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| RESEARCH ARTICLE

Nominalization as a Feature of Functional Morpho-Syntactic Complexity in EFL Medical Scholarly Research Writing

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| ABSTRACT

Academic communication being mainly in the written mode has given primacy to EFL learners' writing skills development. Although academic writing is, on the whole, characterized by formality, conciseness, and clarity, specialized writing within this genre reflects further specificities, the awareness and mastery of which is an index of genre proficiency. This study explores nominalization as a means of information packing and linguistic complexity used in the medical scholarly research writing for complex meaning-making. The study was carried out on the premise of Systemic Functional Linguistics (SFL) that language is a network of systems and serves functions, and that it offers a repertoire of choice for meaning-making, strategically deployed in context. Accordingly, nominalizations through suffixation were identified in 80 research articles Discussion sections written by Moroccan medical researchers, using a computational tool. Nominalization patterns were analyzed, and nominalizations' functional affordances in these specialized academic discourse texts were counted and categorized. Results show an over-reliance on nominalized scientific information post-modification through prepositional phrases and pre-modification through attribute adjectives and nouns, respectively. Other nominalization affordances were found to be underused. These findings provide evidence for the effectiveness of the SFL outlook in fully exploiting the language meaning-making potential and raising awareness of valued functional use of linguistic devices in academic discourse. Functional grammar instruction, incorporation of genre pedagogy, and instruction of conventionalized functional linguistic complexity such as nominalization would benefit academic writing development and specialized scientific register proficiency advancement.

| KEYWORDS

Academic writing; linguistic complexity; nominalization; research writing; English for Academic Purposes; EFL writing development; English for Specific Purposes

| ARTICLE INFORMATION

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1. Introduction

Academic writing is characterized by norms and features differentiating it from other writing genres, such as journalistic or literary writing. These differences include a degree of formality and characteristic lexis and syntactic structures. Yet, even within the academic writing macro-genre, specific discipline-bound norms and features are reflected in varied academic writing sub-genres. Endeavors targeting EFL learners' writing development that overlook these specificities would, consequently, yield limited positive outcomes. Achieving advanced academic writing proficiency, specifically in specialized fields, entails awareness and mastery of specific varieties of English used and expected in different contexts of use. The general theoretical premise for this outlook is that

"learning a language involves learning how particular linguistic variants are conventionally associated with particular contexts of use" (Biber et al., 2022, p. 21).

Medical scholarly research writing is an example of such a context of use. Specificities of medical scholarly research writing include formality, conciseness, economy of expression, and structural compression. Structural compression in this and other academic writing sub-genres has stemmed from the "proliferation of academic sub-disciplines, which have become increasingly specialized in both topic and readership, resulting in *information explosion* and the need to present more information in an efficient and concise way" (Biber and Gray, 2016, p. 207). Linguistic complexity is a device that affords the realization of these characteristics in scholarly research writing.

Linguistic complexity (LC) is the number of linguistic form components determining the structural substance of a linguistic form (formal complexity) and the number of a linguistic structure's meanings and functions and the linguistic feature's form-meaning/function degree of transparency or multiplicity (functional complexity) (Bulté & Housen, 2012). A body of research on LC has demonstrated that nominalization—the process of turning verbs, adjectives, or adverbs into nouns—is an effective linguistic complexity device in realizing the complex communicative purposes of academic writing. Nominalization fulfills lexical density (packing meaning), morphological complexity (the number of morphological formatives of words—morphemes— (Stump, 2016)), and syntactic complexity ("the range and degree of sophistication of syntactic structures" (Lu, 2014, p. 130)). Derivational morphology enables achieving nominalization through affixation (incorporating prefixes or suffixes to verbs, adjectives, or adverbs), as shown in Example (1) and Example (2).

