“These findings are very astonishing”: Hyping of disciplinary research in 3MT presentations and thesis abstracts

Abstract

The changing landscape of scientific communication raises new academic contexts in which research postgraduate students are exposed to diversified forms of interaction and a less predictable audience. Against this backdrop Three Minute Thesis (3MT) presentations have emerged, although we have not yet developed sufficient knowledge about how students present their research work to diverse audiences. In this study, we compared 80 students’ hyping practice of using promotional language to embellish or exaggerate aspects of the same research in 3MT presentations and thesis abstracts to explore how they understand their disciplinary knowledge and its connection with different audiences, and how they adapt their discourse accordingly. Our findings show that students hyped more frequently in 3MT presentations, relying on adverbial affective markers and attending to the broad research area. In thesis abstracts, conversely, boosting hypes were mainly used, especially verb resources, to comment on certainty of knowledge claims and promote the research methods used in the doctoral research. We see the divergency as a likely consequence of different communicative purposes between the two genres, and the different academic status and power asymmetry between students and the audience of each genre. In addition, disciplinarity was noted. Students in the hard sciences made more use of hypes in their 3MT presentations than their peers in the soft sciences and were inclined to promote both broad and specific research areas and embellish the primacy attached to

their research. This disciplinary hyping practice is perhaps related to the conceptual abstractness of scientific knowledge and its opaque connection with common wisdom and public interest. Therefore, this study reveals not only that hypes mark a speaker's orientation to what and who is addressed, but also that students modulate academic persuasion to balance their promotion of results and claims against the discoursal expectations and knowledge bases of different audiences.

Keywords: disciplinary variation; academic persuasion

1. Introduction

Similar to communication in other domains, academic discourse is widely seen as a site of social interaction between speakers and audience, co-constructed through the speakers' active understanding of rhetorical situations and the likely responses of the audience (Dueñas, 2010; Hyland, 2005; Jiang & Ma, 2018). Therefore, academics do not simply report neutral facts but take a robust and plausible perspective on what is discussed, because knowledge claims can hardly be self-evident enough to ensure that recipients take the same point of view and arrive at the same conclusion. Successful communication then relies on speakers' pragmatic ability to convincingly manipulate both rational exposition and rhetorical interactive features (Hyland, 1998). Academic persuasion has been shown to be sensitive to discipline and genre (Hyland, 2004; Koutsantoni, 2006), both of which request a mastery of a relationship between the speaker, propositional information and listenership (Qiu & Jiang, 2021). This may be particularly difficult for novice academics presenting their research to a diverse audience.

The changing landscape of scientific communication and evolving ways of knowledge

exchange are raising new academic contexts in which students, as future academics, are exposed to diversified forms of interaction and a less predictable audience (Bondi et al., 2015; Hyland & Jiang, 2019). Against this backdrop has emerged a new academic genre, Three Minute Thesis (3MT) presentations, which challenge research postgraduate students to present their doctoral projects within three minutes to a wide audience. Facilitating a potent communication of the disciplinary research to the lay audience, speakers seek to express plausible authorial voice and engage listeners (Qiu & Jiang, 2021), while building coherence of rhetorical moves (Jiang & Qiu, 2022).

Besides the above promotional tactics, it is also reasonable to see speakers use positive and boosting linguistic devices to glamorize and play up aspects of their research or make it sound more appealing than it actually is – a phenomenon Millar et al. (2019) refer to as "hype". To best understand students' hyping practice, we compare how they promote the same research project in 3MT presentations and thesis abstracts. This comparison helps to reveal how students relate to different audiences and show the extent to which the contextual differences impact on students' promotional persuasion with these audiences. In doing so, we examine a corpus of 80 3MT presentations and their corresponding thesis abstracts from hard and soft disciplines to answer the following questions:

- To what extent do doctoral students hype their research?
- What are the most common hyping devices used by students?
- What aspects of research do students target using these devices?
- How does the above hyping practice vary, if at all, between 3MT presentations and thesis abstracts and across disciplines?

Before discussing our research design and results, we offer a brief account of what hyping practice refers to in Section 2 and the contexts, aims and evaluation criteria of 3MT competitions and thesis abstracts in Section 3.

2. Hyping and rhetorical promotion of academic research

The assumption that academic discourse is a neutral and faceless reporting of scientific research has now been largely replaced by a more constructivist view, which sees it as a persuasive endeavour of academics to promote the importance or value of their work (Hyland & Jiang, 2021a; Jiang & Ma, 2018). Thus, the literature has described interactional promotion in academic discourse by discussing "positioning" and "boosting" (Hyland, 2004, 2005), "marketisation" (Fairclough, 1993) and "quasi advertising discourse" (Lindeberg, 2004). Talking about "hype", Millar et al. (2019) draw our attention from promotion to even potential over-promotion in which academics use "hyperbolic and/or subjective language to glamorize, promote and/or exaggerate aspects of their research" (p. 141).

The concept of "hype", as argued by Millar et al. (2020), extends what Lazarus et al. (2015, p. 2) call spin – that is, "reporting strategies, either intentional or unintentional, to convince the reader that the beneficial effect of the experimental treatment" – to include instances of promotional language aimed at aspects of a study. According to Millar et al. (2019, 2020), it covers not only salient expressions (e.g. *the results are promising*, *this study clearly demonstrates*) but also those items that function to underscore the importance of the research topic (e.g. *critical*, *essential*), the design of the study (e.g.

suit- able design rules, rigorous study design), the novelty of the study (e.g. *new imaging method, innovative technique*) or a positive attitude towards the results (e.g. *interestingly*, *importantly*). Thus "hype" captures (over)promoted presentation of aspects of research (Bordignon et al., 2021), and is principally expressed by devices which indicate either authorial epistemic conviction or positive personal feelings towards material or the communication itself (Hyland & Jiang, 2021a, 2021b).

