (2011) and also contended elsewhere (Guillén-Galve & Vela-Tafalla, 2021), seems to be appropriate in the conceptualization of the learning of spoken genres: just as Gentil highlights the transferability of genre knowledge in writing in one language to writing in an additional language, it can be hypothesized that genre knowledge in speaking can be used if the speaker has the necessary linguistic resources to manage in the target language. For instance, the genre knowledge used by respondents to deliver a lecture in Spanish, their most frequent language for that activity, is expected to be of use if they are to carry out the same activity in English: similar rhetorical organization and engagement strategies can be deployed, or at the very least they can draw from them, as long as they know the English structures and vocabulary items necessary.

This perspective, therefore, advocates for researchers as legitimate language users and seeks to value their abilities as speakers of academic English varieties (Mauranen, 2012; Mauranen et al., 2010). This idea is reinforced by the finding that following a native

speaker model is not considered relevant for professional success and that, according to the informants, correctness in the use of English does not appear to lie in pronunciation performance. This recalls the conceptualization of researchers as "pluri-competent users of English as a language of scholarly communication" (Corcoran, 2019, p. 543), maybe downplaying the original claims of the notion of English linguistic imperialism in academic written communication (cf. Hyland, 2018). While it is true that there are inherent privileges to being a native speaker of English even in international professional settings (Politzer-Ahles et al., 2016), researchers' use of English needs to be considered as legitimate and distinct from those under the direct influences of native-speaker norms in English-speaking countries (Guillén-Galve & Vázquez-Orta, 2018; Mauranen et al., 2021).

In sum, the data of the study draw a picture of multilingual pluri-literate researchers who resort to a plurality (or at least a duality) of languages as useful means to achieve professional ends and enact their social intentions through different genres with variation depending on the communicative purposes and intended audiences of the different types of activities they become engaged in.

4.1.2. What Is the Place of Spoken Genres in the Researchers' Genre Repertoires?

This question revolves around the distinction between the written and the spoken mode in EAP. As a prerequisite to entering the discussion, the data confirm the existence of such a divide not only from an etic perspective, that is, from the point of view of language specialists, but also from the emic point of view, as the insiders, i.e., the respondents of SEARSQ, report significantly different degrees of time devoted to different languages skills, different self-perceived degrees of anxiety when carrying out written and spoken tasks, as well as a difference, albeit small, in the importance of good written English versus good spoken English for success in the academic profession. As to time, reading and writing in English are significantly more frequent than listening and speaking in English; as to anxiety, speaking is taken as more intimidating, with prepared speech as the most likely to cause anxiety; as to importance, command in spoken and written English are reported to have similar importance, although good writing got a slightly higher score.

In the literature dealing with the issue of modes in academic communication, it is common to find indications of an ongoing adjustment by which, even though writing remains as the most valued and important mode, academic speaking is becoming more

visible in research as well as more important to academics (Guillén-Galve & Vela-Tafalla, 2021; Mauranen et al., 2010; Swales, 2008). This is, in part, a result of the effects of technological advances both on research methodology and, at the same time, on communication practices and the affordances of the digital medium to make effective use of multimodal resources in mixed genres depending on both writing and speaking (Rowley-Jolivet & Carter-Thomas, 2019).

These changes imply that the ephemerality or transitoriness of the spoken word is mitigated, while at the same time the durability or permanence of the written word is challenged by the sheer amount of chat messages, emails, tweets, and posts that are produced on a daily basis. Thus, despite the insistence of canonical works on the distinctiveness of writing and speaking (Biber et al., 2002; Greenbaum & Quirk, 1990; Halliday, 2002), hybrid communicative styles are emerging and it is possible to find reports of speaking-like writing, as in Bloch's (2008) account on blogs. As Belcher and Hirvela (2008, p. 8) put it, "new communication technologies are challenging us to rethink the value of continuing to envision speaking and writing as two entirely separate modalities". In this line, the results of this study about mode interaction also point to the interconnectedness of spoken and written genres (Belcher & Hirvela, 2008; Hirvela & Belcher, 2016) in what would be genre chains by possible processes of remediation: e.g., a written abstract is followed by a (multimodal) slide presentation which is accompanied by a spoken presentation and a Q&A session, which may be then be expanded and written as a special issue abstract to be finally included as a fully-fledged research article.

Another relevant finding from SEARSQ in connection with the relation between spoken and written genres is the fact that speech is considered more challenging than writing and reading, a result in accordance with the informants of Pérez-Llantada (2012), Guillén-Galve and Vela-Tafalla (2021), and Villares (2021), which operate in similar research settings. Within speech, prepared speech is taken as causing more anxiety than unprepared speech. Suitably, prepared speech may be described as writing-like speaking, as if to complement hybridization from the opposite side. Further research would be needed to figure out the reasons why prepared speech, which implies anticipation and forethought, is taken as causing more anxiety, which might seem counterintuitive. One possibility is that it might be connected to the fact that prepared speech activities have to do with genres that are more valued in the academic genre hierarchy, such as conference presentations or PhD vivas (Mežek & Swales, 2016; Querol-Julián & Fortanet-Gómez, 2016). Indeed, these genres play no minor role and are formally connected with

assessment and career development. It is possible to speculate that poor rhetorical strategies or grammar, for instance, are more likely to be tolerated in a relatively unprepared Q&A session after a conference presentation than during the presentation itself, where English might be playing more of a lingua-franca role as a contact variety (Hynninen & Kuteeva, 2017; Rozycki & Johnson, 2013; Seidlhofer, 2011; Walker, 2010)

As already contended, talking about preparedness implies dealing with a spectrum rather than a clear-cur division (Wichmann, 2000). Consequently, it is possible to argue that ranking in the academic genre hierarchy is related to degrees of (un)preparedness. There is nothing intrinsically prestigious about preparedness and indeed in a different context rhetorical improvisation can be valued (e.g., in stand-up comedy); rather, the affordances of prepared genres allow for the creation of more efficient communication tools with a lasting impact. This could also explain the prevalence of a view of language as product, of which written text is the epitome, as opposed to language as process, to which speaking can be associated (Halliday, 2002). Understandably, products can have an effect as rhetorical artefacts which processes might fail to achieve, even if a genre ecological perspective rightly envisions the contribution of all genres to the activities carried out in activity systems (Spinuzzi & Zachry, 2000). However, as already explained, boundaries are blurring and there is a growing number of prepared, durable, product-like spoken genres (Carter-Thomas & Rowley-Jolivet, 2020; Hu & Liu, 2018; Rowley-Jolivet & Carter-Thomas, 2019) which may be more valued than unprepared, ephemeral, process-like written genres. This claim can be supported by the finding in SEARSQ that good written English and good spoken English show rather similar scores in importance for academic success.

In a changing communication landscape, conceptualizing genre relations as an ecology of communication mechanisms comes off as the most appropriate approach to pay attention not only to traditionally salient prepared written genres, but also to the spoken mode and lower degrees of preparedness. Instead of an opposition as first suggested,

> a more apt model might be a double helix with a writing strand and a speaking strand intertwined. At any particular stage one strand may be the focal outcome, drawing upon the other. But as a whole, the two strands are reciprocally supportive and leading in the same direction. (Rubin & Kang, 2008, p. 220)

The two modes, therefore, are not in competition. Rather, they are complementary resources to achieve similar but different communicative purposes, as different tools are appropriate for different tasks.

This conceptualization is paramount for the pedagogy of academic genres. Understanding that spoken genres are not a minor or secondary type of academic literacy (despite the association of this word to the written mode) will foster the teaching of strategies and development of materials that help researchers develop professionally in a multiliterate, plurilingual, and inescapably multimodal research sphere (Bellés Fortuño, 2018; Hafner, 2014; Hafner & Miller, 2019; Hirvela & Belcher, 2016; Ruiz-Madrid & Valeiras-Jurado, 2020). In this regard, the teaching of written and spoken genres should not only address the differences between modes but also the similarities that allow for reuse of pragmatic strategies and genre knowledge transfer. Of course, further research would be needed to confirm whether and which academic writing competences can be transferred to academic speaking (and vice versa) and to find out what characterizes, first, academic speaking as opposed to academic writing and general-purpose speaking (a matter of rhetorical importance), and second, academic spoken English as opposed to academic written English and general-purpose spoken English (a matter of linguistic importance).

This strand of research would need to be complemented by considerations regarding degrees of (un)preparedness that take into account the possibly different pragmatic strategies, rhetorical strategies, and linguistic features that are needed in the teaching of different genres. For instance, training for a conference presentation might obviously be found to be different from training to engage in small talk (Guillén-Galve & Vela-Tafalla, 2021), while at the same time convergences might be found. As an illustration, during a conference presentation it is very relevant to be aware of the rhetorical structure of the speech to be able to refer back to what has been said and point forward to what is going to be discussed; in small talk, however, one does not need this type of awareness while it might be more important to know how to introduce oneself casually, something that is not usually needed in presentations. At the same time, in academic settings both speech events can require maintaining a coherent tone of voice and clear elocution showing respect for the addressee or the ability to reformulate something that has not been properly explained.

Since these similarities and differences pivot around genre-related factors, the teaching of both writing and speaking of English in academic and research settings needs

to address, problematize, and incorporate aspects related to degrees of preparedness in order to help learners properly understand the places and roles of different genres in the contexts where they are going to be used.

4.1.3. What Is the Value and the Degree of Awareness of Intonation for Researchers?

This topic, tackling the linguistic layer of research communication, works as a bridge to the upcoming questions dealing with intonation and its functions in the corpus analysed. However, it is still the sociocultural component of the subject that is addressed by taking into consideration the researchers' views and attitudes as expressed in their responses to SEARSQ.

As to the importance of intonation for the development of a successful research career, researchers significantly report that correct intonation is not considered to be very important, with a score just after correct pronunciation. Interestingly, the relative low importance of intonation and pronunciation in general do not mean that speaking is not considered to imply greater anxiety than writing; this means that other aspects of speaking, not elocution, are still challenging in research communication, even if it must be acknowledged that pronunciation and intonation can cause anxiety despite their not being very important when professional advancement is considered. Indeed, respondents indicated nonetheless that training was necessary in this respect.

Naturally, the respondents' perceptions of pronunciation and intonation are based on an emic, maybe intuitive, understanding of what good speaking can be; still, it might also reflect that they have not often experienced intonation-related problems or at least that those they have come across have not entailed the possibility of a hindrance to career development.

Interestingly, tonality and tonicity, although with different words, figure among important features of successful communication in research associated with interactions among non-native speakers of English as a Lingua Franca (Jenkins, 2000; Seidlhofer, 2011; Walker, 2010). It might be possible that the researchers that responded to SEARSQ usually move in circles where Spanish tonality and tonicity transfer is not generally problematic, as happens to native speakers of Spanish speaking in English, who probably move mainly in the European and American research spheres.

Another possible explanation could be that often the layperson's perception of intonation equates it with tone (Tench, 1996), which might be its more salient feature, and thus it would make sense that respondents do not consider intonation, i.e., tone, as

too strong an influence on their careers. In any case, the score of intonation in the questionnaire was very close to that of pronunciation in general, so that the judgment might be better interpreted as showing the relative lack of importance of oral delivery in general.

Furthermore, the results of this study indicate that intonation is not especially conspicuous in researchers' performances, with rather insignificant degrees of awareness. Apparently, the main differences appear between speaking and listening and between prepared and unprepared speech. Interestingly, researchers report to pay more attention to pronunciation and intonation when listening to others, as that is when problems may arise. However, they seem to overlook their own performance as speakers, probably heeding more relevant elements like content and other aspects of discourse and rhetorical action. This can be used to argue that in fact training is needed because, despite one's disregard of these aspects, the audience is paying attention and one's production may have a different or at least stronger effect than expected.

As to differences in (un)preparedness, the very definition of prepared speech makes it sensible to think that researchers are more self-conscious during prepared speech for the reasons put forward above relating to the higher expectations in these genres and the greater control of the performative act. In line with the Lingua Franca Core (e.g., Walker, 2010), emphases (i.e., tonicity) are more prominent to others and self, while pauses (i.e., tonality) and tune (i.e., tone) stand out in speaking and listening respectively, which could also be anticipated. On a final note, accent is judged a bit more salient in listening to others than in speaking, which, again, confirms the ideas above about the relative negligibility of nativeness and the legitimate use of English in research communication as a lingua franca. Researchers do not need to sound as native English speakers but as international research communicators.

Finally, researchers appear not to be too attentive to pronunciation-related elements, despite the fact that they do report that training in oral skills is needed and should be provided by their university. This seems to reflect a kind of pragmatism in that they are aware that they can do without improving their spoken English but would still benefit from further preparation and think it is a necessary utility. In connection with this, it would be necessary to develop teaching materials that, unlike the few existing manuals on general academic presentations (e.g., Reinhart, 2013), deal with academic speaking from a genre perspective and paying attention to the challenges of today's spoken research communication, such as dealing simultaneously with more than one language, using a

vast repertoire of genres, and successfully drawing from written, spoken, and multimodal resources to achieve their ends.

4.1.4. Conclusion: What Is the Place of Academic Spoken English in Professional Communication in Academia?

By answering the three specific research questions connected with the first main objective of this dissertation, it is possible to characterize academic spoken English more generally. In professional communication in academia, English is the default language chosen for spoken research genres, which can be connected with the intended audiences of the research genre type when opposed to pedagogy genres. Still, a multiplicity of languages are used efficiently by scholars in international communication where English is not a national language but a tool for knowledge dissemination and mutual understanding, as claimed in the literature on English as a Lingua Franca (Jenkins, 2000; Mauranen et al., 2021; Seidlhofer, 2011). Moreover, thanks to technological advancements and the digital medium, spoken genres are more important than ever in the genre ecology of science communication, as they become more useful and usable for the enactment of social intentions in web-based research communication, where researchers can capitalize on recording technologies to utilize prepared-speech genres for their communicative purposes. In this type of communication, intonation does not appear to be a vital resource, especially native-sounding pronunciation, but it is recognized to make an impact on the audiences and to be of interest to researchers if training about it is to be provided.