(1) When teachers illustrate what they are trying to explain, learners understand better

→ Illustra**tion** leads to better understand**ing**

(2) The fact that these studies do not lead to firm conclusions

→ The **in**conclusive**ness** of these studies

The functional use of linguistic features for meaning-making in specific contexts is one of the tenets of Systemic Functional Linguistics (SFL), the principles of which constitute the theoretical underpinning in this study. SFL is a theory premised on the functional view of language. Halliday (1978) maintains, "language is as it is because of the functions it has evolved to serve in people's lives" (pp. 3-4). This is to say, the language system is "closely related to the social and personal needs that language is required to serve" (Halliday 1970, p. 142). Grammar is, thus, a repertoire of resources for meaning-making that codes experience into meaning (Webster, 2009), and language is a *meaning potential* for meaning-making by allowing linguistic choices while considering their appropriateness in relation to the context of use (Eggins, 2004).

The SFL outlook is materialized in the stratification of language into levels. Genre (the context or culture in a community of practice) is constituted of recurring register parameters. Register—variety of language according to use, according to Halliday et al. (1964)—is defined by the parameters of use: field, tenor, and mode. Field refers to the social action for which language is used, tenor to the nature of the relationship amongst the participants in the social action, and mode to the mode of contact for or extent of distance between the participants (Hasan, 2009).

Accordingly, in this study, I explore EFL medical scholarly research writing by Moroccan researchers to investigate whether it incorporates nominalization as a characteristic linguistic complexity feature in this genre and to what extent it exploits different nominalization functions. To this end, a corpus of Discussion sections in 80 medical research articles published by Moroccan researchers in open-access international journals was compiled. The use of nominalization to accomplish communicative purposes in these texts is quantified to assess the writers' awareness of and proficiency in this writing genre. The significance of this research is in seeking to broaden our understanding of EFL medical research development and, therefore, in providing recommendations for specialized academic writing instruction improvement. This research, thus, addresses the following question:

To what extent do Moroccan medical researchers employ nominalization as a functional morpho-syntactic complexity device to achieve communicative goals in their scholarly research writing?

2. Literature review

In exploring nominalization in languages, Comrie and Thompson (2007) present a taxonomy of types of nominalizations in English and the syntactic implications of this process. While state nominalization is turning stative verbs or adjectives into state nouns (they **know** → their **knowledge** - **quiet** → **quietness**), action nominalization is creating action nouns from action verbs (**create** → **creation**). One of the implications here is the loss of tense and voice (finite/active voice: The soldiers **destroyed** the military base → non-finite: The **destruction** of the military base triggered a declaration of war). We can see that a dynamic process (destroyed) achieved by participants (soldiers) becomes static and enters, in turn, into another process or situation as a subject.

Beyond the process-participant relations, Heayaert (2003) offers a theoretical account of nominalizations, seen through the functional and usage-based lens, as constructions serving functional categories and realizing meaning. Heayaert suggests nominalizations be seen as "reclassifications of non-nominal into *nominal* units or units which have adopted nominal functions both in their external and in their internal functioning" (p. 58), encoding particular meaning, realizing compositional relationships, and entering into different paradigmatic relationships.

The meaning-based approach to nominalization was at the core of Ryshina-Pantkova's (2015) argument for exploring the discourse-semantics of meaning-making in specific genres as a better alternative to the form-based or structural study of syntactic complexity. The essence of Ryshina-Pantkova's argument is, convincingly, that syntactic complexity is motivated by particular communicative demands of tasks in specific contexts. To illustrate, the researcher points out that nominalization serves the function of expressing more meaning than the verbal style. That is, the clausal style allows for "congruent construal of the situation because verbs for action, nouns for things or people, and clauses for situations with participants and actions are typical for representing experience *as it is*, in *its flow*." Nominalization, in contrast, "realizes an entire situation with people and their actions and thus construes experience in an incongruent way" (p. 54). This is what Halliday (1985) terms *grammatical metaphor* (GM). Consider the nominalizations in example (1).

(1) (a) When teachers illustrate what they are trying to explain, learners understand better

(b) Illustra**tion** leads to better understand**ing**

The grammatical metaphor here is that the nominalization (a single word) stands for an entire situation (when teachers illustrate what they are trying to explain → illustration - students understand → understanding). This is what Halliday and Matthiessen (2004) refer to as "remapping between the semantics and grammar". Ryshina-Pantkova notes that nominalization allows for the construal of dynamic experience as a stable entity that can be evaluated, interpreted, and reflected upon. In other words, a noun representing an entire situation (or a process) has great potential for modification than a verbal group (i.e., through attributes, relative clauses, prepositional phrases, and apposition). This affords the gathering of multiple informational units in one sentence for better meaning-making. Hence, nominalization reflects linguistic complexity that serves semantic complexity and meaning expansion.

