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Research Paper

The Differential Use of Reformulation Markers in Three Sub-corpora: L1 English, L2 English, and L1 Persian

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Abstract

Given that reformulation is an integral component of scientific texts in which the explanation of terms and ideas is prevalent (Candel, 1984; Thoiron & Bejoint, 1991), this study aims at examining the form, frequency, and function of reformulation markers in three sub-corpora, namely, L1 English, L2 English, and L1 Persian research articles of psychology. The study is based on a corpus of 60 research articles amounting to a total size of 1,105,433 words. Drawing on the list of reformulation markers provided in Hyland (2005) in the case of English sub-corpora and a list of Persian reformulation markers prepared by three experts in the Persian language, we searched the corpus automatically for all the instances of reformulation markers. In the next step, all the instances were examined in their textual context in order to identify their function. The results indicated that L1 English sub-corpus contains the highest frequency of reformulation markers followed by L2 English and finally L1 Persian. There were also differences with regard to forms and functions, as well as parenthetical uses of reformulation markers across the three sub-corpora, specifically between L1 English and L1 Persian, suggesting the existence of intercultural variation in the use of reformulation. Besides, Iranian researchers writing in L2 English tend to adapt their writing style to the norms and conventions of English at least as far as reformulation is concerned. The study concludes with some implications for EAP writing and teaching.

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Recently, a substantial body of genre-based research has focused on Research Articles (RA) since they constitute the primary means of expanding and imparting knowledge in many fields (Le & Harrington, 2015). These studies have mainly focused on exploring the rhetorical structures (Cotos, Huffman, & Link, 2017; Devitt, 2015; Jiang & Hyland, 2017; Sheldon, 2011; Swales, 1981) and metadiscourse features (Crosthwaite, Cheung, & Jiang, 2017; Hyland & Jiang, 2018; Işık-Taş, 2018) in order to identify disciplinary and generic variation. Besides, a growing body of contrastive research has been carried out between English and other languages (see Gao, 2016; Gardezi & Nesi, 2009; Işık-Taş, 2018; Mauranen, 1993; Molino, 2010; Vold, 2006) across different disciplines. The findings of these studies suggest that there exist intercultural differences with regard to rhetorical and metadiscourse features in the academic genre of RAs (Murillo, 2012).

Metadiscourse refers to "aspects of a text which explicitly organize a discourse or the writers' stance towards either its content or the reader" (Hyland, 2005; p. 14). In other words, metadiscourse features show text producers including writers and speakers manipulate their text in an attempt to guide their audiences' reception of it. A case in point is the process of reformulation. According to Hyland (2007), providing convincing and logical explanations for different natural and social events and phenomena is an essential characteristic of scientific discourse including RAs, which is achievable through the use of reformulation markers (RMs). In fact, reformulation is an integral component of scientific texts in which the explanation of terms and

ideas is prevalent (Candel, 1984; Thoiron & Béjoint, 1991). According to Cuenca and Bach (2007), reformulation refers to "…a process of textual reinterpretation" (p. 149): the speaker or writer re-interprets or re-expresses what has been mentioned in previous discourse in order to expedite the reader's understanding of the original. Like other metadiscourse features, reformulation is also context-dependent since its main concern is to meet the audience's expectations (Hyland, 2005).

In recent years, many cross-linguistic studies have been conducted between English and Persian with regard to code glosses in the introduction of RAs (Dehghan & Chalak, 2016), metadiscourse markers in the introduction of RAs (Farzannia & Farnia, 2016), metadiscourse markers in newspapers (Kuhi & Mojood, 2014), rhetorical and metadiscoursal features in introduction of RAs (Validi, Jalilifar, Shooshtari, & Hayati, 2016), metadiscourse functions in sociology RAs (Shokouhi & Baghsiahi, 2009), and metadiscourse in applied linguistics RAs (Rahimpour & Faghihi, 2009). However, none of these studies examining Persian and English languages specifically focused on RMs and their specific functions within discourse in the genre of RA. Drawing on the concept of Contrastive Rhetoric (Kaplan, 1988; Hinds, 1987) and following Murillo's (2012) study, we aim at conducting a cross-linguistic study of RMs in psychology RAs written in English by English native speakers, written in English by Iranian researchers, and written in Persian by Iranian native speakers. The fundamental role of contrastive rhetoric in the study and teaching of academic writing is well-established (see Atkinson, 2004; Connor, 2004), the underlying claim being that differences observed in various written texts derive from differences in culture (Canagarajah, 2002; Golebiowski, 2018). Although contrastive rhetoric suffers from a product-

oriented view of culture, which has a structural bias (Atkinson, 2004), the researchers can make up for this shortcoming by focusing their vision on the processes that give rise to the products (Connor, 2002). For example, by focusing on the process of reformulation (e.g. process) in academic texts (e.g. product), it is possible to detect the traces of cultural contexts in shaping academic texts. With this in mind, the study specifically aims to answer the following research questions:

1. Is there any difference between the three sub-corpora in terms of frequency of RMs?
2. Is there any difference between the three sub-corpora in terms of forms of RMs?
3. Is there any difference between the three sub-corpora in terms of functions and parenthetical uses of RMs?