4.2. The Role of Intonation in Academic Spoken English

As explained in the Introduction, ESP/EAP genre studies complement the study of contextual aspects of target situations with the examination of text exemplars, their rhetorical moves, and their linguistic forms. The latter are seen "as not merely arbitrary, instrumental and autonomous … but as fundamental to disciplinary communication and to thought itself" (Hyland, 2018, p. 388). Understanding that intonation, as a linguistic system, must play its part, a second objective was set; the following sections address each of the specific research questions connected with it.

4.2.1. What Is Academic English Intonation Like?

According to the results of the data analysis of this project, VMA RIs present relatively long IUs, a high frequency of last-word nuclei, and an abundance of falling tones without too much variation. Arguably, such tonality is typical of prepared/read speech (Cruttenden, 1997; Halliday & Greaves, 2008; Tench, 2011), such tonicity could be related to short texts with information-heavy utterances with a relative absence of anaphora (Gussenhoven, 1983; Ladd, 2008; Roach, 2009), and such tone configuration could be justified by the communicative drive to contribute information (Brazil, 1997; Gussenhoven, 1984b; Pierrehumbert & Hirschberg, 1990; Prieto, 2015; Westera et al., 2020).

In this respect, the data so far would seem to indicate that the intonation of academic speech is simpler than that described for general English in the intonation section of pronunciation manuals (Bradford, 1988; Cruttenden, 2014; Hewings, 2007; Roach, 2009; Tench, 2011): academic intonation displays long IUs (i.e., less chunking), default nucleus placement, and uncomplicated tone choice. Simple, however, does not mean poor, but the opposite of complex, and that can be an asset. Precisely the fact that science communication needs to be clear enough, understandable, and relatively neutral might in fact favour intonational devices that facilitate unambiguous information transfer and straightforward speaker-hearer relations. Putting to use the rich resources of English intonation could require extra processing related to the interpretation of not necessarily evident context-dependent implications. These implications would risk failing to get through should the hearer not be sufficiently familiarized with the disciplinary culture, the specific genre, and even the speaker's native culture.

In a study on what researchers consider good and acceptable academic written English, Hynninen and Kuteeva (2017) found that, mainly through gate-keeping mechanisms in publication processes, L2 users favour the existence of a standard language variety that draws from the native model but does not reproduce native-sounding expressions, phraseology, or grammar that obscures or hinders clear communication. This would support the idea that academic English intonation would not benefit from using the whole range of possibilities that native speakers of English exploit. Indeed, these findings shed light on what academic English intonation can be like and how it relates to situational factors, but they do not suggest that academic spoken English is to be characterized as a uniform language variety, which it is not. Rather, it is a multifaceted composite of academic styles and registers, which manifest as the

communicative situation necessitates at the same time as they cause the situation to exist. Whether there is a common core of intonation features to academic spoken English (cf. Jenkins, 2000; Walker, 2010) which can justify its treatment as a standard(ized) variety remains to be explored in future research. Nevertheless, as the previous section has shown, the wide range of possible contextual factors that can account for variation in its use, from individual factors like L1 to disciplinary aspects and the value attached to correct pronunciation, does not seem to favour this idea. Thus, genre presents itself as a candidate to reveal the interaction between the linguistic form of intonation and its functions, as discussed below.

4.2.2. What Is the Connection Between Intonation and Genre?

The analysis of this study has suggested the possibility of linking differences in intonational features across genre moves to the main rhetorical functions of each of those moves. In addition, it has shown how the systems of tonality, tonicity, and tone respond to the situational constraints created by the configuration of audience and overall communicative purpose of the VMA RI part-genre. This has been achieved by resorting to a treatment of intonation, not as a paralinguistic source of expression, but as a linguistic system. The main contribution of this finding, therefore, is to give positive indications to confirm the hypothesis that intonation behaves as any other linguistic form by being affected by genre-specific situational constraints. Naturally, this would also mean that, simultaneously, intonation contributes to the creation of the expectations associated with the specific genre in question.

The relevance of this finding relates to Bolinger's (1986) widely cited characterization of intonation as "a half-tamed savage" and the theoretical construct of 'duality of structure' which suggests that intonation is contributing at the same time to linguistic meaning via discrete features (e.g., pitch direction) as well as to paralinguistic meaning via gradient features (e.g., pitch range). Even though Prieto (2015) rightly cautions that experimental data have not been able to unequivocally confirm the latter hypothesis, this dissertation's approach has aligned with the body of literature that treats intonation in this fashion (e.g., Gussenhoven, 1984a, 2016; Halliday, 1967; Halliday & Greaves, 2008; Ladd, 1996; Tench, 1996, 2011). The results of the work of these authors shows that intonation does work linguistically, be it via discrete or gradient features, despite the difficulty to confirm the theory of duality of structure. Instead, these authors

have focused on understanding functions rather than on getting the form right, which is, arguably, an excessive preoccupation with phonetics in a mainly phonological issue.

Thus, the intonation of VMA RIs varies subtly across moves as it responds to its main communicative purpose of introducing the procedures shown in VMAs via different rhetorical manoeuvres like forecasting the demonstration or introducing additional researchers. VMAs are the adaptation of traditionally written (and printed) methods articles to the digital medium, making the most of its affordances. This suggests that VMAs enact the researchers' social intentions and fulfil their professional needs in an enhanced manner. In a way, they are not exactly filling a new gap but filling an old gap, the necessity to report research methods effectively, in a more suitable and satisfactory manner by getting hold of the affordance of digital video in combination with online multimodal text (Hafner, 2018). Specifically, their social exigence is to respond to Open Science demands for greater transparency of research processes and easier reproducibility of research (Luzón & Pérez-Llantada, 2022; Munafò, 2016; Sullivan et al., 2019). The ultimate purpose and audience of VMAs are very similar to traditional methods articles and thus the observed effects of re-mediation in other genres might be mitigated (Hafner, 2018; Pérez-Llantada, 2013, 2016).

On a final note as to the specific contribution of linguistic, in this case intonational, features to genres, it is necessary to recall that, despite the central role that these are acknowledged and proved to play in achieving rhetorical action (Bhatia, 2004; Hyland, 2018; Hyon, 2018; Swales, 1990, 2004), still, as van Dijk (2008) recalls, "there is no one-to-one mapping between genres, functions or language and formal structures of language" (p. 152). This means that the observations made by research like the present study need to be seen as descriptions of how social intentions have been enacted and can therefore be enacted via intonation in a specific situation, but not as an indication of the only available option. Quite on the contrary, as argued in the genre literature (Askehave & Nielsen, 2005; Bhatia, 1993, 2004; Hyon, 2018; Swales, 1990, 2004; van Dijk, 2008), different configurations of linguistic forms can serve very different communicative purposes, being constrained by situational and interactional requirements. It is therefore those requirements that researchers need to properly assess and understand first in order to respond to them accordingly.

4.2.3. How Does Intonation Contribute to Academic Discourse?

In the light of the results presented and of the discussion thus far, this final section aims at illustrating the possibilities of specification of intonation's function as a general linguistic resource applied to academic settings when used as the linguistic constituent of genres as rhetorical mechanisms for research communication.

First, the system of tonality allows speakers to encode their messages in successive individual pieces of speech. These we call Intonation Units (IUs). This is of paramount importance in the transmission of scientific knowledge, as each group of words encoded as an IU functions together as a unit, as shown, e.g., in recurring expressions in VMA RIs. As speakers are responsible for this chunking mechanism, they need to correctly ration the message they want to convey. They run a twofold risk: (a) assigning too much information to just one long IU, which might put too heavy a load on the hearer; but also (b) excessively fragmenting discourse in a problematic manner that might have negative implications, as it might seem that either the speaker themself is incapable of processing the information properly or, maybe worse, that they do not judge the audience capable of following the arguments. Thus, tonality might be understood to be one of the indicators of the degree of familiarity with the academic situation and the genre, to show oneself at ease while simultaneously guiding the audience correctly. As shown, longer units are produced in prepared speech than in unprepared speech, and both the speaker's and the audience's awareness, to different degrees, of these conventions are expected to have effects on their judgement of the performance.

Second, the system of tonicity allows to select the focal point of information by marking the last salient syllable. The data of VMA RIs have shown very uniform tonicity because of the length of the exemplars. It is possible to assume that this is so because such short texts are necessarily loaded with important pieces of information and therefore there is virtually no deaccenting. Correct nucleus placement, therefore, appears to be important in this context to clearly indicate to the audience whether something stands out or can be taken for granted. Inappropriate deaccenting in the IUs of VMA RIs, for instance, might confuse the audience by giving them the impression that they are missing something. Similarly, failing to deaccent given information would cause a sense of misguidingly strong emphasis or insistence.

Last, the system of tone allows to express the relationship of the IU to the whole communicative situation (Brazil, 1997; Halliday & Greaves, 2008; Tench, 1996, 2011) and present information as either an addition by falls, testing by rises, or selection by

fallrises (Gussenhoven, 1984a), as well as create cohering groups of IUs (Bermúdez Sánchez et al., 2019; Wichmann, 2000, 2010). Therefore, this system clarifies the updating of information that is being contributed to the background which the speaker understands to be shared with the audience. This is also an important resource for academic discourse which needs to make sense of a lot of information presented together and usually densely. Because of the length of VMA RIs and their degree of preparedness (being practically read), they contain a lot of information in a few sentences and have therefore been observed to present mainly additions and metaphorical testing referring to the narrative structure of the moves, which can be argued to relate to the communicative purpose of the part-genre.

4.2.4. Conclusion: What is the Role of Intonation in Academic Spoken English?

By answering the three specific research questions connected with the second main objective of this dissertation, it is possible to shed light on the role of intonation in academic spoken English. As anticipated theoretically, intonation behaves as a linguistic system in academic speaking by responding and recreating the situational constraints of the given communicative circumstances. The three subsystems of English intonation, namely tonality, tonicity, and tone, have been shown to contribute to the rhetorical function of the moves of the analysed part-genre in this dissertation. Thus, the intonation of the instances of academic spoken discourse analysed has been characterized as relatively uncomplicated and straightforward, presumably facilitating smooth knowledge transfer and clear research communication.

4.3. Spoken Genres and the Role of Intonation in Research Communication in English

Broadly, the findings of this dissertation contribute to a wider understanding of communication practices in today's internationalized research context through the examination of some aspects and examples of possible target situations for present-day researchers, namely the practices and attitudes regarding academic spoken English as well as the actual move structure and intonation patterns used in the particular example of the VMA RI part-genre.

Although other scientific languages are also used, English is generally most widely used especially for research communication in the context studied. Furthermore, the genre repertoire deployed by the scholars investigated in this dissertation confirms

that the genre ecology of scholars' professional activity is being rearranged to assimilate a wider variety of spoken genres, while written genres still predominate in their professional activity. It has been argued that a relevant factor contributing to the growth in influence of spoken genres is the technical possibility to record, store, and disseminate them. Thus, it can be hypothesized that the process of remediation and emergence of genres is allowing for hybridization and some types of writing are becoming more like speaking and vice versa, with genres of prepared speech plausibly leading the shift.

These changes bring to the fore the efficient usage of spoken and multimodal resources, with intonation as a case in point. Indeed, recording technologies related to the digital medium and the impact of prepared speech entail that the possibility to pay attention to aspects related to utterances and enunciation/elocution is greater than ever. However, this work's findings show that researchers do not pay as much attention to their own oral delivery as they do when they are listening to others' in a more passive role. At this juncture, intonation's part in fulfilling communicative functions needs to be taught/learned, as it is just as important to meaning making as other systems and modes, both linguistic (i.e., semantics and syntax) and paralinguistic (e.g., loudness, gestures, or kinesics).

This dissertation has shown how, in a relatively stabilized prepared-speech part-genre, and against a generalist corpus of spoken English for reference, the intonation of academic spoken English, through each of its three subsystems, adopts configurations of features that respond to the communicative purpose of speech and the functional aim of each rhetorical move of the genre in question. Thus, as all linguistic resources can do, tonality, tonicity, and tone contribute to the presentation and promotion of methodological procedures in an efficient and reproducible fashion. In this way, VMA RIs mediate as communication mechanisms responding recurrently to the rhetorical situations that arise in research communication.

As with other linguistic systems, the meanings created by phonological choices in intonation are language dependent. Consequently, the specific functions of intonation in this study illustrate what the possibilities are in this regard within the English language. In this sense, an understanding of genre conventions and the role a particular genre plays in its immediate ecological context is the most important: it is worthless to know that falling intonation or deaccenting can be used for any specific goal if speakers do not know their rhetorical effects and thus fail to envision the audience properly or to understand the communicative purpose.

However, rather than a liability, this can in fact be taken to the advantage of multilingual genre users, meaning that genre knowledge can be competently used regardless of language and be conceptualized as potentially transferable. Of course, linguacultural specifications need to be considered, but in general the implication is that a learner of academic spoken English needs to understand, first, what spoken genres are used for, and then, after that, how to exploit English intonation to those ends.

This means that it is worth teaching and learning linguistic features to raise the awareness of users of academic spoken English regarding these factors and the efficient use of genres in research communication. This is especially so for written-like spoken genres which are instances of prepared speech, where linguistic resources are assumed to be carefully deployed. In light of the findings discussed in this dissertation, it seems reasonable to think that there would be a difference in the training needed for prepared and unprepared speech: while the former might require training more similar to that needed for writing and include performative rehearsal and modifications, the latter would be more about the acquisition of intuitive strategies for seemingly effortless improvisation.