Another nominalization function Ryshina-Pantkova (2015) notes is that it allows abstraction and generalization. This is substantiated in example (1). The proposition in (a) is abstracted and elevated in (b) beyond the specific situation and participants (teachers and students) and can be applied to other situations. These two nominalization functions are useful—and even necessary—in genres such as academic writing, and specifically research writing. In this academic writing sub-genre, as a part of the complex tasks they perform, researchers need, for example, to evaluate and comment on previous research, argue, abstract, theorize, explain methodologies, and make generalizations from specified situations and individual experiences and show significance beyond specific contexts (Ryshina-Pantkova, 2015).

Biber et al. (1999) present stance-making (indicating the writer's opinions and feelings) as yet another function nominalizations realize in academic writing. *Attitudinal nominalizations* ''report personal attitudes or feelings'' (page 974), whereas *epistemic nominalizations* comment ''on the status of information in a proposition'' (page 972). We can see in the example *The inadequacy of the data collection instrument is a major shortcoming in their study* that the nominalization *inadequacy* plays such function, so too do *pertinence* and *soundness* in the exemple *the pertinence of the examples used contribute to the soundness of their argument*.

The task complexity in research writing Ryshina-Pankova (2015) invokes stems from the distance in field and tenor, as stipulated by SFL. In the situational parameter field, there is distance between language and the social process it refers to, incongruently (reflection). Spatial, temporal, and relationship distance between the participants is the tenor distance. Lexico-grammatical complexity results from this greater ideational and interpersonal distance in research writing. A more metaphorical synoptic nominal style is, therefore, employed (Halliday, 1993d). Ryshina-Pankova convincingly sums up her argument, concluding that "Discourse-semantic and the ensuing linguistic complexity are most manifest in contexts where communication centers on interpreting and arguing about non-common-sense subject matter with non-intimate participants and in written mode, and thus is typical of academic, institutional, and professional settings" (p. 55).

The meaning and functional approach to linguistic complexity and, by extension, nominalization, seen through the lens of SFL, entails viewing genre in English for academic purposes (EAP) as stabilized and institutionalized typical contextual situations and their typical lexico-grammatical realizations. Hood (2016) expounds that field in English for Academic Purposes (EAP) relates to distinct ways of presenting knowledge, particular discipline-specific discourses, and specific topics, contents, and approaches to knowledge construction. SFL, thus, affords exploring the particular choices made within the network of systems for meaning-making in particular ways in a genre. These choices are manifested in texts—instances of discourse—, and patterns of meaning-

making in discourse semantics of texts indicate genre specificities (Hood, 2010). Words and their arrangements in units of meaning—lexico-grammar—is what allows for the meaning-making potential in language.

A body of research has been conducted on nominalization in EAP and, specifically, in medical research writing in the EFL context. Prasithrathsint's (2014) study revealed more salient use of this linguistic complexity device in academic writing than in editorials, which is due to the need for detachment and objectivity in the former genre. Prasithrathsint cites a pertinent example from Stubbs (1998): (a) X criticized Y → (b) there has been criticism of Y. Baratta's (2010) explored writing produced by students in a Language, Literacy, and Communication degree program in the United Kingdom. The researcher notes an increase in nominalization use in the dissertations the students wrote at the end of the program. We can see the accordance of these findings with the SFL view that the use of lexico-grammatical features (i.e., nominalization) for meaning-making is discipline-specific and bound by the conventions of genres and sub-genres.

Nominalization development at the tertiary level was also explored in the longitudinal study conducted by Linzhou et al. (2022). The frequencies, proportions, and characteristics of nominalization used by EFL learners in 180 essays written by 30 EFL learners at a university in China were analyzed. The use of normalization--more phrasal than clausal--was found to correlate with the students' grades and increased with the level of study. On the other hand, Lu et al. (2021) investigated the cross-disciplinary differences in the use of nominalization. Research article's introductions from different fields of social science were assessed for the use of complex syntactic structures to realize the different moves and steps in the Introduction sections proposed by Swales (2004, 2019). This study revealed significant variation in the use of nominalization to realize varied rhetorical functions in academic writing.

