

A Multidimensional Analysis of Academic Writing: A Comparative Study of Saudi and British University Students' Writing

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Abstract

Academic writing is one of the most crucial skills for university students across the globe; however, the conventions of writing vary across different cultures. This research study used a multidimensional approach to analyze Saudi students' writings compared to British students. A specialized corpus of Saudi academic English writing (CSAEW) was developed to explore interdisciplinary lexico-grammatical patterns. The data was collected from the undergraduate students enrolled in the universities from three regions across the Kingdom. The CSAEW was compared with the British Academic Writing English corpus. Biber's multidimensional model was used to examine linguistic features along dimensions such as involvement, information, argumentation, narration, and abstraction. The study provides evidence about how Saudi students prefer particular lexical and grammatical patterns over others and how Saudi academic writing is distinguished compared to British academic English. The study results indicate that CSAEW is more explicit and non-narrative than BCAW. There are marked differences on dimensions 1, 4, and 5. The mean scores of CSAEW and BCAW fall on the opposite side of the continuum. The findings document the patterns of linguistic variation in Saudi students' academic writing compared to that of British students. Based on the pattern of variation, the study provides some recommendations for pedagogical practices to improve Saudi students' writing skills.

Keywords: academic writing, lexico-grammatical patterns, linguistic variation, multidimensional analysis, Saudi English

1. Introduction

English is increasingly used as the language of international education, and recognizing intercultural differences in academic writing conventions is essential for inclusive pedagogy. A few research studies (Almurashi, 2023; Nuruzzaman et al., 2018; Sawalmeh, 2013) attempted to study Saudi English; instead of using any systematic and rigorous methodology or framework, they primarily rely on impressionistic analyses. Further, their prime focus was merely error analysis. So, there was a need for a rigorous and evidence-based analysis of linguistic features along with the key dimensions that can provide new insights into this newly emerging variety of English. The present research study fills the gap and provides evidence to establish Saudi English as a separate variety. It is the first multidimensional analysis of students' academic writings that opens more opportunities to analyze other genres within this area. The study's objectives were to explore how far the lexico-grammatical choices in Saudi students' writings are similar to or different from British students' writings and to provide recommendations for pedagogical practices based on data-driven insights into the variation of Saudi students' writings. A special collection of English language written by Saudi scholars was created for this research. This collection can be a foundation for making a more extensive and more inclusive database of English written by Saudis.

This study is significant in terms of establishing Saudi Academic English as a separate variety of English, thus providing it a special status among the world Englishes. Further, it will enrich pedagogical practices with a new understanding of how Saudi university students make different lexico-grammatical choices in their writings compared to those of British students. The writings will be analyzed from five comprehensive dimensions exploring one hundred and fifty linguistic features. The findings will be significant for the researchers, teachers, curriculum designers, and course developers. Further, this data-driven multidimensional comparative analysis of Saudi and British students' writing will provide empirical evidence to establish Saudi English as a separate variety and provide pedagogical implications and student support.

2. Literature Review

Saudi and British undergraduate university students' writings have remained the focus of the research for many years. The studies focused on various dimensions of language use, such as lexical variation, syntactic complexity, and discourse organization. Aljafen (2023), for instance, explores the patterns of 68 EFL undergraduate students' Twitter messaging consisting of 3600 words from Qassim University, Saudi Arabia. The results indicate that the students show remarkable language proficiency in the use of syntax, abbreviations, and spelling as well. Al-Nafjan and Alhawsawi (2022) also surveyed Saudi students to find their perception of writing strategies. Khadawardi (2022) also explores the perception of the challenges faced by Saudi students in English academic writing.

Analyzing student writing is essential for assessing and improving students' writing skills at all educational levels. It entails reviewing and evaluating students' written work to find the areas that need development. Ismayanti and Kholiq (2020) investigated the challenges students faced when producing descriptive writing using quantitative descriptive approaches. The study examined worksheets completed by students and their interview responses. The study's prime focus was locating grammatical and other structural problems. It further highlighted that the need for more knowledge of the subject area and weak writing skills are the key factors behind such issues. Another important contributing factor was the lack of motivation in learning English.