The pedagogy of such strategies applied to research genres is paramount in the context of study, as both the advancement of science and people's careers depend on efficient research communication (Hyland, 2018; Hynninen & Kuteeva, 2020; Mauranen et al., 2010; Pérez-Llantada, 2012). As the international language of science, English is nowadays an immediate necessity for a great number of scholars and academics who require the skilful use of rhetorical tools, i.e., genres, for the furtherance of their professional and personal ends. The findings of this dissertation expand the exploration of those contexts where these genres are used as well as of the understanding of how they take shape in linguistic form, specifically by exploiting the possibilities offered by the linguistic system of intonation in English.

Chapter 5. Conclusions

This chapter provides a summary of the research presented, acknowledges known limitations, and makes suggestions on the possible continuation of the project. Finally, it briefly addresses the applications and implications of the relevant findings for the field of English for Specific/Academic Purposes and Genre Studies.

5.1. Summary

The purpose of this dissertation has been to explore spoken genre-mediated research communication in English. In order to do this, it has looked at practices and attitudes regarding spoken English use as reported by UZ researchers and it has examined rhetorical and linguistic practices of spoken English as used in VMA RIs.

Chapter 1 introduced the theoretical apparatus, elaborating on the conceptualization of genres as the mechanisms used in professional communication to achieve the rhetorical ends of scholars and academics (Bhatia, 1993; Charles & Pecorari, 2016; Swales, 1990, 2004). This conceptualization, which assimilated three complementary approaches to genre studies that coalesce to explain genre-mediated communication (Hyon, 1996, 2018), was enriched by a discussion of concepts related to the ecological relations established among genres (Spinuzzi, 2004; Spinuzzi & Zachry, 2000), their internal complexity as hybrid and dynamic rhetorical artefacts (Berkenkotter & Huckin, 1995; Bhatia, 1993, 2004), and their connection with language use in academic settings (Mauranen et al., 2010; Pérez-Llantada, 2021). With this understanding, this dissertation problematized the relations between pedagogy and research genres (Gallego et al., 2016; Paltridge & Starfield, 2016; Pérez-Llantada, 2018), the relations between written and spoken genres (Belcher & Hirvela, 2008; Hirvela & Belcher, 2016), and the specificities of genres in online environments (Luzón & Pérez-Llantada, 2019, 2022). This problematization raised a special interest in the study of the discursive features of digital spoken research genres.

Specifically, intonation was chosen as the focused meaning-making device to be explored, presented as a legitimate linguistic system allegedly capable of making a valuable contribution to academic discourse (Brazil, 1997; Cruttenden, 1997; Halliday & Greaves, 2008; Tench, 1996, 2011). For this purpose, the chapter finally reviewed the relatively few studies that have discussed intonation and genre together and introduced the theoretical approach to the phenomenon of intonation as a composite of three

subsystems, namely tonality, tonicity, and tone, to be examined for their functionality in discourse.

As explained in Chapter 2, these issues were addressed by combining the methodological approaches of ethnomethodology and corpus analysis. The former was used to tackle contextual aspects connected with spoken genres and intonation, while the latter provided the data analysed to examine move configurations and the usage of intonation. The first part materialized as the Spoken English in Academic and Research Settings Questionnaire (SEARSQ), while the second resulted in the compilation and analysis of the JOVE Researcher's Introductions Corpus (JOVE-RI-C). Once piloted, SEARSQ was sent to researchers in Research Institutes at the Universidad de Zaragoza, with respondents answering questions about academic spoken English practices, attitudes towards English in research and teaching, spoken English planning and awareness, and views on training in spoken English. The data were collected online and analysed for descriptive and inferential statistics.

In turn, JOVE-RI-C included 47 Researcher's Introductions (RIs), a section of video methods articles identified by Hafner (2018) as including an innovative way to engage the audience in methods reports and chosen because of the direct part that researchers play in it. RIs were annotated for moves and intonation using a specifically created protocol in the HTML markup language, facilitating later descriptive statistical analysis. Additionally, a generalist corpus of spoken English, the Hong Kong Corpus of Spoken English (Prosodic) (Cheng et al., 2008) was adapted to be used as a reference corpus in this study. Through these two methodological tools, it was possible to explore different facets of spoken genre-mediated communication in English and obtain a wider perspective of the phenomena under study.

The results of these investigations were reported in Chapter 3. The responses to SEARSQ confirmed the relevance of the distinctions between written and spoken and between research and pedagogy usage of language in academic settings, as manifested in respondents' reported time devoted to different language skills, perceived degree of difficulty and awareness, and predominant language used. The data also showed the perceived insignificance of native-soundingness and the importance of good English in general. Differences were also found between speaking and listening, and between prepared and unprepared speech events in relation to degrees of planning and awareness of linguistic feature use. Finally, respondents showed general agreement as to the convenience of training in academic speaking at university for their careers.

The analysis of the data in JOVE-RI-C showed that the most important move in RIs is 3 Explaining Significance, implying that the main communicative purpose of the part-genre is to highlight the relevance of the procedures explained in the rest of the VMA. 2 Forecasting the Demonstration was the next more frequent move, with 6 Giving Tips added to Hafner's (2018) original move inventory for RIs. As to the analysis of intonation, RIs were characterized as comprising generally longer IUs than those in the reference corpus, default tonic syllable placement, and a relative abundance of falling tones. The analysis of the words used showed, in tonality, that some word groups tend to work together intonationally as one unit of information, and in tonicity, that many technical words are commonly highlighted and repeated in focus position. The distribution of these features across RI rhetorical structure showed that a connection can be suggested with the functional intent of each move, finding variation in IU length, in nuclear word position, and in tone type frequency.

The discussion of these results in Chapter 4 centred around the research questions presented in the Introduction. As to the relationship between genres and languages, it seemed reasonable to conceptualize researchers as multilingual pluri-literate professionals who utilize the available linguistic and generic resources at their disposal for the advancement of science and their careers. The distinctions between writing and speaking and between prepared and unprepared speech were problematized as being in a state of change or readjustment, with prepared spoken genres gaining importance in academic settings; still, it is more accurate to look at the whole of research communication as a complex situation where all modes and media interact working together for the same purposes although applied to different situations. Finally, as to the general value and degree of awareness of intonation in science communication, tone appears to be the least valuable system, while tonality and tonicity could have the highest impact, especially considering researchers' lack of awareness in production, which contrasts with the greater attention they pay when listening to others.

Reviewing the corpus data in light of the available literature, the intonation of RIs seemed to be simpler than general English intonation. It was argued that this can be an asset, since research communication needs to put across a lot of complex information in the clearest manner possible. The analysis of intonation as a linguistic component was presented as a relevant contribution to the understanding of its function in discourse, where it appears to correlate with rhetorical aspects in the same way as predicted by the literature: chunking up discourse in manageable pieces of information through tonality,

marking the focused elements through tonicity, and expressing the speakers' intended status of information through the system of tone.

In sum, therefore, this dissertation has drawn from ethnomethodology and corpus-based genre and intonation analysis to explore specific English-medium target situations as illustrations of researchers' communication practices. Conceptualizing genres as the rhetorical tools used and intonation as a valuable available resource of linguistic expression, the discussion has expanded on important issues for today's EAP agenda, such as the status of English in an internationalized academia, the place of spoken genres in the research genre hierarchy, the shifting panorama of prepared and unprepared speech, the emergence and stabilization of multimodal expression, and the genre-related discursive role of intonation in research communication in English.

5.2. Limitations and Future Research

In connection with the SEARSQ tool, generalizability is compromised by a relatively small and localized sample. Still, the literature reviewed suggests that small-scale ethnomethodological approaches are common in applied linguistics research (see Methods), and that is the reason why the data have been compared to similar investigations regarding sample size and/or target population (see Discussion). Further insights could be gained by using the same tool with a different population. Alternatively, it would be advisable to supplement the present data by resorting to other type of data collection tools such as follow-up interviews to respondents.

As to questionnaire design, it could benefit from at least two improvements: first, it might be better to keep all Likert scales to five points, since this could allow for easier comparability across questionnaire items, even in spite of the benefits of variation as argued in the methodological chapter; second, it would be necessary to split those items which asked simultaneously about the respondents' engagement in specific activities and the languages used in them. These changes, together with a possible reduction of the total number of items, would help to simplify both the respondents' task and the data analysis. Finally, data analysis may have been enriched by searching correlations between the data obtained and biodata like seniority, age, or disciplinary interests.

Regarding the compilation and analysis of JOVE-RI-C, it is necessary to point out the limited corpus size, even if justified methodologically by the innovative currency and lack of previous research (see Introduction), as well as by the frequent use of ad hoc corpora in linguistic research (McEnery & Hardie, 2011). Moreover, a general limitation

is the fact that annotation was carried out by an individual researcher without the possibility to assess rating reliability. Data analysis might be supplemented by (a) systematic close reading of the whole corpus to evaluate the extent to which the meanings assigned to tones following Gussenhoven (1984a, 2004) can be held to be coherent; (b) inferential statistics applied to the final data (cf. Berez-Kroeker, 2011); and (c) analysis of lab speech, i.e. experiments designed to prompt speakers into producing specific contours or expressing specific meanings or assessing what is heard. More specifically, tonicity analysis could include prenuclear accents and the tune of whole IUs (Halliday & Greaves, 2008; Tench, 1996, 2011).

Finally, and most interestingly for comparison and satisfactory understanding of genre specificities, it would be highly advisable to carry out an analysis of similar scope and characteristics applied to, first, the remaining sections (part-genres) of VMAs and, second, other relevant genres in emergent spoken research communication online. Optimistically, it would be possible to find genres of these characteristics that have already been analysed from a rhetorical or multimodal point of view, such as 3-minute thesis presentations (Carter-Thomas & Rowley-Jolivet, 2020; Hu & Liu, 2018; Hyland & Zou, 2021) or research pitches (Ruiz-Madrid, 2021; Ruiz-Madrid & Valeiras-Jurado, 2020).

On the whole, the research carried out for the present study might be said to be affected by the localization and the size of the datasets. However, the methodological advancements attained and the incipient understanding of some of the questions under study mean that part of the value of the present project derives from the opportunity to refine and adjust the two data-gathering tools (the questionnaire and the annotation protocol). After such refinement and adjustment, these tools can hopefully be applied efficiently to more diverse targets and the data obtained can enrich and be enriched by the data available at this stage.

5.3. Applications and Implications

In the Discussion chapter, it was argued that the findings of SEARSQ suggest that it is advisable to envision researchers as multiliterate users of academic languages who make legitimate use of different genres for different professional communicative purposes and to address different audiences (Ferguson et al., 2011; Gentil, 2011; Mauranen et al., 2021; Smirnova et al., 2021). This perspective is relevant for the theoretical assumptions behind the pedagogy of spoken EAP, in the sense that it

highlights the importance of teaching spoken English not as an isolated phenomenon but as influencing and influenced by other spoken academic languages as well as written professional communication. Furthermore, the EAP practitioner should bear in mind the readjustment of written, spoken, and mixed genres within the academic genre hierarchy (Mauranen et al., 2021) and the effect of (un)preparedness on the genres' importance, possibly teaching different strategies for different degrees of (un)preparedness. Something else to be considered is the fact that researchers reportedly value explicit teaching of speaking-related aspects like pronunciation and intonation and prefer a focus on intelligibility rather than sounding native (Jenkins, 2000; Seidlhofer, 2011; Walker, 2010).

The findings of the corpus analysis imply that it is not only possible but also worthwhile to look at the contribution of intonation to genre and, reversely, to account for intonation variation from a rhetorical perspective (Guillén Galve & Vela-Tafalla, 2020). This is arguably one of the major implications of this study, since it provides a starting point for the teaching of intonation in EAP not simply as general linguistic expression but especially as a specific resource for making meaning in connection with communicative purpose, as shown by the analysis of tonality, tonicity, and tone across VMA RI moves. Another important implication is that the theoretical model used for intonational meaning can be incorporated to EAP intonation training. Thus, such training should consider the effects of the three subsystems in relation to genre-specific factors like communicative purpose and audience. Additionally, general intonation research can resort to genre as a source of pragmatic meaning (Prieto, 2015; Westera et al., 2020) and, more specifically, the data annotated in JOVE-RI-C could be used as the basis for forced alignment and automated intonation tagging procedures (Domínguez et al., 2019; Rosenberg, 2010).

Furthermore, since the intonation analysis in this dissertation can be a source to draw from methodologically for other research genres, it can also inform EAP/ESP multimodal discourse analysis (Querol-Julián & Fortanet-Gómez, 2012; Ruiz-Madrid & Valeiras-Jurado, 2020), which usually cannot afford to dwell on intonation for long because of the difficulty of dealing with several modes at the same time. This dissertation has displayed a more in-depth analysis from which those other studies can benefit.

More broadly, the research of this project is a specific contribution to the understanding of the oral mode in research communication as a genre-mediated activity. The implications of this approach are that the pedagogy of speaking and listening in

academia should consider genre-specific factors and develop genre-based tasks, mainly in the same way as it is already done for the pedagogy of writing and, to a lesser extent, reading. For instance, speaking training could be directed to teaching how to carry out linguistically (i.e., also intonationally) specific functions of VMA RIs like "explaining significance" or "introducing additional researchers" or how to speak in specific genres like research group videos or short thesis summaries. Instead, speaking manuals often address general strategies like giving emphasis or keeping a neutral tone (Reinhart, 2013). Although those are indeed useful strategies to master, they are virtually useless without an understanding of the communicative purpose, rhetorical structure, and audience of the genre that researchers are engaging with to fulfil a specific professional communication goal.

In order to teach and learn such strategies, this dissertation also provides ideas and hints as to what specific intonational forms can contribute the meanings and functions intended. It is again advisable to remember that there is no one-to-one correspondence between linguistic form and function (van Dijk, 2008), but this type of knowledge is still valuable for teachers to show examples and for learners to form an idea of how they can interact (Bhatia, 2004; Charles & Pecorari, 2016; Hyon, 2018).

