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From Academic to Journalistic Texts: A Qualitative Analysis of the Evaluative Language of Science

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Abstract

This study examined academic articles and journalistic reports in 5 disciplinary areas to explore how similar contents might attitudinally be realized in two different genres. To this end, 25 research articles and 210 news reports were carefully selected and underwent detailed discourse semantic and grammatical analyses with the purpose of identifying the evaluative linguistic patterns. The findings showed that academic texts are attitudinally charged with appreciation rather than other categories of attitude. This suggests that markers of appreciation are responsible for detachment, impersonality, and objectivity. On the contrary, notwithstanding the frequent use of appreciation in journalistic texts, other categories of attitude (affect and judgment) are also effectively used. This suggests that affective and judgment markers account for the subjectivity of journalistic texts. One of the findings emerging from this study is that frequent instances of appreciation in the different parts of an RA might be attributed to the development of language use within an individual which does not lead to lowering the level of objectivity in academic texts but enhancing interpersonal communication.

Keywords: Academic and journalistic texts, appraisal framework, attitudinal resources, evaluative language, lexico-grammatical Resources

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Academic discourse is a social, cognitive, and rhetorical process (Duff, 2010) which describes language uses and thinking ways that exist in the academia (Hyland, 2009). The significance of academic discourse "lies in the fact that complex social activities like educating students, demonstrating learning, disseminating ideas and constructing knowledge rely on language to accomplish" (Hyland, 2009, p. 1). During the last three decades, the importance of academic discourse has been realized, and its educational values, research resources, and variations across genres and disciplines have been recognized (Hyland, 2009; Suomela-salmi & Dervin, 2009).

As an adjacent area to academic discourse, journalism is a highly interdisciplinary entity (Zelizer, 2004) and is "one of the fastest growing areas of study within higher education" (Conboy, 2013, p. xi). Journalism tries to "provide a truthful account of the contemporary world" and to narrate "information that is new about that world, whether concerning fact or opinion based upon that fact" (Conboy, 2013, p.2). As Steensen and Ahva (2015) note, "inquiries into journalism have drawn from a wide range of disciplines, predominantly political science, sociology, history, language, and cultural studies" (p. 3). Academic discourse studies and journalism, on the one hand, have much in common, though both areas virtually have ignored each other and, on the other, among all other vital dimensions of journalism, discourse is the heart of the field. (van Dijk, 2015).

Like many other genres, academic and journalistic discourses are unavoidably teeming with evaluative language, that encompass "a wide range of explicit linguistic and non-linguistic resources" (Jalilifar, Hayati & Mashhadi, 2012, p. 83). Evaluative language, described under different labels such as "*evaluation*" (Thompson & Hunston, 2000), "*appraisal*" (Martin & White, 2005), and "*stance*" (Conrad & Biber, 2000), deals with any expression around speaker/writer`s opinions or stance toward people, things and situations and helps the speaker to create and negotiate an interpersonal relationship with the audience and take a clear stance toward his or her talk`s propositional meaning (Biber, 2006).

From the above evaluative labels, within Halliday`s (1994) systemic functional linguistics, Martin and White (2005) propose "appraisal" which Martin (1995) describes as "resources for modalizing, amplifying, reacting emotionally (affect), judging morally (judgment) and evaluating aesthetically (appreciation)" (p. 28). This framework tries to investigate the levels of semantics (Martin & White, 2005) and "distinguishes between types of attitude (personal affect, judgment of people and appreciation of objects), and describes how authors use language to communicate their engagement with other writers, and to amplify or diminish the strength of their attitudes and engagements" (Read & Carroll, 2012, p. 422).

In order to explore the discursive values, rhetorical strategies, and disciplinary differences in the balance of attitudinal resources in two different genres (academic & journalistic), the present study first sets out to seek what kinds of attitudinal resources are used in research articles (RA) and news reports (NR) in individual domains of science. Second, the study aims at finding out what lexico-grammatical patterns are employed in these texts.

Theoretical Background

This study was inspired by Martin and White`s (2005) appraisal framework, within a broader model of systemic functional linguistics (Halliday & Matthiessen, 2004) which characterizes language as a social semiotic activity. Appraisal, as the main analytical framework of the current study, is a practical framework of interactive meaning at the level of discourse semantics. The framework conforms to stance analysis positioning writers/speakers about voices and values in the text and provides an analytical basis for informed analysis of interpersonal meanings within the discourse semantic analysis of texts. It includes options for encoding semantic categories of attitude (as the focus of this study), which helps explore those kinds of values that are encoded in discourse (Martin & White, 2005). Attitude, as one of the main categories in Martin and White`s (2005) framework, is concerned with the positive and negative evaluation of emotional feelings (affect), people's behavior

(judgment), as well as the evaluation of things made explicit or evoked (appreciation) (Hood, 2004, 2006; Martin & Rose, 2003; Martin & White, 2005; White, 2001).