While hyping can help to engage the audience and highlight the more important aspects of a study (Hyland & Jiang, 2021b; Millar et al., 2019), such practice, particularly if intentional, is suspected to subjugate the actual significance of a study to the deliberate exaggeration of authors, and thus undermines the impartiality of science and biases the audience's interpretation (Caulfield & Condit, 2012; Master & Resnik, 2013). The skepticism is of course subjective and depends on a difference of degree (Nerlich, 2013) and also of intention (Boutron & Ravaud, 2018). Despite these concerns, nonetheless, "more mundane and subtle ethical issues arise when authors use language to encourage positive appraisal" as Millar et al. (2020, p. 53) have argued. This is what we focus on in this study.

A variety of rhetorical and linguistic resources have been revealed to achieve academic persuasion. For example, a "news-oriented text schema" (Berkenkotter & Huckin, 1995) is often used to promote the authors' research results in life and social sciences (Martín & Pérez, 2014), and literary studies (Lindberg, 2004). In addition, attitude markers (Hyland, 2005), "drama" words (Wheatley, 2014), value-laden vocabulary (Fraser & Martin, 2009), positive words (Vinkers et al., 2015) and "superlatives" (McCarthy, 2015) explicitly high- light the novel contribution of academic work, while boosters,

which express authors' strong conviction to knowledge claims, perform a more subtle persuasive function (Hyland, 2005; Hyland & Jiang, 2016).

3. 3MT presentations and thesis abstracts

The idea of 3MT competitions originated at The University of Queensland in 2008, but the activities are now held worldwide with an aim to "cultivate students' academic, presentation, and research communication skills".[1] Student competitors are required to present their doctoral research to a disciplinarily heterogeneous audience in three minutes with the aid of only one static PowerPoint slide. They are judged by members from different faculties and divisions of the host university and even a wider community, and the evaluation centres around the "comprehension and content" of the presentations:[2]

- Did the presentation provide an understanding of the background and significance to the research question being addressed, while explaining terminology and avoiding jargon?
- Did the presentation clearly describe the impact and/or results of the research, including conclusions and outcomes?
- Did the presentation follow a clear and logical sequence?
- Were the thesis topic, research significance, results/impact and outcomes communicated in language appropriate to a non-specialist audience?

Clearly, the criteria are primarily concerned with a coherent and compelling flow of ideas with an appropriate emphasis on certain aspects of the presented research. In other words, presentations of the disciplinary research must take into account interpersonal factors and

the audience's knowledge base, addressing the acceptability conditions that interactants accept an argument (Hyland, 1998). All these point to the importance of using rhetorical resources to make scientific research palpable to someone from outside the discipline. Therefore, 3MT presentations require postgraduate students to possess the pragmatic ability to formulate a plausible and convincing scientific narrative in a rhetorically powerful way appropriate to a non-specialist audience (Boldt, 2019; Hu & Liu, 2018).

This pragmatic use of language is critical given the discursive hybridity of 3MT presentations. First, as an oral narrative of science to a live audience, the presentations mirror other spoken academic genres (e.g. lectures and conference presentations), anticipating listeners' processing difficulty in a real-time communication and building interpersonal rapport and solidarity (Carter-Thomas & Rowley-Jolivet, 2020; Hu & Liu, 2018; Rowley-Jolivet & Carter-Thomas, 2005). However, 3MT presentations may require more rhetorical investment, since presenters need to ensure a convincing and accessible delivery of opaque scientific concepts to a lay audience as in other infotainment presentations such as TED talks (Boldt, 2019; Scotto di Carlo, 2014). Therefore, 3MT presentations are formulated in an interactive style which the diverse grouping of listeners find engaging, persuasive and easy to understand. This brings to the fore the rhetorical emphasis on what is presented, which creates proximity, affectivity, collegial interaction and shared goals (Gotti, 2014; Jiang & Qiu, 2022; Qiu & Jiang, 2021).

Given a growing imperative in recent years for academics to reach new audiences and sponsors (Hyland & Jiang, 2019), the promotion of research findings towards a wider community outreach may be increasing. For example, Rowley-Jolivet and Carter-Thomas

(2005) found that conference presenters in geology, medicine and physics often place emphasis on novelty and results rather than on background information. Fraser and Martin (2009) identified a remarkable increase in value-laden adjectives such as *important*, *critical* and *original* in clinical research writing between 1985 and 2005. The rise of hyper- bole in medical discourse has also been observed by Vinkers et al. (2015), who showed that the frequency of 25 positive-sounding words such as *novel*, *amazing*, *innovative* and *unprecedented* increased almost nine-fold between 1974 and 2014. In biology, Hyland and Jiang (2016) documented an increase in the boosters *show*, *must* and *know* over the last 50 years, forms which ensure readers are aware of the strength of results. They also reported *important*, *even*, *expected* and *interesting* as the most preferred expressions of attitudinal affect across the years.

The focus on selling research work rather than its actual significance, as Millar et al. (2019) argue, can impose "judgments on readers that might undermine objective and dis-interested evaluation of new knowledge" (p.149). Thus, hyping marks a speaker's orientation to what and who is addressed, and this points to the value of comparing rhetorical hypes between 3MT presentations and thesis abstracts in revealing how students understand their disciplinary knowledge and its connection with different audiences, and how they adapt their discourse accordingly.