Husna (2017) conducted a study investigating students' troubles when producing texts. The study also attempted to provide some solutions. Likewise, Graham and Perin (2007) discover a variety of interventions, including strategy teaching, summarization, peer support, goal setting for the product, sentence combining, prewriting exercises, process writing method, model study, word processing, and grammar instruction. This study computed average weighted effect sizes. In their research, Hasan and Marzuki (2017) examined how well students employed grammar, vocabulary, punctuation, spelling, consistency, and cohesiveness in their writings. According to the survey, grammatical errors were the most common errors, including problems with articles, verb forms, clauses, plural forms, passive voice, and prepositions. The lack of transitional devices, improper use of pronouns, and illogical links between sentences and paragraphs were blamed for the coherence and cohesiveness issues.

Much work has also been done on error analysis in Saudi Arabia. The study conducted by Nuruzzaman et al. (2018) is one of them. The study investigated the writing errors made by ninety Saudi students at King Khalid University, KSA, and identified their frequency, types, and categories. Sawalmeh (2013) conducted an error analysis of essay writing by Preparatory Year (PY) students at the University of Ha'il. Likewise, Almurashi (2023) identified common spelling errors in English writing by Saudi students.

Further, Murad (2013) compiled a corpus of thirty-two essays written by Arabic speakers and analyzed them to find the common mistakes they made. The results showed that they commonly made mistakes in prepositions, capitalization, spelling, word order, double negatives, articles, sentence fragments, subject-verb agreement, singular/plural forms, and verb tenses.

Likewise, Farooq and Amer (2019) also conducted an empirical study using error analysis. They collected the data of writings from 80 EFL students. The mistakes at the sentence level included capitalization (10.19%), spelling (14.81%), grammar (42.15%), and punctuation (16.14%). The participants made 264 mistakes at the paragraph level, including errors in point of view inconsistency (2.91%), coherence (4.87%), unity (3.80%), and development (5.13%). Further, Hussain (2020) sought to ascertain the frequency ratio of various error categories and types and common errors produced in English writing by 130 Saudi female undergraduate students. The results showed that there were four types of errors: mechanics, lexis, syntax, and semantics. The mechanical category (51.5%) contained the bulk of errors, which included spelling, capitalization, and punctuation.

In the same manner, Khatter (2019) conducted a study to investigate and examine the most typical essay writing mistakes made by female Saudi students. According to the results, punctuation errors were the most common mistakes made by the participants, followed by spelling, prepositional, article, incorrect verb tense, and incorrect word form problems.

Another contribution was by Ababneh (2017), whose study highlighted the difficulties Saudi students face when writing in English and examined the errors female Saudi students make. In the same way, Alhaysony (2012) provided an account of the types of errors in female Saudi EFL students at the University of Ha'il.

While these researchers and their studies provide valuable insights into the error analysis of Saudi students' English writings, it is essential to note that no study explores the lexico-grammatical choices Saudi students employ in their writings. So, the present study fills this gap and provides a comprehensive statistical analysis of the lexico-grammatical choices used by Saudi students.

3. Research Methodology

A specialized corpus of Saudi students' writings was developed and compared with BAWE (British Academic Writing English Corpus). The data was collected from 150 male and female undergraduate students enrolled in the universities from three regions across the Kingdom: Riyadh, Makkah, and Madina. The participants were randomly selected. One hundred fifty files were taken from BCAW. The total number of text files was 300. The corpus consisted of approximately 135000 words. Further, the length of the selected text files was crucial to identify the co-occurrence patterns and the textual variance. After carefully selecting different grammatical and functional classes, Biber (1993) conducted a comprehensive study and found that the range of the occurrence of different linguistic features is 200 to 600 words. Thus, the text files varying from 400 to 500 words were included in the corpus. The text files of varying lengths were normalized to a text length of 1000 words. The undergraduate students of the year 2023-2024 were selected for data collection. After the corpus compilation, the data was cleaned, and the files were marked with unique codes. Computational identification of linguistic features was completed using the Biber tagger (2006). The factor solution was based on the 150⁺ linguistic features.

Further, the linguistic feature frequencies were counted using Biber's Tag Count program. The following extract, taken from the corpus and its tagged version, has been given as an example.