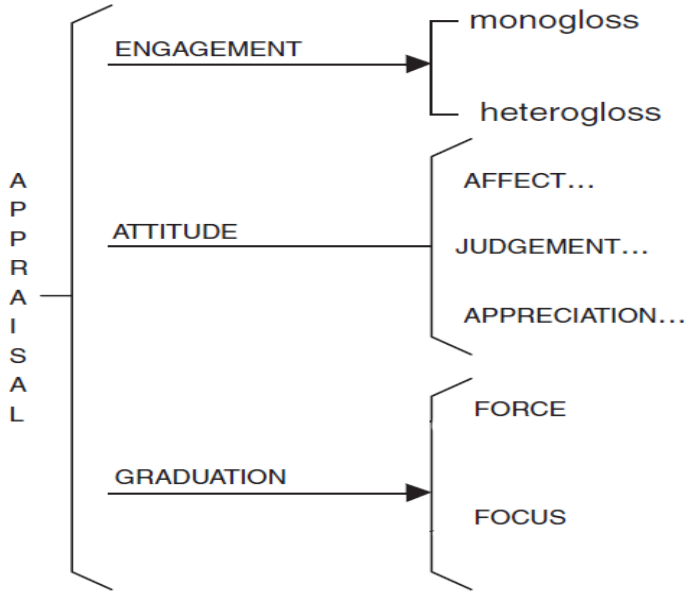

Figure 1. An overview of the appraisal resources (Adopted from Martin & White, 2005, p. 38)

The grammatical resources identified by Hood (2010) as having attitudinal meanings are adjectival qualities, nominal qualities, and processes. Adjectival quality is also classified into two types including epithet and attribute. The primary purpose of applying this grammatical framework was to see whether there exists any systematic pattern in the discoursal formation of the academic and journalistic texts.

Review of the Literature

Due to its vast scope of knowledge, academic discourse has received a great deal of attention from multiple perspectives, including general aspects of academic discourse (Fløttum, 2003, 2006; Fløttum & Rastier, 2003; Hyland, 2000; Hyland & Bondi, 2006; Salager-Meyer, 1998),

metatextual features (cf. e.g., Hyland, 1998, 2000), cultural identities of academic writers (Fløttum, Dahl & Kinn, 2006), cross-linguistic and cross-cultural perspectives on academic discourse (Suomela-salmi & Dervin, 2009), university genre (Biber, 2006), citation practices in research (Charles, 2006; Hyland, 1999; Swales, 1981; Tadros 1993; Thompson, 2000, 2005), and evaluation (Del Lungo Camiciotti & Tognini Bonelli, 2004).

Along the same line, journalistic discourse has provided a rich repertoire of language and knowledge (Bell, 1995) for the study of forms, functions, and politics of journalism from a wide range of perspectives, including linguistics, discourse studies, media studies, sociology, to name a few (Richardson, 2008). Journalistic discourse has typically been explored in two main categories of inquiry. In one category, non-linguistic parameters were investigated including the news semiotics (Hartley, 1982), the concept of popular culture (Conboy, 2002), ideology, mediation, and mass communication (van Dijk, 1988a), and standards of media (Sparks & Tulloch, 2000). In the other category, linguistic parameters were explored in studying discursive levels of news (Bell, 1991; Ungerer, 2004; White, 1997, 1998), newspaper discourse (Biber, 2003; Ljung, 2002; Minugh, 2000; Schneider, 2000), cross-cultural study of stance disaster news reports (Liu & Stevenson, 2013), conversational analysis of media discourse (Clayman, 1990; Greatbatch, 1998), the relationship between cognitive processes and journalistic meaning (van Dijk, 1988a, 1988b), the history of newspaper discourse (Cotter, 1996; Schneider, 1999, 2000), news-making practices (Bell, 1991), power and ideology (Caldas-Coulthard, 2003; Fairclough, 1995a, 1995b; Fowler, 1991; van Dijk, 1988a, 1988b; Weiss & Wodak, 2003; White, 1998), and style and social factors (Bell, 1991; Jucker, 1992).

There is a large volume of published studies on evaluative language in academic and journalistic discourses. Previous studies have reported how attitudinal language is deployed by expert writers and student writers in the introductory sections of published research articles and undergraduate dissertations (Hood, 2004), in argumentative writing across

languages (Liu & Thompson, 2009), in scholarly journal articles in one discipline (Jalilifar & Moazzen. 2014), and in the introduction of research articles authored by Iranian and English researchers (Jalilifar, Hayati, & Mashhadi 2012).

In journalistic discourse, the characteristics of attitudinal stance based on the appraisal framework have been investigated under the notion of *journalistic voice* (Feez, Idema, & White, 1994; Martin & White, 2005; White 2000, 2006). In the works of these authors, media texts are categorized according to how evaluative meanings or positive/negative assessments are communicated (Thomson, White, & Kitley, 2008, p. 220). For instance, Marin-Arrese and Nunez-Perucha (2006) examined the evaluative dimension of journalistic commentary and news reportage in four subgenres (reportage, society pages, opinion columns, and leading articles, and carton strip) drawing on the appraisal framework. Zhang and Liu (2015) explored the deployment of the appraisal resources in news reports, a popular information platform, as a controversial issue of the reporter's attitude and ideology. Behnam and Abbasi Dogolsara (2015) conducted a cross-cultural analysis of attitudinal markers of newspaper headlines on Iran and 5+1`s Geneva deal in 30 Iranian and American newspapers headlines (New York Times & Iran Daily). In another study, Holmgreen and Vestergaard (2009) analyzed evaluative markers used in biotech news texts to discover how objective and neutral accounts of events and state of affairs can be used by journalists to influence the attitudes of the readership significantly.