This hybrid nature makes 3MT presentations a particular academic genre by which we understand students' discursive practice not simply as an on-stage oral speech but more importantly as pragmatic manoeuvring of rhetorical resources to communicate disciplinary knowledge to a diverse audience. This is in striking contrast to doctoral thesis abstracts. While often being the last section of a thesis to be written, the abstract typically

presents a summary of the text and informs readers of "what can be found in the dissertation and in what order, functioning rather as an overall signpost for the reader" (Cooley & Lewkowicz, 2003, p. 112). In thesis abstracts, therefore, students communicate with "a primary reader- ship of one or more examiners" (Paltridge & Starfield, 2020, p. 5), so they usually seek to "demonstrate a command of subject knowledge allied with an ability to undertake inde- pendent research of a requisite standard" (Thompson, 2016, p. 379). Thus, thesis abstracts are also promotional (Bordet, 2014). Furthermore, students have been shown to display a degree of affiliation to their disciplinary fields and present themselves as competent academics immersed in the ideologies and practices of their disciplines (Jiang & Ma, 2018; Qiu & Ma, 2019).

For new claims made in theses to become accepted, and for PhD degrees to be awarded, supervisors, and advisers and examiners, need to be persuaded of the validity of these claims (Paltridge & Starfield, 2020; Thompson, 2016). Moreover, the literature also shows that thesis abstracts feature a different academic status and power asymmetry between students and the immediate audience, and this makes students cautious to present strong claims of new knowledge (El-Dakhs, 2018; Kawase, 2015). Similarly, com- paring thesis and research article abstracts, Koutsantoni (2006) found that thesis authors hedge more often and refrain from taking personal responsibility for their claims. Swales and Feak (2009) report that students often struggle with this pragmatic language use because they are eager to promote their work, but advisors suggest a substantial moderation of the claims being made.

Therefore, thesis abstracts and 3MT presentations differ in audience and communicative purpose, and a comparison between the two genres, as the current study sets out to

explore, problematizes how students relate to different audiences caught "between knowledge-display and information-transmission" (Johns & Swales, 2002, p. 17) and underscores the extent to which the contextual differences impact on students' hyping practices and academic persuasion with the audiences.

4. Data analysis

4.1 Data collection

We created two corpora, one comprising 80 3MT presentations by finalists of the competitions in a university in Hong Kong during the years 2012–2019, and the other comprising the doctoral thesis abstracts of the same PhD projects. The reason for selecting only one university was to minimize the multifarious composition of contestants because in some holding universities PhD students at any year of study are eligible (cf. Carter-Thomas & Rowley-Jolivet, 2020). The presentations were labelled by the university as science, engineering, medicine, arts, education and social science, depending on the presenters' affiliations and the propositional content of presentations, but are largely representative of disciplines in the hard sciences and soft knowledge fields (Becher & Trowler, 2001). Table 1 presents the 3MT and thesis abstract corpora.

After having downloaded all the presentations from the university website, the authors searched for the thesis abstracts by the presenters' names in the e-thesis database of the university. As for the presentations, both authors manually transcribed them, excluding repetition, false starts, hesitation and filled pauses since they are not the focus of our analysis, and then checked all the transcriptions verbatim to ensure accuracy.

4.2 Data analysis

To explore these corpora, we developed a list of hyperbolic items from a potentially open set. As noted in Section 2, we followed Millar et al.'s (2019, 2020) conception of "hype" which includes instances of promotional language aimed at any aspect of research, while recognizing a cline between modest and exaggerated promotion (Nerlich, 2013). Therefore, we first referred to the literature relevant to hyping and thus included hyperbolic terms (Millar et al., 2019), attitude markers (Hyland, 2005; Qiu & Jiang, 2021) and boosters (Hyland, 2005; Qiu & Jiang, 2021) which function to convey an author's strong conviction and epistemic commitment to what is said about aspects of research (*clearly*, *obviously* and *demonstrate* are given by Hyland (2005) as examples). We then consulted the *Oxford Thesaurus of English* (Waite, 2009) for other possible candidate items. This procedure produced a list of about 400 hype items (see Appendix), and they principally comprise positive and boosting linguistic devices which allow speakers to present their research in a favourable light and trigger a positive impression on the audience (Hyland & Jiang, 2021a, 2021b).

We searched our corpora for these items using *AntConc* (Anthony, 2019), and then manually examined and counted each concordance to establish that the feature was performing a hyping function. For example, the word *major* was excluded in contexts such as *Candida is a major fungus which resides in fifty percent of human oral cavities* but seen as hyping when used to modify a claim such as *our magic bullet is a major achievement in this field*. Similarly, words such as *important* and *definitive* were ignored in the negative (e.g. *not important* and *no definitive conclusion*) (see Fraser & Martin, 2009). Both authors worked independently and achieved a high inter-rater

agreement ($\kappa > 0.08$) before resolving disagreements. Then the results were normalized to 1,000 words to allow comparison across the corpora. To determine statistical significances, a *log-likelihood* (*LL*) test was run using Rayson's *log-likelihood* calculator[3] and effect size (*%DIFF*) was also considered (Gabrielatos, 2018).

Table 1 Characteristics of the 3MT and thesis abstract corpora

Genre	**Discipline**		**Number of texts**	**Length (words)**	**Mean length (words)**
3MT presentations	Hard disciplines	Science	15	6,057	403.8
		Engineering	15	5,658	377.2
		Medicine	21	8,744	416.4
		Total	51	20,459	401.2
	Soft disciplines	Humanities	12	4,754	396.2
		Education	7	2,726	389.4
		Social Science	10	3,968	396.8
		Total	29	11,448	394.8
	Total		80	31,907	398.8
Thesis abstracts	Hard disciplines	Science	15	5,652	376.8
		Engineering	15	5,243	349.5
		Medicine	21	9,164	436.4
		Total	51	20,059	393.3
	Soft disciplines	Humanities	12	4,061	338.4
		Education	7	3,145	449.3
		Social Science	10	4,515	451.5
		Total	29	11,721	404.2
	Total		80	31,780	397.3

5. Overall results: Hyping frequency and pattern in 3MT presentations and thesis abstracts

Overall, we identified 661 instances of rhetorical hypes in the 3MT presentations, averaging 8.3 instances per presentation and 23.4 instances per 1,000 words.

