Lingue e Linguaggi
Lingue Linguaggi 11 (2014), 105-122
ISSN 2239-0367, e-ISSN 2239-0359
DOI 10.1285/i22390359v11p105
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EXPRESSING EPISTEMIC STANCE IN UNIVERSITY LECTURES AND TED TALKS: A CONTRASTIVE CORPUS-BASED ANALYSIS

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Abstract – This study explores the web-mediated genre of TED (Technology, Entertainment, Design) talks, speech events whereby experts in their field disseminate knowledge from different domains (e.g. science, technology, design, global issues) addressing an audience of both co-present participants and web-users all over the world. The aim of this study is to investigate the way academics convey epistemic stance (Conrad, Biber 2000) and build up their image as experts on the TED stage. To this purpose, a contrastive analysis was carried out comparing two corpora of spoken discourse, i.e. a corpus of TED talks and a corpus of MICASE university lectures from different disciplines. Although in both genres the speaker is an academic, both the communicative purpose and audience expectations differ substantially in the two contexts under scrutiny. This comparison highlights some distinguishing traits of TED talks and provides a better insight into this genre. Adopting a corpus-based approach, attention is first paid to the most recurrent epistemic lexical verbs (ELVs) and to the use of first and second person pronouns in the two corpora. The qualitative analysis then focuses on similarities and differences in the discourse functions of the four most frequent ELVs (*see*, *show*, *know*, *think*) and of their clusters when they combine with first and second person pronouns in the two corpora. Previous studies in the field of English for Academic Purposes (Rounds 1987; Fortanet 2004; Walsh 2004; Artiga León 2006; Bamford 2009) are referred to as a starting point to investigate a novel, unexplored pragmatic space (i.e. that of TED) wherein academics accomplish purposes other than merely disseminating knowledge and training students, such as promoting their research and building up their image as experts.

Keywords: Languages for Special Purposes, popularization, web-mediated genres, evidentiality, epistemic stance.

1. Introduction

This paper focuses on the reconceptualization of expert discourse in academic settings through the new media. In particular, the study compares the new web-mediated genre of TED talks to the traditional genre of university lecture.

TED talks are a series of short popularizing talks (of approximately twenty minutes), addressing a mass audience and delivered by top-level experts in a wide variety of domains. TED is an acronym that stands for Technology, Entertainment and Design, the three original domains in which the talks were delivered. All TED talks are made freely available in video format on the web page of TED[2] (Figure 1), a non-profit organization whose stated mission is the dissemination of 'Ideas Worth Spreading'. TED lends itself as a new pragmatic space for experts who are given the chance to disseminate knowledge outside their disciplinary communities to a lay audience at two levels: a group of co-present participants attending the TED conference and web-users at home. Because of its features, TED can be considered as a hybrid web-mediated

[1] The authors discussed and conceived this article together. Giuditta Caliendo is responsible for sections 1, 3.4, 3.5 and 4; Antonio Compagnone is responsible for sections 2, 3.1, 3.2, 3.3 and 5.

[2] Available at: www.ted.com (07.01.2014).

genre lying at the intersection of a series of 'satellite' genres (e.g. university lecture, conference presentation, TV documentary) (Caliendo 2012).

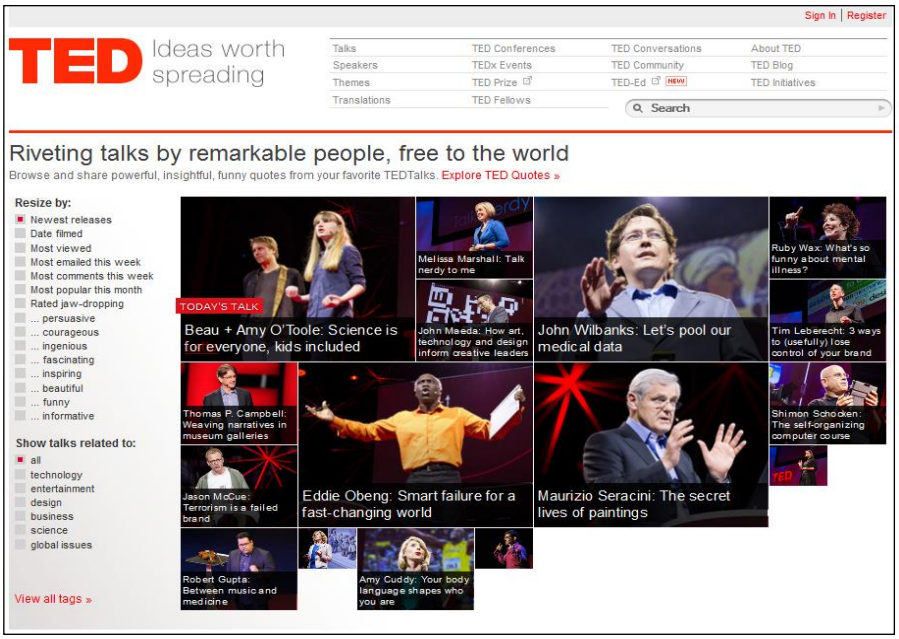


Fig. 1
TED website (www.ted.com)

This study sets out to compare TED to one of its 'satellite' genres, the university lecture. The two share some fundamental features as in both contexts an expert conveys specialized contents to an audience of (semi) lay people drawing on different semiotic modes (i.e., spoken, audio, visual) within a mostly monologic speech event. Nevertheless, one cannot neglect the fact that, when shifting from the classroom to the TED stage, both the speaker's communicative purpose and the recipient's expectations change considerably. While in a classroom a lecturer's main objective is to train an audience of students, these being aware of the fact that they will be assessed at the end of the course, on the TED stage academics mostly present and 'promote' their research while the audience expects to listen to inspiring and groundbreaking ideas, as well as receive a 'smart' form of entertainment.

Against this background, the following research question arises: to what extent do the argumentative practices used to present knowledge in TED talks differ from the ones in university lectures? More specifically, this study aims to investigate the way academics delivering a TED talk:

- present knowledge, with specific reference to the source of information expressed by evidential devices (e.g. use of verbs of perception and cognition);
- convey epistemic stance, i.e. the way they comment on the knowledge status of the information (reference to expressions of certainty, uncertainty, likelihood, etc.);
- build their image as experts through the use of inclusive and exclusive pronouns.

