

Iranian Scholars' Revision of Their Submitted Manuscripts: Signaling Impersonality in Text

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Abstract

Nonnative English-speaking scholars have often been reported to be at a disadvantage vis-à-vis their English native counterparts when it comes to writing a publishable research article (RA). When they submit their manuscripts to English-language journals, they sometimes receive comments criticizing their faulty English. One area of difficulty for these authors is the grammaticalization of neutrality, impersonality, and objectivity. Relying on systemic functional linguistics (SFL), as the analytic framework, and by comparing the transitivity systems of the manuscripts written by the scholars prior to submission with their after-publication version, this study investigated how this is achieved during the revision process. Results suggest that revisions tend to put the authors in the background of the text. This involves increasing the presence of relational processes and reducing the number of material ones, and as far as voice is concerned, the proportion of passive processes in relation to the active ones increases.

Keywords: Academic Publishing; Revision; Impersonality; Transitivity

1. Introduction

In recent years, there has been increasing interest among nonnative English-speaking (NNES) scholars in academic English publishing in order to ensure a successful academic life. More often than not, this is because universities in many countries impose the pressure of publishing in English on scholars by establishing English publications as a criterion for tenure or other academic promotions (Curry & Lillis, 2004; Flowerdew & Li, 2009). However, these scholars have often been reported to be at a disadvantage vis-à-vis their English native counterparts when it comes to writing a publishable research article (RA). In fact, there are a number of factors contributing to this disadvantage, including lack of linguistic repertoire, interference from L1, inappropriate claims and so forth (Flowerdew, 1999a, 1999b; Salager-Meyer, 2008; Uzuner, 2008).

In particular, when NNES scholars submit their manuscripts to English-language journals, they sometimes receive criticisms for their careless “grammaticalization of neutrality, impersonality, and objectivity which give the research article its character” (Martinez, 2001, p. 228). When responding to journal reviewers' comments of this nature, these scholars start to feel that the seemingly effortless revision process is not a matter of putting a third-person singular *s* or adding some *ings* because they should exploit and handle their language resources in a way so that they can distance themselves from the information they present.

One area that seems to have a crucial role in the way writers distance themselves from their text is the transitivity system, which is the primary system within systemic functional linguistics (SFL) for expressing the experiential meanings (or who does what to whom and in what circumstances). It is a system of “transmission of ideas “representing ‘processes’ or ‘experiences’: actions, events, processes of consciousness and relations”(Halliday, 1985, p. 53). Transitivity has been extensively studied for its important role “in revealing and/or concealing ideological orientations and positions” (Babaii & Ansary, 2005, p. 135). Areas like stylistics (e.g., Simpson, 1993), critical linguistics (e.g., Fairclough, 1989) and scientific discourse (e.g., Halliday & Martin, 1993) have all focused on the way clauses are organized to express experiential meaning.

It would be useful to analyze the transitivity system in NNES scholars' texts and the changes happening therein in order to shed some light on the processes involved in creating a manuscript the reviewers can no longer find to be personal, subjective, and biased. One way of such investigation would be to compare the manuscripts written by the scholars prior to submission (PS) with their after-publication (AP) version in terms of their transitivity system.

From a pedagogical viewpoint, it makes sense to investigate the relevant features of the text that are altered during the revision process, so that NNSE novice researchers may be able to “lessen the impact of linguistic and cultural barriers to being productive from the start of their careers” (Gosden, 2003, p. 88). However, there has been little descriptive research on the textual revisions. Insights taken from such studies could make explicit the nature of the grammaticalizations demanded by journal editors. What is more, samples of PS are not publicly available documents and to which researchers, teachers, and students usually have little or no access. Swales calls such genres *occluded* and notes that “academic occluded genres are, in part, those which support the research publication process but are not themselves part of the research record” (1996, p. 45). This is also in line with Flowerdew (2001) who notes, “anything that helps demystify the editorial process is likely to be helpful for novice contributors to international journals” (p. 146). Therefore, this study investigates how Iranian scholars revise their manuscripts by comparing the

transitivity systems of PS and AP versions of their manuscripts. To this end, we rely on SFL as our analytic framework.

2. Theoretical Background

According to Coffin and Donohue (2012), “SFL text analysis is not only the analysis of linguistic resources but, in addition, the analysis of their social, cultural and ideological meanings” (p. 65). Textual analysis done under this framework is aimed to explain explicitly the relationship between text and context. Therefore, what is done as SFL analysis of text is not does not involve only lexicogrammatizations in the absence context of use, but the social context in which the text is constructed (Coffin & Donohue, 2012). As regards scientific writing, the social context would include the writers’ relation to the scientific content, previous scientific work, the rest of the scientific community, and the scientist’s claim for his or her own work.

According to SFL, language is seen as having metafunctional spectra of meaning. These spectra involve ideational (which includes experiential and logical), interpersonal and textual (Eggs, 1994). The ideational metafunction is about the real physical world and according to which clauses are regarded as representations. The interpersonal metafunction involves the social world, especially what goes on between the speaker and hearer; here clauses are treated as exchanges. The textual metafunction is concerned with the verbal world, particularly the way in which information flows in a text; clauses are considered as messages (Halliday, 1985/1994). Therefore, in SFL analysis, we can look at a clause from three perspectives.

