INFORMALITY IN GHANAIAN POSTGRADUATE THESES: A CROSS-DISCIPLINARY PERSPECTIVE

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Abstract: *Informality arguably has permeated almost every domain of language use in academia. This study thus explores informality in L2 postgraduate theses across four disciplines (i.e., English, Economics, Biology, and Civil Engineering). Using a corpus-based analysis and Chang and Swales' (1999) informality model, we identified 4,003 tokens of informal features categorised into eight types: sentence-initial conjunctions/conjunctive adverbs, unattended anaphoric pronouns, first-person pronouns, listing expressions, sentence-final prepositions, split infinitives, second-person pronouns, and direct questions. We found that sentence-initial conjunctions/conjunctive adverbs, unattended anaphoric references, and first-person pronouns were preferred across the four disciplines, collectively accounting for 92% of all informal features. Moreover, disciplinary differences in using informal features were evident, with significant variations between soft and hard* disciplines*. The study provides insights into how L2 postgraduates navigate disciplinary norms and conventions in their theses.*

Keywords: *Academic writing; corpus-based analysis; disciplinary variation; postgraduate theses*

1. Introduction

Academic writing is defined by its show of disciplinary variation (Afful & Twumasi, 2022; Zou & Hyland, 2022). In fact, it is not only how members write but also what they write about that differentiates them (Hyland, 2002). Among the differences one observes are varying appeals to prior knowledge, varying methods of proving reality, and varying methods of engaging readers. Academic texts, particularly theses, vary in terms of purpose, audience, content, and language. This suggests that L2 postgraduates require not only linguistic ability but also knowledge of the rhetorical elements that readers (and/or expert members) accept (Suen, 2022). Academic writing was characterised as formal (Chang & Swales, 1999; Swales & Feak, 2004), and as uptight, conservative, and difficult to change (Hyland & Jiang,

2017). Formal features are used by writers to create a sense of objectivity, anonymity and detachment (Hyland & Jiang, 2017). A writer may be advised to refrain from making explicit subjective representations of opinions, such as *I believe the reasons reside elsewhere*, in preference of more objective modality expressions, such as *It is likely that the reasons reside elsewhere* (ErdoĞAn, 2022).

Chang and Swales (1999) observed a growing shift in academic writing from a formal and impersonal approach towards a personal and informal style. Their findings piqued the interest of practitioners in the fields of English for Specific Purposes (ESP) and English for Academic Purposes (EAP), prompting an exploration into informality in academic genres such as research articles (RAs). Hyland and Jiang (2017) posit that informality involves "linguistic features which establish a close relationship with readers by realising a relatively personal tenor which allows writers to make assumptions about a shared context" (p. 43). Hyland and Jiang's (2017) perspective suggests that informality in academic writing can support writer-reader interaction with elements of subjectivity. Hyland and Jiang (2017) identified a discernible shift towards greater informality in academic texts spanning five decades (1965–2015) across various disciplines. Similarly, studies in diverse settings (e.g., Afful, 2016; Akoto & Afful, 2020; Dixon, 2022; Kyei et al., 2023; Xie, 2020) analysed specific informal features across disciplines. These studies demonstrated that informal features facilitate writer-reader engagement, asserting writers' authority and identity, and effectively managing their voice and stance. Additionally, the studies revealed intra-and inter-disciplinary variation in using informal features.

Although these studies shed light on the influence of disciplinary diversity on rhetorical choices, there remains a gap in examining disciplines such as English, Economics, Biology, and Civil Engineering within a single study. Specifically, there is a need to explore the similarities and differences in the use of informal features by novice L2 writers across these fields. Therefore, this study examines informality in L2 postgraduate theses across the four disciplines. The study, thus, seeks to answer the following research questions:

1. What informal features are employed in L2 postgraduate theses across disciplinary fields of English, Economics, Biology, and Civil Engineering?
2. What are the variations in informal features between soft and hard disciplines?

2. Theoretical Lens

Three theoretic models have been proposed to examine informality in academic writing: Biber's (1988, 1995) multidimensional analysis, Heylighen and Dewaele's (1999) formality score, and Chang and Swales' (1999) taxonomy. This study employed the informality framework developed by Chang and Swales (1999), which has been widely acknowledged in style manuals, academic writing guides, and scholarly textbooks (e.g., Swales & Feak, 2012). The framework has also been validated in prior research as representative of informal academic writing styles (Lee et al., 2019; Tocalo et al., 2022). Chang and Swales (1999) analysed 40 style manuals to identify the most frequently cited grammatical features critical for achieving appropriate levels of formality in academic writing. Their work

incorporated insights from educators, students, and professionals, and it offers a robust foundation for understanding the core elements of academic formality. Hyland and Jiang (2017) adapted Chang and Swales' (1999) informality framework, replacing sentence fragments with second-person pronouns, due to the near absence of sentence fragments in academic writing. The list of the informal features is presented in Table 1.