Finally, it is imperative to argue that future EAP/ESP genre-based pedagogy needs to take the teaching of academic speaking seriously in order to provide trainees with adequate guidance to deal with traditional and emergent spoken genres. As a matter of fact, this will only be an addition, although arguably a significant one, to the diversity of modes that researchers need to pick up in order to manage in today's science communication landscape, where digital literacy and multimodal literacy are becoming crucial to scholars' professional success in the creation of scientific knowledge and research dissemination (Hafner, 2014; Hafner & Miller, 2019; Luzón & Pérez-Llantada, 2022; Ruiz-Madrid & Valeiras-Jurado, 2020).

References

Askehave, I., & Nielsen, A. E. (2005). Digital genres: A challenge to traditional genre theory. *Information Technology and People*, *18*(2), 120–141. https://doi.org/10.1108/09593840510601504

Askehave, I., & Swales, J. M. (2001). Genre identification and communicative purpose: A problem and a possible solution. *Applied Linguistics*, *22*(2), 195–212. https://doi.org/10.1093/applin/22.2.195

Auken, S. (2018). Understanding genre. *Journal of Zhejiang International Studies University*, *2*, 14–27.

Austin, J. L. (1962). *How to do things with words*. Oxford University Press.

Baker, P. (2006). *Using corpora in discourse analysis*. Continuum.

Barrett, N. E., & Liu, G. (2016). Global trends and research aims for English academic oral presentations: Changes, challenges, and opportunities for learning technology. *Review of Educational Research*, *86*(4), 1227–1271. https://doi.org/10.3102/0034654316628296

Bazerman, C. (1994). Systems of genres and the enactment of social intentions. In A. Freedman & P. Medway (Eds.), *Genre and the new rhetoric* (pp. 79–101). Taylor & Francis.

Beckman, M. E., & Pierrehumbert, J. B. (1986). Intonational structure in Japanese and English. *Phonology Yearbook*, *3*, 255–309.

Belcher, D., & Hirvela, A. (Eds.). (2008). *The oral-literate connection: Perspectives on L2 speaking, writing, and other media interactions*. The University of Michigan Press.

Bellés Fortuño, B. (2018). From the editor: Multimodal means of instruction: broadening academic literacies and practices. *Language Value*, *10*(1), i–iii. https://doi.org/https://doi.org/10.6035/LanguageV.2018.10.1

Berez-Kroeker, A. L. (2011). Prosody as a genre-distinguishing feature in Ahtna: A quantitative approach. *Functions of Language*, *18*(2), 210–236. https://doi.org/10.1075/fol.18.2.03ber

Berkenkotter, C., & Huckin, T. N. (1995). *Genre knowledge in disciplinary communication: Cognition/culture/power*. Lawrence Erlbaum Associates.

Bermúdez Sánchez, M., García Riverón, R. M., & Ferrer Riesgo, C. A. (2019).

Demarcación prosódica de los paratonos en el discurso académico oral: Estudio experimental en una muestra de conferencias universitarias [Prosodic demarcation of paratones in academic spoken discourse: An experimental study in a sample of university lectures]. *Estudios de Fonética Experimental*, *28*, 185–227.

Bernad-Mechó, E. (2015). A multimodal discourse analysis of linking metadiscursive elements in two Opencourseware lectures (MOOCs). *Procedia - Social and Behavioral Sciences*, *212*, 61–66. https://doi.org/10.1016/J.SBSPRO.2015.11.299

Bhatia, V. K. (1993). *Analysing genre: Language use in professional settings*. Longman.

Bhatia, V. K. (2004). *Worlds of written discourse: A genre-based view*. Continuum.

Biber, D., Conrad, S., & Leech, G. (2002). *Longman student grammar of spoken and written English*. Longman.

Bloch, J. (2008). Blogging as a bridge between multiple forms of literacy: The use of blogs in an academic writing class. In D. Belcher & A. Hirvela (Eds.), *The oral-literate connection: Perspectives on L2 speaking, writing, and other media interactions* (pp. 288–309). The University of Michigan Press.

Bocanegra-Valle, A. (2016). Needs analysis for curriculum design. In K. Hyland & P. Shaw (Eds.), *The Routledge handbook of English for Academic Purposes* (pp. 560–576). Routledge.

Boersma, P., & Weenink, D. (2019). *Praat: Doing phonetics by computer* (6.1.06). http://www.praat.org/

Bolinger, D. (1986). *Intonation and its parts: Melody in spoken English*. Edward Arnold.

Bolter, J. D., & Grusin, R. (1999). *Remediation: Understanding new media*. The MIT Press.

Bradford, B. (1988). *Intonation in context*. Cambridge University Press.

Brazil, D. (1975). *Discourse intonation*. University of Birmingham, English Language Research.

Brazil, D. (1994). *Pronunciation for advanced learners of English: Student's book*. Cambridge University Press.

Brazil, D. (1997). *The communicative value of intonation in English*. Cambridge University Press.

Brown, G. (1977). *Listening to spoken English* (2nd ed.). Longman. https://doi.org/10.4324/9781315538518

Burgess, J., & Green, J. (2018). *YouTube: Online video and participatory culture* (2nd ed.). Polity.

Burgess, S., Gea-Valor, M. L., Moreno, A. I., & Rey-Rocha, J. (2014). Affordances and constraints on research publication: A comparative study of the language choices of Spanish historians and psychologists. *Journal of English for Academic Purposes, 14*, 72–83. https://doi.org/10.1016/j.jeap.2014.01.001

Carciu, O. M., & Muresan, L.-M. (2020). "There are so many dimensions of internationalization": Exploring academics' views on internationalization in Higher Education. In A. Bocanegra-Valle (Ed.), *Applied linguistics and knowledge transfer: Employability, internationalisation and social challenges* (pp. 203–224). Peter Lang.

Carter-Thomas, S., & Rowley-Jolivet, E. (2020). Three Minute Thesis presentations: Recontextualisation strategies in doctoral research. *Journal of English for Academic Purposes, 48,* 100897. https://doi.org/10.1016/j.jeap.2020.100897

Chang, Y., & Huang, H.-T. (2015). Exploring TED talks as a pedagogical resource for oral presentations: A corpus-based move analysis. *English Teaching & Learning*, *39*(4), 29–62. https://doi.org/10.6330/ETL.2015.39.4.02

Charles, M. (2021). EAP research in BALEAP 1975-2019: Past issues and future directions. *Journal of English for Academic Purpose*, *55,* 101060. https://doi.org/10.1016/j.jeap.2021.101060.

Charles, M., & Pecorari, D. (2016). *Introducing English for Academic Purposes*. Routledge.

Chen, A., Gussenhoven, C., & Rietveld, T. (2004). Language-specificity in the perception of paralinguistic intonational meaning. *Language and Speech*, *47*(4), 311–349. https://doi.org/10.1177/00238309040470040101

Cheng, W., Greaves, C., & Warren, M. (2008). *A corpus-driven study of discourse intonation: the Hong Kong Corpus of Spoken English (Prosodic)*. John Benjamins.

Cheng, W., & Warren, M. (1999). Facilitating a description of intercultural conversations: the Hong Kong corpus of conversational English. *ICAME Journal, 23*, 5–20.

Chitez, M., Kruse, O., & Castelló, M. (2015). *The European Writing Survey (EUWRIT): Background, structure, implementation, and some results*. https://doi.org/10.21256/zhaw-1016

Chomsky, N., & Halle, M. (1968). *The sound pattern of english*. Harper & Row.

Chun, D. M. (2002). *Discourse intonation in L2: From theory and research to practice*. John Benjamins.

Corcoran, J. (2019). Addressing the "bias gap": A research-driven argument for critical

support of plurilingual scientists' research writing. *Written Communication, 36*(4), 538–577. https://doi.org/10.1177/0741088319861648

Coulthard, M. (1985). *An introduction to Discourse Analysis*. Routledge.

Crawford Camiciottoli, B. (2020). The OpenCourseWare lecture: A new twist on an old genre? *Journal of English for Academic Purposes*, 100870. https://doi.org/10.1016/j.jeap.2020.100870

Crawford Camiciottoli, B., & Fortanet-Gómez, I. (Eds.). (2015). *Multimodal analysis in academic settings: From research to teaching*. Routledge. https://doi.org/10.4324/9781315738758

Crawford Camiciottoli, B., & Querol-Julián, M. (2016). Lectures. In K. Hyland & P. Shaw (Eds.), *The Routledge handbook of English for Academic Purposes* (pp. 309–322). Routledge.

Cruttenden, A. (1997). *Intonation* (2nd ed.). Cambridge University Press.

Cruttenden, A. (2014). *Gimson's pronunciation of English* (8th ed.). Routledge.

Crystal, D. (1969). *Prosodic systems and intonation in English*. Cambridge University Press.

Crystal, D. (2019). *The Cambridge encyclopedia of the English language* (3rd ed.). Cambridge University Press. https://doi.org/10.1017/9781108528931

Crystal, D., & Davy, D. (1969). *Investigating English style*. Longman.

Curry, M. J., & Lillis, T. (2013). Introduction to the thematic issue: Participating in academic publishing—consequences of linguistic policies and practices. *Language Policy, 12*(3), 209–213. https://doi.org/10.1007/s10993-013-9286-7

Curry, M. J., & Lillis, T. (2019). Unpacking the lore on multilingual scholars publishing in English: A discussion paper. *Publications, 7*(2), 1–14. https://doi.org/10.3390/publications7020027

Dehaene, S. (2009). *Reading in the brain: The new science of how we read*. Penguin.

Devitt, A. J. (1991). Intertextuality in tax accounting: Generic, referential, and functional. In C. Bazerman & J. Paradis (Eds.), *Textual dynamics of the professions: Historical and contemporary studies of writing in professional communities* (pp. 336–355). University of Wisconsin Press. http://wac.colostate.edu/books/textual_dynamics/chapter14.pdf

Devitt, A. J. (2004). A theory of genre. In *Writing genres* (pp. 1–32). Southern Illinois University Press.

Domínguez, M., Rohrer, P. L., & Soler-Company, J. (2019). PytoBi: A toolkit for ToBI

labeling under Python. *Proceedings of the Annual Conference of the International Speech Communication Association, INTERSPEECH*, 3675–3676. https://doi.org/10.21437/Interspeech.2019-8021

Dörnyei, Z. (2007). *Research methods in applied linguistics: Quantitative, qualitative, and mixed methodologies*. Oxford University Press.

Dörnyei, Z., & Csizér, K. (2012). How to design and analyze surveys in second language acquisition research. In *Research methods in Second Language Acquisition: A practical guide* (pp. 74–94). Wiley-Blackwell. https://doi.org/10.1002/9781444347340.ch5

Dressen-Hamouda, D. (2013). Ethnographic approaches to ESP research. In B. Paltridge & S. Starfield (Eds.), *The handbook of English for Specific Purposes* (pp. 501–517). Wiley-Blackwell.

Fairclough, N. (1992). Discourse and text: Linguistic and intertextual analysis within discourse analysis. *Discourse & Society*, *3*(2), 193–217.

Feak, C. B. (2013). ESP and speaking. In B. Paltridge & S. Starfield (Eds.), *The handbook of English for Specific Purposes* (pp. 35–53). Wiley-Blackwell.

Feak, C. B., & Swales, J. M. (2009). *Telling a research story: Writing a literature review*. University of Michigan Press. https://doi.org/10.3998/mpub.309338

Feak, C. B., & Swales, J. M. (2011). *Creating contexts: Writing introductions across genres*. University of Michigan Press. https://doi.org/10.3998/mpub.3367288

Ferguson, G., Pérez-Llantada, C., & Plo, R. (2011). English as an international language of scientific publication: A study of attitudes. *World Englishes*, *30*(1), 41–59.

Flowerdew, J. (1999). Writing for scholarly publication in English: The case of Hong Kong. *Journal of Second Language Writing*, *8*(2), 123–145. https://doi.org/10.1016/S1060-3743(99)80125-8

Flowerdew, J. (2002). Genre in the classroom: A linguistic approach. In A. M. Johns (Ed.), *Genre in the classroom: Multiple perspectives* (pp. 91–104). Lawrence Erlbaum.

Flowerdew, L. (2013). Needs analysis and curriculum development in ESP. In B. Paltridge & S. Starfield (Eds.), *The handbook of English for Specific Purposes* (pp. 325–346). Wiley-Blackwell.

Freadman, A. (1994). Anyone for tennis? In A. Freedman & P. Medway (Eds.), *Genre and the new rhetoric* (pp. 43–66). Taylor & Francis.

Freadman, A. (2002). Uptake. In R. M. Coe, L. Lingard, & T. Teslenko (Eds.), *The*

rhetoric and ideology of genre (pp. 39–53). Hampton Press Inc.

Gallego, L., Castelló, M., & Badia, A. (2016). Faculty identity through spheres of teaching and research activity and associated genres. *Higher Education Research and Development, 36*(5), 962–974. https://doi.org/10.1080/07294360.2016.1263828

García Lecumberri, M. L. (1997). Traditional British analyses of intonation: A review. *Atlantis: Revista de La Asociación Española de Estudios Anglo-Norteamericanos, 19*(2), 103–111. https://doi.org/10.2307/41055464

García Lecumberri, M. L., Cooke, M., & Cutler, A. (2010). Non-native speech perception in adverse conditions: A review. *Speech Communication, 52*(11–12), 864–886. https://doi.org/10.1016/j.specom.2010.08.014

Gentil, G. (2011). A biliteracy agenda for genre research. *Journal of Second Language Writing, 20*(1), 6–23. https://doi.org/10.1016/j.jslw.2010.12.006

Giannoni, D. S. (2008). Medical writing at the periphery: The case of Italian journal editorials. *Journal of English for Academic Purposes, 7*(2), 97–107. https://doi.org/10.1016/j.jeap.2008.03.003

Giddens, A. (1984). *The constitution of society: Outline of the theory of structuration*. University of California Press.