Because Halliday’s metafunctional organization expresses all the dimensions of a writer’s control of text (and, thereby, of textual revision), it can be suggested that success in scientific RA writing can be evaluated by analyzing textual revisions in relation to a network of ideational, interpersonal, and textual functions (Gosden, 1995). What the present study aimed to focus on was the system of realizing the experiential meanings of the ideational metafunction, namely the transitivity system. The main function of the grammatical system of transitivity, as Halliday argues (1994), is to construe “the world of experience into a manageable set of process types” (p. 106). These process types may include the following three elements: process, participant, and circumstance. The actual process, which is realized by the verbal group, refers to the event or state that is described and is the central component of the message from an experiential point of view (Thompson, 1996). The participants are those people, objects, or phenomena associated with the process and are realized by the nominal group. The circumstances provide contextual information for the process and are typically realized by adverbial and prepositional groups. The circumstantial elements are more peripheral than the

process and participant elements in the system of transitivity and are often optional. The present study sought to find the differences between the rejected manuscripts and their published versions in terms of the processes, participants, and circumstances.

2.1 Processes and Participants

In SFL, processes are typically categorized in one of six ways. A process may be material, mental, behavioral, relational, existential, or verbal, depending on the semantics of the verb. Participants are the second element involved in ideation. In grammatical terms, these are typically the subject or object of the finite verb. A participant is not necessarily a human or a concrete thing, but may be an embedded clause. The following definitions are adopted from Butt, Fahey, Feez, Spinks, and Yallop (2000, pp. 52-59) and Christie (2012, pp.11-17):

Material processes, also called process of doing, are concerned with concrete, physical actions. The participants that coincide with the grammatical subject of material processes are termed the *actors*. Other participant terms typically found with material processes are the *goal* that is the object of the action; the *range* that is the domain over which the action takes place; and the *beneficiary* that is a participant that benefits from the process in some way:

We	distributed	the questionnaires	among the participants	two weeks after the initial selection.
Actor	Material	Goal	Beneficiary	Circumstance

Mental processes are concerned with thinking, feeling ,and seeing. Here, the participants are known as the *senser* that must be a conscious being and the phenomenon. Typically, mental processes project, that is, they relate to another whole clause:

Zwaan et al.,	observed	that miR-146a significantly induced up-regulation of GATA3 expression.
Actor	Mental	Phenomenon

Behavioral processes stand between the material and mental processes. They are defined as “physiological and psychological behavior, like breathing, dreaming, smiling, coughing” (Halliday 1985, p. 128). The participants are the *behave*r that is the grammatical subject and the *circumstance*. Because these processes are not very common in language of science (Martinez, 2001, p. 230), we did not consider this type in our analysis.

Relational processes are concerned with the processes of description regarding the abstract relations that relate participants to each other distinguished by their potential to be reversed. These include either an irreversible *attributive* process whereby a quality, or an adjective (attribute) is assigned to a participant that is termed *carrier* realized by a noun or a nominal phrase and or a reversible *identifying* process consisting of two nominal phrases as participants, namely *token* and *value* and having the capability of being passivized. The verbs are usually *to be* or *to have* or their synonyms such as *seem* and *represent*:

The active superconducting current controller (ASCC)	is	a new type of SFCL.
Carrier	Relational	Attribute

TD	is	the other setting parameter of OCR that is set for protective coordination
Token	Relational	Value

Existential processes are quite similar to relationals that use the verb *to be*. However, existential processes use as the subject the words *there* or *it* and the participant is only the existent:

There	was	a significant, moderate down-regulation in the expressions of Notch1.
	Existential	Existent

Verbal processes stand at the boarder of mental and relational and are concerned with the forms of saying (e.g., *tell*, *ask*, *reports*). The participant who does the saying is the *sayer*, what is said is the *verbiage*, and the one to whom something is said is the *receiver*. As with mental processes, verbal processes can project, that is, relate to another entire clause:

Our results	showed	that ectopic expression of miR-146a could not independently induce differentiation in lymphoblastic cells
Sayer	Saying	Verbiage

2.2 Writers' Resources for Representing Impersonality

The rhetorical construction of objectivity is an important aspect of academic writing. Analyses of academic texts have shown that the decision to express arguments in a somewhat objective and impersonal style is not only related to the epistemological beliefs of the disciplinary community to which writers belong

(e.g., Hyland & Tse, 2005) but also associated with the need of scholars to conform to the writing traditions of their academic community (e.g., Shaw & Vassileva, 2009). Writers have been reported to tend to remove agency to objectify their discourse, and to achieve this they employ different structures such as passive voice (Lachovicz, 1981), intransitive ergative structures (Sinclair, 1990), active verbs with inanimate subjects (Master, 1991) and nominalizations (Halliday & Martin, 1993). Of course, the degree of the objectification achieved through these rhetorical options varies. For example, in passive constructions although the agent is concealed, it can be still probed by questions like *by what* or *by who*, and it can be interpreted, though not observed (Halliday, 1994, p. 169). However, in intransitive ergative constructions (e.g., *the leaves dried*), these questions cannot be posed; hence, the text would have a higher impersonality in comparison with the agentless passive structures. Therefore, according to Martinez (2001, p. 233), the grammaticalizations used to render a text impersonal can be considered to represent a cline along two dimensions: a syntactic-semantic dimension (congruence) and a pragmatic one (negotiability).

