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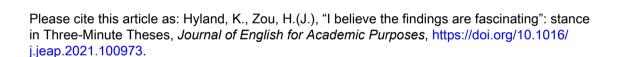
Please cite this article as: Hyland, K., Zou, H.(J.), "I believe the findings are fascinating": stance in Three-Minute Theses, *Journal of English for Academic Purposes*, https://doi.org/10.1016/j.jeap.2021.100973.

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Author statement

"I believe the findings are intriguing": stance in 3-Minute Theses

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1. Introduction

Stance, the positions we take towards our propositions and audience, has long been a popular area of scholarly interest. Research results are not facts that speak for themselves but have to be interpreted, explained and argued for in ways that reader/hearers find plausible and familiar. As a result, academics walk a fine line between presenting their claims too strongly, and perhaps appearing too assertive, over-confident and arrogant, or too softly, seeming ineffectual, uncertain and insipid. Stance therefore involves an appropriate presentation of oneself and one's arguments to audiences with particular expectations. In Hyland's (2012) terms, it involves not only *positioning*, or creating a relationship between the speaker and what is being said, but also *proximity*, establishing a relationship between the self and a community. This may be particularly difficult for novice academics presenting their research to unfamiliar audiences - and is even more fraught if one only has three minutes in which to do it.

The three-minute thesis (3MT) presentation is a relatively new genre which has emerged in the increasingly competitive and high-pressure atmosphere of the modern academy. Doctoral students are encouraged to condense their research into 180 seconds using only one static slide, to gain the support of judges and a variety of scholars from different fields. In this artificially controlled, competitive environment, speakers need to convey a stance which is both persuasive and accommodating, highlighting the significance of material and connections which may be unfamiliar to the audience while recognising their possible uncertainties and objections. In this paper we explore these interactional and evaluative positions, following Hyland (2005b, 2006) in seeing stance as the writer/speaker's expression of epistemic assessment, personal attitudes, and textual presence. Using this model we examine a corpus of 140 3MT presentations from the hard and social sciences to answer the following questions:

(1) How do 3MT presenters manage their presentation of stance?
(2) What differences are there in the use of stance features across disciplines?
(3) How can we account for these differences?

2. The 3MT genre

The 3MT presentation is a rapidly growing genre which both reflects modern academic competitiveness and embraces the call to take research beyond the narrow realms of specialists. Based on an idea developed by the University of Queensland in 2008, it is now held as an annual competition for PhD students in 86 countries and over 900 universities worldwide. Several countries also hold national competitions with finalists from Higher Education institutions. In the UK, for example, this is hosted by the education professional development company Vitae, whose website describes the contest in daunting terms[1]:

> Three Minute Thesis challenges doctoral candidates to present a compelling spoken presentation on their research topic and its significance in just three minutes

As this characterisation suggests, squeezing an 80,000-word research thesis into a 3-minute speech without visual aids and in a form that can be understood by an intelligent audience with no background in the area, is no easy task. The University of Queensland (UQ)[2], in fact, originated the competition expressly to 'cultivate students' academic, presentation, and research communication skills'. The success of the contests has meant that UQ has copyrighted the 3MT idea and manages world-wide competition standards.

Behind the idea is a desire to correct a perceived overemphasis on post-graduate writing and better prepare students for future academic and professional careers in which graduates need to communicate effectively with non-specialists (e.g. Copeman, 2015; Feak, 2016). Not only are short presentations important in many graduation viva or defence formats around the world (e.g. Mezek & Swales, 2013), but graduates are often required to give short talks when presenting conference poster sessions (D'Angelo, 2011) and in professional settings after they graduate (e.g. Evans, 2013). More informally, students are often called upon to explain their research extemporaneously with family, friends and in job interviews. Participating in and especially winning a 3MT contest can also provide a boost for a graduate's career (e.g. Bandler & Kiley, 2018). The University of Oxford[3] presents the benefits like this:

> The competition will help you to develop your communication skills, vital to raise awareness of your work, seek support and obtain funding.

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[1] https://www.vitae.ac.uk/events/three-minute-thesis-competition
[2] https://threeminutethesis.uq.edu.au/about
[3] https://www.ox.ac.uk/students/three-minute-thesis-competition

> You will be able to develop ways of explaining complex ideas in a way that is accessible and engaging for a non-specialist audience, raise the profile of your work, enhance your CV, and network with like-minded researchers.

In each of these situations speakers need to develop a convincing speaking style that persuades the audience to see an important topic, logically developed, and convincingly argued. This, then, is a genre which demands a great deal from students, and which encourages a stance which evaluates material in a clear and concise way while considering the knowledge and needs of the audience. This emphasis on the ability to inform and persuade an audience of disciplinary outsiders is also apparent in the judging criteria:

1. Content: did the presentation describe the impact and results of the research?
2. Comprehension: did the presentation help the audience understand the research?
3. Engagement: did the oration make the audience want to know more?
4. Communication style: was the topic and its significance communicated in language appropriate to a non-specialist audience?