Statement of the Problem

Research articles (RAs), as an example of academic discourse, and news reports (NRs), representing journalistic discourse, though both can report scientific achievements, might be distinct because of their structural characteristics. The possible divide between these two discourses might also reside in the author and audience. Accordingly, it is reasonably acceptable to see differences in the communicative purposes between these two discourses (Hyland, 1999) due to their inherent dissimilarities

pertinent to their audience and authors. In other words, whereas academic discourse is mainly informative (Hyland, 1999), journalistic texts are concomitantly informative and persuasive (Dafouz, 2008; Dow, 1996; Ekstrom, 2002; Jaime Siso, 2009; Jowett & O`Donnell, 2011). If this argument even partly holds, one crucial question that needs to be asked is to what their contexts and fields influence extent attitudinal resources of these two discourses. Also, insofar as the attitudinal resources are grammatically encoded, the critical problem is whether these attitudinal values shape their grammatical patterns.

Despite the relative existence of studies concerning evaluation in RAs and NRs, past research has provided little direction regarding the simultaneous comparative exploration of these domains regarding attitudinal values in the world of technology. That is, the focal aim of this study is to qualitatively analyze attitudinal resources in RAs and NRs, particularly the linguistic patterns of evaluative resources, to explore how these patterns are responsible for the construction of attitudinal meanings in the above-selected discourses. In other words, the intention is to see how texts with similar contents (e.g., two texts in the same area such as civil engineering) are realized attitudinally in different genres (i.e., news reports and research articles). Hence, the current study attempts to answer the following questions:

1. How is the evaluative language construed utilizing attitudinal expressions (Affect, Judgment, and Appreciation) in the sample RAs and NRs?
2. Is there any general trend in the evaluative strategies employed in these texts?
3. How are attitudinal resources grammatically formed in the construction of the RAs and NRs?

Method

This study involves a detailed textual discourse-semantic analysis of a small set of academic and journalistic texts to explore the linguistic patterns and the construction of attitudinal meanings by adopting a

qualitative approach. Due to the diversity of generic and linguistic characteristics of these texts, the study was restricted to RAs and NRs in the area of technology. This, notwithstanding their limited number, enabled us to provide a more focused account of the studied texts.

Material Selection

In this study, the number of RAs and NRs carried no significant weight in the analytical procedure of our study. Since the goal of this study was to explore evaluative linguistic resources in technology texts, the analytical procedure was stopped once no further new patterns emerged. The significant fields selected in this study include computer engineering, civil engineering, mechanical engineering, electronic engineering, and aerospace engineering. These disciplines have been considered as the most referenced and the critical disciplines among investigators (Koutsantoni, 2006).

To select the RAs, a list of journals in each discipline was extracted from Thomson Reuters 2016 Journal Citation Report. This list includes 193, 1377, 4219, 689, and 360 journals in aerospace, electronic, computer, mechanical and civil engineering respectively. The list was given to 20 faculty members of engineering departments (four from each discipline) of Jihad Daneshgahi of Khuzestan, and Shahid Chamran University of Ahvaz, asking them to mark five journals in which they had published or preferred to publish. Finally, journals which were marked by at least two experts in each discipline formed the database from which the corpus of this study was drawn (See appendix 1 for more information about the titles of the journals). The research articles were selected within the time span between 2007 and 2017. Table 1 displays the disciplines, the word counts, and the average word count in an article. Analysis began with the identification of attitudinal resources and proceeded until the diversity of the resources was found to be consistent. Accordingly, this led to the lexico-grammatical analysis of five articles from each discipline (altogether 25 RAs) resulting in data saturation. The analysis excluded such sections as abstracts, reference lists, any footnotes,

acknowledgments, and appendices. The length of the RAs was considered as the criterion upon which the number of NRs were gathered.

Table1.
(Average) Word Counts in Each Article and Discipline

Discipline	Number of RAs	Word counts	Average word counts	Total word counts
aerospace	1	4208	3550	17749
	2	3050		
	3	4105		
	4	3157		
	5	3229		
mechanic	1	3048	4570	22854
	2	6108		
	3	3815		
	4	3824		
	5	6059		
electronic	1	7211	4905	24529
	2	3223		
	3	6809		
	4	2986		
	5	4300		
computer	1	6200	5384	26924
	2	5416		
	3	4833		
	4	5649		
	5	4823		
civil	1	6119	4606	23030
	2	4527		
	3	4561		
	4	3607		
	5	4216		
total	25	119117	4603	115086

To investigate the existing evaluative linguistic patterns in the NRs, the top ten international newspapers were picked out, following the rankings from international media and newspaper association, which includes a worldwide ranking of 7000 newspapers based by web popularity in 200 countries (estimated by Google Page Rank). All newspapers were non-specialized, public, and free of charge. According to 2015 newspapers web ranking, the top ten newspapers included The New

York Times (USA), The Daily Mail (UK), The People`s Daily (China), The Washington Post (USA), The Daily Telegraph (UK), The Guardian (UK), USA Today (USA), The Wall Street Journal (USA), China Daily (China), and Los Angeles Times (USA). However, we removed The People`s Daily and China Daily from the study as newspapers published in a non-Anglophone country. The number of news columns, word counts, and the average word count in each column of news for each discipline is presented in Table 2.