With respect to investigating nominalization in medical research writing, different studies have explored this research avenue in the EFL context. Gao (2012) compared Discussion sections from 10 Chinese-authored medical journal articles to 10 from articles published in international journals, with regard to the use of nominalization. The author infers a deficiency in the use of nominalization in the Chinese authors' medical research articles. The comparative approach in research investigating nominalization use in medical research articles was similarly applied to Iranian authors' writing in Mahbudi et al. (2014). The authors adopted a native-non-native approach in the comparison. Mahbudi et al. found that nominalization is less frequent in the Iranian authors' writing compared to native English-speaking authors.

Against this backdrop, in an attempt to contribute to advancing the scholarly conversation on linguistic complexity and nominalization, in particular, in the EFL context, the endeavor in this study is to answer the question: *To what extent do Moroccan medical researchers employ nominalization as a functional morpho-syntactic complexity device to achieve communicative goals in their scholarly research writing?* The data collected to answer this question was obtained using the corpus linguistics approach.

3. Methodology

3.1. Corpus design

A corpus of Discussion sections from 80 medical research articles published by Moroccan researchers in international open-access journals was compiled. The articles were randomly selected among medical research articles published from 2015 through 2024. The cleaning of the data consisted of the removal of all non-textual elements and non-author-produced texts in these files. The non-textual elements removed included symbols, acronyms, numbers, and formulas, whereas the non-author-produced texts were all quoted texts, be it in-text or block citations. The files in the corpus were then converted to plain text format (.txt) for processing via the concordance tool AntConc 3.2.1w, downloaded from http://www.laurenceanthony.net/. Table 1 displays the distribution of the corpus files.

Table 1

Corpus files distribution

Year	# of texts	# of words
2015	8	6,020
2016	8	5,389
2017	8	6,104
2018	8	4,978
2019	8	5,761
2020	8	5,850

2021	8	5,528
2022	8	6,265
2023	8	5,943
2024	8	6,187
Total	80	58,025

3.2. Nominalization operationalization

To operationalize nominalization, nouns referring to a state or a condition, a situation, or a process were identified in the corpus files. This includes nouns formed through affixation. A list of seven nominalization suffixes was adopted, which comprises the suffixes *-tion, -ment, -sion, -ty, -ness, -ance,* and *-cy*. The automatic identification of nouns containing these suffixes was performed using the AntConc automatic tool. Still, this automatic process was complemented with manual analysis, as the lists the tool produced included, for instance, words ending with *-ion* that is not a suffix (i.e., portion). The nominalization suffixes used in this study, along with examples, are provided in Table 2.

Table 2

Suffixes used to operationalize nominalization

Suffix	Code	Examples
-tion	Nom-tion	disassociation - reduction - intervention
-ment	Nom-ment	development - treatment - measurement
-sion	Nom-sion	exclusion - discussion - suppression
-ty	Nom-ty	abnormality - sensitivity - compatibility
-ness	Nom-ness	usefulness - inconclusiveness - arbitrariness
-ance	Nom-ance	resistance - compliance - performance
-cy	Nom-cy	dependency - fluency - irrelevancy

3.3. Nominalization functions

Nominalization is valued in academic writing, in general, as it affords objectivity—impersonal tone realized by removing the human agent in a process (agentlessness). In addition, at the macro-level, nominalization ensures lexical density and morpho-syntactic complexity, in the sense that multiple units of information are presented in one sentence. At the micro-level, nominalization serves multiple functions in texts. Lexical cohesion is realized in discourse when a noun in a sentence stands for a process, a situation, or a state that is previously referred to in a clause or a sentence. Consider Example (3), where this is illustrated. Besides, nominalization allows for greater modification than a verbal construction, which provides more specific meaning (Examples 4a-4e). The nominalization modification affordances include pre-modification through (a) attribute adjectives and (b) noun(s); or post-modification by (c) prepositional phrases, (d) apposition, and (e) relative clauses. Abstraction is yet another nominalization function. Abstraction is, as we have previously seen, making generalizations from specified situations and individual experiences and showing significance beyond specific contexts, through generalization (Examples 1 and 2). In addition to lexical cohesion and greater modification possibilities, nominalization serves expressing stance in discourse. Nominalized stance is expressing the writer's stance through nominalization, as shown in Example (5).