This is therefore a genre which goes beyond the skills required for a conference presentation to insiders. Yet, despite its growing importance and popularity with university administrators, supervisors and graduate students across the world, the 3MT has attracted surprisingly little attention from applied linguists or EAP practitioners. Feak (2016), for example, laments the fact that very little research on speaking is applicable to the needs of postgraduates to talk about their research and give presentations. Much of the work in EAP speaking focuses on undergraduate presentations (e.g. Zareva, 2011) and studies of specific graduate presentation genres are rare, although the features of conference presentations (e.g. Wulff et al., 2009), 'dissemination talks' (Valeiras-Jurado & Moll, 2020) and thesis defences (e.g. Mezek & Swales, 2013) have been explored.

Few studies deal specifically with the 3MT genre. Skrbis et al, (2010) and Bandler and Kiley (2018) offer reflections of the experience of organising and participating in competitions but only two describe the genre. Hu and Liu (2018) identify the typical genre structure of 142 presentations, finding rhetorical patterns reflecting the dominant move structures of different fields observed in written texts (e.g. Hyland, 2004). More recently, Carter-Thomas and Rowley-Jolivet (2020) have examined a corpus of 30 presentations in the sciences and

humanities to determine how speakers adapt their research to the non-specialist 3MT audience. They identify rhetorical structure and explanatory strategies which are used to make the topic comprehensible and various personalisation strategies and attention-getting devices to engage the audience's interest.

The internet offers a wealth of advice to potential presenters how best to deliver their speech. Admonishments to "present your 3MT like a story, with a beginning, middle and an end" (University of Edinburgh) [4] and to use "shorter words, shorter sentences and shorter paragraphs (without) dumbing down your presentation" (University of Sussex)[5] are common. Students, however, receive no guidance on how they might take an appropriate and effective stance. This is the gap we seek to fill in this paper.

3. Our analytical approach: the stance model

Stance refers to the ways that writers project themselves into their texts to communicate their integrity, credibility, involvement and a relationship to their subject matter and audiences (Hyland, 1999). Successful academic writing, for example, depends on both the writer's personal assessments of the likelihood that something is true, or at least plausible, and the ability to get readers to believe this. Writers seek readers' agreement that claims are significant, original and believable and they do this by positioning themselves in relation to their arguments and audiences. Stance, then, is an attitudinal dimension of interaction and concerns how academics stamp their personal authority or perspectives on their arguments.

It has been referred to in a number of ways in the literature. Some of these are umbrella conceptions such as *posture* (Grabe 1984), *attitude* (Halliday, 2004), *appraisal* (Martin, 2000), *evaluation* (Hunston & Thompson, 2000) and *metadiscourse* (Hyland, 2005a). Others focus more specifically on the linguistic realisations of judgements or viewpoints by looking at *intensity* (Labov 1984), *disjuncts* (Quirk et al, 1985) and *hedges* (Author 1, 1998). Some authors have sought to combine these elements into a single theory. Thus, Biber and Finegan (1989), for example, propose a model of six stance styles using 12 categories of semantic and grammatical criteria. Martin and White's (2005) model of *appraisal* distinguishes the

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[4] https://www.ed.ac.uk/institute-academic-development/postgraduate/doctoral/3mt/entrants/tips

[5] http://www.sussex.ac.uk/internal/doctoralschool/researcherdev/threeminthesis/preparing3mt

possible realisations of attitudinal stance as affect (emotion), judgment (moral), and appreciation (aesthetic) while *engagement* aligns broadly with epistemic stance. Both, however, are concerned with providing a comprehensive description of the resources available in English to express stance, rather than with exploring some of the ways that argument differs by context and genre, depicting what is usual in those contexts rather than just what is grammatically possible.

It is also important to point out that while stance is a writer-oriented aspect of interaction, however, it is not exclusively individual but conveys a writer's socially defined persona, defined by Campbell (1975, p. 394) as the 'created personality put forth in the act of communicating'. Based on this view of writing and speaking as social engagement, Hyland (1999) takes it to have three main components: evidentiality, affect and relation. *Evidentiality* refers to the status of the knowledge contained in propositions and concerns its reliability and the credibility we can invest in it (Chafe, 1986; Chafe and Nichols, 1986). *Affect* concerns the writer/speaker's personal and professional feelings and attitudes, marking intensity rather than evaluation (Ochs and Schieffelin, 1989; Besnier, 1990). *Relation* refers to a writer's discursive construction of relations with audiences and the degree of intimacy or remoteness the author choses to convey.

Four resources are available for users to adopt these functions and stamp their personal authority onto arguments (Hyland, 2005b):

- **Hedges** withhold complete commitment to a proposition and open a discursive space allowing others to dispute interpretations.
- **Boosters** help writer/speakers present their work with assurance and shut down alternative voices.
- **Attitude markers** indicate affective, rather than epistemic, attitudes to propositions, conveying surprise, agreement, frustration and so on.
- **Self-mention** is the writer/speaker's intrusion in the text through use of first-person to emphasise their contribution.

Together these features reveal how writers elaborate their positions and project an authorial stance to their material and audiences, soliciting support, expressing collegiality and displaying competence.