Table 2.
NRs and (Average) Word Counts in Each Discipline

Discipline	Number of NRs	Total word counts	Average word counts
Aerospace	46	35010	761
Civil	41	33986	828.9
Computer	37	34440	930.80
Electronic	44	41945	953.2
Mechanic	42	38630	919.7

Data Analysis

This study involved a detailed discourse semantic analysis of a small set of thematically related RAs and NRs with the purpose of identifying the evaluative linguistic patterns. The most prevalent patterns used in each of the five disciplines were extracted through analyzing the lexico-grammatical contexts in which the evaluative resources occurred. This was achieved through investigating and analyzing those discursive semantic resources encoding appraisal meanings.

In order to determine the ways that attitudinal resources are lexico-grammatically constructed, the grammatical framework provided by Hood (2010) was utilized. Hood (2010) proposed a lexico-grammatical framework contributing to identifying and encoding attitudinal resources. The suggested framework introduces three lexico-grammatical resources: adjectival qualities, nominal qualities, and processes. Adjectival qualities as the congruent form for encoding attitude are primarily introduced because of their defining role in evaluating objects, things, and affairs

effectively. Adjectival qualities are classified into two types including epithet and attribute. Epithet refers to adjectives which appear before nouns, and attributes follow linking verbs. Attitudes can also be grammatically encoded as nominalized qualities. That is nouns might be evaluatively charged with negative or positive polarities. The third kind of grammatical resources introduced by Hood (2010) as encoding attitude are processes realized as verbs.

Based on the lexico-grammatical framework provided by Hood (2010), it became evident that attitudinal resources are not merely represented as adjectives. That is to say, although adjectival qualities are frequently used as effective means for encoding evaluation, other grammatical resources might be exploited in the construction of texts. Therefore, it would be necessary to have both attitudinal resources and grammatical realizations for presenting a complete picture of the way that attitude is grammatically encoded in the given texts.

In order to determine the reliability of our analysis, first, attitudinal resources were identified by the primary researcher. Then, they were specified in terms of their categories (affect, judgment, and appreciation). For a higher degree of accuracy, intra-coder and inter-coder procedures were applied. In this regard, in order to mitigate analytical subjectivity, about 20 percent of the data was coded independently by another expert with knowledge of the appraisal framework. Then, the results were compared with the analysis made by the principal researcher. The observed differences were negotiated, and an agreement was made on the method of the analysis. Additionally, a further 20 percent of the data was re-analyzed by the leading researcher within at least one month, and Cronbach alpha was 0.89.

In order to codify the extracts, the names of the disciplines were abbreviated. The abbreviations of the selected disciplines are as follows: ACo (academic computer engineering), JCo (journalistic computer engineering), ACi (academic civil engineering), JCi (journalistic civil engineering), AMc (academic mechanical engineering), JMc (journalistic mechanical engineering), AAr (academic aerospace engineering), JAr

(journalistic aerospace engineering), AEl (academic electronic engineering), JEl (journalistic electronic engineering). Meanwhile, the texts were orderly numbered concerning their presence in the analytical procedure of the study.

Results and Discussion

This section first renders analysis of attitudinal resources in RAs and NRs in each discipline. Meanwhile, the grammatical resources used in both groups of texts are also identified and discussed.

Attitudinal and Grammatical Resources in Texts

For at least two reasons, i.e., the object of study and establishing rapport between writers and readers, high incidence of appreciation is expected in the introduction sections of RAs. The object of study is very crucial in determining the kind of attitudinal resources used in the formation of texts. That is, irrespective of the content of the text; it might roughly promote guessing the predominant attitudinal resources of that text. The academic texts analyzed in this study indicated an abundant presence of appreciation as the salient attitudinal resources irrespective of the kind of genre involved.

Meanwhile, in the introduction sections of RAs, the writers are primarily concerned with introducing their topics and the worthiness of their studies in the most efficient way. A useful technique which is utilized in the beginning phase of these RAs is establishing interpersonal rapport with the readers of these texts. The process of constructing an interpersonal environment regarding using evaluative resources seems to make readers more interested in the experiential aspects of the texts. Hood (2010) states that "the accumulation of instances of inscribed attitude and the frequent grading up of the values functions to make the warrant more compelling" (p.52). Therefore, here the application of multiple examples of attitudinal resources as appreciation constructs a warrant for the upcoming topic in terms of interpersonally positive evaluative resources.

[4/1: intro: **aerospace**]

With the **development** [appreciation] of technologies, the lethality of the weapons is **enhanced** [appreciation] greatly. It is of a great **demand** [appreciation] to **improve** [appreciation] safety protection **capabilities** [appreciation] of civil air defense fortifications… The traditional blast resistant doors are usually designed in **bulky** [appreciation] and **solid** [appreciation] structures, which lead to **poor** [appreciation] operational performance and high **costs** [appreciation][1]. Therefore, the door with … is **desirable** [appreciation].

[4/2: intro: **mechanical engineering**]

Among **major** [appreciation] components in a TFT, a gate dielectric plays an **important** [appreciation] role because … while its electrical insulation to minimize a leakage current is another **critical** [appreciation] requirement …. Nonetheless, a **strong** [appreciation] emphasis on … has been **major** [appreciation] driving force …; hence, it is now increasingly **important** [appreciation] to discover … to realize the **well-balanced** [appreciation] ultimate TFT performance.