Congruence is often associated with typicality and unmarkedness. For Halliday (1985) a congruent realization is “a kind of baseline” or a “maximally simple” (p. 14) way of expressing things. For example, the typical unmarked way for making a request is to use an imperative not a question. However, speakers or writers sometimes tend to use marked and atypical alternatives for expressing the same thing. For instance, although the typical unmarked form for making a request is an imperative, we tend to use an interrogative structure to make our requests more polite). This process is known as *grammatical metaphor* (Martin & Rose, 2003/2005).

Negotiability, on the other hand, is concerned with the interpersonal meaning of discourse semantics (Martin & White, 2005). The system in which the interpersonal meanings are captured is the mood system where negotiation occurs through the finite verb and subject. According to Martinez (2001), “personal subjects, particularly the first person subjects *I* or *we* [emphasis original] appear to be the most negotiable as they assume responsibility for what is assessed” (p. 233-234). On the other extreme, there are nominalizations that minimize and reduce negotiability by distancing the assessment from the speaker.

It follows from the above definitions that the relationship between congruence and semantic distancing is an inverse one. That is, in texts with less congruency, the distance between the writers and what they express is greater than in more congruent texts. By the same token, the less negotiable a text is, the less the author of that text can be held accountable for what he or she has claimed.

In our study, by analyzing the transitivity system of PS and AP texts, we will focus on the different types of processes, participants, and the nominalizations altered—omitted or created—during the process of revision.

3. Materials and Method

In order to successfully revise their English manuscripts, nonnative scholars whose manuscripts are returned by journal editors for reasons that include language use must embark on a precarious journey to meet the standards of the editors or the manuscript will not be published.

3.1 Research Question

This study investigated the revisions made by those fortunate Iranian scholars who have finished the journey safely and passed the hot water behind. Particularly, we were concerned with the changes made in different sections of the Iranian scholars' manuscripts (i.e., Introduction, Method, Result, and Discussion [IMRD]), regarding the transitivity system of the manuscripts, and how these changes contribute to the objectification of the texts.

3.2 Pilot Study

In this phase of our study, we first conducted a pilot study on 5 manuscripts, the purpose of which was to test the appropriateness of the methodology in terms of the analytical tools employed, the disciplines in which the articles were published, the final number of manuscripts to be collected, the number of scholars to be interviewed, the time limits, and so on. Pilot results were used to adapt and modify those methodological issues that proved to be infeasible.

3.3 Inclusion Criteria for Data Selection

Due to the extremely rare publications in the fields of social sciences as well as art and humanities, we decided to narrow the scope of the study to only those from the fields of sciences and medical sciences. In order to understand the linguistic changes the Iranian scholars make to their manuscripts accepted for publication after initial rejection for reasons that include language use, the following text samples were collected:

1. The original manuscript submitted to an ISI journal that has a fairly accepted Impact Factor (a measure reflecting the average number of citations to recent articles published in the journal) in the discipline in which the scholar practices.
2. The actual published article conforming to the IMRD pattern.

3. Correspondence from the journal editor, indicating the problematic language used in the originally submitted manuscript.

3.4 Data Collection

Because public access to items 1 and 3 was not possible (Swales' occluded genres), these were collected through ways explained below. First of all, the best sources for collecting the data needed for the very purpose of this study were deemed to be the editing centers offering editing and revising services for those who want to publish in English. However, none of these associations agreed to lend a helping hand upon our e-mail and snail mail letters. Their decline led us to go straight to the authors themselves.

We decided to search typical Iranian last names such as Mohammadi, Ahmadi, and Akbari in directories of prestigious and comprehensive online scientific data bases such as ScienceDirect and ProQuest and look for the latest publications in any discipline. However, despite a great number of phone calls and e-mail contacts made on our part and promises of cooperation made on theirs, the overwhelming majority of the contacted scholars failed to be as cooperative as on their phones or in their e-mail messages, and the number of manuscripts collected in this way was far from our expectation. Therefore, we resorted to a traditional yet more effective technique, namely personal contact.

This method involved either sending invitation letters to different departments of Shahid Chamran University and Ahvaz Jundishapour University of Medical Sciences, or simply going to the authors' offices, informing them of the purpose and outcomes of the study, and finally requesting them to participate. Despite the laborious nature of such an undertaking and the occasional cold shoulders the participants-to-be tended to give, this method was the most fruitful of all, making it possible to collect the lion share of our corpus. And eventually, the corpus was collected.