“When I was a little kid my father left in the elevator and the light turned off. I started crying and screaming for my father then he heard me and opened the elevator’s door and took me, I have been afraid of all elevators ever since” (CSAEW-T2)

An output from the tagger is given below:

When_RB
I_FPP1
was_VBD [BEMA]
a_DT
little_JJ
kid_NN
my_FPP1
father_NN
left_VBD
in_PIN
the_DT
elevator_NN
and_CC
the_DT
light_JJ
turned_VBD
off_PIN
I_FPP1
started_VBD
crying_VBG
and_PHC
screaming_VBG
for_PIN
my_FPP1
father_NN
then_RB
he_TPP3
heard_VBD [PRIV]
me_FPP1
and_CC
opened_VBD
the_DT
elevator_NN
's_POS
door_NN
and_CC
took_VBD
me_FPP1
,_P
I_FPP1
have_VPRT [PEAS]
been_VBN [BEMA]
afraid_PRED
of_PIN

all_QUAN
elevators_NN
ever_RB
since_OSUB

The linguistic frequencies were normalized. After normalization, the counts were standardized as it was essential for an equal weight of all the features. The study followed a procedure that included data collection, tagging of data, computation identification of the linguistic features, analysis of co-occurrence patterns, calculation of dimension scores, ANOVA, and functional analyses to interpret the dimensions.

4. Analysis and Discussion

The present study analyses the students’ writings on five dimensions Biber (1991) introduced. Dimension one is labeled as “Involved vs. Informational Discourse”. When a set of features repeatedly appear together in a conversation, they form a dimension. Each dimension consists of positive and negative linguistic features. On the negative polarity of dimension one, linguistic features like nouns, adjectives, and prepositions produce informational discourse. The presence of more linguistic features means the presence of high information density (Biber, 1988, p. 105). On the positive continuum of this dimension, features like demonstrative pronouns, subordinate conjunctions, Wh-questions, Wh-clauses, and discourse particles are among some of the linguistic features that mark the presence of involved discourse. The ANOVA results show statistically significant differences between them, as the significance level is less than 0.05.

The statistical results indicate a sharp contrast between the British and Saudi students’ writings in producing discourse. Table 1 demonstrates that Saudi students produce involved discourse in their writings. However, the discourse produced by British students is highly informational—Saudi students’ writings, with a mean score of 2.66, show involved discourse production. The mean scores (-9.32) of British students’ writings mark the presence of high information discourse.

Table 1. Linguistic variations among British and Saudi students’ writings on dimension 1

	N	Mean	Std. Dev	Std. Err	95% CIM	
					Lower Bound	Upper Bound
CSAEW	150	2.6653	14.23495	1.29947	.0923	5.2384
BCAW	150	-9.3279	7.45090	.68017	-10.6747	-7.9811
Total	300	-3.3313	12.83140	.82826	-4.9629	-1.6997

The following figure further elaborates on the findings. As shown in the figure, there is a prominent difference in the discourse production. Figure 1 demonstrates that the mean scores of Saudi students’ writings fall on the positive continuum, thus producing involved discourse, while the mean scores of Corpus of Saudi Academic English Writing (CSAEW) fall on the negative polarity of the continuum, producing informational discourse.

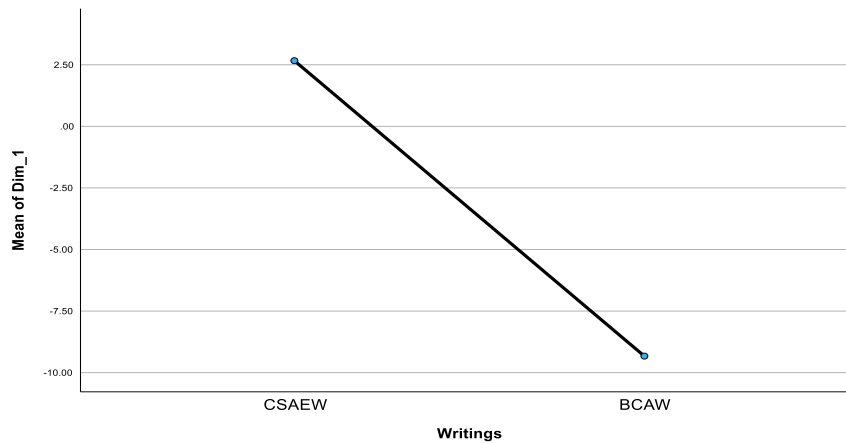


Figure 1. Linguistic variations among British and Saudi students’ writings on dimension 1