[4/3: intro: **electronics**]

Energy production through **clean** [appreciation] energy technologies …, microbial cells are the most **crucial** [appreciation] and **important** [appreciation] issues… Types of research and **innovations** [appreciation] in the field of highly **efficient** [appreciation] and environmentally **amiable** [appreciation] energy conversion ….

[4/4: intro: **computer**]

Stochastic geometry (SG) has succeeded to provide a **unified** [appreciation] mathematical paradigm to …. The **main** [appreciation] **strength** [appreciation] of the analysis … can be attributed to ….

[4/5: intro: **civil**]

Cross-ventilation is an **important** [appreciation] ventilation method since it can provide a **fast** [appreciation] and **effective** [appreciation] way to …. For **detailed** [appreciation] analysis of natural ventilation….

In the above extracts from the introduction sections, the writers tend to inform readers about the ongoing issues of their field of study. Besides, the introduction sections are also infused with attitudinal meanings showing that the writers of the articles draw on evaluative resources to make their argumentations more exciting and attract more readers; therefore, a mixed amalgamation of experiential and attitudinal meanings couples together to make the text informative as well as persuasive for the prospective readers.

Contrary to the rhetorical character of the introduction sections containing both informative and evaluative resources together, the rhetorical structure of methodology sections of RAs except "computer" seems to rely on evaluative resources as illustrated below infrequently:

[4/6: method: **aerospace**]

Experiments were performed at the Blast Impact and Survivability Research Unit (BISRU) at the University of Cape Town. Each test plate was bolted into the clamp frame with 12 bolts evenly spaced around the circular exposed area at a pitch circle diameter of 350 mm. The clamp frame is chamfered at a 45° angle around the edge of the plate to reduce pressure build up and recirculation [4, 5]. The clamp frames and test plates were mounted to a modified pendulum, which was used to determine the impulse and house the cameras used for transient measurements. The experimental arrangement is shown in Figs.1 and 2. [Curry & Langdon, 2017]

[4/7: method: **mechanical engineering**]

For experiments, typical MGs alloys with distinctly different relaxation behavior are selected as model materials, which are representative for most known MGs with different Tg and properties,

as tabulated in Table 1. The metallic glass-forming alloy ingots with various nominal compositions were prepared by arc-melting mixtures of pure metals (with the purity of above 99.9%) in a Tigettered argon atmosphere.

[4/8: methodology: **electronics**]

Scheme 1shows an outline of the synthesis procedure for PIL. First, DMA (20 g) with inhibitor was treated with 1.5 equivalent of N-bromobutane (26 g) and stirred for 48 h. The reaction mixture was precipitated in EA. The white product [DMA+(Br-)] was filtered and dried at room temperature (RT) under vacuum for 12 h (conversion: 93.5 %).

[4/9: methodology: **computer**]

The first step in our analyses was to compile a list with the most **prominent** [appreciation] Spanish news sites ….

[4/10: method: **civil**]

The flow chart of the proposed system is shown in Fig. 2. The system engine first estimates the position of the occupant and the fan will be automatically switched on/off depending on whether or not the occupant enters the cooling area bounded by predefined geofences. Based on the estimated position ðbx; byÞ, the system engine then calculates the slope of the straight line crossing ðbx; byÞ and the position of the fan located at the original point ð0; 0Þ to direct airflow, and also the occupant-fan distance for fan power determination.

The absence of evaluative resources in the majority of the methodology sections of RAs indicates that the writers of these texts have entered into a new phase of communication with their readers which is predominantly informative. That is, the writers of these texts are inclined to give pure information to their readers without evaluating the procedural method employed in the text.

In the methodology section of computer RAs, instances of evaluative resources are observed showing that the writers of these texts are willing

to maintain the language of evaluation even in a section which is mainly written objectively with less or no instances of evaluation. The reason for the application of evaluative resources in the methodological section of computer RAs might be attributed to the increasingly pervasive and omnipresent role and function of the computer not only in academic settings but also in non-academic settings.

In the "result and discussion" sections of the following extracts, instances of attitudinal meanings are evident showing that these resources are employed by their authors to reflect their attitudes towards the obtained results. Attitudinal resources are seen to be used in the "introduction" and "result and discussion" sections of the above RAs; however, the rhetorical function of these resources in the introduction is somewhat different from the result and discussion sections. Attitudinal resources which are used in the result and discussion sections of RAs are rhetorically employed to encode authors' views on the obtained results of the given studies; that is, the rhetorical functions of their attitudinal resources are internally referenced; however, the rhetorical functionality of the attitudinal resources of the introduction sections are mainly externally referenced. In other words, the attitudinal resources employed in the introduction sections reference the general field of study under discussion and the works of other authors, whereas the attitudinal resources applied in the result and discussion sections are concerned with a specific field of study under discussion:

[4/11: result & discussion: **aerospace**]

The ballistic **limit** [appreciation] is the velocity which the projectile is just **able to** [appreciation] perforate …. In these experiments, it is **important** [appreciation] to obtain …. It is also **useful** [appreciation] to have …. The Intersection … marks the ballistic **limit** [appreciation] of the sand block…

[4/ 12: result & discussion: **mechanical engineering**]

…however, each film generally **suffers** [appreciation] from **undesirable** [appreciation] crystallinity, **poor** [appreciation]

interface properties… In contrast, the binary combination … is **beneficial** [appreciation] for tailoring ….