3.5 Data Analysis

Our focus here was on the clause as representation. Transitivity is the resource for construing our experience in terms of processes, participants, and circumstances, and we took these into account. More specifically, what was of interest here were the differences in the different sections of the Iranian scholars' manuscripts (i.e., IMRD), before submission and after publication, regarding the transitivity system of the manuscripts due to the changes made during the revision process of these manuscripts.

Transitivity was analyzed by three features: process, voice, and participant. Voice was analyzed for active or passive. Within the feature of process, the typical

six processes are delineated: relational, material, mental, verbal, existential, and behavioral. The relational process was, further, analyzed for its type as either identifying or attributive. The feature of participant also has three more detailed levels of analysis. Participants are divided into: *we*-subject patterns, anticipatory *it*-patterns, and inanimate subject patterns, considered in the literature as linguistic resources that writers use to express varying degrees of authorial commitment/detachment (Pérez-Llantada Auría, 2011).

We had two types of analyses: quantitative and qualitative. We looked for the percentages/frequencies of the selected lexicogrammatical features of the three metafunctions across the different rhetorical sections of the PS and AP RAs (i.e., IMRD) and then compared and contrasted these frequencies. This was done to see what types of feature change were more common, and whether the differences between the feature frequencies of the PS and AP texts were significant or not. Of course, we were also mindful of Ravelli's (2000) caution that, "there is nothing intrinsically valuable in being able to identify a constituent [of the lexicogrammar] for its own sake" (p. 29). Therefore, the qualitative analysis aimed at complementing the quantitative one was performed on a subset of the corpus (one-third or 20 of the whole articles), comparing the revised clauses (AP) with their original unrevised counterparts (PS) in order to see the nature of the transformations made into the different rhetorical sections of the RAs and again to see whether these transformations were proportional to certain metafunctions and, finally, to see what was achieved during the revisions that made the text publishable. In short, whereas the quantitative analysis was concerned with *what* and *how much* of the changes, the qualitative one dealt with the *how* and *why* of these changes. It should be noted that in the analysis, the unit of analysis was the T-unit that is "an independent conjoinable clause complex" (Fries, 1995, p. 49).

We applied this systemic-functional network of textual revisions to the corpus collected from the scholars. However, to guard against subjectivity, the complete Introduction and Discussion sections of 20% of the corpus selected randomly were analyzed by the researchers twice with an interval of more than 1 month. Two other Ph.D. students of TEFL (raters 2 & 3), both having been revising English articles written by Iranian scholars for several years, were also asked to analyze the same sections of the same articles and to categorize the errors based on the framework given above. In order to increase the chances of reaching a consensus between the raters and minimize any possible discrepancies emerging among them, they were given training on how to extract the features. However, in spite of these precautions, there were still ambiguous cases that are discussed in Dissertation section, but not given here due to space limitations. Also, to further enhance the validity of the data for the statistical analysis, we recoded the process types of 20

percent of the sample with an interval of more than one month. Kappa coefficient (k) was used to test the intrarater reliability, and the reliability index for the agreement between the initial coding and second coding of the corpus was ($k = 0.905$).

The collected data were analyzed using descriptive statistics through frequency tables. In order to show the significance of any possible differences based on the frequency tables, inferential statistics was also employed. This involved the chi-square test in order to see whether there are any possible significant differences among the textual features elaborated above. The results of inferential statistics were interpreted in the light of the qualitative analysis of the data.

4. Results

The analysis of the transitivity system of the texts involved counting the number and type of processes, participants, and voice across the different rhetorical sections of the PS and AP RAs. The PS and AP texts that included 15,375 and 12,243 clauses, respectively, were analyzed in terms of the type of process, voice and participant. Because the numbers of clauses in the two text sets were different, we normalized them by multiplying the quantities of PS texts into 0.79. Due to their extremely rare occurrence, behavioral processes were excluded.

Overall, the greatest change in distribution occurred in the percentage of material and relational processes in relation to the other processes. The number of material processes was reduced from half the total processes in the PS texts down to one-third in the AP texts, whereas the relational processes experienced a considerable increase. As for participants, the most observable change of the increase was in the number of inanimate subjects and the decrease in *we*-subjects. As with voice, a significant increase from the PS texts to the AP texts was observed. In the following sections, we will deal with these changes in more details. Due to the large number of tables presenting the results of the chi-square test, only tables including percentages of different lexicogrammatical features are given here.

4.1 Processes

The processes that differed significantly from the PS to AP texts during the revision process were material processes, making up 51.57% and 41.12% of the total number of processes in the PS and AP manuscripts, respectively. The next process subject to significant changes in the manuscripts analyzed was the relational process (23.66% in the PS texts vs. 33.08% in the AP texts). The percentages of the other processes in the PS and AP texts across the different rhetorical sections of the RA are given in Table 1 and Table 2:

Table 1. *Frequency of Processes in Different Sections of PS RAs*

	Introduction	Method	Results	Discussion	Total
Material	2297.32	1083.09	715.74	2170.13	6266.28
Relational	248.85	942.47	482.69	1203.17	2877.18
Verbal	722.06	127.98	167.48	408.43	1425.95
Mental	476.37	54.51	92.43	533.25	1156.56
Existential	102.70	97.96	168.27	63.99	432.92