Literature Review

Reformulation

Reformulation is a process of textual reinterpretation through which writers get involved in a re-elaboration of an idea to express it in a more specific way in order to enhance the readers' comprehension of the original content ideas (Blakemore, 1993). Murillo (2012) has suggested that RMs make a salient contribution to the writer-reader interaction because they are a reflection of writers' perception about their readers' cognitive resources for text processing and their background knowledge. In other words, these metadiscourse devices are aimed at reducing the possible communication problems in a text by means of re-elaboration, which is expanding, specifying, clarifying, or defining a fragment of discourse previously mentioned (Charolles & Coltier, 1986; Gülich & Kotschi 1983). According to Cuenca

(2003), RMs can be either simple, which are fixed and unchangeable like *in other words*, or complex that can be variable in form. For instance, there are different realizations for the marker *to say the same thing a different way*: *to say the same thing differently*, *to put the same thing a different way*, and *to put the same thing differently*. Moreover, some RMs may be put within dashes or parentheses, preserving the rhetorical linearity of the utterance, as opposed to regular RMs without dashes or parentheses that disrupt the linearity of the discourse (Dehé & Kavalova, 2007).

In line with relevance theory, Blakemore (1993) proposed that reformulation is associated with those facets of style dealing with how writers/speakers make an assessment of the contextual and processing resources of their audiences. Similarly, Murillo (2007; 2012) indicated that RMs are procedural devices enabling readers to have a sound textual interpretation by serving functions like making conclusions explicit and offering background information about concepts. Hyland (2005) also introduced code glosses, which incorporate reformulation and exemplification markers. The main discourse function of these devices is to offer readers additional information through explaining, re-wording, specifying, and facilitating readers' understanding of the writer's intended message. Hyland (2005) has emphasized that code glosses, as other interactive metadiscourse markers, purport to organize and present textual content in a way that the target readership finds it coherent and persuasive. Hyland (2007) suggested that RMs have two major functions in academic writing, namely reduction and expansion. Specification and paraphrasing have the function of reduction and restricting readers' understanding of what has been mentioned. On the other hand, implication and explanation are instances of expansion that expand the meaning of what has been stated. Hyland's findings indicated that the most

frequent function of reformulation in academic writing is specification, demonstrating the importance of restricting and precision in this genre.

The use of reformulators in academic writing has also been the focus of cross-linguistic research. Cuenca (2003) demonstrated some differences in the use of reformulation in a corpus of linguistics book chapters written by Spanish, Catalan, and English writers. Cuenca demonstrated that English writers who follow a formal-oriented culture expecting them to render their writing as understandable as possible and also adopt a linear and synthetic approach to text production. Conversely, Spanish and to some extent Catalan writers, belonging to a content-oriented culture, attach prime importance to offering a huge amount of information, and assume that readers would be responsible for its understanding. This could explain why reformulators that are structurally complex tend to be more frequent in Spanish and Catalan texts, whereas simple RMs are more frequently used in English expository writing. Overall, Spanish and Catalan writers made more extensive use of reformation markers than English writers. Cuenca (2003) concluded that the selection and use of RMs not only reflect different grammars but also different rhetorical strategies. Similarly, Cuenca and Bach's (2007) study indicated that the use of RMs in linguistics research articles across three languages of English, Spanish, and Catalan reflects differences that can be attributed to unique rhetoric of these languages. More specifically, it was found that English research articles are marked by a higher frequency of simple and fixed RMs, while a higher frequency of reformulation sequences, which can have different structural realizations, was observed in Catalan and Spanish papers. Similar to Cuenca's (2003) study, the frequency results of this study also indicated that Spanish and Catalan languages use reformulation markers more frequently than English. In addition, it was revealed that the English writers

use reformulators mostly to expand the previously mentioned content, whereas Spanish and Catalan authors tend to use reformulators to reduce what has been already stated. Taking a similar approach, Murillo (2012) compared the forms and functions of RMs in research papers of business management written by L1 Spanish, L1 English, and L2 English authors. The findings indicated that reformulators in L1 English articles outnumber those in L1 Spanish and L2 English papers. In addition, the functional analysis conducted by Murillo revealed that functions related to implicit meaning (conclusion and math operation) and those associated with conceptual meaning (definition and denomination) tend to be less frequent than explicit meaning functions (like identification and specification). While English writers used RMs more frequently than Spanish writers in Murillo's (2012) study, in Cuenca (2003) and Cuenca and Bach's (2007) studies, it is Spanish and Catalan writers who make more extensive use of RMs. These frequency differences can be attributed to the make-up of their corpora, the perceived size of the audience by writers, and to differences related to genres in these studies. In sum, although a few cross-linguistic studies regarding reformulation has been conducted between English and some other languages like Spanish and Catalan, no study has investigated this cross-linguistics analysis between Persian and English.