[4/13: result and discussion: **electronics**]

In the synthesis of nanohybrids, the **main** [appreciation] role has been …. Therefore, as a **foremost** [appreciation] step, optimization of …. The frequency … is the most **important** [appreciation] feature ….

[4/29: result & discussion: **computer**]

At the receiver, various **efficient** [appreciation] decoding algorithms have been …. Theoretically, ML decoding … can provide **better** [appreciation] data recovery but its usage is **limited** [appreciation] due to the implementation **complexity** [appreciation]. Symbol-by-symbol … the algorithm is computationally **complex** [appreciation] and is not a **preferred** [appreciation] choice for … (VLSI) chip.

[4/14: result & discussion: **civil**]

Significant [appreciation] **improvement** [appreciation] of performance is observed …These two scores will finally be **equivalent** [appreciation] when …, and the model performance will not be **improved** [appreciation] even ….

The reason for the presence of these resources which are combined with informative aspects of "result and discussion" sections can be attributed to the fact that, in these sections, the informative aspect of these articles is decorated and embellished with attitudinal meanings to make readers more easily convinced about the experiential meanings which are presented. That is authors, attempt to make use of effective means by which their ways of negotiation of informational meanings would be more conveniently accepted with the least number of opposed views. As such, they reproduce evaluative language which was primarily applied in the beginning phase of the article as a suitable tool for attracting readers' attention.

In addition to the explicit employment of attitudinal resources, the invoked attitude seems to play a significant role in shaping the structural organization and directing readers towards one specific goal in academic texts. Here, the organizational presentation of the information in the following RAs is signaled through the application of processes implying the orderly presentation of information to readers:

[4/15: ACA: **aerospace**]

In this paper, the transient response of Domex steel …**is reported**…The influences of charge mass and staff-off distance …**is discussed**.

[4/16: ACA: **mechanical engineering**]

In this paper, we **review** the up-to-date …. We first **provide** a brief overview …. Then, we **give** a detailed analysis …. Finally, we **discuss** future challenges ….

[4/17: ACA: **electronics**]

This work also **provides** a new perspective fabricating nanohybrid ….

[4/18: ACA: **computer**]

The rest of the paper is **organized** as follows: section two **describes** the major challenges …. Section three **provides** an extensive …. Section four **presents** various techniques ….

[4/19: ACA: **civil**]

The wind-tunnel experiments …**are presented** in section 2. In section 3, the computational settings **are described** and the results …**are presented**. The comparison of … **is provided** in section 4. The results of LES simulation **are presented**… moreover, a more detailed comparison **is provided** in … also, section (8) **conclude** this paper.

As one can see from the above examples, the bold processes indicate the organizational presentation of the content of the RAs in an orderly fashion. This manner of presentation invoking attitude as appreciation employing signaling the organizational presentation of the RAs is very

significant and worthwhile while an article is intended to be accepted in a journal. If such a section is omitted from an article, readers might be bewildered as to how the text is constructed organizationally. Alternatively, the article might be so simply rejected on the grounds of not observing the rhetorical regulations of the journal in employing the required move which is structurally needed to exist in its generic position.

The above analysis shows that the writers of RAs may resort to frequent explicit attitudinal meanings to make their readers more interested in the informational aspect of the texts by establishing interpersonally communicative resources.

Contrary to the academic texts that discuss matters related to the academic affairs, in the NRs, one might see human and non-human affairs. The shift in the subject of discussion affects the kinds of attitudes as well. Whereas attitudinal resources as appreciation are exclusively used in the RAs, in the NRs, other kinds of attitude are also exploited:

[4/20: J: **aerospace**]

"We're **safe** [affect]. From this one." That was a quote from NASA's planetary defense officer, Lindley Johnson…

[4/21: J: **mechanical engineering**]

Playing e-mechanic is not necessarily for the novice. To get **better**[appreciation] performance …, then spent "two **stressful** [appreciation] days and nights of blood, …. The result: **excellent** [appreciation]…. Still not **satisfied** [affect], Mr. Cagnolatti is … and uploads the **new** [appreciation] software ….

[4/22: J: **electronics**]

There are **major** [appreciation] technical **hurdles** [appreciation] in a project … but the parts **need** [appreciation] to fit with …. "It's a **challenge** [appreciation]," said Dr. Bigot, who **devotes** [affect] much of …. "We **need** [affect] to be very **sensitive** [judgment] about quality."

[4/23: J: **computer**]

Moreover, they **want** [affect] to build on …, who developed techniques that opened the door to **remarkable** [appreciation]

improvements [appreciation] in an A.I. technology called machine learning,… and the tech industry considered … an **unpromising** [appreciation] backwater.

[4/24: J: **civil**]

"He **didn't** just **want** [affect] to build a bridge. He **wanted** [affect] the bridge to look a **particular** [appreciation] way," he said. "The stone towers are …**decorative** [appreciation]. They don't have … because he **felt** [affect] they made it look **right** [appreciation]."