In an attempt to address these questions, we draw on the notion of "evidentiality" (Chafe 1986; Aikhenvald 2004)whose interpretation is the object of contrasting perspectives. In her study, Aikhenvald (2004, p. 3) regards evidentiality as "a linguistic category whose primary meaning is source of information [...] without necessarily relating to the degree of speaker's certainty concerning the statement or whether it is true or not." In opposition to this view, Chafe (1986, p. 262) argues that evidentiality entails, in its "broadest sense", all those expressions concerning "attitudes toward knowledge" rather than simply "expression of 'evidence' per se". The latter

interpretation is the one adopted for this study and dovetails with the concept of "epistemic stance" as theorized by Conrad and Biber (2000, p. 57). The scholars regard "epistemic stance" as one of the three major domains of 'stance', which focuses on the degree of "certainty (or doubt), reliability, or limitations of a proposition, including comments on the source of information" (Conrad, Biber 2000, p. 57).

Conrad and Biber's (2000) notion of "stance" is strictly connected to that of "evaluation", "a broad cover term for the expression of the speaker's or writer's attitude or stance towards, viewpoint on, or feelings about the entities or propositions that he or she is talking about" (Hunston, Thompson 2000, p. 5). On the basis of a combining approach, evaluation merges together the notions of "appraisal" (i.e. expression of value judgments) and "modalization" (i.e. commenting on the probability of a proposition), these being considered as separate aspects of discourse (Halliday 1994; Martin 2000). As pointed out by Hunston and Thompson (2000) evaluation performs three basic functions in discourse, these being:

(1) to express the speaker's or writer's opinion, and in doing so to reflect the value system of that person and their community;
(2) to construct and maintain relations between the speaker or writer and hearer or reader;
(3) to organize discourse.

(Hunston, Thompson 2000, p.6)

Against this backdrop, the present study focuses on the semantic category of epistemic lexical verbs (ELVs) which, according to Hyland (1998, p.119-120):

> […] represent the most transparent means of coding the subjectivity of the epistemic source […]. By indicating the writer's confidence in a statement they contribute to the evidential reasoning between grounds and claims (Toulmin, 1958), and allow an evaluation of the intended degree of certainty"

The study pays particular attention to the four most recurrent ELVs (*see*, *show*, *know*, *think*),as well as to the clusters of these verbs in relation to first and second person pronouns, in two corpora of spoken discourse: a corpus of TED talks and a corpus of MICASE university lectures from different disciplines (full details on corpus selection in section 2).

Drawing on previous corpus-assisted studies on the use of ELVs and personal pronouns in the genre of university lecture (Rounds 1987; Fortanet 2004; Walsh 2004; Artiga León 2006; Bamford 2009), the present study offers a qualitative and quantitative methodology for systematic analysis of academic discourse in the new web-mediated and multimodal setting of TED talks.

Since our paper focuses on the interaction between language and context as well as on the interdiscursive nature of TED as a hybrid genre, its theoretical framework could not overlook studies in the fields of Discourse Analysis (Goffman 1981; Brown, Yule 1983; Renkema 2004; Jaworski, Coupland 2006; Gee 2011; Hyland, Paltridge 2011) and Genre Theory (Swales 1990; Bhatia 2004, 2007, 2012), identifying TED as a new pragmatic framework wherein "professional writers [and speakers] use the language to achieve the objectives of their professions" (Bhatia 2012, p.24).

The paper is structured as follows: section 2 describes the corpora selected and the analytical procedures followed; section 3 illustrates the results obtained by looking at the frequency in the two corpora of first and second person pronouns and of ELVs, as well as at the co-occurrence of the four most frequent ELVs with first and second person pronouns; section 4 summarizes the most significant findings within the framework of a comparative analysis between TED talks and university lectures; finally, in section 5 a summary of results is presented.

2. Corpus and methods

The present study is based on the contrastive analysis of two corpora. One is a corpus of 207 TED talks (552,345 tokens, hereinafter: TED_ac), the other is a corpus of 35 lectures delivered at the University of Michigan at Ann Arbor (348,005 tokens, hereinafter: MICASE_lect). Both TED talks and lectures selected for this study are all delivered by academics who are native speakers of American English.

The TED_ac corpus has been drawn from a wider reference corpus (TED_ref, totalling to 2.5 million tokens) of TED talks delivered by different types of expert (doctors, politicians, literary men and women, artists, etc.), on the basis of an archive[3] available on the TED website (see above, fn 1). Both TED_ac and TED_ref cover a time span of about ten years (2002-2012).

The MICASE_lect corpus has been drawn from MICASE (*Michigan Corpus of Academic Spoken English*), a spoken-language corpus of approximately 1.8 million tokens consisting of different academic speech events (lectures, colloquia, dissertation defenses, discussion sessions, etc.). The MICASE_lect corpus covers a time span of about four years (1998-2001).The difference in time spans between the two corpora under scrutiny is solely due to the availability of research materials (ten years for TED as opposed to four years for MICASE) and is not part of our research design.

Both the TED_ac and MICASE_lect corpora have respectively been subdivided into two sub-corpora separating 'hard' from 'soft' sciences. The selected disciplines in the 'hard' science category are Biology, Biochemistry, Immunology, Natural Resources, Neuroscience, Physiology, Public Health, Astronomy, Chemistry, Engineering, Geology, Mathematics, Physics, Statistics, Technical Communication. The selected disciplines in the 'soft' science category are Anthropology, Business Administration, Communication, Economics, Education, History, Political Science, Psychology, Sociology, Architecture, Linguistics and Philosophy.

Both TED talks and MICASE lectures are freely available on-line in the form of transcripts. By means of the MICASE interface,[4] speech events could be selected on the basis of different contextual attributes (e.g. event type, speaker's role, interactivity rating). Given the monologic nature of TED talks, the MICASE lectures have been collected according to the attributes "highly monologic" and "mostly monologic". This increased the comparability of the two corpora. Besides, the transcripts of MICASE lectures have been cleansed of all the parts not pertaining to the instructor (e.g. questions from the students).

Previous research on the genre of university lecture (Rounds 1987; Fortanet 2004; Walsh 2004; Artiga León 2006) focused on the category of ELVs as well as on first and second person pronouns to (1) provide a mapping of English language in the context of the classroom and (2) assist non-native students and teaching assistants in achieving their purposes. The present study focuses on the same linguistic categories, this time analyzed within the new pragmatic framework of TED talks.

With reference to pronouns, masculine and feminine third person pronouns have been discarded from our search in that, as Fortanet (2004) aptly points out, they rarely refer to the speaker or the hearer.