Table 1: A List of Informal Features

S/N	Features of informality	Examples
1.	First-person pronouns – (I, we, me, us, my, our, mine, ours)	… "we" examined the ideational meta-function of punctuations.
2.	Unattended anaphoric pronouns (this, these, that, those)	"This" is his raw material.
3.	Split infinitives – an infinitive that has an adverb between "to" and the verb stem	The president proceeded "to sharply admonish" the reporters.
4.	Sentence-initial conjunctions or conjunctive adverbs	"And" I will blame her if she fails in these ways.
5.	Sentence-final preposition	A student should not be taught more than he can think "about".
6.	Listing expressions	"and so on", "etc.", "and so forth"
7.	Second-person pronouns	you, your, yours
8.	Contractions	don't, can't, let's, etc.
9.	Direct questions	What can be done to lower costs?
10.	Exclamations	Someone should hire this man!
11.	Sentence fragments	But not for want of trying

As presented in Table 1, the comprehensive list of informal features, as delineated by Chang and Swales (1999) and Hyland and Jiang (2017), consists of eleven distinct grammatical elements: sentence-initial conjunctions or conjunctive adverbs, first-person pronouns, unattended anaphoric pronouns, listing expressions, split infinitives, second-person pronouns, sentence-final prepositions, contractions, direct questions, exclamations, and sentence fragments.

3. Methods and Procedures

The study used postgraduate theses, specifically MA/MSc and MPhil theses, written between 1980 and 2022 from a Ghanaian public university. This period was selected due to the historical development of postgraduate programmes at the university, which initially only offered MA degrees before introducing MSc and MPhil programmes in the late 1990s. Additionally, obtaining theses from before 1980 was challenging due to the limited volume of postgraduate research, particularly in Economics, Civil Engineering, and English.

The study used Becher's (1989) model to classify disciplines into soft and hard disciplines, aligning with prior studies (e.g., Hyland & Jiang, 2016; 2017; 2018). The four disciplines analysed were English, Economics, Biology, and Civil Engineering. English was chosen for its emphasis on language data analysis, and problem-solving methodology. Postgraduate theses from the university's Department of Languages (pre-2010) and Department of English (post-2010) were examined. Economics was chosen for this study due to existing literature (Dahl, 2004, 2008, 2009; Greenlaw, 2003; Hunter & Tse, 2013; Owusu, 2018), highlighting the importance of supporting novice writers in making claims and engaging readers. Biology was also selected for two main reasons: its established academic history at the university, which dates back to the 1950s, and the aim to (in)validate the findings of Hyland and Jiang (2017) who reported a notable 24.8% rise in the use of informal features in Biology academic writing between 1965 and 2015. More so, Civil Engineering was chosen due to its intricate rhetorical practices in establishing credibility, as observed by Hyland (2004) in Engineering writing. Additionally, the field has been largely neglected in Applied Linguistics literature (Maher & Milligan, 2019), resulting in limited resources for writing instructors developing courses for master's students.

The study used purposive and random sampling techniques to create a balanced and representative dataset. Purposive sampling was first employed to select theses that were written by Ghanaian postgraduate students, and published between 1980 and 2022. This ensured that the selected theses accurately reflected the target group. After this initial selection, we randomly selected two theses from each discipline for each decade. Theses from 2009 onward were obtained from the university's institutional repository, while hard copies of those published before 2008 were sourced from the university's main library. ABBYY FineReader Professional Edition 9.0 was used to scan and convert the hard copies into Word documents. Given the focus of this study, thesis para-genres such as titles, abstracts, acknowledgements, keywords, appendices, and references were excluded.

The sampled theses were divided into five decades: 1980s (1980-1989), 1990s (1990-1999), 2000s (2000-2009), 2010s (2010-2019), and 2020s (2020-2022), ensuring both disciplinary balance and temporal representation. The corpus was constructed by selecting two postgraduate theses from each discipline for each decade, following related studies (e.g., Kuhi, Sharghinezhad & Rezaei, 2020). Table 2 presents an overview of the corpus size and composition for each decade.

Table 2: Corpus Size and Composition

	1980s	**1990s**	**2000s**	**2010s**	**2020s**	**Overall**
English	44319	47194	46880	52249	63496	254138
Economics	40986	43525	33674	49758	22029	189972
Biology	21088	24389	36890	37421	44004	163792
Civil Engineering	36204	38568	32752	40851	30797	179172
Total	**142597**	**153676**	**150196**	**180279**	**160326**	**787074**

As depicted in Table 2, the corpora comprised 40 master's theses with a word count of 787,074 words. Variations in corpus sizes did not affect the findings, as frequencies of informal features were normalised per 10,000 words.

Informal features such as unattended anaphoric pronouns, sentence-initial conjunctions, sentence-final prepositions, second person pronouns, and direct questions were detected using AntConc 4.0.5 (Anthony, 2022), followed by manual verification. More complex features, such as split infinitives, were extracted using advanced search functions or wildcard settings. For instance, the term "ly" was employed to locate adverbs, and a list of contracted forms such as "'m, 're, 's" was created to identify contractions. Direct questions and exclamations were identified through the use of search terms "?" and "!", respectively.
The Log-Likelihood (LL) test was employed for statistical analysis to establish whether the observed differences were statistically significant. Frequencies for each informal feature were examined using Rayson's LL calculator (http://ucrel.lancs.ac.uk/llwizard.html). A significance level of $p<0.05$ was chosen, with any value equal to or exceeding 3.84 considered statistically significant (Rayson & Garside, 2000).