The fact that we need to stand in relation to our arguments, community and interlocutors is a key feature of arguments in a range of academic genres. Research has demonstrated its importance in undergraduate essays (Dong & Buckingham, 2018), theses (Aull, 2019), abstracts (Hyland & Tse, 2005), academic blogs (Author 2 & Author 1, 2019) and research articles (Hyland, 2012). Stance is also evident in disciplines as diverse as biochemical research (Poole, Gnann & Hann-Powell, 2019), pure maths (McGrath & Kuteeva, 2012) and art-history (Tucker, 2003). Research has also pointed to the importance of context in stance choices as it differs across time (Gillaerts and Van de Velde, 2010; Hyland & Jiang, 2019), discipline (Hyland, 2004; Yang, 2014), and genre (Crosthwaite et al, 2017; Zou & Hyland, 2019). In academic speech, stance is seen to be important in audioslide presentations (Yang, 2017) and lectures (Crawford Camiciottoli, 2020) where speakers use hedges to negotiate a balance between authority and concession with audiences (Poos & Simpson, 2012).

Perhaps more significantly for the present study, research has revealed clear differences in the ways writers represent themselves and their work across disciplines. Unsurprisingly, those writing research papers in the humanities and social sciences take far more explicitly involved and personal positions than those in the science and engineering fields, with 75% more stance items (Hyland, 2005a). Undergraduate papers in economics are more stance heavy than those in political theory (Lancaster, 2016). There is far greater use of self-mention in computer science and electronic engineering articles than in physics (Kuo, 1999) and in history compared with economics articles (Bondi, 2005). Interdisciplinary studies of stance in academic speech are relatively rare, although there appears to be similar variations in the use of these features between hard and soft disciplines (Yang, 2014).

In sum, stance is a pervasive feature of conventional academic genres, allowing writer/ speakers to demonstrate both an individual perspective and a collective orientation. As we have suggested, however, this literature is dominated by studies of a few conventional, and mainly written, genres with well-defined audiences. In this paper we take this research further to better understand stance and its role in successful examples of a new spoken genre.

4. Method and procedures

Our corpus comprises 140 3MT presentations, taken equally from the hard and social sciences, and transcribed from videos of competition finals posted on public domain sites

such as YouTube, threeminutethesis.org and university websites. [6] Disciplines included education, applied linguistics, history, sociology, law, engineering, environmental and life sciences, applied health sciences, biology, medicine. We ensured that the selected presentations exemplified the key features of the genre such as the time limit, live audience and the use of only one static slide. Our criteria were that the 3MT presentations

1) were presented between 2011 and 2020 to ensure currency
2) were presented in English
3) were presented by PhD students
4) were the top finishers of university sponsored competitions to ensure consistency of quality

This process produced a corpus of 140 3MT presentations of nearly 62,644 words which we then separated into hard and soft science talks (Table 1).

Table 1. Corpus size and composition

3MT sources	Number of texts	Total number of words
Social sciences	70	30,280
Sciences	70	32,364
Total	**140**	**62,644**

The corpora were then searched for Hyland's (2005a) stance features using AntConc (Anthony, 2018). The search inventory comprised a general list of 400 common stance features and additional items were added after a thorough reading of the data. All the examples retrieved by this method were then concordanced and manually checked to ensure that they performed the engagement function assigned to them. Each author independently coded a 25% sample of each corpus and reached an inter-rater agreement of 95% through discussion. Intra-reliability tests were also conducted by the second author re-categorising 20% of the cases two weeks after the initial coding with full agreement between the two. Finally, the frequencies of each engagement feature were calculated after normalising the results to 1,000 words to allow cross-corpora comparison. The SPSS (Statistical Package for

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[6] Our transcriptions noted linguistic features only. We included laughter where it occurred, but this was rare. Hesitations, pauses and gestures were minimal, unlike, say, Ted Talks. This is perhaps related to the short time limit and the academic nature of the 3MT. Presenters are under strict constraints to deliver their message effectively in 3-minutes and therefore seem to make best use of each second without noticeable pausing or hesitation.

the Social Sciences) was used to determine the significances of results using a Student's t-test. We will discuss the results in the following sections.

5. Stance features: overall results

Overall, we found 4,616 stance markers in the corpus. Clearly, speakers recognise the critical need to present themselves and their claims in ways which meet the particular rhetorical challenges of the 3MT format. The time constraint and spoken mode encourage the use of language which is both relatively more informal and succinct, so speakers have to make their position prominent and highlight the value and plausibility of the content.

More interestingly, the results also reveal considerable disciplinary variations, with 2,087 cases in the social science presentations and 2,529 in the hard sciences. When normed to 1,000 words, this amounted to 68.9 in the social science talks and 78.1 in the hard fields, with the difference being statistically significant (log Likelihood = 8.59, $p < 0.01$). Table 2 shows that speakers from the physical and life sciences used significantly more hedges and boosters (log Likelihood = 20.02 $p < 0.0001$ for hedges, log Likelihood = 37.72, $p < 0.0001$ for boosters). While attitude markers and self-mention were only slightly more frequent in the social science presentations (log Likelihood = 19.96, $p < 0.0001$ for attitude markers, log Likelihood = 0.54, $p < 0.4$ for self-mention).