Comparatively, 617 instances were found in the thesis abstracts, averaging 7.7 instances per abstract and 19.4 instances per 1,000 words. The high frequencies suggest students' awareness of presenting their research and claims persuasively and highlighting the value of the propositional content in the succinct textual spaces. More interestingly, the results also show that significantly more hypes were used in the 3MT presentations than the thesis abstracts (*log-likelihood* = 11.3, %*DIFF* = 6.70, $p < 0.001$). The difference may be related to the spoken mode of 3MT presentations since Biber et al. (1999) show that stance expressions are much more common in spoken than written genres. Speech settings typically involve an interactive nature, with speakers addressing a live audience, and this on-line character marks a higher engagement and a more personal affect. Additionally, the higher frequency indicates students' stronger intention to promote their disciplinary research to a general audience. This can be seen in (1) and (2):[4]

(1) *These stem cells are amazing because they have the most incredible ability to repair damaged cells*. [3MT, medicine]

(2) *The growth of the human intestinal cells was significantly improved when we added these low salt cheese whereas, interestingly, the growth of human intestinal cancer cells was significantly reduced*. [3MT, sciences]

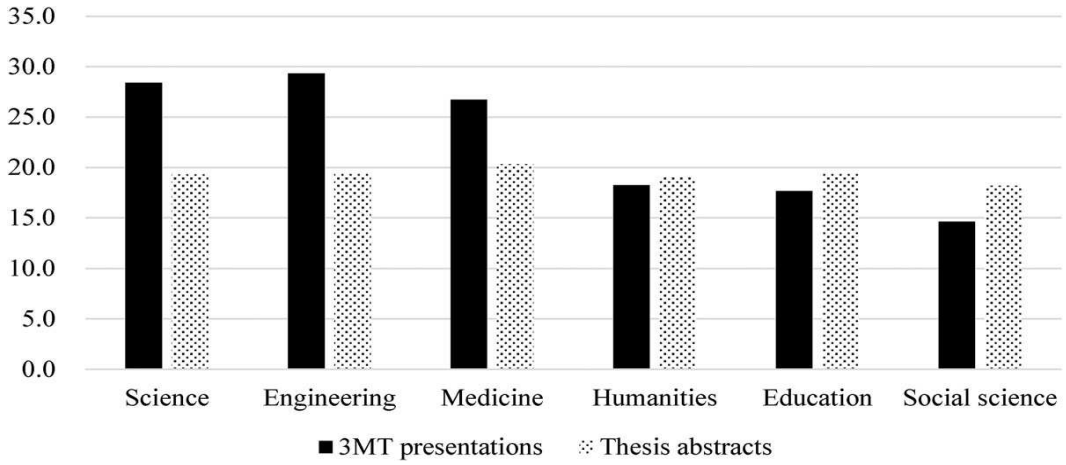

Figure 1. Disciplinary distribution of hyping features in 3MT presentations and thesis abstracts

The hyping markers assist the heterogenous listeners to make better sense of the "news value" of research findings (Berkenkotter & Huckin, 1995, p. 28). This rhetorical function may help to explain the disciplinary variation in hyping practice by students in the two genres. As shown in Figure 1, students in the hard disciplines hyped their research in 3MT presentations significantly more often than their peers in the soft knowledge fields (*log-likelihood* = 37.0, *%DIFF* = 66.16, $p < 0.001$), although the disciplinary difference in hyping expressions is not significant in thesis abstracts.

The similar use of hypes in thesis abstracts in the soft and hard disciplines may point to a genre convention for 3MT presentations, which comprise a different communicative purpose and audience base. Hard sciences typically probe into abstract concepts and build knowledge value by establishing interconnections between observed phenomenon, scrutinizing "inferred structures or processes that are not directly accessible to public experience" (Kolb, 1981, p. 244). Therefore, the use of hypes functions to impress the audience with their research as "glamorizing material" (Hyland, 2010, p. 124), and

shape the presentation of the abstract scientific subjects in a way which is convincing and accessible to a diverse lay audience. The 3MT presentation exemplars below provide a flavour of this communicative effect:

(3) *More importantly, it demonstrates that studies on simple animals can help to under- stand the processes driving evolution*. [3MT, science]

(4) *The results are incredible. These certainly survive better. So I strongly believe that these cells have the amazing ability to repair at the damage cells*. [3MT, medicine]

In contrast, thesis abstracts are centrally a summary of research projects to be read and evaluated by examiners (Cooley & Lewkowicz, 2003; Paltridge & Starfield, 2020). There are differences in academic status and power asymmetries between thesis authors and disciplinary examiners. The lower relative and absolute status of student authors makes them "much cautious to present strong claims of new knowledge" (El-Dakhs, 2018, p. 52), and reduces the urgency of marketing the research and maximizing its public intelligibility. However, further noted is the higher frequency of hyping in abstracts than in 3MT presentations in the soft disciplines. This may suggest that PhD students feel a greater need to discursively impress examiners with what they aim to and have found in their years of doctoral research, as illustrated in (5) and (6):

(5) *All in all, extensive green roof remains as an effective and promising alternative mitigation strategy to urban stormwater management in Hong Kong with potential application to other tropical areas*. [Thesis abstracts, social sciences]

(6) *This study aimed to develop a holistic and robust understanding of knowledge-*

building discourse supported by Knowledge Forum among primary- and secondary-school students in Hong Kong. [Thesis abstracts, social sciences]

6. Hyping options: What devices PhD students prefer in 3MT presentations and thesis abstracts

Hyping, as noted in Section 4 above, is mainly expressed by boosters, which stress the categorical nature of claims and so increase their impact, as in (7) and (8), and positive attitude markers, which project an affective take on what is being said, as in (9) and (10):