The employment of attitudinal resources in both kinds of texts, i.e., the RAs and NRs, shows the recent shift of writers' attitudes for applying these resources to establish an effective, interpersonal communication with the readers. In this regard, even RAs are seen to be increasingly dense with attitudinal resources. Meanwhile, in the NRs which are regarded as less objective texts, not only are numerous instances of appreciation applied but other kinds of attitude, i.e., affect and judgment, are also observed. Affect, and judgment is not applied to the RAs because their writers attempt to keep their objective perspective as the dominant means of communication, although their texts are charged with an appreciation for maintaining interpersonal communication as the new trend of communication even in the academic levels. In the NRs, on the other hand, because of the deeper affectual relationship that is expected to exist between the writers and the readers, in addition to using appreciation, affect and judgment are also employed.

As to the grammatical resources, the adjectival form as a standard and interesting grammatical feature is abundantly used in both NRs and RAs in both forms of attribute and epithet in the following extracts:

but were **unable** to provide information [4/32: ACA: **aerospace**]

Neuberger [7] have yielded **valuable insight** into maximum transient [4/32: ACA: **aerospace**]

bulky and **stabl**e structures [4/1: ACA: **aerospace**]

We're **safe** [4/20: J: **aerospace**]

as two **major** competing modes [4/33: ACA: **mechanical engineering**]

a gate dielectric plays an **important** role [4/2: ACA: **mechanical engineering**]
as an **enthusiastic** Tesla owner [4/25: J: **mechanical engineering**]
promising candidates [4/34: ACA: **electronics**]
significant technical hurdles [4/22: J: **electronics**]
unified mathematical paradigm [4/4: ACA: **computer**]
unpromising backwater [4/23: J: **computer**]
These two scores will finally be **equivalent** [4/14: ACA: **civil**]
he felt they made it look **right** [4/24: J: **civil**]
under **intelligent** clothing [4/35, ACA: **civil**]
Instances of nominal qualities which are infused with attitudinal meaning are also applied in both RAs and NRs in the following extracts:
With the **development** of technologies [4/1: ACA: **aerospace**]
a tremendous **opportunity** to test our theories [4/26: J: **aerospace**]
the hopfion **stability** [4/36: ACA: **mechanical engineering**]
the car's **limitations** and **errors** [4/25: J: **mechanical engineering**]
its decent **strength** [4/30: ACA: **electronics**]
significant technical **hurdles** [4/22: J: **electronics**]
implementation **complexity** [4/29: ACA: **computer**]
remarkable **improvements** [4/23: J: **computer**]
Significant **improvement** of performance [4/14: ACA: **civil**]
the more significant **problem** in this part [4/29: J: **civil**]

Processes are also infused with attitudinal meanings in both of these texts showing that evaluative meaning has affected the RAs and NRs at the level of verbs, too. The application of the verbs implying evaluative reading indicates that the writers of these texts are becoming aware of the significance and effect of attitudinal meanings in engaging readers' attention:
With the development of technologies, the lethality of the weapons is **significantly enhanced** [4/1: Aca: **aerospace**]
however, each film generally **suffers** from undesirable crystallinity [4/12: Aca: **mechanical engineering**]

None of that has **discouraged** some **enthusiastic** Tesla owners [4/31: J: **mechanical engineering**]
Its use as a substrate layer also **promotes** the recovery [4/30: ACA: **electronics**]
Dr. Bigot, who **devotes** much of his time to [4/22: J: **electronics**]
capacity requirements are **increasing** drastically [4/28: ACA: **computer**]
they **want** [attitude: affect] to build [4/23: J: **computer**]
the model performance will not be **improved** [4/14: ACA: **civil**]
He and Mr. Dinkeloo **disagreed** on [4/27: J: **civil**]

The writers of both RAs and NRs make use of the above grammatical resources carrying attitudinal meanings for enriching the evaluative content of their texts. The writers make use of other grammatical resources which intrinsically carry attitudinal meanings with the purpose of maintaining the presence of evaluation at a desired and required level. However, the tendency of the RA and NR writers in using an extensive list of adjectives over other grammatical resources shows the significance of this grammatical feature in characterizing the textuality of texts.

Conclusion

The attitudinal analysis of the disciplines in this study has shown that evaluation is employed in both academic and journalistic domains. One of the findings emerging from this study is that, contrary to the traditional beliefs that attitudinal assessments and evaluations have little or no significance in the discoursal formation of disciplinary English, frequent instances of attitudinal resources of appreciation in the different parts of an RA might be attributed to the logogenesis of language use which does not lead to lowering the level of objectivity in academic texts but enhancing interpersonal communication.

An essential finding of this study was that the use of attitude as appreciation, mainly found in all sections of academic articles, corresponds characteristically to the purpose of the section of an RA in which it is used. The kind of appreciation in the *introduction* section is used for evaluating other studies pertinent to the current study and the

concept of the study in general; however, the kind of appreciation which is utilized in *results and discussion* evaluates the study itself.