Table 2. Stance features by field (per 1,000 words and %)

	Social sciences 3MT		Hard sciences 3MT	
	per 1,000 words	%	per 1,000 words	%
Hedges	17.0	24.7	23.3	29.9
Boosters	12.1	17.5	21.8	27.9
Attitude markers	16.3	23.7	11.5	14.7
Self-mention	23.5	34.1	21.5	27.5
Total	**68.9**	**100.00**	**78.1**	**100.00**

These findings are surprising as they depart from the previous studies we have mentioned which show that scholars in the social sciences present a more explicit 'authorial self' in stance-heavy texts compared with scientists and engineers (e.g. Hyland, 1999; 2004; Peacock, 2006; McGrath & Kuteeva, 2012). Generally writers in the soft fields have to invest more interpersonal work to persuade their audience because they are

less able to rely on the explanatory value of accepted procedures underpinning 'strong' claims. Rhetorical practices, however, are always guided by the writer/speaker's purpose at hand, and in this case, it is to ensure their certainties, attitudes and energy can involve and persuade a heterogeneous audience with often limited knowledge of the topic.

Perhaps the frequencies of the sub-categories might be less surprising. We see that the hard science students are more likely to take a stance by using epistemic devices, with hedges and boosters comprising half their choices. These markers convey the speaker's judgements of the reliability that might be invested in a statement, either casting doubt or asserting certainty, and this is the kind of evaluative assessment typically required in the hard sciences. The preference for a stance which claims a strong authorial self through a more visible personal presence and greater willingness to offer explicit affective commentary is generally more widely seen in the soft fields. In what follows we discuss each stance feature in turn.

6. Hedges

Hedges are a ubiquitous feature of academic communication and tend to dominate the frequencies of interactional and evaluative features in research writing (e.g. Hyland, 2005b). Their importance lies in the fact that they function to downplay a writer's commitment to a proposition, modifying its scope, relevance or certainty (Hyland, 1998). While they may appear to dilute a strong authorial stance, they actually represent an intervention which shifts the focus momentarily to the speaker. Hedges are an explicit intrusion into the talk by a speaker to offer a personal assessment of a claim. The audience gains a clear understanding of the speaker's position and the epistemic confidence they are being asked to place on a statement. At the same time, of course, they are asked to recognise the speaker's concern for their own views. This is an acknowledgement of audience presence and the speaker's willingness to concede to the possible alternative views of the audience (Hyland & Jiang, 2019).

The distribution in Table 2 shows speakers in the hard sciences employed significantly more hedges and that these accounted for the largest proportion of all stance features (31.8%) in the science presentations. This result is counter-intuitive and, as we noted above, seems to contradict previous studies which report more frequent use of hedges in social sciences research articles (e.g. Hyland, 2005b). We hypothesize that one reason for this may be a

consequence of the challenges of putting across, and gaining acceptance for, complex scientific information that is perhaps harder to present in descriptive or illustrative ways which resonate with the lived experience of audience members. Social scientists, dealing with matters which are possibly closer to the everyday understandings of a lay audience, have less need to hedge. We must also remember that these are presentations based on unfinished PhD theses which contain results as yet unverified or accepted by examiners or peer reviewers. In this context, hedges are an important strategy to modify the certainty with which information is conveyed:

> (1) *Maybe* something that can produce the next antibiotic or that *could* be used in bioenergy production. (HS25) [7]

> (2) It *might* sound simple but my research has only become possible with new technology (HS44)

This disciplinary variation is clearer if we consider the different types of hedges. Table 3 shows that hedges not only differed in frequency across disciplines, but were also used differently in terms of three broad types (Hinkel, 2005; Salager-Meyer, 1994): downtoners, rounders and plausibility hedges.

- Downtoners are largely adverbs and are used to mitigate the intensity of a statement (e.g. *slightly, barely, quite*).
- Rounders (*about, around*) are associated with lack of precision and indicate an (often numerical) approximation.
- Plausibility hedges mainly lexical verbs and modals, used to signal that a claim is based on plausible assumptions rather than evidence (e.g. *could, may, suggest*).

Table 3. Types of hedges by disciplines (per 1,000 words and %)

	Social sciences 3MT		Hard sciences 3MT	
	per 1,000 words	%	per 1,000 words	%
Downtoners	3.5	20.6	3.7	16.0
Rounders	1.2	7.0	2.6	11.0
Plausibility hedges	12.3	72.4	17.0	73.0
Total	**17.0**	**100.0**	**23.3**	**100.0**

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[7] HS refers to a hard science presentation and SS to a social science one. The number identifies the text.

While plausibility hedges dominate the social science frequencies, downtoners, rounders and plausibility hedges are more prominent in the hard science talks (log Likelihood = 9.36, p < 0.01 for rounders, log Likelihood = 16.87 p < 0.0001 for plausibility hedges, log Likelihood = -1.39 p < 0.6 for downtoners). Both of the latter types concern precision in various ways and so are easier to associate with the exactitude of hard science methods and measurements. Downtoners, which increase the credibility of a claim by understating or mitigating the intensity of how it is expressed, were over three times higher in the science talks, where they function to either add precision to statements that are unproven (3) or protect the speaker against inaccuracy (4):

> (3) We don't **quite** understand why but we know that it is linked to their genetics. (HS2)
>
> (4) If you look at the mosquito infection trends, we see **almost** no West Nile virus activity early in the year. (HS1)