Table 2. *Frequency of Processes in Different Sections of AP RAs*

	Introduction	Method	Results	Discussion	Total
Material	1726	967	741	1603	5037
Relational	493	1107	482	1970	7504
Verbal	788	65	237	373	1463
Mental	546	59	119	608	2664
Existential	63	66	184	58	371

The changes made in processes had a different distribution across the different rhetorical sections of the RAs. The Introduction sections wherein authors try to create a research space through the acknowledgement of previous work (Swales, 1990) had the highest number of verbal (e.g., *report* or *show*) and mental processes (e.g., *believe* or *observe*), and this is attested by Martinez (2001) who attributes it to the general function of the Introduction section. However, the processes that were subject to revision in this section were mostly material processes. For example:

- (1a) *Jaishi and Ren [17] used eigen frequency and modal strain energy residuals to update the FE model [PS]*
- (1b) *Jaishi and Ren [17] employed eigen frequency and modal strain energy residuals to update the FE model [AP]*

The revisions made to the processes of the Introduction sections were often like this example, wherein an overly used process like *use* is replaced with another, say *employ*, and this seems to have been done to add variety to the conservatively written PS texts. However, the few changes to the verbal or mental processes were in form of the following example, wherein the tense or subject-verb agreement was corrected:

- (2a) *Some researches stated that bare ZVIN particles are prone to agglomerate rapidly.*
- (2b) *Some research states that bare ZVIN particles are prone to rapid agglomeration.*

The frequent changes in the processes in the Method sections again occurred to the material processes. These changes involved either passivization of the process or changing its tense. This reflects the very nature of this section of the RAs, namely what becomes highlighted, or to put it more technically, thematized is the object of the study, not the authors themselves, and this is usually done for distancing themselves from their text.

- (3a) *In short, 20 mL of NaBH₄ solution (1.05 M) slowly added in the constant rate of 3 mL/min under N₂ atmosphere.*
- (3b) *In short, 20 mL of NaBH₄ solution (1.05 M) was slowly added in the constant rate of 3 mL/min under N₂ atmosphere.*

Of course, despite the concealment of the agency in passive constructions, the agent can be interpreted though not observed (Halliday, 1994, p. 169). However, the highest percentage of changes made to the processes in this section suggests that Iranian scholars need more instruction on presenting what they have done in their studies.

The sections in which the authors had made the fewest linguistic errors in terms of processes were the Results sections. Although this section is said to be dominated by relational and existential processes (Martinez, 2001), the tiny minority of processes that were revised in this section were mostly verbal or mental. This has significant implications for the authors' impersonality because these processes are reported to be used to make evaluative comments about the data and agreement with other previous studies (Thomson, 1993). The few changes made to the processes of this section were either in form of the following examples, wherein the tense or subject-verb agreement of a relational process was corrected:

- (4a) *According to Table 3, hydrodynamic diameters of YTY were larger than YTY in different ionic strengths.*
- (4b) *According to Table 3, hydrodynamic diameters of YTY are larger than those of YTY in different ionic strengths.*

Or, verbless clauses which were modified by adding an existential process:

- (5a) *Generally, sum of four different interparticle forces namely Van der Waals, the magnetic, the electrostatic, and the steric control colloidal stability of ZVIN particles.*
- (5b) *Generally, there was a total of four different interparticle forces namely Van der Waals, the magnetic, the electrostatic, and the steric control colloidal stability of ZVIN particles.*

The Discussion sections were fraught with revisions involving nominalization of processes. When a process is nominalized, it becomes part of a nominal group to which the writer can add modifiers and qualifiers. This becomes highly critical in a section of an article wherein sound and solid arguments are supposed to be made because it is through nominalization that it becomes possible to build up chains or sequence of logical argument (Halliday, 2008). Consider the following examples:

- (6a) *The results of aforementioned phenomena lead to increasing the size of PVP-ZVIN compared to PAA-ZVIN.*
- (6b) *The results of aforementioned phenomena lead to an increase in the size of PVP-ZVIN compared to PAA-ZVIN.*
- (7a) *The DC flux in the magnetic core of the power transformer in the primary stage of the process increases rather than decreasing,*
- (7b) *The DC flux in the magnetic core of the power transformer in the primary stage of the process has an increase rather than a decrease,*

These nominalized structures serve to “compactly convey . . . technical messages to small groups of highly trained readers in a specialized research field” (Gross, Harmon, & Reidy, 2002, p. 167). In fact, nominalization allows “the expression of complex, information-rich utterances in a compact form” (Hanauer & Englander 2013, p. 22). No wonder that the prevailing processes left intact after revision in this section are relational and existential processes. Martinez (2001) believes that these processes are the ones that particularly realize the central moves of the Discussion section, namely Evaluation of Results, Statement of Results, and Reference to Previous Research.