As far as ELVs are concerned, on the basis of previous studies three different classifications of ELVs were adopted (Chafe 1986; Hyland 1998; Artiga León 2006) and combined together to draw up the following selection of thirty-nine ELVs that were searched for in the two corpora under investigation: *admit*, *appear*, *argue*, *assume*, *attempt*, *believe*, *calculate*, *claim*, *conclude*, *consider*, *doubt*, *estimate*, *exhibit*, *feel*, *figure*, *guess*, *hear*, *imagine*, *imply*, *indicate*, *infer*, *judge*, *know*, *look like*, *note*, *notice*, *predict*, *propose*, *report*, *see*, *seek*, *seem*, *show*, *sound*, *speculate*, *suggest*, *suppose*, *suspect*, *think*.

[3] https://docs.google.com/spreadsheet/ccc?key=0AsKzpC8gYBmTcGpHbFlILThBSzhmZkRhNm8yYllsWGc&hl=e%20%20n#gid=0 (07.01.2014).

[4] http://quod.lib.umich.edu/cgi/c/corpus/corpus?c=micase;page=simple (07.01.2014).

The analysis was carried out by means of computer software *WordSmith Tools 5.0* (Scott 2011), this being the same concordance program used by previous scholars (Fortanet 2004; Walsh 2004; Artiga León 2006) in their analysis of the university lecture genre. Firstly, we looked at the frequencies of pronouns and ELVs in order to compare their distribution in the two corpora. Secondly, we focused on the four most frequent ELVs (*know*, *see*, *show*, *think*), which significantly outnumbered the other verbs of the list in both corpora. Thirdly, we looked at the co-occurrences of the four most frequent ELVs with first and second person pronouns to detect any significant difference in the use of pronoun reference when comparing the two corpora. Finally, drawing on concord lists, we analysed the clusters of the four ELVs under scrutiny in order to point out their pragmatic functions in the two corpora.[5]

3. Results and discussion

3.1. Frequencies and collocations

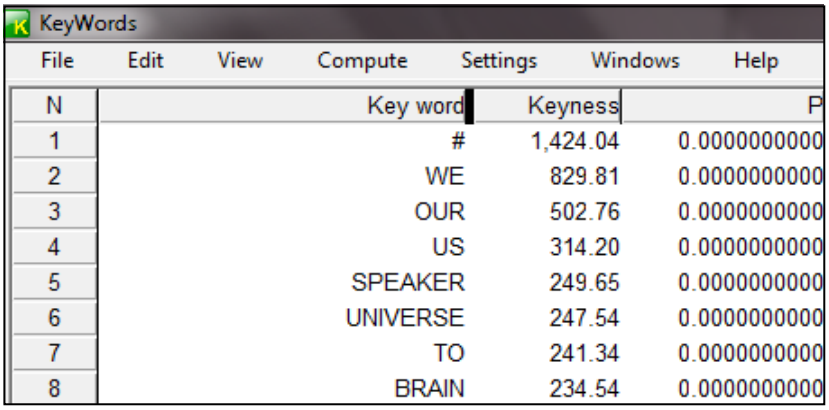
Following previous research on the use of pronouns within the genre of university lecture (Rounds 1987; Fortanet 2004; Walsh 2004), a first corpus search focused on the distribution of first and second person pronouns used in MICASE and TED both as subject and object. As Table 1 below shows, in MICASE the pronoun *you* (used both as subject and object) outnumbers first person pronouns *I* and *we* and their object related forms. As far as the TED corpus is concerned, the pronoun *you* is higher than *I* and its object related form *me*, similarly to what can be observed in MICASE. On the contrary, a difference can be perceived in the use of *we* and its object related forms, which in TED rank slightly higher than *you* when compared to the MICASE corpus.

	MICASE		TED	
Pronoun	Occurrence	Freq. ptw[6]	Occurrence	Freq. ptw
First person				
I	4,436	12.7	7,471	13.5
me	394	1.1	1,000	1.8
we	3,328	9.5	8,851	16
us	207	0.5	1,081	1.9
let's	310	0.8	218	0.3
Second person				
you	7,076	20.3	9,789	17.7

Tab. 1.
Occurrences of first and second person pronouns in MICASE and TED

Moreover, while in MICASE the pronoun *I* is more frequent than *we*, in the TED corpus the opposite is true. A keyword list of the TED_ac corpus, obtained by using the MICASE_lect as a reference corpus, confirmed the saliency of the pronoun *we*. This is, in fact, the first keyword of the list with a highly reliable *p-value*[7] ($p < 0.000001$) (Figure 2).

[5] The clusters of the four ELVs under investigation were selected for the analysis when their occurrence was ≥ 10.
[6] Frequency per thousand words.
[7] According to Baker (2006: 125), "a p-value (a number between 0 and 1) indicates the amount of confidence that we have that a word is key due to chance alone – the smaller the p-value, the more likely that the word's strong presence in one of the sub-corpora isn't due to chance but a result of the author's (conscious or subconscious) choice to use that word repeatedly".


KeyWords

File Edit View Compute Settings Windows Help

N	Key word	Keyness	P
1	#	1,424.04	0.0000000000
2	WE	829.81	0.0000000000
3	OUR	502.76	0.0000000000
4	US	314.20	0.0000000000
5	SPEAKER	249.65	0.0000000000
6	UNIVERSE	247.54	0.0000000000
7	TO	241.34	0.0000000000
8	BRAIN	234.54	0.0000000000