Speakers in the social sciences, however, tended to use downtoners to inject some professional modesty into the presentation and thereby softening statements which might be challenged by those with some knowledge of the topic:

> (5) My research is **quite** important because there is no such forum currently for nongovernmental organizations from Australia and governments to get together. (SS58)
>
> (6) My research however takes a **slightly** different approach and looks at three things:… (SS6)

Rounders express approximation, generally with numerical data (Rowland, 1995), and provide hearers with an idea of the accuracy they might take from the figures being presented. Rounders are common, therefore, in the generally more quantitative science talks where they seem useful in adding an element of informality to proceedings and reducing any possible negative effects of seeming hyper-precise:

> (7) But for 336 million people, **about** 30 times the population of Australia. (HS52)
>
> (8) By the time that air it is our lungs the oxygen concentration has already dropped to **around** 15% in our blood. (HS37)

By making numbers a little fuzzy, rounders take the edge off what might otherwise be regarded as an exaggeratedly exact and fussy meticulousness, thereby contributing to making the argument more accessible and persuasive. They perform a similar function on the social science 3MT presentations, but these tend to contain less quantification.

Plausibility hedges clearly dominate the frequencies in both fields as they work to tone down the strength of assertions and recognise the limitations of claims. They are likely to be more frequent in the social sciences as the often less exact and more qualitative methods generally require greater circumspection, and in this sense the examples seem very similar:

(9) It *may* allow us to create robots that do not generate the kind of resistance. (SS19)

(10) however, my model *suggests* the optimal time to be four weeks earlier which would have resulted in an increase of DVD sales by 5.7%. (SS23)

Like the other forms, however, these hedges also have an interpersonal as well as epistemic dimension. While demonstrating researchers' reservations of the truth or accuracy of statements, they can also express a more balanced and engaging tone by moderating the way the speaker conveys ideas:

(11) This *may* be a dangerous assumption. (SS11)

(12) So, which would you choose? *Probably* the former, right? (SS26)

(13) Strange as it *may seem*, I am actually using this exact principle to save an endangered marsupial from extinctions. (HS39)

The use of plausibility hedges in these examples do not mitigate research claims but work interpersonally to bring the audience into the argument, particularly with engagement markers such as 'you' and question framing, to promote understanding and finesse a positive response to ideas.

7. Boosters

Boosters function in contrast to hedges by indicating certainty and commitment, removing any doubts about claims and upgrading propositions to emphasise their significance, uniqueness or originality (Hyland, 2005a). Because of this, they are a perfect strategy in a context which encourages speakers to communicate their material, and stance towards it, as clearly and as assuredly as they can in the limited time available. They are, for example, a popular way of making a pitch for the importance of the research at the outset of a talk:

(14) My research aims to increase *the greatest* awareness and improved understanding about psychology contract among managers in public and private sector in Vietnam. (SS47)

(15) This will have a *particularly* important impact on parts of the world that don't have ready access to hot water. (HS43)

They are also common in speaker's attempts to convey the value of their chosen method, especially in the sciences where it's efficacy may not be immediately clear to an audience lacking the necessary specialised knowledge:

(16) In order for me to **truly** determine the effectiveness of these races, I need to subject them to real-life extreme stresses and see how they perform. (HS28)

(17) If you emit millions and millions of pulses over a forest canopy, you get a **really** detailed look at the structure of these forests. (HS19)

As we saw in Table 2, boosters were significantly more frequent in the hard science talks, being more than twice as common. Once again, this contrasts with their distribution in research articles (Hyland, 2004). Although their use seems to be falling in journal articles (Hyland & Jiang, 2019), scientists usually prefer to be more measured in their arguments and avoid being personally involved in them. As we suggested earlier, however, in the 3MT presentations, speakers from the hard sciences are keen to express their convictions and stress the credibility of their work for an uninitiated audience. Boosters, for example, can highlight the significance of the work:

(18) Once we know how SSP H1 contributes to infection, we'll **truly** know how dangerous that strain is. (HS2)

(19) You will find **completely** different bacterial communities. (HS25)

Boosters not only differed in frequency across the two fields, but they were also used differently. We found that each booster performed one of three functions, broadly mirroring those in hedges:

- Intensity boosters: amplify the emotive strength of a statement (*extremely, amazing*)
- Extremity boosters: emphasise the upper edge of a continuum (*highest, greatest, most*)
- Certainty boosters: indicate the writer or speaker's epistemic conviction (*definite, prove, show*).

Table 4 shows that intensity and certainty boosters were significantly more frequent in the hard science presentations (log Likelihood= 28.28, p < 0.0001 for intensity boosters, log Likelihood = 22.72, p < 0.0001for certainty boosters), while extremity types were slightly, although not significantly, more frequent in the social sciences (log Likelihood = -1.34, p < 0.6).