(3) Each file in the data was assigned a code reflecting its source and the date it was collected. **Coding** was completed according to the general guidelines provided.

(4) When examples are given, the meaning becomes clearer.

→ (a) *Effective* **exemplification** makes the meaning clearer.

→ (b) *Concept* **exemplification** makes the meaning clearer.

→ (c) **Exemplification** *of all concepts* makes the meaning clearer.

→ (d) **Exemplification**, *an effective means of explanation*, makes the meaning clearer.

→ (e) **Exemplification** *that is provided for all concepts* makes the meaning clearer.

(5) These conclusions **vagueness** does not advance our knowledge with regard to pronunciation instruction.

These nominalization affordances could be better thought of and used, as seen through the SFL lens, as a repertoire of linguistic choices to be deployed strategically in the medical research article Discussion section part-genre. Table 3 displays the nominalization functions explored in the present study and the codes associated with them.

Table 3

Nominalization functions types adopted for the study

Nominalization function type		Code
Lexical cohesion		Lex-Coh
Phrasal modification	Attribute adjective	Adj-Mod
	Noun(s) as modifier(s)	Nn-Mod
	Prepositional phrase	PPh-Mod
	Apposition	App-Mod
	Relative clause	RC-Mod
Abstraction		Abst
Nominalized stance		Nom-Stnc

3.4. Analytical procedures

After the corpus files conversion to plain text format, the files were analyzed through AntConc. AntConc is a concordance freeware developed by Laurence Anthony. It is a software program for extracting words or morphemes and displaying their frequencies and immediate context in a corpus. These concordances were counted and categorized to quantify nominalization functions deployment in the corpus files. The results of the AntConc processing and the analysis of the text files are presented next.

4. Results

Analysis of the AntConc corpus files processing output reveals a total of 3,461 occurrences of nominalization. The distribution of these nominalization occurrences was examined across the eight functional categories adopted for the present study (Table 3). Table 4 reports the frequency and percentage of each nominalization function identified within the corpus text files.

As can be seen from the data in Table 4 and the graph in Figure 1, the three most frequent nominalization functions are the affordances of modification through prepositional phrases, attribute adjectives, and nouns. These three categories collectively account for 87.21% of the total normalization functions in the data set. More specifically, modification through prepositional phrases (PPh-Mod) is the single most frequently used function (43.88%, n=1519). These prepositional phrases are headed by the prepositions *of, in, to, with, by, for, about, after, before, through, and between* (Examples 6-16). Yet, *-of* prepositional phrases were the most frequently used in the corpus. Attribute adjectives (Adj-Mod) as pre-modifiers are the second most frequent category in the text files (24.81%, n=859). The use of nouns to modify other nouns (Noun modifiers: Nn-Mod) represent the third most frequent nominalization function in the corpus (18.52%, n=641).

(6) The **improvement** *of* the embryology learning

(7) Ocular **morbidity** *in* children after eye injury

(8) Factors that may influence the **progression** *to* overweight and obesity

(9) Visual **inspection** *with* acetic acid is simple and low-cost

(10) Sites that promote **colonization** *by* certain cariogenic bacteria

(11) **Treatment** *for* their bilio-bronchial fistula with exclusive thoracotomy