4.2 Voice

Passive constructions were observed to prevail across all the rhetorical sections of the RAs, being particularly prominent in Method and Results sections, but also scoring the highest comparative frequencies and the highest expected frequencies in Introduction and Discussion sections. The proportion of active and passive processes changed noticeably from the PS texts to the AP texts (see Tables 3 & 4). In all clauses in the AP texts, more than half of the processes were active (55.98%), and slightly less than half were passive (43.98%). In contrast, almost two-thirds of the processes in the PS texts were active (67.99%), whereas about one-third was passive (31.97%). The choice of voice across the different sections of the RAs in the PS and AP texts is given here:

Table 3. *Frequency of Active/Passive Voice in Different Sections of PS RAs*

	Introduction	Method	Results	Discussion	Total
Active	3404.11	612.25	1339.05	2904.83	8260.24
Passive	480.32	1588.69	366.56	1450.44	3886.01

Table 4. *Frequency of Active/Passive Voice in Different Sections of AP RAs*

	Introduction	Method	Results	Discussion	Total
Active	3106	253	967	2531	6857
Passive	479	2154	740	2013	5386

As regards the relationship between voice and the rhetorical sections, it could be observed that the changes made in processes and voice had a different distribution among the different sections of an article (i.e., IMRD). For example, the voice in the Method sections was almost always passive. However, the exception to this was when there was an unusual adjustment to a method in which the revision involved sentences often beginning with the pronoun “we,” followed by the activity, as in, “*We changed the sample size due to the restrictions we had.*” This is in line with Swales and Feak (2004) who believe that in the Method sections, *we* is used to distinguish commonly accepted methods from those that are altered by the researchers.

In the PS texts, the passive processes were almost equally divided between *material* and *mental* processes. However, their distribution in different sections of the RAs was different. For example, in the Discussion sections of the AP texts, the vast majority were mental (e.g., *It can be argued that . . . this method is considered as*) with only a small percentage of passive material and a passive existential processes. However, in the Introduction and Method sections the passivized material processes outweighed their mental counterparts. For example, in the PS texts, the clause, which reads in part *in which three types of identified HNCs are given*, the process is analyzed as being passive and material. In the AP text, it is reconstructed to read, *three HNCs are identified*, which is passive and a mental process. In the Introduction and Method sections of the AP texts, more than two-thirds of all the passive processes were mental (e.g., *is resolved, is distinguished, is known, is recognized*). In the PS texts, slightly less than half of these mental processes were stated in the passive. Many more material processes were also presented in the passive in the AP texts.

4.3 Participants

Across the different sections of the analyzed PS and AP RAs, the three types of participants (i.e., *we*-subjects, anticipatory *it*, and inanimate subjects) had a

different distribution. The clauses having passive structures were excluded, and the frequencies and percentages presented here were calculated based on the active structures.

Table 5. *Frequency of Participants in Different Sections of PS RAs According to Active Voice*

	Introduction	Method	Results	Discussion	Total
<i>We</i> -subjects	1182.63	874.53	298	743	3098.16
Anticipatory <i>it</i>	618.57	1044.38	501	1027	3190.95
Inanimate subjects	741.81	303.36	1682	1756	4483.17

Table 6. *Frequency of Participants in Different Sections of AP RAs According to Active Voice*

	Introduction	Method	Results	Discussion	Total
<i>We</i> -subjects	1522	441	341	518	2822
Anticipatory <i>it</i>	513	1129	791	947	3380
Inanimate	525	640	1602	2354	5121

Overall, the results suggest section-specific use of subject patterns in both PS and AP texts. For example, the *we*-subjects prevailed the Introduction sections in both PS and AP texts, with the tokens in the AP texts outnumbering their PS counterparts. By contrast, the Discussion sections were host to the greatest number of inanimate subjects and anticipatory *it*, again with the AP tokens outnumbering their PS counterparts.

The results of the qualitative analysis of the participants showed that in the Introduction sections, the revisions made in a way that the use of *we*-pronoun patterns increased more than the other two options:

- (8a) *Cladosporium, Alternaria, Aspergillus, Penicillium, and Rhizopus are as predominant fungi genera in Ahvaz.*
- (8b) *We can consider Cladosporium, Alternaria, Aspergillus, Penicillium and Rhizopus as predominant fungi genera in Ahvaz.*

The addition of *we* here is to include the reader, as well or to refer to the discourse community to convey the idea that readers are considered as colleagues or as fellow researchers reducing the gap between writer and reader (Li & Ge, 2009) and bringing readers into the text (Hyland, 2008). This was strategically done when a criticism or a claim was to be made because, by doing this, their impact would be mitigated (Myers, 1989, p. 7). Of course, Myers also believes that strategic use of pronouns is to stress solidarity.