4. Results and Discussion

4.1 Overall Distribution of Informal Features in the Corpus

Table 3 presents the raw and normalised frequencies (per 10,000 words) of the informal features found in the corpus. The normalised frequencies (NFs) are in parentheses. The study identified 4,003 occurrences of informal features within the corpus. Eight distinct types of informal features were also identified across the disciplines, albeit with quantitative differences. The number and forms of the informal features in this study differ from previous studies (e.g. Dhandi & Madjid, 2022; Sholihah, 2018; Praminatih et al., 2018; Tocalo et al. (2022). Sholihah (2018), for instance, found that Indonesian students used nine informal features in their thesis proposals. However, Dhandi and Madjid (2022) identified seven informal features. Praminatih et al. (2018) also identified eight informal features in thesis abstracts, including sentence fragments, whereas this study identified second-person pronouns.

Table 3: Distribution of Informal Features by Discipline

Informal Features	English	Economics	Civil Engineering	Biology	Total
1. Sentence-initial conjunctions/adverbs	597(23.49)	535(28.16)	155(8.65)	166(10.13)	1453(70.44)
2. Unattended anaphoric pronouns	425(16.72)	426(22.42)	269(15.01)	266(16.24)	1386(70.40)
3. First-person pronouns	620(24.40)	149(7.84)	34(1.90)	41(2.50)	844(36.64)
4. Listing expressions	44(1.73)	58(3.05)	40(2.23)	23(1.40)	165(8.42)
5. Split infinitives	10(0.39)	19(1.00)	11(0.61)	3(0.18)	43(2.19)
6. Second-person pronouns	20(0.79)	18(0.95)	3(0.17)	0(0.00)	41(1.90)
7. Sentence-final	17(0.67)	14(0.74)	4(0.22)	2(0.12)	37(1.75)

preposition					
8. Direct questions	19(0.75)	14(0.74)	0(0.00)	1(0.06)	34(1.55)
Total	1752(68.94)	1233(64.90)	516(28.80)	502(30.65)	4003(193.29)

The differences in the findings can be attributed to the distinct contexts (L1, L2 or L3), disciplines, genre types, and the level of the text producers as students (undergraduate/postgraduate) or experts. The use of informal features is shaped by various contextual factors such as the writer's linguistic background (native or non-native, L1 or L2), level of expertise (expert or novice), and the genre type (e.g., RAs, theses, proposals) (Boginskaya, 2022). While Tocalo et al. (2022) analysed Applied Linguistics RAs, Praminatih et al. (2018) and Sholihah (2018) focused on an English as a Foreign Language (EFL) setting, with Praminatih et al. examining thesis abstracts and Sholihah using thesis proposals.

The test for significance in Table 4 confirms the effect of disciplinarity on the use of informal features.

Table 4: Inter-Discipline LL Values of Informal Features

Disciplines	**LL**	**Significance Level: p<0.05**
English vs Economics	2.64	Not Significant
English vs Biology	292.78	Significant
English vs Civil Engineering	348.57	Significant
Economics vs Biology	218.95	Significant
Economics vs Civil Engineering	262.31	Significant
Biology vs Civil Engineering	1.33	Not Significant

Table 4 shows the frequency variations of informal features across disciplines: English vs Economics (LL=2.64), English vs Biology (LL=292.78), English vs Civil Engineering (LL=348.57), Economics vs Biology (LL=218.95), Economics vs Civil Engineering (LL=262.31), and Biology vs Civil Engineering (LL=1.33). Statistical analysis revealed significant differences in four comparisons (English vs Biology, English vs Civil Engineering, Economics vs Biology, and Economics vs Civil Engineering) at the $p<0.05$ level. The results indicate that Economics writers used informal features more frequently than their Biology and Civil Engineering counterparts. These differences reflect distinct disciplinary writing conventions and communicative styles. Meanwhile, the LL values for English vs Economics, and Biology vs Civil Engineering suggest that there was a statistically not significant difference in their frequencies. The lack of significant use of informal features in Civil Engineering and Biology aligns with expectations, considering that these disciplines are typically categorised as hard disciplines. This potentially bolsters the claim that in hard disciplines, "their insistence on formal style thus remains" (Chang & Swales, 1999, p. 154) and that they maintain an empiricist and positivist supposition that scientific studies are factual and, as such, most suitably crafted to be faceless and agentless. In fact, writers in Civil Engineering and Biology in the present study tended to downplay their involvement in the research and often used a less intrusive or personal style. They tried to distance themselves from interpretations in methods that most EAP teachers are familiar with, such as using

the passive voice as in extracts 1a & b, dummy 'it' subjects as in extracts 2a & b, and attributing agency to inanimate objects as in extract 3a & b.