Table 4. Types of boosters by disciplines (per 1,000 words and %)

	Social sciences 3MT		Hard sciences 3MT	
	per 1,000 words	%	per 1,000 words	%
Intensity boosters	8.1	67.0	15.3	70.3
Extremity boosters	3.0	24.8	2.8	13.0
Certainty boosters	1.0	8.2	3.7	16.7
Total	**12.1**	**100.0**	**21.8**	**100.0**

Intensity boosters dominate the frequencies of both fields as speakers dial up the emotional vigour of their arguments for rhetorical effect. These do not concern epistemic assurance but add affective colour to their claims, functioning almost like attitude markers, although doing so by raising the volume rather than expressing an attitude, as we can see here:

(20) Nano electrode are ***extremely*** sensitive. (HS23)

(21) Once harvested, these bugs are 40 percent protein and 30 percent fat, making them an ***extremely*** high-value food product. (HS2)

(22) Robots are designed to push these buttons and when they do it is ***exceedingly*** difficult for us not to feel that it is acting as someone. (SS19)

We see here something of the overlap between 3MT talks and the less formal spoken register of conversation, conveying a strong stance and connecting with hearers emotionally rather than intellectually. These speakers are, generally, young, enthusiastic and devoted to their topic, carrying the excitement of youth without the burden of disinterest and objectivity expected of more senior scholars. After several years of immersion in their topic, these PhD students see the issues they discuss as fundamental and vital and seek to encourage their audience to understand the topic in the same way. Intensity boosters, then, both enhance persuasion through a committed and involved attitude and create greater proximity through conversational rapport with hearers.

Extremity boosters are almost as important as intensity types to the social science speakers. These mark the high end of a continuum and help remove any doubts about statements.

(23) …. studies show that teachers' beliefs are ***the greatest*** predictor of their practice. (SS9)

(24) The third message was ***the most*** surprising and that was around guidance. (HS32)

By upgrading propositions, speakers in both fields are able to emphasise the significance,

uniqueness or originality of their arguments without the need for elaboration. They are therefore a useful strategy when one has only 400 words or so to make an impact on hearers' understandings.

Finally, certainty boosters, which enable speakers to convey their epistemic convictions, are surprisingly little used in these presentations. By expressing a clear stance towards the certainty or truth of a proposition, speakers can also project credibility as an academic and an image of authority, decisiveness, and conviction in their views (Hyland, 2004). However, certainty is largely applied to generalities in these presentations rather than specific results:

> (25) It's my hope we can put this knowledge into practice which will *definitely* involve a few more people staring at knees. (HS41)
>
> (26) *Certainly*, this helps us answer how it is we can influence our brains by working our minds. (SS12)

Speakers, therefore, tend to use these boosters to promote the importance of the study rather than the truth of findings. They are a rhetorical strategy to help convince readers of the argument and sidestep possible alternative views from an unpredictably heterogeneous readership.

8. Attitude markers

Attitude markers indicate the writer's affective perspectives and include evaluations and personal feelings as he or she comments on the material under discussion or on the communication itself (Hyland & Jiang, 2019). By signalling affect, speakers are able to step into the discussion to assert their presence and contribution, expressing an opinion which marks a clear stance. This is something more familiar to those working in the social sciences where frequencies are significantly higher, and instances comprise a quarter of all stance features. As we have noted, this more visible personal presence is a characteristic of argument in the softer sciences and humanities, and in these talks it allows speakers to take a clear position and appeal for support from the heterogeneous audience.

> (27) However, I also witnessed *incredibly* creative strategies being used to address these challenges. (SS50)
>
> (28) The purpose of my research is to provide *insightful* data, produced by easily teachable methods, … (SS5)

We see here speakers using attitude makers to expressly take a position and encourage accord

from the audience who might be led to agreement with these positions. The scientists, however, tended to use a narrower range of attitude and restrict them to the potential significance of their research:

> (29) Let me tell you about one ***promising*** application of my research: optical telecommunication system. (HS21)
>
> (30) These opportunities for parenting also allowed people to step into their role as parents and that has ***important*** implications for identity. (HS32)

Our findings show, then, that 3MT presenters in different fields used attitude markers slightly differently. Table 5 illustrates the distribution of markers according to the categories suggested by Dueñas' (2010). These are used to modify:

- assessment (i.e. acuity, novelty, interestingness, validity, quality)
- significance (i.e. relevance, importance)
- emotion (i.e. emotional judgements).

We can see that assessment (log Likelihood = 31.31, $p < 0.0001$) and emotion types (log Likelihood = 1.29, $p < 0.3$) are more frequent in talks by social scientists while significance markers are significantly more frequent in the hard sciences, although the difference is not significant (log Likelihood = -3.99, $p < 0.08$).

Table 5. Functions of attitudinal markers by disciplines (per 1,000 words and %)

	Social sciences 3MT		Hard sciences 3MT	
	per 1,000 words	%	per 1,000 words	%
assessment	11.7	71.5	7.0	60.5
significance	3.8	23.1	3.9	34.1
emotion	0.9	5.5	0.6	5.4
Total	**16.3**	**100.0**	**11.5**	**100.0**

The assessment type is overwhelmingly the most frequent, accounting for the largest proportion of attitude marker among both groups. They indicate the speaker's evaluation of the research they are presenting and pointing out to a non-specialist audience what they might find interesting, unusual or valuable. This is a useful strategy in the time-constrained context and also helps to generate a certain enthusiasm to the live audience by conveying the speaker's excitement.