However, not all *we* inclusions were made as a better way of establishing solidarity and involvement with the reader. In the AP texts, *we* was included when writers aimed at promoting their research. This was done to justify the need for the current research by explicitly referring to their own previous findings:

- (9a) *It was demonstrated that crocin also determines a significant myocardial integrity and function by the simultaneous treatment with vitamin E.*
- (9b) *We demonstrated that crocin also determines a significant myocardial integrity and function by the simultaneous treatment with vitamin E.*

The Method sections in both PS and AP texts were dominated by passive structures. However, the difference between the PS and AP texts was in the number of passives used, which were followed by *we*-subjects and inanimate subjects. As stated earlier, this was done whenever there was an unusual adjustment to a method often beginning with the pronoun “*we*,” followed by the activity:

- (10a) *A simple quantitative microassay tool was used for determining the amounts of collagen and noncollagenous proteins in tissue sections by differential staining with two dyes, Sirius Red and Fast Green.*
- (10b) *We used a simple quantitative microassay tool for determining the amounts of collagen and noncollagenous proteins in tissue sections by differential staining with two dyes, Sirius Red and Fast Green.*

In the Results sections of the AP texts, the use of inanimate subjects such *Table X*, *Figure Y*, *our results*, or *percentages* and anticipatory *it* increased significantly at $p < 0.01$ when compared to the PS texts. On the contrary, the use of *we*-subjects decreased from the PS to AP texts ($p < 0.01$):

- (11a) *We can see from Fig 3 and Table 1 that the maximum concentration values among dominant isolated fungi at university station were Cladosporium and Aspergillus.*
- (11b) *It can be observed from Fig 3 and Table 1 that the maximum concentration values among dominant isolated fungi at university station were Cladosporium and Aspergillus.*

In the Discussion sections, both anticipatory *it* and inanimate subjects increased, but only inanimate subject patterns in the AP texts showed statistically significant differences ($p < 0.05$) compared to the PS texts:

- (12a) *This is the same as the findings of some researchers like Tarim and Akdeniz (2008)*

- (12b) *This result is the same as the findings of some researchers like Tarim and Akdeniz (2008)*
- (13a) *The dysregulations in the balance of some growth factors play major roles in determining the differences between normal and pathologic tissue repair.*
- (13b) *It is likely that the dysregulations in the balance of some growth factors play major roles in determining the differences between normal and pathologic tissue repair.*

Abstract nouns such as *reason, question, example, way, factor, and result* usually made up the inanimate subjects. These nouns Schmid (2000) called “shell” (p. 37) nouns and are said to sum up a chunk of information. They are said to sum up a chunk of information by conceptualizing and characterizing its function in the discourse (Schmid). Nominal groups having as shell noun have a reporting function and are used to introduce an argument. Of course, occurrences of these shell nouns do not always report the writer’s arguments, but at times those of another scholar, and work as a kind of distancing device in order for the writer to counter-argue, again showing the dialogic nature of the Discussion section.

5. Discussion

The results suggest that, in the revised manuscripts, ideational meaning is generally altered by increasing the presence of relational processes and reducing the number of material ones, and as far as voice is concerned, the proportion of passive processes in relation to the active ones increases. These changes to the ideational meaning, or what the text is about, can be attributed to the objectification of the scientific. Changes in the proportion of types of processes reveal a de-emphasis of material processes in the revised manuscripts and a large percentage of material processes placed in the passive voice, making relational processes prominent. This configuration of processes serves to reify the field, such that people are not doing things, but rather things get done, or things simply are.

In terms of congruence and negotiability, as a significant increase happens in the number of relational processes, particularly as we compared the PS texts with the AP ones proceeding from the Introduction to the Discussion sections, impersonality and incongruence are on the rise, hence contributing to little negotiability.

On the other hand, when the relationship between process and voice was analyzed, the AP texts displayed a greater proportion of mental and material processes in the passive voice. This could be due to the fact that mental and material processes describe cognition and events, and placing them in the passive voice

eliminates the active role of participants. Mental processes require a human senser, and putting a mental process in the passive voice removes the foregrounding of people and further minimizes the role of authors in the text. The presence of relational processes and the passive voice are both typical of English scientific texts, as they serve to obviate the role of the author and hold noun phrases in relation to each other, construing phenomena as if they were things and holding reality still (Halliday & Martin, 1993). Together, these changes in process and voice increase the objectivity and impersonality of the text. Phenomena simply are. Neither the author nor other fallible agents are in some way causing the phenomena.

Further, passivization allows the writer “to retreat to the background, to foreground findings, to convey the impersonal and factual character that results from the use of incongruent structures of low negotiability” (Martínez 2001, p. 242). In fact, these elements create the impression that “the facts are speaking for themselves” (p. 242).

Another important phenomenon observed in the modification of the transitivity system of the texts was nominalization. In fact, both passivization and nominalization conceal the human researcher, “conveying the impression that this type of discourse is a “value-neutral” objective description of facts” (Marco, 2000, p. 66). Nominalization, however, has the advantage of enabling the writer to condense meaning and, thus pack, more information into the very limited space permitted in most academic journals. A notable element of scientific writing is the presence of dense noun phrases that condense a great deal of information into a small space. The focus in science writing is generally not on what the researchers do, but on the processes themselves. They serve to “compactly convey . . . technical messages to small groups of highly trained readers in a specialized research field” (Gross et al., 2002, p. 167). It is a compressed form of writing that now appears in “virtually every sentence in present-day written academic text” (Biber & Gray, 2010, p. 17).