Extract 1

a. 44.74% of viral detection was found in this group compared to the other age groups. [Biology, 2022]
b. This was confirmed in this study. [Civil Engineering, 2007]

Extract 2

a. It was found that lactic and acetic acids were present in the dough. [Biology, 1999]
b. It is assumed that the commercial and industrial demand area amounts to about 2570 of the domestic in the Urban area and of the domestic demand in the Rural areas [Civil Engineering, 1988]

Extract 3

a. The figures show that the compressive strength of bamboo culms is very much lower … [Civil Engineering, 1999]

b. The figures show that the compressive strength of bamboo culms very much lowers the tensile … [Biology, 1984]

As evident in Extracts 1-3, the writers chose to de-emphasise their contributions and instead directed attention to the findings. Through the use of passive voice, dummy "it" subjects, and attributing agency to inanimate objects, the writers effectively conveyed that their study's outcomes remain unaffected by individual influences, reinforcing the objectivity of their interpretations by "subordinating their voice to that of nature" (Hyland, 2008, p. 16). This is also supported by Basal and Bada (2012, p. 1783) who noted that "in the hard disciplines, researchers minimise their contribution in terms of their visibility."

The absence of statistical significance between English and Economics can be attributed to the fact that both disciplines fall under the category of soft disciplines. This finding supports Hyland's (2005) assertion that differences in purpose and methodological rigour between the hard and soft disciplines lead to inherent distinctions in rhetorical practices. The observed variations in the use of informal features among disciplines, particularly in the hard and soft disciplines, reinforce the notion that disciplinary differences influence the communicative choices and rhetorical resources employed by writers in academic contexts. Indeed, discipline-specific differences have been observed in several academic genres, including RAs (Hyland & Jiang, 2016), undergraduate essays (Jiang, 2015), postgraduate dissertations (Charles, 2006), university textbooks (Hyland, 1999) and academic lectures (Akoto, Ansah & Fordjour, 2021).

4.2 Informal Features across the Disciplines

Table 3 indicates that sentence-initial conjunctions and conjunctive adverbs were the most prevalent informal features across the four disciplines, occurring 1,453 times at a frequency of 70.44 tokens per 10,000 words. This finding aligns with previous studies (e.g., Praminatih et al., 2018; Sholihah, 2018). Sholihah (2018) noted a high frequency of sentence-initial conjunctions and conjunctive adverbs in thess proposals. Likewise, Praminatih et al. (2018, p. 8) discovered that students

"quite often employed conjunctive adverbs at the beginning of the sentences". The commonality in the findings could be attributed to students' desire to achieve coherence, signal relationships between ideas, and create a smooth flow in their writings. It is further shown that unattended anaphoric pronouns had the second-highest NF (70.40) in the corpora. This finding supports Lee et al.'s (2019) claim that L2 students frequently incorporate unattended anaphoric pronouns.

Again, the study reveals that sentence-initial conjunctions/conjunctive adverbs, unattended anaphoric pronouns, and first-person pronouns accounted for 92% of all informal features in the corpus. This result corroborates previous studies (e.g. Hyland & Jiang, 2017; Ebrahimi & Fakheri, 2019; Sholihah, 2018; Yang & Pan, 2023). The study also found that split infinitives, second-person pronouns, sentence-final prepositions, and direct questions were less frequent in the corpus, consistent with findings in RAs (Chang & Swales, 1999; Hyland & Jiang, 2017) and L2 student writings (Lee et al., 2019). This study, as with the findings of Hyland and Jiang (2017), did not identify any instances of sentence fragments. The similarity between the present study and Hyland and Jiang (2017) supports the notion that sentence fragments are infrequently employed in the academic writing genre.

The thesis writers in the present study did not use contractions and exclamations. This finding can be explained by the fact that Ghanaian postgraduate thesis writers are possibly aware that these features are informal and must be avoided in written academic genres. Moreover, these features are generally discouraged in academic writing courses, such as Communication Skills, offered at various educational levels in Ghana, especially at the university level (Afful, 2007; Gborsong et al., 2015). As Chang and Swales (1999) revealed, non-native speakers of English generally acknowledged that contractions (except in quoted materials) and exclamations are not part of the academic writer's repertoire. The finding further corroborates Leedham's (2015) observation that L1 students employ more contractions than L2 authors. Leedham (2015) explained why these two groups' use of contractions differ. She indicates that ESL students pay more attention to the limitations on contractions outlined in style guidelines and enforced by ESL instructors.

The NFs of the eight informal features identified in the four disciplines demonstrate discipline-specific variations in using informal features. English recorded the highest NF (68.94), followed by Economics (64.90), Biology (30.65), and Civil Engineering (28.80). These findings are similar to Hebib's (2022) study, which revealed that Linguistics had the highest number of informal features, with Economics ranking second. Further, disciplinary differences in the frequency of sentence-initial conjunctions were noted across the four disciplines. Economics recorded the highest frequency with NF of 28.16, followed by English (23.49), Biology (10.13), and Civil Engineering (8.65). This finding contrasts with Hebib's (2022) observations where sentence-initial conjunctions were most commonly used by writers in Linguistics far more than Economics, Biology, and Mathematics.

Regarding the unattended anaphoric pronouns, Economics had the highest NF (i.e. 22.42), followed by English (16.72), Biology (16.24), and, finally, Civil Engineering (15.01). In contrast, Hebib (2022) found that Mathematics had the highest number of unattended anaphoric pronouns, followed by Economics, then Linguistics, and finally, Biology. The divergent findings between Hebib (2022) and the present study are expected, considering the distinct genre types and disciplines involved in the studies.