(12) **Literacy** *about* HCV disease

(13) Its **effectiveness** *after* a period of three months

(14) **Guidance** *before* medicine self-administration

(15) **Observation** *through* a protocol

(16) **Correlation** *between* the treatment and symptoms variation

Table 4

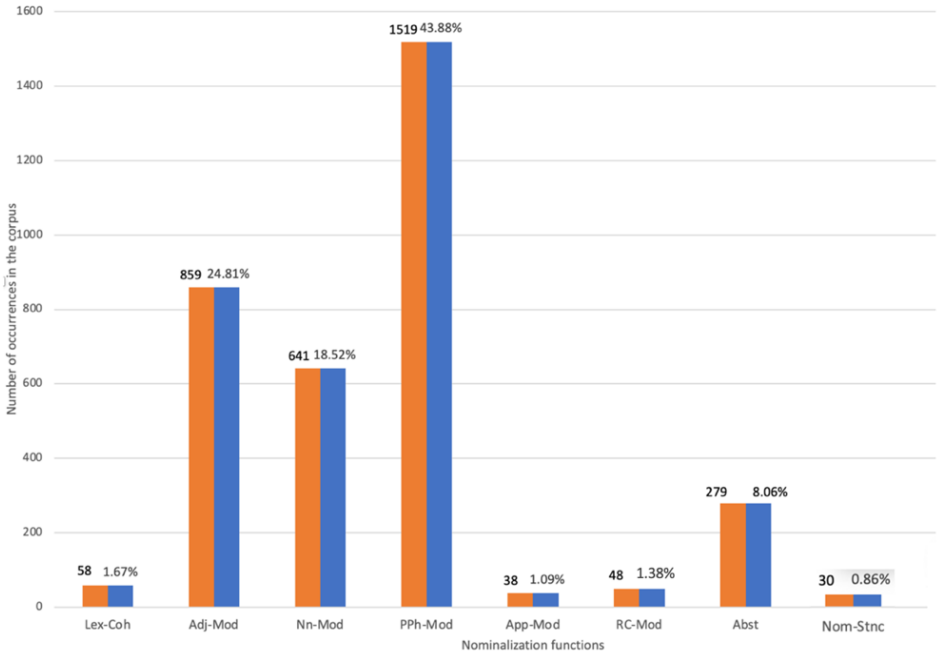
Distribution of the nominalization functions occurrences in the corpus

Nominalization Function	**Code**	**#**	**-tion** 1826	**-ity** 574	**-ment** 443	**-cy** 118	**-sion** 175	**-ance** 239	**-ness** 86	**Total 3461**	**%**
Lexical Cohesion	Lex-Coh		21	11	8	4	7	3	4	58	1.67
Attribute adjective	Adj-Mod		450	138	140	32	42	53	4	859	24.81
Noun/s as modifier/s	Nn-Mod		380	96	79	22	26	52	13	641	18.52
Prepositional phrase	PPh-Mod		838	255	159	44	66	113	44	1519	43.88
Apposition	App-Mod		16	5	3	4	7	2	1	38	1.09
Relative clause	RC-Mod		31	4	6	2	0	3	2	48	1.38
Abstraction	Abst		113	58	49	12	23	10	14	279	8.06
Nominalized stance	NomStnc		9	7	3	0	4	3	4	30	0.86

The data shown in Table 4 and illustrated in Figure 1 also reveals that Abstraction, Lexical Cohesion, Relative Clauses Modification, Apposition, and Nominalized Stance are, on the other hand, used to a much lesser extent in the corpus files. The functional use of nominalization to create Abstraction (Abst) represents 8.06% (n=279) of the total nominalization functions, whereas the Lexical Cohesion (Lex-Coh) function use represents 1.67% (n=58). Moreover, the functions of allowing for modification through relative clauses (RC-Mod), Apposition (App-Mod) are marginal, accounting for 1.38% (n=48) and 1.09% (n=38) of the total functions, respectively. Nominalization used to express a stance (Nominalized Stance: Nom-Stnc) is rare, appearing in only 0.86% of cases (n=30).

Figure 1

Distribution of the nominalization functions occurrences in the corpus



5. Discussion

The aim of this study has been to explore the deployment of nominalization as a functional morpho-syntactic device for meaning-making in EFL medical research writing sub-genre of academic writing. Results show a clear pattern of nominalization for modification. This is clearly demonstrated by post-modification through prepositional phrases and pre-modification through attribute adjectives and noun modifiers, together accounting for over 87% of the functional use of nominalizations in the corpus. The data shows evidence of this nominalization modification function dominance manifested particularly in a heavy reliance on prepositional phrases post-modification (nearly 44% of all instances). The use of nominalization and noun modification in these authors' Discussion sections of research articles aligns with the characteristic concept of *compressed* academic style used in scholarly research writing. These genre-bound linguistic devices afford elaboration by turning processes into nouns and packing distinct logical relationships into a single grammatical subject or object and, thus, facilitating high information density.