The high mean scores of the British Corpus of Academic Writing (BCAW) indicate the dense presence of nouns, attributive adjectives, and prepositions in the students’ writings. Biber (1991) labeled dimension two as “Narrative vs. Non-narrative Concerns.” Table 2 displays that the mean scores of both the corpora fall on negative polarity, thus producing non-narrative discourse. Linguistic features like the pronoun ‘it’, place adverbials, ‘That’ deletion, and present-tense verbs mark the presence of non-narrative discourse. The simple present tense indicates that ‘the event time is identical to the time of utterance’ (Lee, 2011, p. 123). The term “adverbial” refers to a specific syntactic function within a sentence (Duplatre & Modicom, 2022). So, place adverbial indicates where something or someone is. Biber (1991) believes that using the pronoun ‘it’ with limited information indicates that the discourse is associated with a typical spoken situation. Further, in his study, there are fewer instances of that deletion in edited writing.

Table 2 shows no significant difference in the mean scores of CSAEW and BCAW. Saudi students' writing is slightly more non-narrative than British ones, with a mean score of -2.99 compared to -2.62.

Table 2. Linguistic variations among British and Saudi students' writings on dimension 2

	N	Mean	Std. Dev	Std. Err	95% CIM	
					Lower Bound	Upper Bound
CSAEW	150	-2.9998	3.85382	.35180	-3.6964	-2.3032
BCAW	150	-2.6229	3.06317	.27963	-3.1766	-2.0692
Total	300	-2.8114	3.47886	.22456	-3.2537	-2.3690

Figure 2 gives a clear representation of the mean scores of both countries. The line in the figure indicates that students' writing by both Saudi and British students produces non-narrative discourse on the negative polarity of a discourse on a continuum.

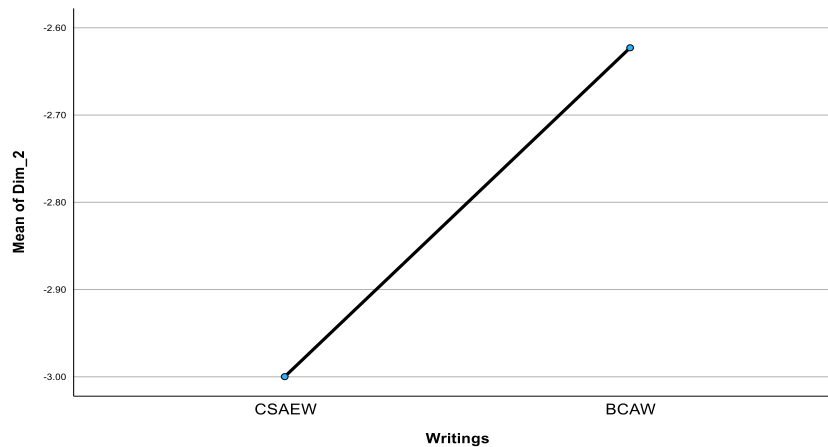


Figure 2. Linguistic variations among British and Saudi students' writings on dimension 2

Biber (1991) labeled this dimension as 'Explicit vs. Situation Dependent Discourse,' which he (2010) labeled as 'Elaborated vs. Situation Dependent discourse' later. On the positive polarity, linguistic features like *pied-piping*, *singular noun-nominalization*, and *coordinating conjunction-phrasal connector* are among the linguistic features that produce an explicit discourse. On the negative polarity of the dimension, *adverbs of place and time* produce situation-dependent discourse. Table 3 indicates that students' writings by both Saudi and British students produce explicit discourse on the positive side of this dimension but to a varying degree. *Singular noun nominalization* is used to integrate information into fewer words. Kluender (2004) observes that *wh-pronoun-relative clauses* are used to give explicit reference. Unlike the pronoun 'it,' *pied-piping constructions* are mostly used in written texts (Adejare, 2021). Ali and Sheeraz (2022) observed that a coordinating-phrasal connector is used to develop an idea. As shown in Table 3, CSAEW (5.47) is slightly more explicit than BCAW (5.42).