Turning now to affect and judgment, the evidence from this study suggests that affect and judgment are exclusively used in the journalistic texts. Utilized for expressing emotions and feelings as well as evaluating behaviors of people (Martin & White, 2005), affect and judgment in RAs fail to enhance discussions and reinforce scientific achievements. Therefore, RAs do not inherently deal with emotional affairs, which are hardly related to academic issues. NRs, on the contrary, might be used for expressing emotions and feelings because strict rules and regularities do not impose them as their counterpart. Meanwhile, one of the main purposes of NRs, in addition to conveying information, is to establish interpersonal rapport between writers and readers. That is, attitudes, feelings, and emotions of both writers and readers are rhetorically considered in the construal of the texts. Thus, one might come across texts which are pregnant with emotional expressions and judgments.

With the application of the grammatical forms, it was revealed that the writers of both academic and journalistic texts make use of every possible grammatical structure to evaluate their texts. In other words, grammatical forms are utilized in both text types for expressing evaluation. The findings of the study merely included analyzing RAs and NRs qualitatively. Meanwhile, our analysis was restricted to five disciplines. Therefore, the qualitatively methodological approach and limited corpus call for further studies using more data, following a mixed methods design to explore the role and function of evaluation in the construction of RAs and NRs.

The findings of this research can help journalists and authors of articles to recognize the outstanding role of evaluative language in the construction of these two genres. The outcome of this study can shed light on the way that evaluation rhetorically shapes the writing in RAs and NRs. Therefore, writers can be informed about the role and function of evaluation in the rhetorical construction of these texts. Meanwhile, the study helps them to become informed about the attitudinal resources that

are more favorably welcomed by the writers. The analysis has shown that among the categories of the appraisal framework, one or more categories might be more favored in the textuality of academic or journalistic texts. When the writers are well equipped with this knowledge, their textual characters would be closer to the norms of their discourse community. Moreover, they are informed about the prescribed regulations and the preferential grammatical structures which are maximally used in the construction of these two genres. Furthermore, the findings of this study provide novice writers with rhetorical knowledge of evaluation which can be applied as useful guidelines for writing their forthcoming texts.

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Appendix:
Electronic links to the journal articles analyzed in this study

[4/1] http://www.sciencedirect.com/science/article/pii/S0734743X16310776
[4/ 2] http://www.sciencedirect.com/science/article/pii/S0927796X16301073
[4/3] http://www.sciencedirect.com/science/article/pii/S2211285517300125
[4/4] introduction] http://ieeexplore.ieee.org/document/7733098/
[4/5] http://www.sciencedirect.com/science/article/pii/S036013231630511X
[4/6] http://www.sciencedirect.com/science/article/pii/S0734743X16306753
[4/7] http://www.sciencedirect.com/science/article/pii/S1369702117301736
[4/8] http://www.sciencedirect.com/science/article/pii/S2211285517300435
[4/9] http://onlinelibrary.wiley.com/doi/10.1111/jcc4.12196/abstract
[4/10] http://www.sciencedirect.com/science/article/pii/S0360132316304784
[4/11] http://www.sciencedirect.com/science/article/pii/S0734743X17300210
[4/ 12] http://www.sciencedirect.com/science/article/pii/S0927796X16301073
[4/13] http://www.sciencedirect.com/science/article/pii/S2211285517300125
[4/14] http://www.sciencedirect.com/science/article/pii/S036013231630484X
[4/15] http://www.sciencedirect.com/science/article/pii/S0734743X16306753
[4/16] http://onlinelibrary.wiley.com/doi/10.1002/adma.201606128/abstract
[4/17] http://www.sciencedirect.com/science/article/pii/S2211285517300125
[4/18] http://ieeexplore.ieee.org/document/7553489/
[4/19] http://www.sciencedirect.com/science/article/pii/S036013231630511X
[4/20: j] https://www.nytimes.com/2017/04/19/science/asteroid-earth-nasa.html
[4/ 21] http://www.nytimes.com/2004/02/13/travel/driving-altering-your-engine-with-new-chips.html
[4/22] https://www.nytimes.com/2017/03/27/science/fusion-power-plant-iter-france.html
[4/23] https://www.nytimes.com/2017/04/09/technology/canada-artificial-intelligence.html
[4/24] https://www.nytimes.com/2017/03/03/nyregion/hell-gate-bridge-a-good-place-to-hide-from-zombies-turns-100.html
[4/25] https://www.nytimes.com/2016/01/18/technology/driverless-cars-limits-include-human-nature.html
[4/26] https://www.nytimes.com/2017/04/13/science/saturn-cassini-moon-enceladus.html
[4/27] https://www.nytimes.com/2017/02/17/nyregion/abba-tor-dead.html
[4/28] http://ieeexplore.ieee.org/document/7553489/?reload=true

[4/29] http://ieeexplore.ieee.org/document/7553489/
[4/30] http://www.sciencedirect.com/science/article/pii/S2211285517300393
[4/ 31] https://www.nytimes.com/2016/01/18/technology/driverless-cars-limits-include-human-nature.html
[4/32] http://www.sciencedirect.com/science/article/pii/S0734743X16306753
[4/33] https://www.nature.com/nmat/journal/v16/n4/full/nmat4813.html
[4/34] http://www.sciencedirect.com/science/article/pii/S2211285517300435
[4/35] http://www.sciencedirect.com/science/article/pii/S036013231630484X
[4/36] http://www.nature.com/nmat/journal/v16/n4/full/nmat4826.html