Still, the over-reliance on *-of* prepositional phrases to post-modify nominalizations situates the syntactic complexity in the texts under study at Stage 3 (out of 6) in Biber and Gray's (2011) syntactic complexity developmental taxonomy. Likewise, attribute adjectives pre-modification is a characteristic of a lower stage of development—Stage 2. On the other hand, apposition, a syntactic device characterizing Stage 6, appears to be under-exploited by the authors of the text files in the corpus. Moreover, the infrequent use of post-modification through relative clauses revealed by our data is in line with the findings reported by Jalilifar et al. (2018). This Stage 3 index was mainly represented by *-that* relative clauses in the researchers' data set. In like manner, the deployment of nominalization to achieve lexical cohesion, a central component of textual metafunction in Systemic Functional Linguistics (SFL), is scant in the medical research articles Discussion sections explored in the present study. The nominalization lexical cohesion function provides continuity and semantic unity, allowing perception of a text as a coherent whole (Halliday & Hasan, 1976).

Although Abstraction appears less frequently than the modification categories, its presence is qualitatively significant. This function reflects the *grammatical metaphor* described by Halliday (1985), where concrete congruents are transformed into abstract entities. The presence of abstraction indicates that the writers are not just describing physical phenomena, but are engaging in concept formation. By nominalizing actions (*Researcher observed how drugs interact* → ***Observation*** *of drug* ***interaction***), the writers detach the action from the specific time and agent, allowing the concept to be discussed as a theoretical construct. Similarly, the marginal use of nominalized stance may be due to the writers expressing their attitude through other linguistic means, rather than embedding their judgment through nominalization. Yet, the under-use of nominalized stance could suggest the writers' unawareness of this morpho-syntactic device affordance as an additional or alternative linguistic tool for concise textual meaning-making.

6. Conclusion

This study has investigated academic writing in the context of Morocco, focusing on the linguistic complexity dimension in a specialized scientific writing genre. The aim has been to explore the functional use of nominalization as a morpho-syntactic complexity feature for meaning-making in the medical scholarly research writing sub-genre of academic writing. The pattern of partially exploiting nominalization affordances in the texts studied in this research may suggest a scholarly research writing underdevelopment.

The findings indicate that awareness and functional use of linguistic complexity devices in different genres knowledge is central to EFL academic writing development. This suggests that proficiency in specialized academic writing entails a transition from the general university essay writing to the more demanding, knowledge-making conventions of scholarly research writing and broadening the linguistic repertoire to effectively achieve communicative purposes within a genre. Linguistic complexity plays a functional role in complex meaning-making and serves the characteristics of information density in scholarly prose. More specifically, nominalization provides a repertoire of morphosyntactic functional affordances for achieving this purpose, as proposed in SFL.

This may be of practical importance in English for Academic Purposes (EAP) writing instruction. Teaching grammar functionally and embedding grammar instruction within writing instruction would instill in learners the conception of grammar as systems of choice that serve context-bound communicative goals. A further implication of the present study's findings is that attainment in academic writing ought to be gauged not only in terms of accuracy and fluency but also in terms of complexity and its successful deployment in sub-genres, guided by explicit genre knowledge and shared community norms. Such an approach would better prepare students to produce genre-appropriate, complex scholarly texts.

The focus in this study has been on medical research articles and on nominalizations extracted from the Discussion sections using computational tools. Other academic sub-genres could be explored, and data for such research could be obtained from other research article sections. Moreover, beneficial future research directions could include experimental and longitudinal work using

linguistic complexity and nominalization instruction as a treatment variable, cross-disciplinary comparisons, inclusion of complexity in assessment schemes, and genre-based pedagogy supported by corpus linguistics and automatic analysis tools.

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