Table 3. Linguistic variations among British and Saudi students' writings on dimension 3

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
CSAEW	150	5.4762	7.03222	.64195	4.2051	6.7474
BCAW	150	5.4204	3.15995	.28846	4.8492	5.9916
Total	300	5.4483	5.44014	.35116	4.7566	6.1401

ANOVA results also indicate that there is no statistically significant difference in the students' writings of both countries in producing explicit discourse, as the p-value is more than 0.05. Figure 3 compares the results and shows that although there is no statistical difference between the mean scores of Saudi and British students' writings, they show a slight difference in producing explicit discourse on the positive polarity of this dimension.

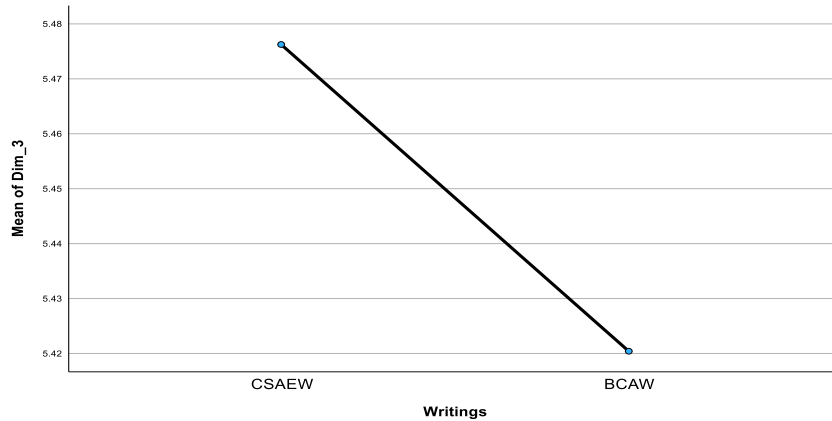


Figure 3. Linguistic variations among British and Saudi students’ writings on dimension 3

Dimension four in Biber’s (1991) has only positive linguistic features like *necessity modal*, *possibility modal*, *infinitives*, *predicate modals*, and *suasive verbs*. Together, they mark the presence of argumentative or persuasive discourse. The results of the data, however, show that factor 4 has linguistic features with negative weight: *private verbs*, *hedges*, and *third-person pronouns*.

The results of this dimension conform to the results of Ali and Thomson’s (2022) study, where cultural press reportage has produced non-argumentative discourse. Malu (2023) describes hedges as informal, less specific markers of probability or uncertainty. Cock and Kluge (2016) say that the third-person pronouns give reference to the person outside the immediate interaction. The findings of this study suggest that CSAEW, with an average score of -2.41, reflects non-argumentative discourse production. On the other hand, BCAW has an average score of 0.15. According to Biber (2009), a score close to zero indicates that the particular discourse has a mixed purpose. There are both negative and positive linguistic features present in those specific texts.

Table 4. Linguistic variations among British and Saudi students’ writings on dimension 4

	N	Mean	Std. Dev	Std. Err	95% CIM	
					Lower Bound	Upper Bound
CSAEW	150	-2.4189	5.06813	.46265	-3.3350	-1.5028
BCAW	150	.1539	4.67036	.42634	-.6903	.9981
Total	300	-1.1325	5.03106	.32475	-1.7722	-.4928

ANOVA results indicate that the difference between the mean scores of CSAEW and BCAW is statistically significant (the significance value is less than 0.05). Table 4 clearly shows that the mean scores of BCAW are close to zero, and the mean scores of CSAEW indicate negative discourse production.