Goldsmith, J. A. (1972). *Autosegmental phonology*. Massachusetts Institute of Technology.

Gollin-Kies, S. (2014). Methods reported in ESP research articles: A comparative survey of two leading journals. *English for Specific Purposes, 36*, 27–34. https://doi.org/10.1016/j.esp.2014.04.001

Greenbaum, S., & Quirk, R. (1990). *A student's grammar of the English language*. Longman.

Guillén-Galve, I., & Bocanegra-Valle, A. (Eds.). (2021). *Ethnographies of academic writing research: Theory, methods, and interpretation*. John Benjamins.

Guillén-Galve, I., & Vázquez-Orta, I. (Eds.). (2018). *English as a Lingua Franca and intercultural communication: Implications and applications in the field of English language teaching*. Peter Lang.

Guillén Galve, I., & Vela-Tafalla, M. A. (2020). New research genres and English prosody: An exploratory analysis of academic English intonation in video methods articles in experimental biology. *Language Value, 12*(1), 1–29. https://doi.org/10.6035/LanguageV.2020.12.2

Guillén-Galve, I., & Vela-Tafalla, M. A. (2021). Taking the ethnomethodological lens to

enquire into academic literacy development in graduate students. In L.-M. Muresan & C. Orna-Montesinos (Eds.), *Academic literacy development: Perspectives on multilingual scholars' approaches to writing* (pp. 101–121). Palgrave Macmillan.

Gussenhoven, C. (1983). Focus, mode and the nucleus. *Journal of Linguistics*, *19*(2), 377–417. https://doi.org/10.1017/S0022226700007799

Gussenhoven, C. (1984a). A semantic analysis of the nuclear tones of English. In *On the grammar and semantics of sentence accents* (pp. 193–290). Foris Publications. https://doi.org/10.1515/9783110859263.193

Gussenhoven, C. (1984b). *On the grammar and semantics of sentence accents*. Foris Publications. https://doi.org/10.1515/9783110859263

Gussenhoven, C. (2004). *The phonology of tone and intonation*. Cambridge University Press.

Gussenhoven, C. (2016). Foundations of intonational meaning: Anatomical and physiological factors. *Topics in Cognitive Science*, *8*(2), 425–434. https://doi.org/10.1111/tops.12197

Gussenhoven, C., & Rietveld, T. (1991). An experimental evaluation of two nuclear-tone taxonomies. *Linguistics*, *29*, 423–449. https://doi.org/10.1515/ling.1991.29.3.423

Hafner, C. A. (2014). Embedding digital literacies in english language teaching: Students' digital video projects as multimodal ensembles. *TESOL Quarterly*, *48*(4), 655–685. https://doi.org/10.1002/tesq.138

Hafner, C. A. (2018). Genre innovation and multimodal expression in scholarly communication: Video methods articles in experimental biology. *Ibérica*, *36*, 15–42. https://revistaiberica.org/index.php/iberica/article/view/121

Hafner, C. A., & Miller, L. (2019). *English in the disciplines: A multidimensional model for ESP course design*. Routledge. https://doi.org/10.4324/9780429452437

Halliday, M. A. K. (1963). Intonation in English grammar. *Transactions of the Philological Society*, *62*(1), 143–169. https://doi.org/10.1111/j.1467-968X.1963.tb01003.x

Halliday, M. A. K. (1967). *Intonation and grammar in British English*. Mouton.

Halliday, M. A. K. (1978). *Language as social semiotic*. Edward Arnold.

Halliday, M. A. K. (1985). *Introduction to Functional Grammar*. Edward Arnold.

Halliday, M. A. K. (2002). *On grammar*. Continuum.

Halliday, M. A. K., & Greaves, W. S. (2008). *Intonation in the grammar of English*.

Equinox.

Halliday, M. A. K., & Hasan, R. (1976). *Cohesion in English*. Longman.

Halliday, M. A. K., & Matthiessen, C. M. I. M. (2014). *Halliday's introduction to Functional Grammar* (4th ed.). Routledge.

Harklau, L. (2011). Approaches and methods in recent qualitative research. In E. Hinkel (Ed.), *Handbook of research in second language teaching and learning* (Vol. 2, pp. 175–189). Routledge.

Harrison, S. (2021). Showing as sense-making in oral presentations: The speech-gesture-slide interplay in TED talks by Professor Brian Cox. *Journal of English for Academic Purposes*, *53*, 101002. https://doi.org/10.1016/j.jeap.2021.101002

Hewings, M. (2007). *English pronunciation in use advanced*. Cambridge University Press.

Hinkel, Eli. (2006). Current perspectives on teaching the four skills. *TESOL Quarterly*, *40*(1), 109–131. https://doi.org/10.2307/40264513

Hirschberg, J., & Pierrehumbert, J. (1986). The intonational structuring of discourse. *Proceedings of the 24th Annual Meeting on Association for Computational Linguistics*, 136–144. https://doi.org/10.3115/981131.981152

Hirvela, A., & Belcher, D. (2016). Reading/writing and speaking/writing connections: The advantages of multimodal pedagogy. In R. M. Manchón & P. K. Matsuda (Eds.), *Handbook of second and foreign language writing* (pp. 587–612). De Gruyter Mouton.

Hu, G., & Liu, Y. (2018). Three minute thesis presentations as an academic genre: A cross-disciplinary study of genre moves. *Journal of English for Academic Purposes*, *35*, 16–30. https://doi.org/10.1016/j.jeap.2018.06.004

Hutchinson, T., & Waters, A. (1987). *English for Specific Purposes: A learning-centred approach*. Cambridge University Press.

Hyland, K. (2013a). ESP and writing. In B. Paltridge & S. Starfield (Eds.), *The handbook of English for Specific Purposes* (pp. 95–113). Wiley-Blackwell.

Hyland, K. (2013b). Introduction. In K. Hyland (Ed.), *Discourse studies reader: Essential excerpts*. Bloomsbury.

Hyland, K. (2018). Sympathy for the devil? A defence of EAP. *Language Teaching*, *51*(3), 383–399. https://doi.org/10.1017/S0261444818000101

Hyland, K., & Jiang, F. (2021). A bibliometric study of EAP research: Who is doing what, where and when? *Journal of English for Academic Purposes*, *49*, 100929.

https://doi.org/10.1016/j.jeap.2020.100929

Hyland, K., & Shaw, P. (Eds.). (2016). *The Routledge handbook of English for Academic Purposes*. Routledge. https://doi.org/10.4324/9781315657455

Hyland, K., & Zou, H. (2021). "I believe the findings are fascinating": Stance in three-minute theses. *Journal of English for Academic Purposes, 50*, 100973. https://doi.org/10.1016/j.jeap.2021.100973

Hynninen, N., & Kuteeva, M. (2017). "Good" and "acceptable" English in L2 research writing: Ideals and realities in history and computer science. *Journal of English for Academic Purposes, 30*, 53–65. https://doi.org/10.1016/j.jeap.2017.10.009

Hynninen, N., & Kuteeva, M. (2020). Researchers' language practices concerning knowledge production and dissemination: Discourses of mono- and multilingualism. In M. Kuteeva, K. Kaufhold, & N. Hynninen (Eds.), *Language perceptions and practices in multilingual universities* (pp. 323–350). Palgrave Macmillan.

Hyon, S. (1996). Genre in three traditions: Implications for ESL. *TESOL Quarterly*, *30*(4), 693–722.

Hyon, S. (2018). *Introducing genre and English for Specific Purposes*. Routledge.

Hyon, S., & Chen, R. (2004). Beyond the research article: University faculty genres and EAP graduate preparation. *English for Specific Purposes*, *23*(3), 233–263. https://doi.org/10.1016/j.esp.2003.08.002

Jenkins, J. (2000). *The phonology of English as an International Language*. Oxford University Press.

Johns-Lewis, C. (1986). Prosodic differentiation of discourse modes. In C. Johns-Lewis (Ed.), *Intonation in discourse* (pp. 199–219). Croom Helm.

Johns, A. M. (1997). *Text, role, and context: Developing academic literacies*. Cambridge University Press.

Johns, A. M., Bawarshi, A., Coe, R. M., Hyland, K., Paltridge, B., Reiff, M. J., & Tardy, C. M. (2006). Crossing the boundaries of genre studies: Commentaries by experts. *Journal of Second Language Writing*, *15*(3), 234–249. https://doi.org/https://doi.org/10.1016/j.jslw.2006.09.001

Johns, A. M., & Swales, J. M. (2002). Literacy and disciplinary practices: Opening and closing perspectives. *Journal of English for Academic Purposes, 1*(1), 13–28. https://doi.org/10.1016/S1475-1585(02)00003-6

Johnson, K. (2012). *Acoustic and auditory phonetics* (3rd ed.). Wiley-Blackwell.

Kim, W., Jeong, O.-R., & Lee, S.-W. (2010). On social Web sites. *Information Systems*,

35, 215–236. https://doi.org/10.1016/j.is.2009.08.003

Kousha, K., Thelwall, M., & Abdoli, M. (2012). The role of online videos in research communication: A content analysis of YouTube videos cited in academic publications. *Journal of the American Society for Information Science and Technology, 63*(9), 1710–1727. https://doi.org/10.1002/asi.22717

Kress, G., & van Leeuwen, T. (1996). *Reading images: A grammar of visual design*. Routledge.

Kress, G., & van Leeuwen, T. (2001). *Multimodal discourse: The modes and media of contemporary communication*. Arnold.

Kuteeva, M., & Mauranen, A. (2014). Writing for publication in multilingual contexts: An introduction to the special issue. *Journal of English for Academic Purposes, 13*(1), 1–4. https://doi.org/10.1016/j.jeap.2013.11.002

Ladd, D. R. (1978). Stylized intonation. *Language*, *54*(3), 517. https://doi.org/10.2307/412785

Ladd, D. R. (1996). *Intonational phonology*. Cambridge University Press.

Ladd, D. R. (2008). *Intonational phonology* (2nd ed.). Cambridge University Press.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.

Lei, J., & Hu, G. (2019). Doctoral candidates' dual role as student and expert scholarly writer: An activity theory perspective. *English for Specific Purposes*, *54*, 62–74. https://doi.org/10.1016/j.esp.2018.12.003

Li, Y., & Hu, G. (2017). Chinese management academics' English-medium scholarly experience: Comparative perspectives on overseastrained and home-trained scholars. *Ibérica*, *33*, 71–96. https://revistaiberica.org/index.php/iberica/article/view/158

Lillis, T. (2008). Ethnography as method, methodology, and "deep theorizing": Closing the gap between text and context in academic writing research. *Written Communication, 25*(3), 353–388. https://doi.org/10.1177/0741088308319229

Lillis, T., & Curry, M. J. (2010). *Academic writing in a global context: The politics and practices of publishing in English*. Routledge.

Lindsey, G. (2019). *English after RP: Standard British pronunciation today*. Palgrave Macmillan.

Lorés, R. (2018). Online conference announcements as spaces for disciplinary communication. *English Text Construction*, *11*(2), 256–284.

https://doi.org/10.1075/etc.00011.lor

Luczaj, K., Leonowicz-Bukala, I., & Kurek-Ochmanska, O. (2022). English as a lingua franca? The limits of everyday English-language communication in Polish academia. *English for Specific Purposes*, *66*, 3–16. https://doi.org/10.1016/j.esp.2021.11.002

Luzón, M. J. (2013a). Public communication of science in blogs: Recontextualizing scientific discourse for a diversified audience. *Written Communication*, *30*(4), 428–457. https://doi.org/10.1177/0741088313493610

Luzón, M. J. (2013b). "This is an erroneous argument": Conflict in academic blog discussions. *Discourse, Context and Media*, *2*(2), 111–119. https://doi.org/10.1016/j.dcm.2013.04.005

Luzón, M. J. (2017). Connecting genres and languages in online scholarly communication: An analysis of research group blogs. *Written Communication*, *34*(4), 441-471. https://doi.org/10.1177/0741088317726298

Luzón, M. J. (2019). Bridging the gap between experts and publics: The role of multimodality in disseminating research in online videos. *Ibérica*, *37*, 167–192. https://revistaiberica.org/index.php/iberica/article/view/114

Luzón, M. J., & Pérez-Llantada, C. (2019). *Science communication on the internet: Old genres meet new genres*. John Benjamins.

Luzón, M. J., & Pérez-Llantada, C. (2022). *Digital genres in academic knowledge production and communication: Perspective and practices*. Multilingual Matters.

Major, R. C. (2001). *Foreign accent: The ontogeny and philogeny of second language phonology*. Lawrence Erlbaum.

Martin, J. R., Christie, F., & Rothery, J. (1987). Social processes in education: A reply to Sawyer and Watson (and others). In I. Reid (Ed.), *The place of genre in learning: Current debates* (pp. 46–57). Deakin University Press.

Mauranen, A. (2012). *Exploring ELF: Academic English shaped by non-native speakers*. Cambridge University Press.

Mauranen, A., Pérez-Llantada, C., & Swales, J. M. (2010). Academic Englishes: A standardized knowledge? In A. Kirkpatrick (Ed.), *The Routledge handbook of world Englishes* (pp. 634–652). Routledge.

Mauranen, A., Pérez-Llantada, C., & Swales, J. M. (2021). Academic Englishes A standardized knowledge? In A. Kirkpatrick (Ed.), *The Routledge handbook of world Englishes* (2nd ed., pp. 659–676). Routledge.

McEnery, T., & Hardie, A. (2011). *Corpus linguistics: Method,theory and practice*. Cambridge University Press.

McEnery, T., Xiao, R., & Tono, Y. (2006). *Corpus-based language studies: An advanced resource book*. Routledge.