> (31) The findings are ***fascinating***. (SS39)

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(32) My research will lead to more *effective* and *efficient* financial literacy resources targeted to when people need them because… (SS43)

(33) This data may be *useful* for companies who are looking at how to devise strategies to attract skilled professionals… (SS44)

Evaluating the novelty, usefulness, or contribution of the research findings is clearly a key feature of research, particularly among the social scientists who take a more involved and visible position on matters.

Speakers in the social sciences also made slightly more use of emotion attitude markers. These refer explicitly to the speaker's affective position, how he or she feels rather than an evaluation of a claim or situation, and so express a clear and personal emotive stance. At the same time, the speaker may hope to generate the same sentiment in hearers, often to underline what seems unusual or unexpected.

(34) It might be *surprising*. (SS40)

(35) But perhaps even more *worryingly*, if the displays of behaviour are satisfactory and fulfilling, does it even matter that they're only an appearance? (SS19)

But while such markers of emotion may help the speaker to evoke a shared personal response in the audience to suggest a more dialogic interaction, this is also a risky strategy as some may see it as compromising the conventions of scientific objectivity. Speakers in the hard sciences therefore tended to use emotion to highlight the originality of their research:

(36) *Strange* as it may seem, I am actually using this exact principle to save an endangered marsupial from extinctions. (HS39)

(37) *Surprisingly*, from the results I found the current water scarcity can be significantly reduced without compromising the food production. (HS35)

Finally, the significance type of attitude markers are slightly more frequent in the hard science 3MT presentations, correlated, perhaps, to the fact that the audience may lack the scientific background to see the significance of results and methodological decisions without the explicit help of the speaker.

(38) It's a simple solution to a *significant* problem because it means…
(HS52)

(39) But to anticipate and prevent a painful attack, it is ***vital*** they can monitor the uric acid levels regularly ideally by testing themselves in the comfort of their home. (HS23)

At the same time, of course, this kind of stance-taking helps create an expert authorial persona; someone who knows what they are doing and who can be relied on to present a valid and important argument.

9. Self-mention

The final indicator of authorial stance in the model is self-mention. This refers to the extent writer/speakers intrude into their texts using first-person pronouns and possessive adjectives (Hyland, 2004). Communication, in whatever mode or register, involves presenting a discoursal self to show where the agent stands in relation to their arguments and the audience. Speakers in these 3MT presentations made equal use of self-mention in their talks, with roughly 22 cases per 1,000 words (Table 2). While we might expect the social science speakers, following the conventions of authorial visibility in written texts (e.g. Hyland, 2004; McGrath & Kuteeva, 2012), to adopt this feature with more enthusiasm, this does not seem to be the case. The spoken mode and live audience seem to play a grater role here. For both sets of speakers, self-mention helps strengthen their credibility and reinforce their role as an active scholar. Turning the talk from the content to their own expertise:

(40) ***I*** want you to think about this. (SS41)

(41) In this way, ***I*** believe my work is important because it directly addresses questions about global food security and prevents this nematode from having too easy of a time. (SS3)

(42) And so, ***I*** am developing a theory. (SS53)

In the hard science talks in particular, we observed speakers giving greater attention to how they intervened at key points to make critical decisions, highlighting their own personal contribution to the successful outcome of the research.

(43) ***I*** then use a molecular technique called micro satellite analysis and what that does is giving me a measure of how different the DNA of each individual is compared to all the other ones I have sampled. (HS17)

(44) ***I*** found a huge amount of variation both in the right trainers introduced scaloppini and the total monthly workloads. (HS30)

(45) *I* use optical imagery to identify disturbances across the boreal by

having four decades of optical imagery collected from satellites (HS19)

There is little observance of the convention that scientific facts should be allowed to speak for themselves here, but the audience gains a clear sense of the speaker's agency.

We were surprised to find the use of plural forms of self-mention in these presentations of students' individual research projects (Table 6).

Table 6. Forms of self-mention device by disciplines (per 1,000 words and %)

	Social sciences 3MT		Hard sciences 3MT	
	per 1,000 words	%	per 1,000 words	%
we/our/us	5.0	19.9	6.3	3.1
I/my/me	19.8	79.7	17.8	73.9
Other	0.1	0.4	0.0	0.0
Total	**24.8**	**100.0**	**24.1**	**100.0**

It is not surprising to find these plural forms were more frequently used by hard scientist. Differences in first person singular pronouns were not significant (log Likelihood = 0.75, $p <$ 0.4). This use of exclusive we/our forms is an expected finding given that PhD research in the sciences is more likely to be collaborative than those in the social sciences, conducted as part of a supervisors funded project and research team of fellow graduate students. Speakers presenting their research as part of such a team, we surmised, might be more likely to discuss their work using plural self-mention, as here:

(46) Number three, *our* current diagnostic tests for Salmonella

contamination are nonspecific and look for the presence of any Salmonella

strain as a result, … (HS32)

(47) So, *our* next step is to use Alzheimer fish to screen for drugs that can

correct the chain as we see. (HS56)

Clearly, however, either there is a growing trend towards similar research patterns in the social sciences or, perhaps more likely, speakers are using the form rhetorically, to create a temporary dominance by giving the speaker the right to speak with authority. In these

examples, for instance, plural self-mention seems to enhance the strength of the research findings by implying they have been validated by more than one scholar:

> (48) *Our* current experimental setup which is only the size of a walk-in
> refrigerator can eat up to 500 kilograms of food waste everyday. (SS2)
> (49) For these people, *we* found that by applying vibration to the neck
> muscles,… (SS55)

Whatever the form, however, self-mention is a popular rhetorical option for speakers in the 3MT genre where PhD candidates are seeking to make their presence felt in the discourse to stamp their authority onto their arguments, engage with hearers and present material through personal experience.