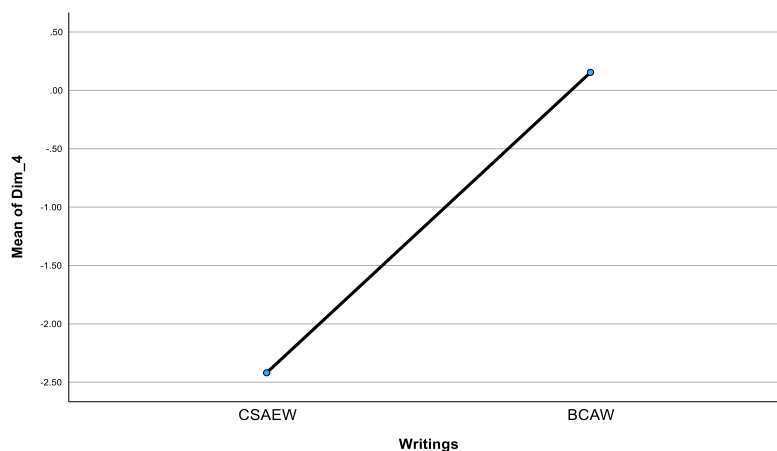


Figure 4. Linguistic variations among British and Saudi students’ writings on dimension 4

Biber (1991) names dimension 5 as ‘Impersonal (Abstract) vs. Non-impersonal (Non-abstract) Style.’ *Passive post-nominal modifiers*, *subordinating conjunctions*, *the passive verb ‘by’*, *adverbial- conjuncts*, and *agentless passives* are linguistic features that together perform the function of producing abstract discourse. On the other side of the continuum, the *type-token ratio* marks the presence of non-abstract discourse. In their writings, journalists frequently employ passives, which are the main markers for producing abstract discourse (Stojan & Mijic, 2017). Further, Qasim (2016) believes that journalists purposefully alter the sentence structure and, if necessary, delete the action’s

agent to make the remarks seem impersonal.

Table 5 reveals a marked difference in the mean scores of CSAEW and BCAW in producing discourse. CSAEW, with a mean score of -0.43, shows very little non-abstract discourse. However, BCAW, with a positive mean score of 5.37, indicates a marked presence of abstract discourse.

Table 5. Linguistic variations among British and Saudi students' writings on dimension 5

	N	Mean	Std. Dev	Std. Err	95% CIM	
					Lower Bound	Upper Bound
CSAEW	150	-.4371	4.53510	.41400	-1.2568	.3827
BCAW	150	5.3705	4.23027	.38617	4.6058	6.1352
Total	300	2.4667	5.25528	.33923	1.7985	3.1350

Figure 5 summarizes the linguistic variations between the writings of British and Saudi students.

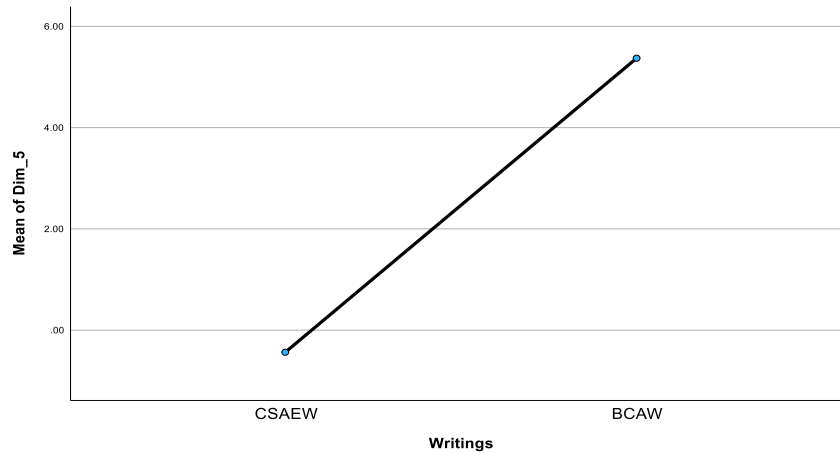


Figure 5. Linguistic variations among British and Saudi students' writings on dimension 5

The closeness of the mean scores of CSAEW to zero shows fewer linguistic features in the texts that mark the presence of non-abstract discourse. The mean scores of BCAW show a dense presence of linguistic features that are the primary markers for producing abstract discourse. So, like dimensions 1 and 4, there is a marked difference in producing discourse again on this dimension.