Fig.2.
TED keyword list

	MICASE	TED	MICASE	TED	MICASE	TED
ELVs	Occurrences		Frequencies ptw		Comparative percentages	
admit	5	19	0.01	0.03	0.09	0.22
appear	31	51	0.08	0.09	0.57	0.60
argue	47	42	0.1	0.07	0.87	0.50
assume	100	36	0.2	0.06	1.85	0.42
attempt	8	35	0.02	0.06	0.14	0.41
believe	73	185	0.2	0.3	1.35	2.20
calculate	15	29	0.04	0.05	0.27	0.34
claim	7	10	0.02	0.01	0.12	0.11
conclude	11	26	0.03	0.04	0.20	0.31
consider	67	60	0.1	0.1	1.24	0.71
doubt	4	4	0.01	0.007	0.07	0.04
estimate	42	21	0.1	0.03	0.77	0.25
exhibit	6	9	0.01	0.01	0.11	0.10
feel	124	332	0.3	0.6	2.29	3.96
figure	24	8	0.06	0.01	0.44	0.09
guess	64	63	0.1	0.1	1.18	0.75
hear	81	275	0.2	0.4	1.49	3.28
imagine	45	206	0.1	0.3	0.83	2.45
imply	5	3	0.01	0.005	0.09	0.03
indicate	18	21	0.05	0.03	0.33	0.25
infer	4	1	0.01	0.001	0.07	0.01
judge	4	12	0.01	0.02	0.07	0.14
know	**1,708**	**1,736**	**4.9**	**3.1**	**31.62**	**21.03**
look like	63	148	0.1	0.2	1.16	1.76
note	28	12	0.08	0.02	0.51	0.14
notice	89	86	0.2	0.1	1.64	1.02
predict	51	88	0.1	0.1	0.94	1.04
propose	9	19	0.02	0.03	0.14	0.22
report	5	37	0.01	0.06	0.09	0.44
see	**1.059**	**1,880**	**3**	**3.4**	**19.60**	**22.43**
seem	138	124	0.3	0.2	2.55	1.47
seek	25	18	0.07	0.03	0.46	0.22
show	**270**	**540**	**0.7**	**0.9**	**4.99**	**6.44**
sound	21	61	0.06	0.1	0.38	0.72
speculate	5	4	0.01	0.007	0.09	0.04
suggest	64	72	0.1	0.1	1.18	0.85
suppose	112	78	0.3	0.1	2.07	0.93
suspect	2	19	0.005	0.03	0.03	0.22
think	**967**	**1,984**	**2.7**	**3.5**	**17.90**	**23.67**
TOTAL	5,401	8,381	14.41	14.3	100%	100%

Tab. 2.
Frequencies of ELVs in MICASE and TED

With reference to previous research on the category of epistemic lexical verbs (Chafe 1986; Hyland 1998; Artiga León 2006), a second search using *WordSmith Tools* looked at the distribution of the thirty-nine ELVs under scrutiny in MICASE and TED. The verbs *know*,[8] *see*, *show* and *think* turned out to be the first four most frequent ELVs in both corpora. In both cases, these four verbs outnumber the remaining thirty-five verbs of the list, representing 74.13% and 73.26% of the whole category, in MICASE and TED respectively. The results are illustrated in Table 2 above, the first four most frequent ELVs are in bold.

Finally, attention has been paid to the co-occurrence of first and second person pronouns with the four most frequent ELVs. The results are illustrated in Tables 3 and 4 below:

Lexical verb[9]	I	we	you
know	162	95	200
see	64	186	395
show	47	3	7
think	374	67	196
TOTAL	647 (1.8 ptw)	351 (1 ptw)	798 (2.2 ptw)

Tab. 3.
Pronoun reference in MICASE

Lexical verb	I	we	you
know	250	363	217
see	108	449	750
show	176	26	17
think	714	248	306
TOTAL	1,248 (2.2 ptw)	1,086 (2 ptw)	1,290 (2.3 ptw)

Tab. 4.
Pronoun reference in TED

As shown in Tables 3 and 4 above, while *I* and *you* dominate statistically in both corpora, in TED the pronoun *we* co-occurs with the four ELVs far more frequently than in MICASE.

The following subsections (3.2-3.5) illustrate the results of the comparative analysis of TED_ac and MICASE_lect with reference to the ELVs *see*, *show*, *know* and *think* and their most frequent clusters, also pointing at similarities and differences among 'soft' and 'hard' disciplines.

3.2. Clusters of ELV see in MICASE and TED

As shown in Table 2 above, the verb *see* ranks second in both MICASE (19.6%) and TED (22.4%). The verb *see* belongs to the category of "mental verbs" which, following Biber *et al.* (1999, p. 362), "denote a wide range of activities and states experienced by humans" and whose subject "often has the semantic role of recipient". Mental verbs can be divided into a series of sub-categories depending on their meaning. *See* is a verb of perception and differentiates itself, for instance, from mental verbs having a cognitive meaning (e.g. *think*, *know*) or an emotional one (e.g. *love*, *want*) as well as from verbs denoting a receipt of communication (e.g. *read*, *hear*).

As shown in Tables 5 and 6 below, in both MICASE and TED the most recurrent cluster of the verb *see* is *you see*, immediately followed by the cluster *you can see* which proves to be

[8] Occurrences of the verb *know* functioning as a filler, as in *you know*, have been discarded from the count.
[9] Each ELV listed in Table 3 and 4 includes all its inflected word-forms.

particularly interesting. As previously argued by Bamford (2009), by means of the cluster *you can see* in MICASE lectures knowledge tends to result from a visual aid source (e.g. a power point presentation, a blackboard) that the lecturer draws on to convey information.

		MICASE		'hard' science lectures		'soft' science lectures	
	Cluster	Occ.	Freq. ptw	Occ.	Freq. ptw	Occ.	Freq. ptw
1	you see	148	0.4	83	0.4	65	0.3
2	you can see	87	0.2	34	0.2	53	0.2
3	we see	61	0.1	17	0.1	44	0.2
4	you'll see	32	0.09	13	0.07	19	0.2
5	let's see	30	0.08	17	0.1	13	0.07
6	we can see	19	0.05	8	0.04	11	0.06
7	I see	17	0.04	11	0.06	6	0.03
8	we'll see	16	0.04	10	0.05	6	0.03
9	you're gonna see	12	0.03	9	0.05	3	0.01
10	you see that	11	0.03	6	0.03	5	0.02
11	you can see that	10	0.02	5	0.02	5	0.02

Tab. 5.
Clusters of *see* in MICASE

		TED		'hard' science talks		'soft' science talks	
	Cluster	Occ.	Freq. ptw	Occ.	Freq. ptw	Occ.	Freq. ptw
1	you see	273	0.4	176	0.5	97	0.4
2	you can see	243	0.4	191	0.5	52	0.2
3	we see	190	0.3	119	0.3	71	0.3
4	we can see	52	0.09	46	0.1	6	0.02
5	you'll see	49	0.08	37	0.1	12	0.05
6	you can see that	45	0.08	32	0.09	13	0.05
7	you can see the	39	0.07	29	0.08	10	0.04
8	what you see	29	0.05	20	0.06	9	0.04
9	let's see	27	0.04	17	0.05	10	0.04
10	what we see	25	0.04	12	0.03	13	0.05
11	you see that	21	0.03	8	0.02	13	0.05
12	we see that	21	0.03	12	0.03	9	0.04
13	you see here	19	0.03	16	0.04	3	0.01
14	as you can see	18	0.03	15	0.04	3	0.01
15	you're going to see	15	0.02	14	0.04	1	0.004
16	you can't see	14	0.02	14	0.04	-	-
17	and you can see that	13	0.02	11	0.03	2	0.009
18	what you see here	12	0.02	10	0.03	2	0.009
19	we'll see	12	0.02	9	0.02	3	0.01
20	we see this	12	0.02	6	0.01	6	0.02
21	we're going to see	11	0.01	7	0.02	4	0.01
22	you see how	10	0.01	6	0.01	4	0.01
23	you can see it	10	0.01	10	0.03	-	-
24	you can see that the	10	0.01	6	0.01	4	0.01