(7) *What does my thesis tell us? Humanitarianism is always political*. [3MT, arts]

(8) *Findings show that the teachers changed their reading responses to the texts and their ways to apply DiE to teach*. [Thesis abstracts, education]

(9) *And I found the results are very astonishing*. [3MT, science]

(10) *All in all, extensive green roof remains as an effective and promising alternative mitigation strategy to urban stormwater management in Hong Kong*. [Thesis abstracts, social science]

Table 2 shows how students employ boosting and affective markers in different genres. Clearly, the students made significantly more use of boosters when presenting their research in the thesis abstracts, while using affective markers more substantially in the 3MT presentations. The extent to which a research project is accepted hinges on the impact it exercises on the audience, but research writing typically underscores objectivity

and empirical impartiality. Hyland and Jiang (2016) observed an increase in boosters while a decrease in attitude markers in academic prose in the last 50 years. Hype in the thesis abstracts, therefore, is more of an epistemic option than an affective expression, as shown in (11) and (12):

(11) *By showing that Hong Kong was far from absent from British imaginations, it becomes clear that the landscape and geography of the island were crucial to how the colony was perceived and communicated to audiences back in Britain*. [Thesis abstracts, arts]

(12) *Surface vibration mode was firmly demonstrated to exist in these nanostructures with optical studies and theoretical analysis*. [Thesis abstracts, science]

Table 2 Distribution of boosting and affective markers in 3MT presentations and thesis abstracts (per 1,000 words)

	3MT presentations	Thesis abstracts	*Log-likelihood*	*%DIFF*	*p*
Boosting markers	9.1	13.4	24.6	-32.1	<.001
Affective markers	14.3	6.0	105.3	138.3	<.001

By contrast, when presenting their academic work to a wide audience, students seem more comfortable with inflating claims with their affective feeling and embroidering their statements by expressions of personal attitude. Therefore, (13) and (14) are typical in 3MT presentations, which may arouse a sensation with listeners who possess little

disciplinary knowledge:

(13) *But these stem cells are amazing because they have the most amazing ability to repair damaged cells*. [3MT, medicine]

(14) *Preliminary results are very encouraging. We surprisingly found that our green roofs were able to absorb and release rainwater slowly, sometimes, delaying the peak dis- charge by as long as five hours*. [3MT, social science]

We may have a clearer view of the most preferred hyping options by considering the most frequently occurring items used to promote the value of research in the corpora (Table 3). Among the 15 most common hyping items, *new*, *important*, *effective*, *novel*, *potential* and *significantly* are shared in 3MT presentations and thesis abstracts, with nine particular to each genre (words shared in the two genres are bolded in Table 3). This shows that students exercise different hyping options when promoting research to different audiences.

For the top 15 items in Table 3, we followed Hyland and Jiang (2021b) and identified three broad categories of value which students seemed to be highlighting in what they presented:

- Certitude (concerns the strength or confidence of the statement – *always*, *clearly*, *demonstrate*, *really*)
- Contribution (refers to the immediate value or importance of the issue – *enhance*, *important*, *effective*, *useful*)
- Novelty (stresses the originality of the claim – *new*, *surprisingly*, *novel*, *interestingly*)

Table 3 The most common 15 hyping items in 3MT and thesis abstracts (per 1000 words & percentage of total)

3MT presentations			**Thesis abstracts**		
hyping items	**per 1000 words**	**%**	**hyping items**	**per 1000 words**	**%**
very	3.2	13.6	**novel**	1.1	5.8
new	1.2	5.3	**potential**	1.0	5.3
important	1.1	4.7	**new**	1.0	5.2
effective	0.9	3.6	significant	1.0	5.0
always	0.6	2.7	**important**	0.7	3.6
really	0.6	2.6	demonstrate	0.6	3.2
best	0.6	2.4	significantly	0.5	2.8
novel	0.4	1.8	**effective**	0.5	2.8
potential	0.4	1.8	enhance	0.5	2.6
significantly	0.4	1.5	critical	0.5	2.6
importantly	0.3	1.4	facilitate	0.4	2.3
amazing	0.3	1.4	strong	0.4	1.9
clearly	0.3	1.4	show	0.3	1.8
interestingly	0.3	1.4	efficient	0.3	1.8
surprisingly	0.3	1.4	useful	0.3	1.6

When presenting research to both insider and outsider audiences in disciplinary fields, students seek to speak with a clear assurance of importance or benefit of the current research. Such declarations of certainty comprise half of the most frequent items in both genres but are expressed by different hyping options. Briefly, students prefer adverbs in 3MT presentations, as in (15) and (16), while relying on verbal resources in thesis abstracts, as in (17) and (18):

(15) *Back pain is a very common problem affecting over eighty percent of people*

worldwide. [3MT, medicine]

(16) *What does my thesis tell us? Humanitarianism is always political*. [3MT, humanities]

(17) *The overall results demonstrate that the coastal marine environments in this region are still heavily contaminated with OTs especially TPT*. [Thesis abstracts, science]

(18) *In this research, I show that small molecules are more challenging to use in the hESC context*. [Thesis abstracts, medicine]

Stance adverbials set up an interpretative frame for propositional information, and their flexible ordering in the sentence aligns with on-line production of speech in spoken discourse (Biber et al., 1999), so they are found more frequently in spoken than in written registers (Biber, 2006). By contrast, stance verbs express the epistemic assessment of the speaker with respect to the proposition contained in the matrix clause in a way "that gives the appearance of presenting stanceless facts" (Biber et al., 1999, p. 969), so they are often found in written genres.