Furthermore, first-person pronouns were more prevalent in English (NF: 24.40) than in the other three disciplines. This was followed by Economics (7.84), Civil Engineering (1.90), and Biology (2.50). English employed nearly double the NFs of first-person pronouns as Economics, Civil Engineering, and Biology combined (9.99). The prevalent use of first-person pronouns by English writers is consistent with the research conducted by Kuhi et al. (2020), who discovered that first-person pronouns were the most frequently employed in Applied Linguistics. Concerning listing expressions, the study found that Economics had the highest NF (3.05), followed by Civil Engineering (2.23), English (1.73), and Biology (1.40). Hebib (2022) rather found that listing expressions were most frequently used in Linguistics. Additionally, in contrast to the present study, Hebib (2022) observed that listing expressions did not appear in Biology. More so, split infinitives were most commonly found in Economics (1.00), followed by Civil Engineering (0.61), English (0.39), and Biology (0.18). This differs from Hebib (2022) who found that Linguistics mostly used split infinitives, followed by Biology, then Economics, and finally Mathematics. This disparity in findings may stem from the distinction between expert writers (Hebib, 2022) and novice writers (in the present study). On sentence-final prepositions, Economics had the highest NF (0.74), followed by English (0.67), Civil Engineering (0,.22), and Biology (0.12). Generally, it can be noted that sentence-final prepositions were among the least employed informal features in the corpus. This finding corroborates the findings of prior studies. Among L2 academic writers, Tocalo et al. (2022:117) discovered "a less noticeable amount of using sentence-final prepositions." Praminatih et al.'s (2018) findings revealed that EFL thesis writers used sentence-final prepositions less frequently. Hyland and Jiang (2017) also showed that across the disciplines in their study, one of the least employed informal features was the sentence-final preposition.

Finally, direct questions occurred only in English (with NF of 0.75) and Economics (with a NF of 0.74). Direct questions were not used in Civil Engineering but were used in Biology (0.06). The findings show strong disciplinary variations in the distribution of direct questions, which is consistent with previous studies (Chang & Swales 1999; Hyland & Jiang, 2016) that found more questions in soft disciplines than in hard disciplines. This is partly due to the differences in how soft and hard disciplines conduct research and negotiate knowledge. Given the interpretative nature of knowledge in the soft disciplines (Jiang & Hyland, 2022), writers explicitly invite readers to follow an argument. Hard-discipline writers, on the other hand, "find their interpretations in established statistical or laboratory analyses, or rhetorically bolster their arguments through the replicability of experimental procedures" (Hyland 2002b, p. 538).

The test for significance in Table 5 confirms the effect of disciplinarity on the use of individual informal features.

Table 5: Inter-Discipline LL of Individual Informal Features

Sentence-initial conjunctions	**LL**	**Significance level: p<0.05**
English vs Economics	9.24	Significant
English vs Biology	105.60	Significant
English vs Civil Engineering	145.67	Significant
Economics vs Biology	153.52	Significant
Economics vs Civil Engineering	199.75	Significant

Biology vs Civil Engineering	2.27	Not Significant
Unattended Anaphoric Pronouns		
English vs Economics	18.24	Significant
English vs Biology	0.14	Not Significant
English vs Civil Engineering	1.93	Not Significant
Economics vs Biology	17.41	Significant
Economics vs Civil Engineering	27.18	Significant
Biology vs Civil Engineering	0.82	Not Significant
First-Person Pronouns		
English vs Economics	189.10	Significant
English vs Biology	386.25	Significant
English vs Civil Engineering	454.43	Significant
Economics vs Biology	50.24	Significant
Economics vs Civil Engineering	71.41	Significant
Biology vs Civil Engineering	1.43	Not Significant
Listing Expressions		
English vs Economics	8.15	Significant
English vs Biology	0.68	Not Significant
English vs Civil Engineering	1.35	Not Significant
Economics vs Biology	10.89	Significant
Economics vs Civil Engineering	2.36	Not Significant
Biology vs Civil Engineering	3.25	Not Significant
Split Infinitives		
English vs Economics	6.07	Significant
English vs Biology	1.52	Not Significant
English vs Civil Engineering	1.04	Not Significant
Economics vs Biology	10.72	Significant
Economics vs Civil Engineering	1.72	Not Significant
Biology vs Civil Engineering	4.17	Significant
Second-Person Pronouns		
English vs Economics	0.32	Not Significant
English vs Biology	19.90	Significant
English vs Civil Engineering	8.83	Significant
Economics vs Biology	22.38	Significant
Economics vs Civil Engineering	11.03	Significant
Biology vs Civil Engineering	3.90	Significant
Sentence-Final Prepositions		
English vs Economics	0.07	Not Significant
English vs Biology	7.87	Significant
English vs Civil Engineering	4.76	Significant
Economics vs Biology	8.43	Significant
Economics vs Civil Engineering	5.31	Significant
Biology vs Civil Engineering	0.51	Not Significant
Direct Questions		
English vs Economics	0.00	Not Significant
English vs Biology	20.28	Significant
English vs Civil Engineering	23.28	Significant
Economics vs Biology	11.60	Significant

Economics vs Civil Engineering	18.60	Significant
Biology vs Civil Engineering	1.48	Not Significant