Tab. 6.
Clusters of *see* in TED

However, in MICASE the cluster *you can see* often marks a mental effort on the part of the listener (42%), who tries to picture a state of affairs or a process in his or her own mind. This use is particularly frequent in the soft science sub-category. In such contexts, the verb *see* is semantically closer to cognitive verbs (e.g. *know*, *think*):

(1) Um, we begin as we did last time with the figure of Gaius Marius. In some ways and *you can see* in these people's activities some ups and downs. Marius, was never, single yo- uh the single all-powerful legislative figure. (MICASE, History)[10]
(2) We believe it because we've seen it, in action, I mean *you can see* evolution happening. (MICASE, Psychology)
(3) […] where psychologists start to break down, is in whether or not you can account for, um not just physical changes evolving, but whether or not *you can see* behavioral changes and I'll try to make that clear as we go along. (MICASE, Psychology)
(4) Not necessarily the message he wanted to send while he was speaking, uh, but nobody could get him to stop doing that. um, so I mean *you can see* why there were certain problems. (MICASE, History)

Unlike what can be observed in MICASE, in TED the cluster *you can see* almost always signals the presence of a visual prop (93.7%). Such use is predominant in the hard science talks, although it can also be found in the soft science sub-category. As Chafe (1986, p. 267) points out, knowledge derived from sensory evidence is "high in reliability" and knowledge presented from the TED stage is literally something you can see:

(5) So again, *you can see* the extension of this Great Wall of galaxies showing up here. (TED, Astronomy)
(6) Now we're going to zoom back out, and *you can see* this structure that, when we get very far out, looks very regular, but it's made up of a lot of irregular variations. (TED, Astronomy)
(7) And finally, we did MRI and MR spectroscopy scans on some of these patients, and the tumor activity is shown in red in this patient, and *you can see* clearly it's better a year later, along with the PSA going down. (TED, Public Health)
(8) And *you can see* that each of the experimenters is actually holding up a little, yellow food dish and that's what the monkey can for a single token. So everything costs one token, but as *you can see*, sometimes tokens buy more than others, sometimes more grapes than others. (TED, Psychology)
(9) So this is a graph of prevalence estimated by UNAIDS, and prevalence based on the mortality data for the years in the late 1990s in nine countries in Africa. *You can see*, almost without exception, the UNAIDS estimates are much higher than the mortality-based estimates. (TED, Economics)

In MICASE the verb *see* also occurs with the pronoun *we* (0.05%), though less frequently if compared to *you* (0.1%) (see Table 3 above). According to Bamford (2009, p. 205), in university lectures the pronoun *we* mostly takes on an 'inclusive' value and it contributes "to draw the listener into the ongoing discourse and create intersubjectivity between speaker and audience". This is also true for the MICASE corpus of lectures used for this study, where the cluster *we can see* is mostly used metadiscursively by the author, i.e. it refers internally to the speech event in which it is found and is used to guide the hearer. Such use could be found in both the hard and soft science sub-categories:

[10] Italics added for emphasis in all examples.

(10) Uh and as *we can see* the theme of today is the emergence of the monarchy, uh or how empire uh, made the Roman democracy impossible. (MICASE, History)
(11) So as a result, *we can see* that we can start getting cycles because of this delay, or this time lag, in the logistic. (MICASE, Natural Resources)
(12) So *we can see* in his own writings that he had a sense of humor. I mean there are passages in Caesar's commentary, which are among the funniest bits of prose. (MICASE, History)

A similar metadiscursive function has also been found in TED. However, unlike MICASE, TED speakers tend to use the cluster *we can see* in almost half of the cases (40.3%) in order to make reference to a visual source through which information can be inductively acquired through a sensory perception. This use can only be found in the hard science talks:

(13) So really, just an amazing image, slowed down extremely, to extremely slow speeds. And again, *we can see* it in slightly different form there, with the bubble forming and collapsing between those two surfaces. (TED, Biology)

Another interesting difference emerged when comparing the two corpora in greater detail. In TED, the occurrence of *see* together with the pronoun *we*, not necessarily contiguous to each other, often marks a tendency of the speaker to present the piece of information as the result of the experimental observation (or as a hypothesis) of a whole group of experts s/he belongs to. This is especially true in the hard science sub-category:

(14) So, again, this is stuff we're doing with Danny Hillis and a group called Applied Proteomics, where *we can start to see* individual neutron differences, and we can start to look at that system like we never have before. (TED, Public Health)
(15) They gave us endotracheal aspirate […] We put it on the chip; *what do we see*? Well, *we saw* parainfluenza-4. (TED, Biochemistry)
(16) Now, what good are springy legs then? What can they do? Well, *we wanted to see if* they allowed the animals to have greater stability and maneuverability. (TED, Biology)
(17) Now, *we wanted to see if* we could actually record this on the track, so we headed down south to Laguna Seca. (TED, Engineering)
(18) We want to get to the point in our maps of the early universe *we can see* whether there are any non-linear effects that are starting to move, to modify, and are giving us a hint about how space-time itself was actually created at the beginning moments. (TED corpus, Astronomy)
(19) The next thing we looked at is in which case were people more likely to buy a jar of jam [...] Of the people who stopped when there were six, well now *we saw that* 30 percent of them actually bought a jar of jam. (TED, Business Administration)

As shown in examples (14)-(19) the pronoun *we*, on the one hand, excludes the audience while, on the other, it allows the speaker to mark his or her membership in a group of researchers so as to build his or her image as an expert. This specific use could not be found in MICASE, in line with Fortanet (2004), whose study on the use of the pronoun *we* in university lectures recounts the statistically irrelevant use of this pronoun to refer to the category "speaker + other people", i.e. the group of experts to which the speaker belongs.

3.3. Clusters of ELV show *in MICASE and TED*

The verb *show* ranks fourth in both MICASE (4.9%) and TED (6.4%), being slightly more frequent in the latter. *Show* belongs to the category of "activity verbs" which "primarily denote actions and events that could be associated with choice and so take a subject with the semantic role of agent" (Biber *et al.* 1999, p. 361). Though being a verb whose core meaning denotes an

activity, like *see*, the ELV *show* usually indexes a visual source through which the piece of information is conveyed.