In addition, students also seek to highlight the immediate value or efficacy of their research projects, and the promotion of contribution reinforces the social relevance, as in (19), and the disciplinary alignment, as in (20), of the doctoral research discussed:

(19) *We find acacetin can be quite effective to inhibit atrial fibrillation in mammal animals*. [3MT, medicine]

(20) *It was revealed that n-3 PUFAs and their oxidized products were enhanced by ALA- enriched diets*. [Thesis abstracts, science]

It is interesting to see the different hyping items by students when promoting the knowledge contribution in the two genres. As shown in Table 3, adjectives are more common in 3MT presentations (e.g. *best*, *amazing*) while verbs are more often used in thesis abstracts (e.g. *enhance*, *facilitate*). While the full reasons are unknown, we may see this difference as related to the connection between the suasive effect of the linguistic features and the knowledge base of the different audiences. As reported in Charles (2006) and Dong et al. (2022), verbs are typically used in research writing to report one's own or others' knowledge claims, and the connotative meaning by verbs such as *enhance* and *facilitate* can be acquired by readers' expertise within a disciplinary framing. By contrast, adjective commentary seems more accessible to a diverse audience, and thus can easily emphasize "its application, its usefulness and the effects" of the presented research "upon people's lives" (Calsamiglia, 2003, p. 140).

The third category of value emphasized by students is the newness of knowledge claims and research results. A research project garners disciplinary recognition by revealing unknown aspects of the scientific world and contributing to its current body of knowledge (Becher & Trowler, 2001; Hyland, 2004). Therefore it is common to see students stress the trailblazing value of their doctorial research, as in (21) and (22), and this hyping effort may help to impress listeners with the academic innovation which is normally underscored in assessment:

(21) *As the outcome of my research, I have proposed a new design method which have taken into consideration of these two new findings*. [3MT, engineering]

(22) *My study provides the novel information that acacetin may have*

cardioprotection against regional ischemia/reperfusion injury. [Thesis abstracts, medicine]

Additionally, students used *interestingly* and *surprisingly* more frequently in 3MT presentations than thesis abstracts to stress the novelty of what is found in the research. As seen in (23) and (24), these adverbs function to set up an interpretative frame for listeners as to how the following propositional information is to be processed, and thus may direct listeners to understand the information from the same perspective intended by the speaker:

(23) *Interestingly, this specification can only be found in English word processing but not in Chinese character processing*. [3MT, social science]

(24) *Surprisingly, we find that after we baked the salmon, the heart protected mediators have increased significantly*. [3MT, science]

We also note disciplinary variation of the most frequent hyping items in the two genres (Table 4). In Table 4, we see that *very* and *important* are the most favoured means of establishing the prominence of work in the 3MT presentations, although no such common items were found across disciplines in the thesis abstracts. In addition, students in the hard sciences shared *effective* as one of the most preferred hyping choices in their presentations, which suggests their rhetorical intention to impress the general audience with the efficacy of what they have found in the doctorial research, as in (25) and (26):

(25) *So I breakthrough in the development of effective drugs for the treatment of rheumatoid arthritis*. [3MT, medicine]

(26) *The objective of my PhD research is to develop a very effective method to remove nitrogen from waste water*. [3MT, engineering]

Table 4 The most frequent five hyping items in 3MT and thesis abstracts across disciplines

3MT Presentations					
education	**humanities**	**social sciences**	**medicine**	**engineering**	**sciences**
very	very	very	very	new	very
important	always	important	new	concrete	significantly
productive	really	new	important	very	effective
really	important	always	effective	effective	important
advanced	potential	strong	novel	great	really
Thesis Abstracts					
education	**humanities**	**social sciences**	**medicine**	**engineering**	**sciences**
significantly	facilitate	novel	novel	new	potential
highlight	contribution	important	potential	efficient	critical
importance	important	new	significant	effective	enhance
main	new	effective	new	potential	significant
significant	novel	facilitate	effective	extensive	new

In terms of the thesis abstracts, students in the hard disciplines chose *potential* as one of their most common hyping items. Therefore, different from presenting their research to a diverse audience, students refrained from explicitly highlighting the effectiveness of their research work but pointed instead to its potential value. A comparison of (25) and (26) above with (27) and (28) below gives a taste of the students' different rhetorical focus:

(27) *The key research finding in this thesis demonstrated that ba-NMD is a potential mediator between elevated SUA and MACE*. [Thesis abstracts, medicine]

(28) *Doubly symmetric built-up sections have great potential to extend the application of cold-formed steel to structural members with larger scale*. [Thesis abstracts, engineering]

7. Hyping targets: Which aspects of study PhD students seek to hype

In addition to the specific rhetorical functions which writers boost or positively evaluate with hypes, we also examined the broad functional categories targeted by the pro- motional words and expressions. Based on a modified version of Millar et al.'s (2019) classification, we employed the following categories to determine which aspects of the study hypes served to embellish (Table 5):

- Broad Research Area: target the general field of study;
- Specific Research Topic: relate to the particular area under investigation;
- Research Method: target how the study was designed or conducted;
- Research Outcome: concern the results of the study or their interpretation; and
- Research Primacy: describe the research as superior or assign it priority in some way.

To some extent, but not entirely, these rhetorical functions align with the IMRD (Intro- duction, Methods, Research, Discussion) structure of professional research writing. For example, in Millar et al.'s (2019) study, generally, hypes aiming at broad and specific research topics were found in the introduction (which functions to set up the centrality of the topic and the purpose of the research), hypes at research methods in the methods and discussion sections, and those promoting research outcomes and primacy in the discussion.