The LL tests for sentence-initial conjunctions revealed statistically significant differences between English and Economics (9.24), English and Biology (105.60), English and Civil Engineering (145.67), Economics and Biology (153.52), and Economics and Civil Engineering (199.75) at the $p<0.05$ level. This implies that at the five ends of the comparison, disciplinarity had an actual effect on sentence-initial conjunctions in Ghanaian postgraduate theses. Meanwhile, the distinction between Biology and Civil Engineering (LL=2.27) was not statistically significant. As already indicated, given their "hardness" nature, they may share some similarities. As shown in Table 5, the LL values for the differences in the use of unattended anaphoric pronouns were English vs Economics (18.24), English vs Biology (0.14), English vs Civil Engineering (1.93), Economics vs Biology (17.41), Economics vs Civil Engineering (27.18), and Biology vs Civil Engineering (0.82) at the $p < 0.05$ level. The results suggest that the use of unattended anaphoric pronouns differed significantly at three ends of comparison: English vs Economics, Economics vs Biology, and Economics vs Civil Engineering. This finding is supported by Dixon (2022), and Hyland and Jiang (2017), and Gao (2020). On the other hand, the LL values for the differences in unattended anaphoric references in English vs Biology, English vs Civil Engineering, and Biology vs Civil Engineering were not statistically significant. This arguably creates a picture of similarity rather than a difference in the use of unattended anaphoric pronouns between the three groups of writers, drawing attention to instances in the use of informal features where the Ghanaian postgraduate writers in English behave like their Civil Engineering and Biology colleagues.

Moreover, there were statistically significant differences in first-person pronouns in English vs Economics (LL=189.10), English vs Biology (LL=386.25), English vs Civil Engineering (LL=454.43), Economics vs Biology (LL=50.24), and Economics vs Civil Engineering (LL=71.41). The findings reveal that disciplinary variation significantly impacts on the use of first-person pronouns at the five ends of comparison. This result is consistent with those of previous studies (e.g. Melissourgou et al., 2019). Meanwhile, the observed difference in Biology vs Civil Engineering (LL=1.43) was not statistically significant. This could be because the writers in Biology and Civil Engineering are from the hard disciplines. As Hyland (2002) observed, author involvement in hard disciplines is more implicit than in the soft disciplines. Furthermore, the LL values for listing expressions across the disciplines were English vs Economics (8.15), English vs Biology (0.68), English vs Civil Engineering (1.35), Economics vs Biology (10.89), Economics vs Civil Engineering (2.36), and Biology vs Civil Engineering (3.25). The results suggest that there were statistically significant differences in listing expressions between English and Economics, and Economics and Biology. The differences observed between English and Biology, English and Civil Engineering, and Biology and Civil Engineering, however, were not statistically significant.

A statistical comparison of the observed differences in the use of split infinitives across the disciplines revealed that they were significant at three levels: English vs Economics (LL=6.07), Economics vs Biology (LL=10.72), and Biology vs Civil Engineering (LL=4.17). This confirms Gao's (2020) study that reported statistically significant differences in the use of split infinitives between some disciplines.

Meanwhile, the observed differences were not statistically significant in English vs Biology (LL=1.52), English vs Civil Engineering (LL=1.04), and Biology vs Civil Engineering (LL=1.72).

Table 5 further indicates a statistically significant difference in the use of second-person pronouns between English and Biology (LL=19.90), English and Civil Engineering (LL=8.83), Economics and Biology (LL=22.38), Economics and Civil Engineering (LL=11.03), and Biology and Civil Engineering (LL=3.90). The results show that disciplinarity has a considerable impact on the use of first-person pronouns at the five ends of comparison. This finding is congruent with the findings of Yang and Pan (2023), who discovered significant differences in the distribution of second-person pronouns between disciplines. Nevertheless, the observed difference between English and Economics (LL=0.32) was not statistically significant. This phenomenon might be attributed to the close association of both domains with soft disciplines, potentially leading to the sharing of certain linguistic features (Ahmad, Mahmood & Siddique, 2023; Hyland, 2005).

A statistical analysis of sentence-final prepositions found significant variations between English and Biology (LL=7.87), English and Civil Engineering (LL=4.76), Economics and Biology (LL=8.43), and Economics and Civil Engineering (LL=5.31). According to the findings, the use of sentence-final prepositions demonstrates some degree of disciplinarity. This finding is supported by evidence from other corpus studies fields (e.g. Hebib, 2022; Hyland & Jiang, 2017). The significance test for unattended anaphoric pronouns was not statistically different between English and Economics (LL=0.07) and Biology and Civil Engineering (LL=0.51). Finally, the observed differences in the use of direct questions were statistically significant in English vs Biology (LL=20.28), English vs Civil Engineering (LL=23.28), Economics vs Biology (LL=11.60), and Economics vs Civil Engineering (LL=18.60). On the other hand, the observed differences between English and Economics (LL=0.00), and Biology and Civil Engineering (LL=1.48) were not statistically significant. This may provide credence to the notion that English and Economics share similar softness properties, whereas Biology and Civil Engineering share similar hardness properties (Hyland, 2009). The discussion suggests that informal features do not appear uniformly across disciplines. The extent of the variation appears to be influenced by disciplinary norms, conventions and epistemologies (Akoto, Amoakohene & Ansah, 2021).