10. Conclusions and discussion

Our purpose in this paper has been to explore how junior academics represent themselves and their work in the 3MT genre, a new and increasingly popular format for presenting academic research. Using a corpus approach and adopting Hyland's (2005b) stance model, we have analysed how speakers project themselves into the discourse to take explicit positions towards their research and their audiences. The results suggest that the spoken mode, strict time constraint, live audience, high-stakes context and heterogeneous, lay audience together encourage a heavily stance-laden discourse. We found, for example, 72.3 cases per 1,000 words of speech in our corpus, greatly exceeding figures given for research articles (30.5 per 1,000 words) (Hyland & Jiang, 2019), academic blogs (58.2) (Zou & Hyland, 2020) and undergraduate reports (22.5) (Hyland, 2012). The frequent expression of evidentiality, affect and presence in this genre, then, combine to offer a more urgently persuasive and intimate style of argument. These features allow speakers to exhibit sensitivity to the diverse views and background knowledge of their audiences and express their convictions and personal commitments in persuading hearers of their arguments.

In addition, our results seem to contradict the assertion by Carter-Thomas and Rowley-Jolivet (2020: 12) that "3MTs possess a very stable cluster of features, with few notable differences between disciplines". While their study did not specifically look at stance features and was based on a very small corpus of just 30 talks (compared with the 120 in this research), we found that speakers from the hard sciences used significantly more explicit stance markers. In particular, they employed more epistemic devices to both accentuate and attenuate their claims, stepping into their presentation to explicitly comment on the confidence that the

audience might have in the claims made. The social science speakers, in contrast, took a more affective and visible stance through greater expression of attitude, although with similar frequencies of personal presence to the scientists. There do, therefore, appear to be disciplinary variations in the results, indicating that these PhD students construct their talks by not only drawing on their experience of what works in face-to-face interactions but also on their knowledge of the conventions of disciplinary-specific communication.

We recognise, however, the limitations of our study. While we hope to have illuminated the stance taking practices of PhD students in this genre, without self-report data we are unable to say anything about the speaker's motives and explanations for deploying these features. It is unclear, however, how much we might learn from such data. While further research might be useful, we do not know if the decision-making involved in stance-creation is conscious or unreflective, despite the talks being painstakingly prepared. It might also be interesting to discover the impact of these choices on audiences and whether they are interpreted in the same ways by in-groups and outsiders. We have concentrated on successful presenters in our study by focusing on those who have reached the finals of university competitions, but this does not guarantee that their stance positions have effectively translated into audience agreement.

We also acknowledge that these presentations are multimodal, and that stance can be conveyed through paralanguage, facial expression, posture and gesture which are not available to us in the transcripts. The extension of the framework to incorporate these elements would obviously add richness and detail to the description of these 3MT talks. However, there is still no empirical confirmation for a universal hierarchy of effectiveness, attributing stronger effects to nonverbal cues, and debates continue about whether verbal or non-verbal cues in speeches have greater influence on the impression gained by the audience. What seems important is that speakers orchestrates consistency in the overall set of cues they convey (e.g. Isbister & Nass, 2000) and following simple rules such as standing still, using a lower pitch, standing with feet apart and employing congruent gestures help speakers to be rated as confident and persuasive (Newman et al, 2016). Research suggests, however, that such non-verbal features may only temper an audience response rather than sway it (Nagel et al, 2012; Jackob et al, 2016). It is therefore unlikely that the results produced by analysis of these features would add considerably to our understanding of what speakers are seeking to achieve through linguistic means.

We believe, however, that our study has shed light on the rhetorical choices made by junior scholars to create a stance towards their work and hearers in this genre. The use of these interpersonal resources are extremely frequent in the corpus and show how speakers promote their research and themselves as academics in a high-stakes context where they are judged on the content of their PhD and ability to communicate it succinctly to a heterogeneous audience. Our analyses, therefore, have importance for scholars interested in the role of context in academic communication and the possible influence of different local variables on language choices. We also hope that our results may guide graduate students who are considering entering a 3MT competition and are looking for useful advice on delivering a successful presentation.

Finally, our work has implications for EAP teachers in helping to raise students' communicative awareness of the features of academic speech and providing them with effective strategies to participate in this genre. In advanced level EAP classes, for instance, comparative tasks may be useful, identifying the ways writers seek to achieve particular goals in speech and in writing, or examining transcripts to discuss the rhetorical effects of removing some of these features. Alternatively, teachers might ask students to watch a successful presentation on YouTube and note the occurrence of hedges or boosters and what they contribute to the argument, or explore the impact of self-mention on the effect of a statement. Overall, what is important is that students are sensitised to these features and the roe they play in effective monologues. However our findings are used, we hope to have provided learners and teachers with analyses which can inform strategies for successful participation in what may be an unfamiliar academic genre.

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