Figure 2 shows that 'Broad Research Area' was hyped significantly more often by the students in the 3MT presentations (*log-likelihood* = 7.8, *%DIFF* = 4.6, $p < 0.01$) while 'Research Methods' was highlighted to a larger extent in the thesis abstracts (*log-likelihood* = 10.9, *%DIFF* = 6.1, $p < 0.001$). In 3MT presentations, students seek to explicitly declare the research area that their research occupies since the presentations are judged as to how much the audience can understand "what you're doing?" (Skrbis et al., 2010, p. 45). However, different from examiners of thesis abstracts, the lay audience of 3MT presentations may need a general background knowledge about the research topic for a plausible understanding of what is being presented, as in (29). By contrast, examiners relatively expect to see a strong rationale for the specific research niche doc- toral students attempt to occupy by the research project, as in (30):

(29) *Omega three oil, also known as fish oil, is important for our health since scientists find that EP and DHA can help to protect our heart*. [3MT, science]

(30) *There is a significant residual risk of ESKD despite conventional strategies including the renin-angiotensin-aldosterone system blockade, control of blood glucose and blood pressure*. [Thesis abstracts, medicine]

Table 5 Hype target (functional) categories and examples

Hype target	**Function**	**Example**
Broad Research Area	targeted at the general field of study	Early childhood and pre-school education is especially **important**. (3MT, education)
Specific Research Topic	concerned with the particular area under	Pancreatic transplantation has shown to be **highly effective** in

	investigation	circumventing the problem of β-cell insufficiency. (Thesis abstracts, medicine)
Research Method	concerned with how the study was designed or conducted	A **robust** method was **successfully** developed to simultaneously quantify the concentrations of six common OTs in molluscan tissues. (3MT, science)
Research Outcome	concerned with the results of the study or its interpretations	The results were **remarkable** because the dominant group was able to double its usable space. (3MT, social science)
Research Primacy	concerned with the research as superior or assign it priority in some way	So we envisage this test will be **meaningful** and **useful** test in future clinical practice. (3MT, medicine)

On the contrary, students placed less emphasis on research methods in the 3MT presentations than in the thesis abstracts. This is probably in line with the communicative context of presenting disciplinary research to out-of-the-loop listeners. As argued by Calsamiglia and van Dijk (2004), in popularizing communication of scientific exploration, the audience is normally not positioned as disciplinarily knowledgeable fellows but as those who need enticing into the research. The rhetorical focus, therefore, is on human interest rather than scientific reasoning, and hyping priority is often given to the potential payoffs of research results, as in (31), rather than the rigor of how they are obtained, as in (32). 3MT presenters often set score by celebrating scientific results and promoting their novelty and uniqueness, with their validity taken for granted, and as a consequence, it is common to see hype on what is found, as in (31), in the 3MT corpus:

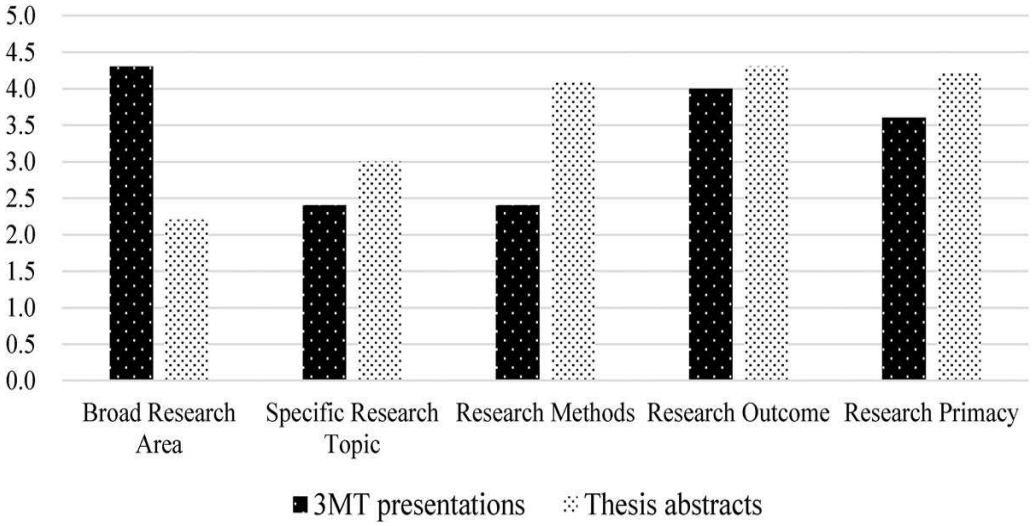

Figure 2. Hyped targets in 3MT and thesis abstracts corpora (per 1,000 words)

(31) *In my research, I found that high salt content significantly alters the structure and function of these probiotic bacteria*. [3MT, science]

(32) *We comprehensively study a library of fifty thousand small molecule to find a lead compound or simply a magic bullet against Candida*. [3MT, medicine]

The above difference, however, does not apply equally to all disciplines. Table 6 presents the disciplinary variation of hyped targets. The results show that the hyped targets have a similar distribution in the hard and soft disciplines. In communicating disciplinary research to a wide audience in the 3MT presentations, students in the hard knowledge domains were inclined to hype both broad and specific research areas. As seen in (33) and (34), a convincing rationale for a research project is established, especially for an audience who has little disciplinary background:

(33) *Have you ever seen a puffer fish blows up itself? It's a very amazing process*. [3MT, medicine]

(34) *But have you heard about plants that can trap insects for pollination in which Poland* [pollen] *is transferred from the male part of the flower to the female part of other flower in order to set fruit and reproduce successfully? Pollination is essential for many commercial fruit and seed crops, and therefore scientific study on pollination is extremely important*. [3MT, science]

Another aspect science students sought to emphasize by hypes in the 3MT presentations is the primacy given to a research study. This rhetorical work promotes the research itself rather than the results, as in (35) and (36). While strengthening the audience's aware- ness of bottom-line outcomes, students also go beyond this to stress the wider impor- tance of the study and the likely future value of extending this line of work:

(35) *With these unique and promising features, time-stretch imaging can open a new paradigm of quantitative bio-assays and in general enable the concept of data-driven bio-medicine*. [3MT, engineering]

Table 6 Hyped targets in 3MT presentations and thesis abstracts across disciplines (per 10,000 words)

	Science		**Engineering**		**Medicine**	
Target Focus	**3MT**	**abstracts**	**3MT**	**abstracts**	**3MT**	**abstracts**
Broad Research Area	5.9*	2.6	5.5*	3	5.1*	2.5
Specific Research Topic	7.5*	4.1	7.9*	3.8	8.2*	4.5
Research Methods	3.3	4.8	3.1	4.2	3.2	4.5
Research Outcome	5.3	4.3	4.9	4.1	4.6	4.2
Research Primacy	6.4*	3.5	7.9*	4.4	5.6	4.6
	Humanities		**Education**		**Social Science**	
Target Focus	**3MT**	**abstracts**	**3MT**	**abstracts**	**3MT**	**abstracts**
Broad Research Area	3.6	3	3.3	1.5	2	2

Specific Research Topic	4	3.6	3.9	2.1	3.1	2.7
Research Methods	2.1	3.6	2.3	5.6*	2	4.4*
Research Outcome	4	4.4	4	5	3.6	4.5
Research Primacy	4.5	4.4	4.1	5.2	3.9	4.6

* marks statistically significant difference (p<.05).

(36) *And this is important because the outcome of this research work will not only provide religion's constraint on the above controversial issue, but will also provide insight into an understanding of the formation and evolution of the central Asia oceanic belt.* [3MT, science]

Interestingly, different from the hard domains, the soft disciplines saw substantially more hypes on research methods in the thesis abstracts. Although the difference in the humanities was not statistically significant, the larger number of hypes may reflect the increasing need to ensure methodological rigour of research work in the soft knowledge fields (Barusch et al., 2011), and may warrant a "readier acceptance of methodological innovation or appropriation" (Choi & Richards, 2016, p. 2). Thus, it is common to see students promote a robust research design to thesis examiners, as in (37) and (38), but this promotional statement on research design seems less compelling to the general audience in 3MT presentations:

(37) *Through innovative research methods and comparison with previous studies, this research provides encompassing information for development, management and conservation in geotourism*. [Thesis abstracts, social science]

(38) *This robust analysis supports the usefulness of a repertoire-based indexical approach for systemically analyzing multilingual practices*. [Thesis abstracts, education]

8. Some observations and conclusions

The changing forms of knowledge exchange in today's academic context involve students as future scientists in communicating scientific research to a diverse group of audiences. We have shown that when speaking about disciplinary research to a wide lay audience in 3MT presentations, students hyped much more frequently, relying on affective markers, especially adverbial resources, and focused on the broad research area they sought to hype. By contrast, when presenting the same research to disciplinary examiners in thesis abstracts, students hyped less frequently, but more often used boosting expressions to comment on the certainty of knowledge claims, preferring verb resources, and were inclined to hype the research methods they used in their doctoral research. We see the divergencies as a possible consequence of different communicative purposes between 3MT presentations and thesis abstracts, and the different academic status and power asymmetry between students and the audience of each genre.

Disciplinarity is also noted, especially in the way that students used hyping resources in the 3MT presentations. Overall, students in the hard domains hyped their research in 3MT presentations more frequently than their peers in the soft disciplines, using *effective* as one of the most preferred linguistic markers. We have also shown that compared with those in soft disciplines, students in the hard sciences tended to hype both broad and specific research areas and embellish the primacy attached to their research. This disciplinary hyping practice is perhaps related to the conceptual abstractness of scientific knowledge and its opaque connection with common wisdom and public

interest.

We see from the hyping practice something about how students understand their disciplinary knowledge and its connection with both specialist and non-specialist audiences and how they adapt their discourse accordingly. Therefore, a persuasive discourse is shaped by students seeking to balance their promotion of interesting results and novel interpretations with the discoursal expectations and knowledge bases of different audiences, which they encounter in academic activities "between knowledge-display and information-transmission" (Johns & Swales, 2002, p. 17). Undoubtedly, in today's ever- changing academic landscape driven by commercialization of scientific output, research postgraduate students come to grips with the challenges of presenting disciplinary knowledge "in a diversity of ways with a diversity of people as they develop their aca- demic literacies" (Starfield & Paltridge, 2019, p. 2). Therefore, the genre range of post- graduate education needs broadening to include popularizing activities such as 3MT presentations, and this genre diversity can fit students as novice academics with the rhetorical toolkit they may need for various genres and audiences in their future professional careers.

As an emerging important academic genre, 3MT presentations raise important pedagogical implications for language teaching. The present-day change in academic context draws our attention to students' ability to argue for the immediate value of their scientific research to real-life concerns. This entails students' active understanding of disciplinary knowledge and the likely stakeholders it relates to. Therefore, it is crucial to cultivate the role of students as real researchers to explore the discursive and social context in which they engage in scientific research and academic communication.

Additionally, we also see the necessity of introducing 3MT presentations to learners, especially research students, to heighten their understanding of rhetorical subtleties of writing for professional and popularizing purposes and develop their pragmatic abilities to present disciplinary knowledge to those from different backgrounds and with different discourse communities.

Footnotes:

[1]Introduction to 3MT competition on its official website: https://threeminutethesis.uq.edu.au/about.

[2]Judging criteria of 3MT competition on its official website: https://threeminutethesis.uq.edu.au/resources/judging- criteria.

[3]Accessed at http://ucrel.lancs.ac.uk/llwizard.html on 25 February 2020.

[4]Hypes are bolded in the examples, with genre and the source of discipline marked in square brackets.

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