McGrath, L. (2014). Parallel language use in academic and outreach publication: A case study of policy and practice. *Journal of English for Academic Purposes, 13*(1), 5–16. https://doi.org/10.1016/j.jeap.2013.10.008

Mehlenbacher, A. R. (2017). Crowdfunding science: Exigencies and strategies in an emerging genre of science communication. *Technical Communication Quarterly, 26*(2), 127–144. https://doi.org/10.1080/10572252.2017.1287361

Mežek, Š., & Swales, J. M. (2016). PhD defences and vivas. In K. Hyland & P. Shaw (Eds.), *The Routledge handbook of English for Academic Purposes* (pp. 361–375). Routledge.

Miller, C. R. (1984). Genre as social action. *Quarterly Journal of Speech, 70*(2), 151–167. https://doi.org/10.1080/00335638409383686

Miller, C. R., & Devitt, A. J. (Eds.). (2019). *Landmark essays on rhetorical genre studies*. Routledge.

Miller, C. R., & Kelly, A. R. (2017). *Emerging Genres in new media environments*. Palgrave Macmillan. https://doi.org/10.1007/978-3-319-40295-6

Morell, T. (2018). Multimodal competence and effective interactive lecturing. *System, 77*, 70–79. https://doi.org/10.1016/j.system.2017.12.006

Moreno, A. I., Rey-Rocha, J., Burgess, S., López-Navarro, I., & Sachdev, I. (2012). Spanish researchers' perceived difficulty writing research articles for English-medium journals: The impact of proficiency in English versus publication experience. *Ibérica, 24*, 157–184. https://revistaiberica.org/index.php/iberica/article/view/300

Moreno, A. I., & Swales, J. M. (2018). Strengthening move analysis methodology towards bridging the function-form gap. *English for Specific Purposes, 50*, 40–63. https://doi.org/10.1016/j.esp.2017.11.006

Mott, B. (2011). *English phonetics and phonology for Spanish speakers* (2nd ed.). Publicacions i Edicions de la Universitat de Barcelona.

Munafò, M. (2016). Open science and research reproducibility. *Ecancermedicalscience, 10*, ed56. https://doi.org/10.3332/ecancer.2016.ed56

Mur-Dueñas, P. (2018). Disseminating and constructing academic knowledge in online

scholarly journals: An analysis of virtual special issue introductions. *Discourse, Context and Media*, *24*, 43–52. https://doi.org/10.1016/j.dcm.2018.04.010

Muresan, L.-M., & Orna-Montesinos, C. (Eds.). (2021). *Academic literacy development: Perspectives on multilingual scholars' approaches to writing*. Palgrave Macmillan.

O'Connor, J. D., & Arnold, G. F. (1973). *Intonation of colloquial English* (2nd ed.). Longman.

O'Grady, G. (2017). Intonation and systemic functional linguistics: The way forward. In T. Bartlett & G. O'Grady (Eds.), *The Routledge handbook of Systemic Functional Linguistics* (pp. 146–162). Routledge. https://doi.org/10.4324/9781315413891

O'Grady, G. (2020). Is there a role for prosody within register studies? And if so what and how? *Language, Context and Text, 2*(1), 59–92. https://doi.org/10.1075/langct.00021.ogr

O'Halloran, K. (2004). *Multimodal discourse analysis: Systemic-Functional perspectives*. Continuum.

O'Halloran, K. L., Tan, S., & Wignell, P. (2019). SFL and Multimodal discourse analysis. In G. Thompson, W. L. Bowcher, L. Fontaine, & D. Schönthal (Eds.), *The Cambridge handbook of Systemic Functional Linguistics* (pp. 433–461). Cambridge University Press. https://doi.org/10.1017/9781316337936.019

Ohala, J. (1983). Cross-language use of pitch: An ethological view. *Phonetica, 40*, 1–18.

Ohala, J. (1984). An ethological perspective on common cross-language utilization of f0 in voice. *Phonetica, 41*, 1–16.

Ohala, J. (1990). There is no interface between phonology and phonetics: a personal view. *Journal of Phonetics, 18*, 153–171.

Ohala, J. (1996). The frequency code underlies the sound symbolic use of voice pitch. In L. Hinton, J. Nichols, & J. Ohala (Eds.), *Sound Symbolism* (pp. 325–347). Cambridge University Press.

Orlikowski, W. J., & Yates, J. (1994). Genre repertoire: The structuring of communicative practices in organizations. *Administrative Science Quarterly, 39*, 541–574.

Paltridge, B., & Starfield, S. (2016). Ethnographic perspectives on English for academic purposes research. In K. Hyland & P. Shaw (Eds.), *The Routledge handbook of English for Academic Purposes* (pp. 218–229). Routledge.

Paltridge, B., Starfield, S., & Tardy, C. M. (2016). *Ethnographic perspectives on academic writing*. Oxford University Press.

Pérez-Llantada, C. (2012). *Scientific discourse and the rhetoric of globalization: The impact of culture and language*. Continuum.

Pérez-Llantada, C. (2013). The article of the future: Strategies for genre stability and change. *English for Specific Purposes*, *32*(4), 221–235. https://doi.org/10.1016/j.esp.2013.06.004

Pérez-Llantada, C. (2015). Genres in the forefront, languages in the background: The scope of genre analysis in language-related scenarios. *Journal of English for Academic Purposes*, *19*, 10–21. https://doi.org/10.1016/j.jeap.2015.05.005

Pérez-Llantada, C. (2016). How is the digital medium shaping research genres? Some cross-disciplinary trends. *ESP Today*, *4*(1), 22–42.

Pérez-Llantada, C. (2018). Bringing into focus multilingual realities: Faculty perceptions of academic languages on campus. *Lingua*, *212*, 30–43. https://doi.org/10.1016/j.lingua.2018.05.006

Pérez-Llantada, C. (2019). Ecologies of genres and an ecology of languages of science. In D. R. Gruber & L. C. Olman (Eds.), *The Routledge handbook of language and science* (pp. 361–374). Routledge. https://doi.org/10.4324/9781351207836-28

Pérez-Llantada, C. (2021). Genres and languages in science communication: The multiple dimensions of the science-policy interface. *Language and Communication*, *78*, 65–76. https://doi.org/10.1016/j.langcom.2021.02.004

Pérez-Llantada, C., Plo, R., & Ferguson, G. R. (2011). "You don't say what you know, only what you can": The perceptions and practices of senior Spanish academics regarding research dissemination in English. *English for Specific Purposes*, *30*(1), 18–30. https://doi.org/10.1016/j.esp.2010.05.001

Phillipson, R. (1992). *Linguistic imperialism*. Oxford University Press.

Pierrehumbert, J. (1980). *The phonology and phonetics of English intonation*. [Doctoral dissertation, Massachusetts Institute of Technology]. DSpace@MIT. https://dspace.mit.edu/handle/1721.1/16065

Pierrehumbert, J., & Hirschberg, J. (1990). The meaning of intonational contours in the interpretation of discourse. In P. R. Cohen, J. Morgan, & M. E. Pollack (Eds.), *Intentions in communication* (pp. 271–311). MIT Press. https://doi.org/10.7551/mitpress/3839.003.0016

Pike, K. L. (1945). *The intonation of American English*. University of Michigan Press.

Politzer-Ahles, S., Holliday, J. J., Girolamo, T., Spychalska, M., & Berkson, K. H. (2016). Is linguistic injustice a myth? A response to Hyland (2016). *Journal of Second*

Language Writing, *34*, 3–8. https://doi.org/10.1016/j.jslw.2016.09.003

Prieto, P. (2015). Intonational meaning. *WIREs Cognitive Science*, *6*(4), 371–381. https://doi.org/10.1002/wcs.1352

Qiu, X., & Jiang, F. (2021). Stance and engagement in 3 MT presentations: How students communicate disciplinary knowledge to a wide audience. *Journal of English for Academic Purposes*, *51*, 100976. https://doi.org/10.1016/j.jeap.2021.100976

Querol-Julián, M. (2011). *Evaluation in discussion sessions of conference paper presentations*. Lambert Academic Publishing.

Querol-Julián, M., & Fortanet-Gómez, I. (2012). Multimodal evaluation in academic discussion sessions: How do presenters act and react? *English for Specific Purposes*, *31*(4), 271–283. https://doi.org/10.1016/j.esp.2012.06.001

Querol-Julián, M., & Fortanet-Gómez, I. (2016). Evaluation in discussion sessions of conference presentations: Theoretical foundations for a multimodal analysis. *Kalbotyra*, *66*, 77–98. https://doi.org/10.15388/klbt.2014.7676

Reinhart, S. M. (2013). *Giving academic presentations* (2nd ed.). University of Michigan Press. http://www.tesl-ej.org/pdf/ej74/r1.pdf

Riazi, A. M., & Candlin, C. N. (2014). Mixed-methods research in language teaching and learning: Opportunities, issues and challenges. *Language Teaching*, *47*(2), 135–173. https://doi.org/10.1017/S0261444813000505

Riazi, A. M., Ghanbar, H., & Fazel, I. (2020). The contexts, theoretical and methodological orientation of EAP research: Evidence from empirical articles published in the Journal of English for Academic Purposes. *Journal of English for Academic Purposes*, *48*, 100925. https://doi.org/10.1016/j.jeap.2020.100925

Rivas, L. I. (2017). Looking at genres from a phonological perspective. In P. Chappell & J. S. Knox (Eds.), *Transforming contexts. Papers from the 44th International Systemic Functional Congress* (pp. 12–18). 44th ISFC Organising Committee.

Rivas, L. I., & Germani, M. P. (2016). Analysing correlations between generic patterns and prosodic realizations in interviews in English. *International Journal of Language Studies*, *10*(2), 103–126.

Roach, P. (1994). Conversion between prosodic transcription systems: "Standard British" and ToBI. *Speech Communication*, *15*(1–2), 91–99. https://doi.org/10.1016/0167-6393(94)90044-2

Roach, P. (2009). *English phonetics and phonology: A practical course* (4th ed.). Cambridge University Press.

Rosenberg, A. (2010). AuToBI-A tool for automatic ToBI annotation. *Proceedings of Interspeech, Makuhari, Japan*, 146–149.

Rowley-Jolivet, E., & Carter-Thomas, S. (2019). Scholarly soundbites: Audiovisual innovations in digital science and their implications for genre evolution. In M. J. Luzón & C. Pérez-Llantada (Eds.), *Science communication on the internet: Old genres meet new genres* (pp. 81–106). John Benjamins. https://www.benjamins.com/catalog/pbns.308

Rozycki, W., & Johnson, N. H. (2013). Non-canonical grammar in Best Paper award winners in engineering. *English for Specific Purposes*, *32*(3), 157–169. https://doi.org/10.1016/j.esp.2013.04.002

Rubin, D. L., & Kang, O. (2008). Writing to speak: What goes on across the two-way street. In D. Belcher & A. Hirvela (Eds.), *The oral-literate connection: Perspectives on L2 speaking, writing, and other media interactions* (pp. 210–225). The University of Michigan Press.

Ruiz-Madrid, N. (2021). A multimodal discourse approach to research pitches. *Journal of English for Academic Purposes*, *52*, 101003. https://doi.org/10.1016/j.jeap.2021.101003

Ruiz-Madrid, N., & Fortanet-Gómez, I. (2015). Contrastive multimodal analysis: Conference plenary lectures in English and in Spanish. In B. Crawford-Camiciottoli & I. Fortanet-Gómez (Eds.), *Multimodal analysis in academic settings: From research to teaching* (pp. 39–60). Routledge.

Ruiz-Madrid, N., & Fortanet-Gómez, I. (2017). An analysis of multimodal interaction in a webinar: Defining the genre. *EPiC Series in Language and Linguistics*, *2*, 274–282. https://doi.org/https://doi.org/10.29007/p8mm

Ruiz-Madrid, N., & Valeiras-Jurado, J. (2020). Developing multimodal communicative competence in emerging academic and professional genres. *International Journal of English Studies*, *20*(1), 27–50. https://doi.org/10.6018/ijes.401481

Ruiz Mantilla, J. (2019, June 11). Un libro para escuchar antes de leer [A book to listen to before reading]. *El País*. https://elpais.com/cultura/2019/06/11/actualidad/1560272732_554873.html

Russell, D. R. (1995). Activity Theory and its implications for writing instruction. In J. Petralgia (Ed.), *Reconceiving writing: rethinking writing instruction* (pp. 51–78). Erlbaum.

Sambre, P., Bröne, G., & Vranjes, J. (2013, May 29-31). *Video CV: Multimodal moves in*

a hybrid genre. [Conference presentation]. Global Advances in Business Communication, Annual Tricontinental Conference, Antwerp, Belgium.

Sancho Guinda, C. (2016). Semiotic shortcuts: The graphical abstract strategies of engineering students. *Hermes - Journal of Language and Communication in Business*, *55*, 61–90. https://doi.org/10.7146/hjlcb.v0i55.24289

Saussure, F. (1916). *Cours de linguistique générale*. Payot.

Scollon, R. (2003). The dialogist in a positivist world: Theory in the social sciences and the humanities at the end of the twentieth century. *Social Semiotics*, *13*(1), 71–88. https://doi.org/10.1080/1035033032000133517

Searle, J. (1969). *Speech acts*. Cambridge University Press.

Seidlhofer, B. (2011). *Understanding English as a Lingua Franca*. Oxford University Press.

Silverman, K., Beckman, M., Pitrelli, J., Ostendorf, M., Wightman, C., Price, P., Pierrehumbert, J., & Hirschberg, J. (1992). ToBI: A standard for labeling english prosody. *Proceedings of the 2nd Conference on Spoken Language Processing (ICSLP 1992)*, 867–870. https://www.isca-speech.org/archive/icslp_1992/silverman92_icslp.html

Smirnova, N. V., Lillis, T., & Hultgren, A. K. (2021). English and/or Russian medium publications? A case study exploring academic research writing in contemporary Russian academia. *Journal of English for Academic Purposes*, *53*(July 2020), 101015. https://doi.org/10.1016/j.jeap.2021.101015

Spinuzzi, C. (2004). Describing assemblages: Genre sets, systems, repetoires, and ecologies. *Computer Writing and Research Lab White Paper Series*. https://www.dwrl.utexas.edu/old/content/describing-assemblages.html

Spinuzzi, C., & Zachry, M. (2000). Genre Ecologies: An Open-System Approach to Understanding and Constructing Documentation. *Journal of Computer Documentation*, *24*(3), 169–181.