4.3 Variations in Informal Features between Soft and Hard Disciplines

The present study, among other things, analysed the distribution of the informal features between 1980 and 2022 in the soft and hard disciplines. As illustrated in Table 6, the overall distribution of informal features reveals a similar pattern of frequency of occurrence. The three most common informal features used by both the hard and soft disciplines were first-person pronouns, unattended anaphoric pronouns, and sentence-initial conjunctions/conjunctive adverbs. This finding corroborates previous studies (e.g., Sholihah, 2018; Yang & Pan, 2023) that found that academic writers frequently employed first-person pronouns, sentence-initial conjunctions, and unattended anaphoric references.

Table 6: Overall Distribution between Soft and Hard Disciplines

Informal Features	Soft Disciplines	Hard Disciplines

	English	Economics	Total	Civil Engineering	Biology	Total
1. Sentence-initial conjunctions	597(23.49)	535 (28.16)	1132(51.65)	155(8.65)	166(10.13)	321(18.79)
2. Unattended anaphoric pronouns	425(16.72)	426 (22.42)	851 (39.14)	269(15.01)	266(16.24)	535(31.25)
3. First-person pronouns	620 (24.4)	149 (7.84)	769 (32.24)	34(1.9)	41(2.50)	75 (4.40)
4. Listing expressions	44 (1.73)	58 (3.05)	102(4.78)	40 (2.23)	23(1.40)	63(3.64)
5. Split infinitives	10 (0.39)	19 (1.00)	29 (1.39)	11(0.61)	3(0.18)	14(0.80)
6. Second-person pronouns	20(0.79)	18 (0.95)	38(1.74)	3(0.17)	0(0.00)	3(0.17)
7. Sentence-final preposition	17 (0.67)	14 (0.74)	31(1.41)	4(0.22)	2(0.12)	6(0.35)
8. Direct questions	19 (0.75)	14 (0.74)	33(1.49)	0(0)	1(0.06)	1(0.06)
Total	**1752 (68.94)**	**1233 (64.9)**	**2985 (133.84)**	**516 (28.80)**	**502(30.65)**	**1018(59.45)**

The present study reveals that soft disciplines (133.84) used informal features more frequently than hard disciplines (59.45). The soft disciplines are noted for less rigidity as compared to the hard disciplines (Hyland, 2009). The LL values between soft and hard disciplines show significant variations in the use of informal features. Notably, first-person pronouns exhibited the highest LL value (599.21), indicating a substantial difference in usage between soft and hard disciplines. This is followed by sentence-initial conjunctions/adverbs, and unattended anaphoric pronouns. Listing expressions, split infinitives, second-person pronouns, sentence-final prepositions, and direct questions, also demonstrate significant disciplinary variation.

Hence, the disciplinary gatekeepers in the soft disciplines are arguably more tolerable to changes in rhetorical, linguistic and discoursal choices than their hard discipline counterparts. Again, the prevalence of informal features is expected in the soft disciplines as these disciplines emphasise personal styles compared to the impersonal/detached style favoured in the hard disciplines (Ädel, 2022; Afful, 2010). The present finding supports Li and Lee (2013), Kuhi et al. (2020), and Mirzapour (2016) who reported that writers in soft disciplines employed more informal features in their writings than those in the hard disciplines. The log-likelihood results (see Table 7) confirm the impact of disciplinarity on the frequency of informal features between the soft and hard disciplines.

Table 7: LL Values between Soft and Hard Disciplines

Informal Features	**Soft vs Hard (LL Value)**	**Significance Level: p<0.05**
1. Sentence-initial conjunctions/adverbs	405.3	Significant
2. Unattended anaphoric pronouns	45.57	Significant
3. First-person pronouns	599.21	Significant
4. Listing expressions	5.95	Significant
5. Split infinitives	4.00	Significant

6. Second-person pronouns	32.11	Significant
7. Sentence-final preposition	16.18	Significant
8. Direct questions	35.12	Significant

As shown in Table 7, the observed differences between soft and hard disciplines were statistically significant at the $p<0.05$ level in sentence-initial conjunctions (LL=405.3), unattended anaphoric pronouns (LL=45.57), first-person pronouns (LL=599.21), listing expressions (LL=5.95), split infinitives (LL=4.00), second-person pronouns (LL=32.11), sentence-final prepositions (LL=16.18), and direct questions (LL=35.12). Thus, the overall density of informal features varied considerably across the hard and soft disciplines. The informal features were significantly employed more frequently in the soft disciplines than in the hard disciplines. The highest LL value for both soft and hard disciplines was observed for first-person pronouns. This study somewhat supports Hyland's (2001a; 2001b; 2005) argument that academic writers in the hard disciplines can minimise their personal representation in their studies. They do this to shed light on the phenomena under inquiry, underlining the need to replicate research efforts and generalise conclusions. Kuhi et al. (2020) rightly argue that in the soft disciplines, a writer's style is viewed as an important component of his/her credibility in the work.