According to Halliday (2004), nominalization “is motivated in the discourses of science because of its massive potential for creating new knowledge” (p. xxi). This is particularly beneficial for the scientific writer because “grammatical metaphor increases the power that a language has for theorizing because it creates virtual phenomena–virtual entities, virtual processes– which exist solely on the semiotic plane; this makes them extremely powerful abstract tools for thinking with” (p. xvii). Nominalization structures, therefore, are already known and “the vast majority of the terms are already established within the discourse community at the time of writing” (Banks, 2008, p. 135). Both the novice reader and nonnative English speaker, however, may find these structures very difficult. The novice reader “would need to literally decipher the various elements of the noun phrase and

relate them to real world” (Hanauer & Englander 2013, p. 22). To produce these structures, the writer must take active elements and condense them down into these complex noun phrases.

In the corpus, unlike the AP texts, the examples of grammatical metaphors found in the PS texts were very limited. One class of such examples were particularly found in the Introduction sections in introductory phrases such as *the present paper discusses*, *the current analysis deals with*, and *this study is concerned with*, wherein inanimate subjects (*paper/study/discussion/analysis*) take verbs of cognitive activities as their predicates. Different studies that have investigated the prevalence of such metonymies in scientific English offer varying results. Myers (1992), for example, found that such constructions are infrequent, and he treated them as a marginal phenomenon. Swales (1990), on the other hand, maintains that they are, in fact, quite prevalent in English, whereas noting that in some languages like Japanese, formulations of this kind are unacceptable. Persian is apparently one of the languages in which this structure is more frequently found. In the corpus, the vast majority of the PS texts contained sentences of this kind, especially in the introductory and concluding sections.

The crucial point from a rhetorical perspective is that this kind of grammatical metaphor, one that positions the *paper/study/discussion/analysis* as a metonymic agent, has an impersonal quality. Because the actions of discussing, proposing, focusing, and exploring are all cognitive activities carried out by the authors themselves, the grammatical metaphor enables them to refrain from indicating the actual agent, thereby downgrading the author’s presence in the text.

However, these findings should not lead us to suppose that the authors of these manuscripts were fully aware of the rhetorical functions of such structures. Rather, we believe that the authors had used these as some form of formulas, and they are far from competently exploiting these valuable resources in their texts. This is supported by several examples of revisions particularly in the Discussion sections, wherein the writers failed to attend to this very important linguistic choice. In fact, researchers are expected “to use language to interpret their results and locate them in relation to the theoretical assumptions that they made in conducting the experiment”. This becomes “impossible to do well without control of the range of grammatical metaphors” (Schleppegrell, 2005, p. 179). For example, consider the following revision:

- *the DC flux in the magnetic core of the power transformer in the primary stage of the process increases rather than decreasing, [PS]*
- *the DC flux in the magnetic core of the power transformer in the primary stage of the process has an increase rather than a decrease,*

The noun *increase* in the second sentence is an example of a nominalization because *increase* is not an entity, but a process that has been observed by the researcher. This process could have a bearing on how information flows as the discourse unfolds because *a decrease* that performs a rhematic function and is new information can be a definite noun form placed in a thematic role as the given information in the following sentences. Thus, from the point of view of discourse structure, nominalization serves the development of the argument.

The Iranian scholars in their PS texts, however, seem to have underestimated the role of passivization and nominalization in creating more objective or impersonal texts, or alternatively they try to signal objectivity via other linguistic devices that are typical in Persian, but not in English. For instance, “Persian writers’ less use of the passive voice may not be indicative of less objectivity in their work; it is only that objectivity is realized through other linguistic elements than passive in Persian” (Jalilifar, 2011, p. 38). Faulty structures written by the Iranian scholars reveal their unawareness of the weightings that different linguistics choices of materializing impersonality might carry not their ignorance of the necessity of an objective and impartial scientific writing.

6. Conclusion

This study investigated the revision process the Iranian scholars usually would go through in order to see how much their texts alter in terms of the degree of and the devices used for signaling impersonality in scientific texts. This was done by comparing the transitivity systems of the PS and AP versions of their manuscripts. In summary, revisions made to the manuscripts tend to put the authors in the background in the text. By and large, this involves making things and events foregrounded, and the agents, when they are named, are rarely human. Material processes, for example, are most often linguistically materialized into passive voice, and this sustains the back-grounding of the researcher. Most often, in scientific RAs, the focus is on the scientific activity—not the scientists. However, scientists deliberately bring attention to themselves through *we*-pronoun when they indicate their contributions. After all, scientists typically seek to bring new knowledge to their discipline, and so they highlight their own research purpose in Introduction sections and their new contribution in Discussion sections. Thus, a RA is a careful construction where most of the activity revolves around the research process, and only occasionally and strategically are the researchers made visible. Lack of familiarity with these resources of academic discourse may cause difficulties for those students who want to be considered as a member of disciplinary community. The awareness of these rhetorical devices provides this opportunity for L2 learners to meet the needs of the audience. Therefore, it seems necessary to devote special attention to the teaching of these resources to L2 learners in research/ESP courses.

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