As can be seen from Table 7 below, in MICASE *I'll show you* and *I'm gonna show you* are the only two clusters above the threshold set for the collection of the ELV clusters – see fn. 6 above.

		MICASE		'hard' science lectures		'soft' science lectures	
	Cluster	Occ.	Freq. ptw	Occ.	Freq. ptw	Occ.	Freq. ptw
1	I'll show you	11	0.03	8	0.4	3	0.01
2	I'm gonna show you	10	0.03	8	0.4	2	0.01

Tab. 7.
Clusters of *show* in MICASE

Similarly to what the speaker does in (10)-(12) using the cluster *we can see*, in both (20) and (21) below, the instructor makes use of *show* metadiscursively to guide the hearer:

(20) The way that one gets Agro bacterium into a plant cell *I'll show you* in just a second, allow those cells to grow up, and then you can regenerate whole plants, that are transgenic that express, the gene in this case the E-P-S-P gene. (MICASE, Biology)
(21) Here this is clearly a very depressed person they, you know, there's no question that that is there. um *I'm gonna show you* an interview, in a little bit of a man who's quite depressed. (MICASE corpus, Social Sciences and Education, Psychology)

The same clusters have also been found in TED (Table 8) where, as exemplified in (22)-(25) below, they play a similar function:

(22) We synthesize happiness [...] though *I'm going to show you* some experimental evidence, you don't have to look very far for evidence. (TED, Psychology)
(23) So *I'm going to show you* the results of a very large-scale simulation of what we think the universe might be like. (TED, Astronomy)
(24) If it [energy] drifts away in the right pattern that we can calculate, this will be evidence that the extra dimensions are there. *Let me show you* that idea visually. (TED corpus, Physics)
(25) So *I'll show you* a quick video of what this marketplace actually looks like. (TED, Psychology)

It is worth pointing out the fact that – apart from signaling the visual source used to convey information – in examples (22)-(25) the verb *show* also combines with some phrases expressing direct and tangible evidence (e.g. "some experimental evidence", "the results of a very-large-scale simulation"). In this way the information provided acquires a certain degree of reliability.

		TED		'hard' science talks		'soft' science talks	
	Cluster	Occ.	Freq. ptw	Occ.	Freq. ptw	Occ.	Freq. ptw
1	I'm going to show you	46	0.08	43	0.1	3	0.01
2	I'll show you	29	0.05	20	0.06	9	0.04
3	let me show you	23	0.04	16	0.04	7	0.03
4	I want to show you	19	0.03	14	0.04	5	0.02

Tab. 8.
Clusters of *show* in TED

An interesting cluster of *show*, which is mostly used in the hard science talks, is *I want to show you*:

(26) As a fish nerd, I have to laugh, because you know they don't call us fish nerds for nothing – we actually do get excited about finding a new dorsal spine in a guppy. But, it's much more than that. And, *I want to show you* a few of the guppies *we*'ve found over the years. (TED, Biology)
(27) Now, 100,000 feet, if you fly cross-country to Los Angeles, you fly 37,000 feet. *We* do our tests at 100,000 feet. And *I want to show you* one of *our* tests. (TED, Astronomy)
(28) And then finally, *I want to show you* some responses that *we* recorded with the world's first deep-sea webcam, which *we* had installed in Monterey Canyon last year. (TED, Biology)
(29) Well, a number of years later, I graduated from UCLA and I found myself at NASA, working for the jet propulsion laboratory, and there our team was challenged to create a 3D visualization of the solar system, and today *I want to show you* what *we*'ve done so far. (TED, Engineering)

In (26)-(29), by means of the cluster *I want to show you*, not only do TED speakers prospectively draw their listener's attention to the upcoming information, they also place emphasis on their and their group's research activity (also note the use of *we* and *our* in the examples above). By doing so speakers construe their image as experts, while conferring high reliability on what is being conveyed to the audience. The fact that the cluster *I want to show you* cannot be found in MICASE is revealing, since its function to present the speaker's and their group's research activity is not a priority in university lectures *vis-à-vis* TED talks.

3.4. Clusters of ELV know in MICASE and TED

The verb *know* ranks first in MICASE (31.6%) while it is far less frequent in TED, where it ranks third (21.3%) (see Tables 3 and 4 above). The verb *know* belongs to the class of cognitive verbs, a sub-category of mental verbs (Biber *et al.* 1999, p. 362). With reference to the clusters of the verb *know* found in the MICASE and TED corpora, their distribution and frequency are presented in Tables 9 and 10 below.

As Table 9 shows, and in line with the results presented by Artiga León (2006), the most recurrent cluster of *know* in MICASE is *I don't know*, which expresses the speaker's uncertainty or complete ignorance of a fact/event:

(30) Basically there's two strategies when they're developing products. and you're gonna tell very s- quickly where my bias is, um, and *I don't know* if that's just because, that's what I'm most familiar with or if that's truly what most of plant biotechnology is doing. (MICASE, Biology)
(31) [...] *I don't know* if that's still the case, but horiz- the Chebyshev travel occurs whenever you have two independent motors moving uh concurrently. (MICASE, Engineering)

An intriguing difference between the two corpora can be perceived in the case of the cluster *we know*, which is salient in TED. This cluster allows TED speakers in half of the cases (49%) to ascribe themselves to a group of experts or researchers and strengthen their authority as members of the scientific community. This use is predominant in the hard sub-category and could not be found in MICASE, wherein the instructors' main concern is not to align themselves with a group of experts:

(32) So, the answer is bio-mimicry: just copy nature directly. *We know* from working on animals that the truth is that's exactly what you don't want to do - because evolution

works on the just-good-enough principle, not on a perfecting principle. And the constraints in building any organism, when you look at it, are really severe. (TED, Biology)

(33) When one is exposed to H1N1, you take Tamiflu, and you can remarkably decrease the severity of symptoms and prevent many of the manifestations of the disease. Why? Because *we know* what you have, and *we know* how to treat it -- although we can't make vaccine in this country, but that's a different story. (TED, Public Health)

(34) *We know* that if you reward kids for drawing pictures, they stop caring about the drawing and care only about the reward. (TED, Psychology)

Another interesting recurrent cluster of the verb *know* – which is used in both the hard and soft science categories and cannot be found in MICASE – is *we all know*, an evaluative marker by means of which knowledge is accommodatingly presented as something both the speaker and his or her audience share:

(35) *We all know* that technology, entertainment and design have been and can be used for destructive purposes. *We* also *know* that technology, entertainment and design can be used to relieve misery. And by the way, the distinction between relieving misery and building happiness is extremely important. (TED, Psychology)

(36) They wanted to do something about what *we all know*, namely the revolving door of the criminal justice system. (TED, Psychology)

(37) *We all know* that some deep-sea creatures glow. Well, they've now taken that gene, that bioluminescent gene, and put it into mammal cells. (TED, Public Health)

(38) And then, of course, there's climate change, and *we all know* about climate change. I guess the iconic figure of it is the melting of the ice in the Arctic Sea. (TED, Biology)

		MICASE		'hard' science lectures		'soft' science lectures	
	Cluster	Occ.	Freq. ptw	Occ.	Freq. ptw	Occ.	Freq. ptw
1	I don't know	86	0.2	43	0.2	43	0.2
2	we know	85	0.2	38	0.2	47	0.2
3	I know	61	0.1	35	0.2	26	0.1
4	you know what	38	0.1	18	0.1	20	0.1
5	you know that	38	0.1	17	0.1	21	0.1
6	you know it's	30	0.08	12	0.07	18	0.09
7	we know that	24	0.06	10	0.05	14	0.07
8	you know there's	17	0.04	7	0.04	10	0.05
9	you know when	16	0.04	5	0.02	11	0.06
10	you know how	15	0.08	-	-	15	0.08
11	I don't know if	14	0.04	7	0.04	7	0.03
12	I don't know how	12	0.03	7	0.04	5	0.02
13	I know that	11	0.03	8	0.04	3	0.01
14	we don't know	10	0.03	7	0.04	3	0.01
15	you know why	10	0.03	5	0.02	5	0.02

Tab. 9.
Clusters of *know* in MICASE

		TED		'hard' science talks		'soft' science talks	
	Cluster	Occ.	Freq. ptw	Occ.	Freq. ptw	Occ.	Freq. ptw
1	we know	181	0.3	122	0.3	59	0.2
2	I know	133	0.2	60	0.1	73	0.3
3	I don't know	69	0.1	35	0.1	34	0.1
4	you know what	60	0.1	30	0.09	30	0.1
5	we know that	46	0.08	31	0.09	15	0.06
6	we don't know	36	0.06	31	0.09	5	0.02
7	we all know	28	0.05	17	0.05	11	0.04
8	you know that	24	0.04	12	0.03	12	0.05
9	you know it's	19	0.03	11	0.03	8	0.03
10	you know how	16	0.02	8	0.02	8	0.03
11	I know that	14	0.02	8	0.02	6	0.02
12	I know what	13	0.02	5	0.01	8	0.03
13	you don't know	13	0.02	4	0.01	9	0.04
14	what we know	12	0.02	5	0.01	7	0.03
15	I don't know if	11	0.01	3	0.009	8	0.03
16	we didn't know	11	0.01	11	0.03	-	-
17	we know what	11	0.01	7	0.02	4	0.01
18	you all know	10	0.01	5	0.01	5	0.02
19	I don't know how	10	0.01	4	0.01	6	0.02
20	I don't know what	10	0.01	7	0.02	3	0.01

Tab. 10.
Clusters of *know* in TED

The cluster *we all know* also serves as a discourse organizing device in order to introduce and emphasize a new topic idea:

(39) So deep inside, *we all know*, you go sufficiently far down, you have atoms. *We also all know* that atoms are not the end of the story. They have little electrons that swarm around a central nucleus with neutrons and protons. Even the neutrons and protons have smaller particles inside of them known as quarks. That is where conventional ideas stop. *Here is the new idea of string theory*. Deep inside any of these particles, there is something else. (TED, Physics)

As example (39) above shows, in terms of communicative dynamism, the cluster *we all know* is used in TED to unfold the meaning in the theme-rheme structure (Halliday 1994). As a matter of fact, something *we all know* is introduced first as theme ("you go sufficiently far down, you have atoms"; "atoms are not the end of the story") and then a new topic idea follows as rheme ("deep inside any of these particles, there is something else").

3.5. Clusters of ELV think in MICASE and TED

The verb *think* only ranks third in MICASE (17.9%), while it is more frequent in TED where it ranks first (23.6%). Like the verb *know*, *think* is a mental verb of cognition. The most frequent clusters of the verb *think* are illustrated in Tables 11 and 12 below.

As previously pointed out by Artiga León (2006) in her study on academic lecturing based on MICASE, in this corpus the verb *think* tends to frequently occur with the pronoun *I* (0.1%), as shown in Table 3 above.

		MICASE		‘hard’ science lectures		‘soft’ science lectures	
	Cluster	Occ.	Freq. ptw	Occ.	Freq. ptw	Occ.	Freq. ptw
1	I think	314	0.9	110	0.6	204	1
2	you think	108	0.3	50	0.2	58	0.3
3	we think	30	0.08	17	0.1	13	0.07
4	I think that’s	29	0.08	7	0.04	22	0.1
5	I don’t think	25	0.07	10	0.05	15	0.08
6	I think that	25	0.07	10	0.05	15	0.08
7	if you think about	20	0.05	8	0.04	12	0.06
8	I think it’s	20	0.05	7	0.04	13	0.07
9	if you think of	12	0.03	6	0.03	6	0.03
10	if you think about it	10	0.02	3	0.01	7	0.03

Tab. 11.
Clusters of *think* in MICASE

		TED		‘hard’ science talks		‘soft’ science talks	
	Cluster	Occ.	Freq. ptw	Occ.	Freq. ptw	Occ.	Freq. ptw
1	I think	507	0.9	289	0.8	218	0.9
2	you think	185	0.3	81	0.2	104	0.4
3	we think	125	0.2	74	0.2	51	0.2
4	I think that	52	0.09	26	0.07	26	0.1
5	I don’t think	29	0.05	12	0.03	17	0.07
6	we think about	29	0.05	11	0.03	18	0.08
7	I think it’s	25	0.04	20	0.06	5	0.02
8	if you think about	23	0.04	8	0.02	15	0.06
9	I think this is	19	0.03	3	0.009	16	0.07
10	I think that’s	19	0.03	13	0.03	6	0.02
11	you think that	15	0.02	4	0.01	11	0.04
12	we think that	14	0.02	9	0.02	5	0.02
13	when we think about	13	0.02	3	0.009	10	0.04
14	if you think about it	11	0.01	3	0.009	8	0.03

Tab. 12.
Clusters of *think* in TED

Collocating with the first person pronoun, *think* is a recurrent stance marker through which the lecturer expresses opinions, indicates degree of certainty and comments on the information presented in a more subjective way. In (40)-(43) below not only does the speaker present knowledge as stemming from their cognition, the information also carries an evaluative component as evidenced by the use of the evaluative adjectives *interesting* (40), *major* (41), *best* (42) and *complicated* (43).