6. Conclusion

The present study compares the writings of the students from two countries, Saudi Arabia and Britain on Biber's (1991) five textual dimensions. The study results indicate a marked difference in the mean scores of the students' writings in both countries on dimension 1. CSAW produces involved discourse, while BCAW shows dense informational linguistic features. The mean scores of dimension 2 show that CSAEW and BCAW are quite similar. Both indicate non-narrative discourse with negative mean scores. Although both countries produce explicit discourse on dimension 3 with positive mean scores, CSAEW is slightly more explicit than BCAW. There is a marked difference in producing discourse on this dimension. Where CSAEW produces non-argumentative discourse, BCAW shows mixed-purpose discourse. Like dimension 1 and dimension 4, on D 5, there is a significant difference in the mean scores of CSAEW and BCAW in producing discourse. CSAEW shows less non-abstract discourse, while BCAW indicates a marked presence of abstract discourse. The findings show a marked difference in the academic discourse production of both countries as the students of both countries use different linguistic features in their writings.

This research study would be valuable to the local Saudi community in providing new insights to the teachers, researchers, and curriculum designers into how Saudi students prefer particular lexico-grammatical patterns over others in their writing. It will also open new possibilities for the researchers working on the writing of Saudi students in specific and Saudi English in general. Corpus linguistics is an emerging field, and corpora of many countries are available; however, presently, more specialized or general Saudi corpus is needed to study. The specialized corpus developed for this study helps provide scope for pedagogical practices and research activities. It will also provide a base for compiling a more comprehensive Saudi English corpus to establish Saudi English as a distinctive variety. As Saudi Arabia is proving to be distinctive from the rest of the world in many fields, establishing Saudi English as a distinct variety will significantly contribute to the Kingdom's Vision 2030.

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Authors contributions

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Competing interests

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Data sharing statement

No additional data are available.

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Appendix A

Co-occurring Linguistic Features on Five Textual Dimensions of 1991 MD analysis

Dimension 1: Involved vs. Informational Discourse

Positive Feature

- 'That' deletion
- Verb (uninflected present, imperative & third Person)
- Second Person pronoun/Possessive
- Verb 'Do'
- Demonstrative Pronoun
- Adverb/Qualifier-Emphatic (e.g., just, really)
- First-person pronoun/possessive
- Verb 'Be' (uninflected present tense, verb, and auxiliary)
- Sub-ordinating Conjunction-Causative
- Discourse Particle
- Nominal Pronoun
- Adverbial -Hedge
- Adverbial/Qualifier-Amplifier
- Wh-question
- Modals of Possibility
- Co-ordinating conjunction-clausal connector
- Wh-clause

Negative Features

- Nouns (excluding gerund)
- Preposition
- Attributive Adjective

Dimension 2: Narrative vs. Non-narrative Concerns

Positive Feature

- Past Tense Verb
- Third-person pronoun (except 'it')
- Verb-perfect Aspect

Negative Features

- Present Tense verb
- Place adverbial
- That deletion
- Pronoun 'it'

Dimension 3: Explicit Vs. Situation Dependent Discourse

Positive Feature

- Wh-pronoun-relative clause-object position
- Wh-pronoun-relative clause-subject- position
- Wh-pronoun-relative clause-object position
- With prepositional fronting (pied-piping)
- Nominalization
- Coordinating Conjunction -phrasal connector
- Singular noun-nominalization

Negative Features

- Adverb of time
- Adverb of Place
- Adverb Other

Dimension 4: Overt Expression of Argumentation /Persuasion

Positive Features

- Infinitive Verb
- Modal of Prediction
- Persuasive Verb
- Subordinating conjunction-conditional
- Modal of Necessity
- Adverb within auxiliary

Negative Features

- Private verb
- Public verb
- Third-person pronoun
- Hedges

Dimension 5: Impersonal (Abstract) VS. Non-impersonal (Non-Abstract Style)

Positive Features

- Adverbial-conjuncts
- Agentless Passive verb
- Passive verb + by
- Passive Post-nominal modifier
- Subordinating conjunction-Other

Negative Features

(no negative features)