Sullivan, I., DeHaven, A., & Mellor, D. (2019). Open and reproducible research on Open Science framework. *Current Protocols in Essential Laboratory Techniques*, *18*, e32. https://doi.org/10.1002/cpet.32

Swales, J. M. (1990). *Genre analysis: English in academic and research settings*. Cambridge University Press.

Swales, J. M. (1996). Occluded genres in the academy: The case of the submission letter. In E. Ventola & A. Mauranen (Eds.), *Academic writing: Intercultural and textual*

issues (pp. 45–58). John Benjamins.

Swales, J. M. (1998). *Other floors, other voices: A textography of a small university building*. Routledge.

Swales, J. M. (2004). *Research genres: Explorations and applications*. Cambridge University Press.

Swales, J. M. (2008). Foreword. In D. Belcher & A. Hirvela (Eds.), *The oral-literate connection: Perspectives on L2 speaking, writing, and other media interactions* (pp. v–viii). The University of Michigan Press.

Swales, J. M. (2012). A text and its commentaries: Toward a reception history of "Genre in three traditions" (Hyon, 1996). *Ibérica, 24*, 103–116. https://revistaiberica.org/index.php/iberica/article/view/296

Swales, J. M. (2018, June 7-8). *The future of genre studies* [Plenary lecture abstract]. 2018 NFEAP Conference, Oslo, Norway. https://uni.oslomet.no/nfeap/wp-content/uploads/sites/781/2018/06/NFEAP-2018-Abstracts-and-biographies.pdf

Swales, J. M. (2019). The futures of EAP genre studies: A personal viewpoint. *Journal of English for Academic Purposes*, *38*, 75–82. https://doi.org/10.1016/j.jeap.2019.01.003

Swales, J. M., & Feak, C. B. (2009). *Abstracts and the writing of abstracts*. University of Michigan Press. https://doi.org/10.3998/mpub.309332

Swales, J. M., & Feak, C. B. (2011). *Navigating academia: Writing supporting genres*. University of Michigan Press. https://doi.org/10.3998/mpub.3073304

Swales, J. M., & Feak, C. B. (2012). *Academic writing for graduate students: Essential tasks and skills* (3rd ed.). University of Michigan Press. https://doi.org/10.2307/358319

Tardy, C. M. (2003). A genre system view of the funding of academic research. *Written Communication, 20*(1), 7–36. https://doi.org/10.1177/0741088303253569

Tardy, C. M. (2016). *Beyond convention: Genre innovation in academic writing*. University of Michigan Press.

Tench, P. (1996). *The intonation systems of English*. Cassell.

Tench, P. (2011). *Transcribing the sound of English*. Cambridge University Press. https://doi.org/10.1017/cbo9780511698361

Thompson, S. E. (2003). Text-structuring metadiscourse, intonation and the signalling of organisation in academic lectures. *Journal of English for Academic Purposes*, *2*(1),

5–20. https://doi.org/10.1016/S1475-1585(02)00036-X

Valeiras-Jurado, J. (2015). A multimodal approach to persuasion in conference presentations. In B. Crawford-Camiciottoli & I. Fortanet-Gómez (Eds.), *Multimodal analysis in academic settings: From research to teaching* (pp. 108–130). Routledge.

Valeiras-Jurado, J., & Ruiz-Madrid, N. (2019). Multimodal enactment of characters in conference presentations. *Discourse Studies*, *21*(5), 561–583. https://doi.org/10.1177/1461445619846703

Valeiras-Jurado, J., Ruiz-Madrid, N., & Jacobs, G. (2018). Revisiting persuasion in oral academic and professional genres: Towards a methodological framework for multimodal discourse analysis of research dissemination talks. *Ibérica*, *35*, 93–118. https://revistaiberica.org/index.php/iberica/article/view/136

van Dijk, T. A. (2008). *Discourse and context: A sociocognitive approach*. Cambridge University Press.

Ventola, E., Shalom, C., & Thompson, S. (Eds.). (2002). *The language of conferencing*. Peter Lang.

Villares, R. (2021). Engaging internationally in academia: How personal experience shapes academic literacy development. In L.-M. Muresan & C. Orna-Montesinos (Eds.), *Academic literacy development: Perspectives on multilingual scholars' approaches to writing* (pp. 247–264). Palgrave Macmillan.

Walker, R. (2010). *Teaching the pronunciation of English as a Lingua Franca*. Oxford University Press.

Web Hypertext Application Technology Working Group. (n.d.). *HTML Standard*. Retrieved December 1, 2021, from https://www.w3.org/TR/html52/

Westera, M., Goodhue, D., & Gussenhoven, C. (2020). Meanings of tones and tunes. In C. Gusenhoven & A. Chen (Eds.), *The Oxford handbook of language prosody* (pp. 443–453). Oxford University Press.

Wichmann, A. (2000). *Intonation in text and discourse: Beginnings, middles and ends*. Routledge.

Wichmann, A. (2010). Intonational meaning in institutional settings: The role of syntagmatic relations. *Cultural Studies of Science Education*, *5*(4), 849–857. https://doi.org/10.1007/s11422-010-9263-9

Wingrove, P. (2017). How suitable are TED talks for academic listening? *Journal of English for Academic Purposes*, *30*, 79–95. https://doi.org/10.1016/J.JEAP.2017.10.010

Zou, H., & Hyland, K. (2019). Reworking research: Interactions in academic articles and blogs. *Discourse Studies*, *21*(6), 713–733. https://doi.org/10.1177/1461445619866983

Zou, H., & Hyland, K. (2020). “Think about how fascinating this is”: Engagement in academic blogs across disciplines. *Journal of English for Academic Purposes, 43*. https://doi.org/10.1016/j.jeap.2019.100809

Appendix A

Spoken English in Academic and Research Settings Questionnaire

Estudio del uso oral del inglés en ámbitos académicos y de investigación

Proyecto FFI2015-68638-R MINECO/FEDER, EU

GLES Academic genres and language ecologies

¿En qué actividades tienes que hablar en inglés? ¿Es necesario saber hablar en inglés o basta con escribir bien? ¿Cómo podemos los profesionales del inglés ayudarte en tu tarea investigadora y docente?

Las respuestas de la comunidad académica a estas cuestiones puede ser de gran utilidad. Gracias a ellas, podemos desarrollar cursos, seminarios y otras actividades de apoyo a la tarea investigadora y docente en contacto con la realidad y los usuarios.

Esta encuesta es anónima y tiene cinco secciones de preguntas breves. Está dirigida a investigadores y académicos de todos los ámbitos y se puede realizar en unos cinco minutos.

Si quieres saber más o tienes alguna duda, puedes contactar con nosotros escribiendo a mvela@unizar.es

Para estar al tanto de nuestras actualizaciones y noticias, visita:
- Página web https://genresandlanguages.org
- ResearchGate https://goo.gl/CD5Zih
- Twitter https://twitter.com/genres_language

Perfil personal

Conociendo un poco a los usuarios podemos mejorar nuestras propuestas.

1. Sexo

Marca solo un óvalo.

- ◯ Mujer
- ◯ Hombre
- ◯ Prefiero no decirlo

Appendix A

2. Año de nacimiento

3. ¿Cuántos años has dedicado a la investigación?

4. ¿Cuántos años has dedicado a la docencia universitaria?

5. ¿Cuál es tu principal interés de investigación u objeto de estudio?

6. ¿Cuál es tu principal área de docencia universitaria? (Si procede)

7. Categoría o posición (titular, asociado, contratado proyecto, investigador...)

8. Departamento/Instituto

9. Lengua materna

Marca solo un óvalo.

- ◯ Español
- ◯ Inglés
- ◯ Otro: _____

10. ¿Cuál dirías que es tu nivel de inglés?

Marca solo un óvalo.

- Acceso (A1)
- Elemental (A2)
- Intermedio (B1)
- Intermedio alto (B2)
- Competente (C1)
- Maestría (C2)

11. Por favor, si tienes algún certificado oficial de inglés, indica cuál(es).

12. ¿Has realizado estancias de trabajo, formación o docencia en algún país donde no se habla tu lengua materna?

Marca solo un óvalo.

- Sí, seis meses o más
- Sí, tres meses o más sin superar los seis meses
- Sí, inferior a tres meses
- No

13. ¿Has recibido formación (cursos, talleres, asignaturas...) o asesoramiento personal sobre inglés académico?

Marca solo un óvalo.

- Sí
- No

Appendix A

14. ¿Has recibido formación (cursos, talleres, asignaturas...) o asesoramiento personal sobre inglés para fines específicos (es decir, para tu especialidad o profesión)?

Marca solo un óvalo.

- Sí
- No

¿Cuánto usas el inglés y para qué?

Prácticas de uso del inglés académico oral

15. ¿En qué proporción de tus tareas como investigador y/o docente utilizas el inglés?

Marca solo un óvalo.

- 0%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%

16. De estas tareas que realizas en inglés, ¿cuánto tiempo dedicas a escribir?

Marca solo un óvalo.

	1	2	3	4	5	6	7	
Nada de mi tiempo								Todo mi tiempo

17. De estas tareas que realizas en inglés, ¿cuánto tiempo dedicas a leer?

Marca solo un óvalo.

	1	2	3	4	5	6	7	
Nada de mi tiempo	◯	◯	◯	◯	◯	◯	◯	Todo mi tiempo

18. De estas tareas que realizas en inglés, ¿cuánto tiempo dedicas a hablar?

Marca solo un óvalo.

	1	2	3	4	5	6	7	
Nada de mi tiempo	◯	◯	◯	◯	◯	◯	◯	Todo mi tiempo

19. De estas tareas que realizas en inglés, ¿cuánto tiempo dedicas a escuchar?

Marca solo un óvalo.

	1	2	3	4	5	6	7	
Nada de mi tiempo	◯	◯	◯	◯	◯	◯	◯	Todo mi tiempo

20. Tus intervenciones orales en inglés...

Marca solo un óvalo por fila.

	Nunca	Casi nunca	A veces	Casi siempre	Siempre
Van acompañadas de un soporte visual	◯	◯	◯	◯	◯
Están basadas en textos escritos principalmente en inglés	◯	◯	◯	◯	◯
Están basadas en textos escritos principalmente en español	◯	◯	◯	◯	◯
Están basadas en textos escritos principalmente en otras lenguas	◯	◯	◯	◯	◯
Dan lugar después a textos escritos principalmente en inglés	◯	◯	◯	◯	◯
Dan lugar después a textos escritos principalmente en español	◯	◯	◯	◯	◯
Dan lugar después a textos escritos principalmente en otras lenguas	◯	◯	◯	◯	◯

21. Si has indicado "otras lenguas" en la pregunta anterior, especifica cuál.

_____

22. ¿En qué lenguas sueles realizar las siguientes actividades o tareas? (Primera parte)

Marca solo un óvalo por fila.

	Principalmente en inglés	En inglés o español	Principalmente en español	Principalmente en otras lenguas	Nunca he realizado esta actividad
Ponencias en congresos nacionales					
Ponencias en congresos internacionales					
Posters en congresos					
Mesas redondas en congresos					
Entrevistas con patrocinadores o socios en persona					
Entrevistas con patrocinadores o socios mediante teléfono o videoconferencia (Skype...)					
Jornadas nacionales o locales de investigación					
Jornadas internacionales de investigación					
Market places (ferias)					
Reuniones de investigación					

23. ¿En qué lenguas sueles realizar las siguientes actividades o tareas? (Segunda parte)

Marca solo un óvalo por fila.

	Principalmente en inglés	En inglés o en español	Principalmente en español	Principalmente en otras lenguas	Nunca he realizado esta actividad
Clase magistral	◯	◯	◯	◯	◯
Seminarios / Coloquios	◯	◯	◯	◯	◯
Tutorías	◯	◯	◯	◯	◯
Defensa de tesis doctoral (futura o ya realizada)	◯	◯	◯	◯	◯
Tribunal de defensa de tesis doctorales	◯	◯	◯	◯	◯
Defensa de TFG, TFM u otros proyectos finales evaluables	◯	◯	◯	◯	◯
Tribunal de defensa de TFG, TFM u otros proyectos finales evaluables	◯	◯	◯	◯	◯
Exposición de trabajos en el aula y su evaluación (grado o máster)	◯	◯	◯	◯	◯
	◯	◯	◯	◯	◯

Reuniones de administración académica (departamento, claustro...)					
Auditorías	⬭	⬭	⬭	⬭	⬭
Contratar servicios de la universidad (reprografía, publicaciones, agencia de viajes...)	⬭	⬭	⬭	⬭	⬭

24. Si has indicado "otras lenguas" en las preguntas anteriores, especifica cuáles.

25. ¿Realizas también alguna de estas actividades?

Marca solo un óvalo por fila.

	Sí, principalmente en inglés	Sí, principalmente en español	No, pero me gustaría realizarla	No la realizo
Webinarios	◯	◯	◯	◯
Ver vídeos de MOOCs	◯	◯	◯	◯
Ver charlas TED o similares	◯	◯	◯	◯
Podcasts	◯	◯	◯	◯
Monólogos científicos (FameLab, RISArchers...)	◯	◯	◯	◯
Tesis en Tres Minutos o similares	◯	◯	◯	◯
Clase invertida	◯	◯	◯	◯
Audioslides	◯	◯	◯	◯

26. ¿Hay alguna otra actividad relacionada con tu desempeño académico que realices hablando o escuchando español u otras lenguas? Por favor, indica cuál(es) y en qué lenguas.