5. Conclusion

The study examined variations in the use of informality features across four disciplines (i.e. English, Economics, Biology, and Civil Engineering). Masters' theses written by Ghanaian students constituted the corpus for the study. A corpus-based approach was employed. The study realised statistical differences between disciplines within the soft and hard categories, and across soft and hard categories. The findings confirm the commonalities and differences in the use of these features based on the shared and distinct disciplinary norms, conventions and epistemologies. It is thus evident that informality plays a significant role in L2 postgraduate theses across disciplinary fields. The observed disciplinary differences in the use of informal features highlight the nuanced nature of academic writing practices across different fields.

Overall, this study provides valuable insights into informality in L2 postgraduate theses. The study contributes to our understanding of how academic writers in L2 contexts engage with disciplinary norms in their writing. The findings support the move that academic writing in L2 contexts such as Ghana should adopt the discipline-specific approach which is championed within English for Specific Academic Purposes (ESAP). This will enable the novice to familiarise themselves with the disciplinary culture as part of their socialisation and enculturation into their respective academic disciplinary discourse communities. It is, therefore, recommended that further studies be undertaken on specific thesis part-genres such as the abstract, statement of the problem and methodology to provide further insights into used and unused informality features that typify them.

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APPENDIX
Postgraduate Theses Used

Discipline	Title of Thesis (Year of Publication)
English	1. Artistic aspects of Asafo Companies in Cape Coast (1981) 2. The human head in Akan art and belief: - a study of the head as in entity: the significant of its minor form, their symbolism and their spiritual values (1986) 3. Folktales as source material for children stories - a retelling of some Northern tales (1991) 4. Edibo: a study of the funeral performances of the Effutu of Winneba as drama (1997) 5. An introduction to folktales in Nkoranza traditional area (2000) 6. The artistry of Akan oratory: a study of selected speeches delivered in Ashanti royal courts (2001) 7. The Presentation of the African Woman in Chinua Achebe's

	Anthills of the Savannah, Amma Darko's *Faceless*, and Marjorie Oludhe Macgoye's *Coming to Birth* (2010) 8. Championing the Cause of African Women: An Analysis of Buchi Emecheta's The Joys of Motherhood, Tsitsi Dangarembga's Nervous Conditions and Ama Ata Aidoo's Changes. (2014) 9. Exploring code choices among upper primary school students: A case of selected schools in the ashanti region (2022) 10. Discourse functions of antonymy in some speeches of John Dramani Mahama (2022)
Economics	1. Mobilising rural resources for development: the case of Ahafo Ano District (1982) 2. The impact of manufacturing on rural economies: the case of the Wenchi factory (1984) 3. Motivational strategies to improve performance and productivity in the Pharmaceutical industry in Ghana (1999) 4. Human resource development and productivity in the timber industry "the case of Ghana (1999) 5. Total quality management as a basis for achieving comparative advantage in this contemporary business concern: a case study of Coca-Cola Bottling Company Gh. Ltd. (2000) 6. Estimation of economic cost of forest fire prevention and control (2000) 7. The impact of exchange rate movements on import demand behaviour of Ghana (2016) 8. Issues and challenges of export diversification in Ghana: firm level analysis (2016) 9. The macroeconomic effect on public dept: An empirical analysis of Ghana (2021) 10. The impact of financial development on manufacturing sector performance in Ghana (2021)
Civil Engineering	1. Bamboo-reinforce concrete slabs subjected to concentrated loading (1984) 2. Re-appraisal of Water Supply Systems on the River Densu (1988) 3. Stochastic live load studies in Ghana (1992) 4. Structural performance of septic tanks constructed from clay bricks (1994) 5. Development of an urban road maintainance management system for Tamale (2007) 6. Correlation between Dynamic Cone Penetrometer (n-Value) and Allowable Bearing Pressure of Shallow Foundation Using Model Footing (2008) 7. Incorporating joint flexibility in collapse risk assessment (2016) 8. Strength and deformation characteristics of recycled polyethylene fibre reinforced concrete (2016)

	9. The use of microbial and chemical indicators to detect the impacts of anthropogenic activities on urban groundwater quality: A case study of Madina Zongo (2022) 10. Valorisation of grafted polymers into briquette as green fuel for replacing wood charcoal (2022)
Biology	1. Effects of some extraneous factors on the bactericidal efficiency of ultraviolet radiation (1981) 2. Starter culture for corn grist fermentation (1989) 3. Screening for candidate Bacillus Spp. for the control of cultcine larvae (1990) 4. Foraging strategies and some morphometric characteristics of the African Honeybee (Apis mellifera adansonii L) in the humid forest environment (1991) 5. Morphometric, meristic and allozyme studies of black-chinned tilapia, sarotherodon melanotheron melanotheron (ruppell, 1852) (pisces: cichlidae), populations in coastal waters of Ghana (2000) 6. The prevalence of luteal phase defect among infertile women (2008) 7. Phytoremediation of Irrigation Water Using Limnocharis Flava, Typha Latifolia and Thalia Geniculata in a Constructed Wetland (2011) 8. Microbial and Chemical Processes Associated with Burukutu, a Ghanaian Fermented Alcoholic Beverage (2012) 9. Viral pathogens associated with pneumonia in HIV infected children in Ghana (2022) 10. Effect of ivermectin plus albendazole mass drug administration on intestinal parasites among lymphatic filariasis patients in Kassena Nankana District (2022)