(40) Cuz I knew you all wanted to know all of these exact numbers, but, it’s because I - mostly because *I think* that some of these numbers are kinda *interesting*. (MICASE, Biology)

(41) So I point this out because, this piece of legislation was passed, and *I think* it’s had a very, *major*, effect, on, uh bird conservation. (MICASE, Biology)

(42) *I think* one of the *best* examples that has recently come out on how to best manage the choice offerings has actually been something that David Laibson was heavily involved in designing, which was the program that they have at Harvard. (TED, Business Administration)

(43) Um, so *I think* this is a kind of *complicated* uh uh statement it's a little easier to be breaking, natural selection down into sort of what are the assumptions that are embedded in here and look at, uh a couple cases. (MICASE, Psychology)

Table 4 above shows that in the TED corpus, too, *think* tends to occur with *I* (0.1%) more frequently than with *you* (0.05%) or *we* (0.04%).*I think* shows the same frequency rate in both MICASE and TED. Conversely, the cluster *we think* is less frequent in MICASE (0.08%) than in TED (0.2%). This highlights an interesting difference between the two corpora in that in TED the cluster *we think* tends to be used to present knowledge from the perspective of a group of scientific experts the speaker belongs to. Such use is more frequent in the hard science sub-category:

(44) So *we think* synthetic cells are going to have tremendous potential, not only for understanding the basis of biology but for hopefully environmental and society issues. (TED, Biology)
(45) So we have a model, and we can calculate it, and we can use it to make designs of what *we think* the universe really looks like. (TED, Astronomy)
(46) We do this by shooting a laser up into the atmosphere, and what *we think* we can do is if we shine a few more that we can correct the rest. So this is what we hope to do in the next few years. (TED, Astronomy)
(47) *We think*, Ken and I, that there are real sources of hope. We identify one set of people in all of these practices who we call canny outlaws. (TED corpus, Psychology)

Laying stress on their affiliation and membership to a group of experts enhances the credibility and reliability of the information being provided by the speaker and makes the whole delivery more persuasive and grounded. As previous scholars would have it (Rounds 1987; Fortanet 2004), here *we*is used by academics with a "representation-of-group function "and has as its main referents the speaker and the category of experts she/he belongs to, thus excluding the audience. For the sake of the comparative analysis, it is worth pointing out that no specific instance of this use of personal pronoun *we* could be detected when searching the MICASE_lect corpus, where the pronoun mainly plays a metadiscursive role.

4. Findings

The results of the corpus-based analytical study show an interesting use of epistemic lexical verbs, with different nuances of meaning, also in relation to the pronouns that co-occur with them.

As to how academics position themselves as experts in the new pragmatic setting of TED talks, it is interesting to note that the widespread use of the pronoun 'we' in TED (*we see*, *we know*, *we think*) is not related to the need to include the audience and lacks the metadiscursive function that characterises university lectures (Fortanet 2004). In TED *we* typically excludes the audience, is used by academics with a "representation-of-group function", and refers mainly to '*speaker + other people*' (Rounds 1987; Fortanet 2004). The pronoun therefore allows the speaker to signal his or her belonging to a community or group of researchers so as to build his or her image as expert. TED becomes a pragmatic space where academics can promote their and their groups' research and discoveries.

Additionally, the results of the analysis show a different semantic use of 'epistemic lexical verbs' (Biber *et al.* 1999). In MICASE, the verb *see* mainly works as a verb of cognition, through which the hearer is invited to make a mental effort to picture a state of affairs or a process in his or her mind. In TED, *see* mainly works as a verb of sensory perception, through

which the hearer is invited to focus on a visual support through which knowledge is conveyed. In TED talks both verbs *see* and *show* stress the highly multimodal quality of the new genre, as these verbs are widely used to index the visible and tangible sources of knowledge being presented to the audience, therefore greatly increasing the degree of reliability of the information provided.

As regards *know* and *think,* in both MICASE and TED they work as cognitive verbs and express a judgmental stance on the part of the speaker. And yet, unlike in MICASE, in TED the speculative source of knowledge encoded by *know* and *think* corresponds to a whole group of experts the speaker associates her/himself with. This means that, though excluding the lay hearer, experts acquire a certain degree of credibility in the eyes of their audience. This is in line with what is propounded by Hyland (2004, p. 99), who argues that: "Laying stress on their membership, their joint affiliation to a community-situated pursuit of knowledge is an important way that writers give persuasive weight to their texts."

5. Conclusions

This paper problematizes the linguistic structures that index epistemic stance and evidentiality in two genres where academics address the audience, TED talks and university lectures. In both genres an expert presents specialized contents to an audience of semi-lay people within a mostly monologic speech event. However, the settings hosting the two communicative events differ to a great extent and the main focus of this paper is to understand whether classroom argumentative practices undergo any form of change when brought onto the TED stage.

By investigating academic discourse in the context of this new web-mediated genre, the contrastive corpus-based analysis was aimed to tease out the way academics delivering a TED talk (1) present knowledge, with reference to the source of information expressed by evidential devices; (2) discursively express stance by means of epistemic lexical verbs in combination with first and second person pronouns; (3) construe their image as experts in the new pragmatic framework of TED through the use of inclusive and exclusive pronouns.

The contrastive analysis, based on the comparison of two spoken-language corpora, TED_ac and MICASE_lect, highlighted a different distribution of ELVs and their clusters, as well as a varying saliency of personal pronouns. Similarities and differences among the two corpora under scrutiny were also explored taking into consideration the differences emerging from the comparison between texts dealing with 'soft' and 'hard' disciplines.Drawing on previous studies on the use of ELVs and personal pronouns in the genre of university lecture (Rounds 1987; Fortanet 2004; Artiga León 2006; Bamford 2009), this corpus-assisted study has placed emphasis on the reconceptualization of academic discourse in TED talks by means of a qualitative and quantitative methodology.

The findings evidenced that TED talks, despite their declared informative purpose, differentiate from university lectures in that they work as an alternative pragmatic space where academics construe their image by (a) laying stress on their affiliation to a community of experts and (b) promoting their group's research and findings, which are discursively presented as tangible and highly reliable.

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