¿Merece realmente la pena saber inglés?

Actitudes hacia el uso del inglés

27. ¿Qué te resulta más sencillo hacer en inglés?

Marca solo un óvalo.

- Hablar
- Escuchar
- Escribir
- Leer

28. ¿Qué te resulta más complicado hacer en inglés?

Marca solo un óvalo.

- Hablar
- Escuchar
- Escribir
- Leer

29. ¿Sientes ansiedad o estrés cuando tienes que escribir en inglés?

Marca solo un óvalo.

- Nunca
- Pocas veces
- A menudo
- Siempre

30. ¿Sientes ansiedad o estrés cuando tienes que leer en inglés?

Marca solo un óvalo.

- Nunca
- Pocas veces
- A menudo
- Siempre

Appendix A

31. ¿Sientes ansiedad o estrés cuando tienes que hablar o interaccionar en inglés en una situación preparada (ponencias, mesas redondas...)?

Marca solo un óvalo.

- Nunca
- Pocas veces
- A menudo
- Siempre

32. ¿Sientes ansiedad o estrés cuando tienes que hablar o interaccionar en inglés en una situación espontánea?

Marca solo un óvalo.

- Nunca
- Pocas veces
- A menudo
- Siempre

33. ¿Qué peso dirías que tienen las siguientes competencias para el éxito profesional en la carrera investigadora?

Marca solo un óvalo por fila.

	Es irrelevante.	Tiene algo de importancia.	Es muy importante.	Es imprescindible.
Escribir bien en inglés	◯	◯	◯	◯
Hablar bien en inglés	◯	◯	◯	◯
Hablar en inglés con corrección gramatical	◯	◯	◯	◯
Hablar en inglés pronunciando bien las palabras	◯	◯	◯	◯
Hablar en inglés entonando bien las frases	◯	◯	◯	◯
Pronunciar las palabras de un modo tan cercano a los nativos como sea posible	◯	◯	◯	◯
Entonar las frases de un modo tan cercano a los nativos como sea posible	◯	◯	◯	◯

¿Te aseguras de que te comunicas correctamente?

Estrategias de preparación del discurso oral

34. Cuando preparas una intervención oral en inglés...

Marca solo un óvalo por fila.

	Nunca	Casi nunca	A veces	Casi siempre	Siempre
¿Planeas las palabras exactas que vas a utilizar?	◯	◯	◯	◯	◯
¿Te aseguras de la pronunciación de las palabras que vas a utilizar?	◯	◯	◯	◯	◯
¿Prestas atención a la entonación que vas a utilizar?	◯	◯	◯	◯	◯
¿Planeas dónde vas a hacer pausas?	◯	◯	◯	◯	◯
¿Planeas qué palabras vas a resaltar dándoles mayor énfasis?	◯	◯	◯	◯	◯
¿Planeas las subidas o bajadas de tono (melodía) que vas a hacer en las frases para dar énfasis?	◯	◯	◯	◯	◯
¿Tienes en cuenta la velocidad a la que vas a hablar?	◯	◯	◯	◯	◯
¿Planeas el acento que vas a utilizar?	◯	◯	◯	◯	◯

35. Cuando, interaccionando en inglés, te encuentras en una situación que no has podido preparar...

Marca solo un óvalo por fila.

	Nunca	Casi nunca	A veces	Casi siempre	Siempre
¿Prestas atención a cómo pronuncias las palabras?	◯	◯	◯	◯	◯
¿Prestas atención a cómo entonas las frases?	◯	◯	◯	◯	◯
¿Prestas atención a dónde haces las pausas?	◯	◯	◯	◯	◯
¿Prestas atención a qué palabras resaltas dándoles mayor énfasis?	◯	◯	◯	◯	◯
¿Prestas atención a las subidas o bajadas de tono (melodía) que haces en las frases para dar énfasis?	◯	◯	◯	◯	◯
¿Tienes en cuenta la velocidad a la que hablas?	◯	◯	◯	◯	◯
¿Prestas atención al acento que utilizas?	◯	◯	◯	◯	◯

36. Cuando escuchas a alguien hablar inglés...

Marca solo un óvalo por fila.

	Nunca	Casi nunca	A veces	Casi siempre	Siempre
¿Prestas atención a cómo pronuncia las palabras?	◯	◯	◯	◯	◯
¿Prestas atención a cómo entona las frases?	◯	◯	◯	◯	◯
¿Prestas atención a dónde hace pausas?	◯	◯	◯	◯	◯
¿Prestas atención a cómo resalta palabras dándoles mayor énfasis?	◯	◯	◯	◯	◯
¿Prestas atención a las subidas o bajadas de tono (melodía) que hace en las frases para dar énfasis?	◯	◯	◯	◯	◯
¿Prestas atención a la velocidad a la que habla?	◯	◯	◯	◯	◯
¿Prestas atención al acento que utiliza?	◯	◯	◯	◯	◯

¿Qué podemos hacer por ti?

Opinión sobre la formación en competencias orales en inglés para fines académicos

37. ¿Crees que es necesaria la formación para mejorar la competencia oral en inglés?

Marca solo un óvalo.

- ◯ Sí
- ◯ No
- ◯ Tal vez

38. A título personal, ¿crees que necesitas formación o asesoramiento personal para mejorar la competencia oral en inglés?

Marca solo un óvalo.

- Sí
- No
- Tal vez

39. ¿Crees que la universidad debería ofrecer formación para mejorar la competencia oral en inglés de los investigadores y académicos?

Marca solo un óvalo.

- Sí
- No
- Tal vez

40. ¿Crees que la universidad debería ofrecer asesoramiento personal para mejorar la competencia oral en inglés de los investigadores y académicos?

Marca solo un óvalo.

- Sí
- No
- Tal vez

41. ¿Crees que un curso de inglés académico para investigadores debería incluir formación sobre la competencia oral?

Marca solo un óvalo.

- Sí
- No
- Tal vez

42. ¿Crees que la formación sobre la competencia oral en inglés debería incluir aspectos relacionados con la entonación?

Marca solo un óvalo.

- Sí
- No
- Tal vez

¡Gracias por tu ayuda!

Puedes contactar con nosotros escribiendo a mvela@unizar.es

Para estar al tanto de nuestras actualizaciones y noticias, visita:
Página web https://genresandlanguages.org

ResearchGate https://goo.gl/CD5Zih

Twitter https://twitter.com/genres_language

Proyecto FFI2015-68638-R MINECO/FEDER, EU

GLE
Academic genres and language ecologies

Appendix B

Video Methods Articles in the

JOVE Researcher's Introductions Corpus

Corpus Index	Issue	Issue Index	JOVE Code	Length of RI (s)	Title	DOI
001	154	01	57823	64	*In Situ* Microscopy for Real-time Determination of Single-cell Morphology in Bioprocesses	10.3791/57823
002	154	02	60423	29	Automated Counterflow Centrifugal System for Small-Scale Cell Processing	10.3791/60423
003	154	03	60434	66	Pancreatic Tissue-Derived Extracellular Matrix Bioink for Printing 3D Cell-Laden Pancreatic Tissue Constructs	10.3791/60434
004	154	04	60538	54	A Quantitative Fluorescence Microscopy-based Single Liposome Assay for Detecting the Compositional Inhomogeneity Between Individual Liposomes	10.3791/60538
005	154	05	59860	37	Methods for *In Vivo* Biomechanical Testing on Brachial Plexus in Neonatal Piglets	10.3791/59860
006	154	06	60545	76	Protocols of 3D Bioprinting of Gelatin Methacryloyl Hydrogel Based Bioinks	10.3791/60545
007	154	07	59678	68	Standardized and Scalable Assay to Study Perfused 3D Angiogenic Sprouting of iPSC-derived Endothelial Cells In Vitro	10.3791/59678
008	153	01	60399	23	Lab-on-a-CD Platform for Generating Multicellular Three-dimensional Spheroids	10.3791/60399
009	153	02	60486	75	A Human 3D Extracellular Matrix-Adipocyte Culture Model for Studying Matrix-Cell Metabolic Crosstalk	10.3791/60486
010	153	03	60493	35	Spatial Temporal Analysis of Fieldwise Flow in Microvasculature	10.3791/60493
011	153	04	60307	27	Rapid Fabrication of Custom Microfluidic Devices for Research and Educational Applications	10.3791/60307
012	153	05	60038	30	Databases to Efficiently Manage Medium Sized, Low Velocity, Multidimensional Data in Tissue Engineering	10.3791/60038
013	153	06	59857	36	Four-Dimensional CT Analysis Using Sequential 3D-3D Registration	10.3791/59857
014	152	01	60088	52	Applications for Open Source Microplate-Compatible Illumination Panels	10.3791/60088
015	152	02	59655	56	A Multilayer Microfluidic Platform for the Conduction of Prolonged Cell-Free Gene Expression	10.3791/59655
016	152	03	60383	36	Fabrication and Implementation of a Reference-Free Traction Force Microscopy Platform	10.3791/60383
017	152	04	60415	43	Traction Microscopy Integrated with Microfluidics for Chemotactic Collective Migration	10.3791/60415
018	152	05	60280	45	Biomechanical Testing of Murine Tendons	10.3791/60280
019	152	06	60251	64	3D Imaging of Soft-Tissue Samples using an X-ray Specific Staining Method and Nanoscopic Computed Tomography	10.3791/60251
020	152	07	60250	57	Bulk Droplet Vitrification for Primary Hepatocyte Preservation	10.3791/60250
021	152	08	60238	82	Prospecting Microbial Strains for Bioremediation and Probiotics Development for Metaorganism Research and Preservation	10.3791/60238
022	151	01	59752	37	Use of Micro X-ray Computed Tomography with Phosphotungstic Acid Preparation to Visualize Human Fibromuscular Tissue	10.3791/59752
023	151	02	60078	70	Experimental Methods to Study Human Postural Control	10.3791/60078
024	151	03	59399	43	Measuring the Spin-Lattice Relaxation Magnetic Field Dependence of Hyperpolarized [1-^{13}C]pyruvate	10.3791/59399

Appendix B

Corpus Index	Issue	Issue Index	JOVE Code	Length of RI (s)	Title	DOI
025	151	04	59676	42	A Microfluidic Platform for Stimulating Chondrocytes with Dynamic Compression	10.3791/59676
026	151	05	60185	65	Generation of Heterogeneous Drug Gradients Across Cancer Populations on a Microfluidic Evolution Accelerator for Real-Time Observation	10.3791/60185
027	151	06	59951	39	Core/shell Printing Scaffolds For Tissue Engineering Of Tubular Structures	10.3791/59951
028	151	07	60202	31	Establishing Single-Cell Based Co-Cultures in a Deterministic Manner with a Microfluidic Chip	10.3791/60202
029	151	08	60334	45	Patterning the Geometry of Human Embryonic Stem Cell Colonies on Compliant Substrates to Control Tissue-Level Mechanics	10.3791/60334
030	150	01	59520	42	Implementation of Interference Reflection Microscopy for Label-free, High-speed Imaging of Microtubules	10.3791/59520
031	150	02	59668	66	Home-Based Monitor for Gait and Activity Analysis	10.3791/59668
032	150	03	59838	31	Evaluation of Photosynthetic Behaviors by Simultaneous Measurements of Leaf Reflectance and Chlorophyll Fluorescence Analyses	10.3791/59838
033	150	04	59976	87	Calvarial Model of Bone Augmentation in Rabbit for Assessment of Bone Growth and Neovascularization in Bone Substitution Materials	10.3791/59976
034	150	05	60125	55	Biaxial Basal Tone and Passive Testing of the Murine Reproductive System Using a Pressure Myograph	10.3791/60125
035	150	06	58900	53	Lucifer Yellow - A Robust Paracellular Permeability Marker in a Cell Model of the Human Blood-brain Barrier	10.3791/58900
036	150	07	60103	39	Production of *E. coli*-expressed Self-Assembling Protein Nanoparticles for Vaccines Requiring Trimeric Epitope Presentation	10.3791/60103
037	150	08	60054	32	In Silico Modeling Method for Computational Aquatic Toxicology of Endocrine Disruptors: A Software-Based Approach Using QSAR Toolbox	10.3791/60054
038	149	01	59900	52	Preparation and Characterization of Nanoliposomes for the Entrapment of Bioactive Hydrophilic Globular Proteins	10.3791/59900
039	149	02	59647	51	In Vivo Two-Color 2-Photon Imaging of Genetically-Tagged Reporter Cells in the Skin	10.3791/59647
040	148	01	59906	52	Human iPSC-Derived Cardiomyocyte Networks on Multiwell Micro-electrode Arrays for Recurrent Action Potential Recordings	10.3791/59906
041	148	02	59364	165	High Throughput Traction Force Microscopy Using PDMS Reveals Dose-Dependent Effects of Transforming Growth Factor-β on the Epithelial-to-Mesenchymal Transition	10.3791/59364
042	148	03	59474	33	High-resolution Imaging of Nuclear Dynamics in Live Cells under Uniaxial Tensile Strain	10.3791/59474
043	148	04	59814	50	Isokinetic Robotic Device to Improve Test-Retest and Inter-Rater Reliability for Stretch Reflex Measurements in Stroke Patients with Spasticity	10.3791/59814
044	148	05	59462	66	A Converging Strategy for the Generation of a Virtually Sequenced cDNA Library from Unreferenced Pacific Oysters	10.3791/59462
045	148	06	59768	40	Labeling of Blood Vessels in the Teleost Brain and Pituitary Using Cardiac Perfusion with a DiI-fixative	10.3791/59768
046	148	07	59682	48	Human Neural Organoids for Studying Brain Cancer and Neurodegenerative Diseases	10.3791/59682
047	148	08	59831	25	In Vesiculo Synthesis of Peptide Membrane Precursors for Autonomous Vesicle Growth	10.3791/59831