Method

The present study is based on a corpus of psychology research articles (RA) written by three groups of writers: L1 English writers, L2 English writers, and L1 Persian writers. L1 English sub-corpus was comprised of 40 RAs written by native speakers of English; in order to identify native speaker authors, we examined their university affiliation and their names; L2 English

sub-corpus consisted of 40 RAs written by Iranian academics; and L1 Persian sub-corpus included 40 RAs written by Iranian scholars. All in all, the corpus consisted of 1,105,433 words. In order to select the journals for the L1 English sub-corpus, the psychology category of the journal citation reports released in 2018 was consulted. Two journals related to the field of psychology, namely, Annual Review of Psychology, and Psychological Bulletin Journal, with impact factor above 2 were selected. The journals comprising the other two sub-corpora were specialized and peer-reviewed journals introduced by Iranian experts in the field of psychology. Three experts in the field of psychology at University of Bojnord were consulted to introduce the most prestigious journals in the field of psychology, both in Persian and English language written by Iranian writers. These University professors agreed on two Persian and two English journals. Then, the list of reputable journals released by the Iranian Ministry of Science, Research, and Technology in 2018 was consulted in order to make sure that these four journals introduced by Iranian scholars were among the leading journals of this field. Having selected the appropriate journals, the articles were randomly selected, and only those articles that were organized in the following order were included: Introduction, Method, Results, Discussion, and Conclusion. All these sections were included in the corpus. Finally, given the dynamic and changing nature of metadiscourse (Hyland & Jiang, 2020), we restricted our corpus to a five-year period ranging from 2014 to 2018; four articles in each year, yielding 40 articles for each sub-corpus.

Data Analysis

Having prepared a Word file containing different sections of RAs, we started scanning all the texts electronically while searching for specific

metadiscourse features which could potentially act as RMs. In order to identify the potential candidates of RMs in English texts, we used Hyland's (2005) model of metadiscourse as well as the findings of previous research on RMs (Barabadi & Golparvar, in press; Cuenca, 2003; Murillo, 2012). In order to identify reformulation markers in the Persian language, three university professors of the Persian language at the University of Bojnord were asked to write all the markers that in their opinion accomplished the process of reformulation. Having agreed on the final list of RMs in Persian, these three Persian language experts introduced 15 different markers. As will be indicated in the next section, four of these markers were absent in our Persian sub-corpus.

After an automatic search by computer, all identified instances were examined manually in their contexts in order to achieve two purposes: to make sure that the metadiscourse features really introduce a reformulation; and to determine the function of each reformulation sequence. In order to assign the function of each reformulation, two researchers of this study independently examined the RMs in their contexts by drawing on Murillo's (2012) and Barabadi & Golparvar's (in press) classification. Due to space limitations, detailed descriptions and illustrations of these functions are provided in the Results section by giving some examples from the three sub-corpora in this study. Except for the two functions of Exemplification and Clarification (Barabadi & Golparvar, in press), the rest of the functions were taken from Murillo (2012). Since the overall number of words in each sub-corpus was not evenly distributed, the frequency occurrences of RMs and their functions were normalized per 10, 000 words, allowing us to compare the results of the three sub-corpora. Setting the criterion for normalizing the data at 10, 000 is quite arbitrary, showing just what is the norm in many corpus-based studies that

examine meta-discourse markers (Barabadi & Golparvar, in press; Murillo, 2012).

1. **Functions dealing with the interpretation of explicit content:**

(a) Identification
(b) Specification
(c) Explanation
(d) Clarification
(e) Exemplification

2. **Functions dealing with conceptual knowledge:**

(f) Definition
(g) Denomination

3. **Functions dealing with implicit meaning:**

(h) Conclusion
(i) Mathematical operations

Inter-rater reliability for assigning the function of each RM by the two researchers was acceptable. Cohen's Kappa statistics for L1 English, L2 English, and L1 Persian sub-corpora were .89, .93, and .88 respectively. According to Landis and Koch (1977), these values indicate a substantial to perfect agreement between the raters.

Results and Discussion

The Overall Frequency of RMs in the Three Sub-corpora

This sub-section of the study aims at answering the first research question. The overall frequency of RMs can be seen in Table 1. As indicated by p-values, there are statistically significant differences between all three sub-corpora. The greatest difference lies between the L1 English sub-corpus

written by L1 English academics and L1 Persian sub-corpus written by Iranian academics.

Table 1.
Overall Frequency of RMs.

L1 English (448, 098)	L1 Persian (399, 467)	L2 English (257, 868)
Total/per 10,000	Total/per 10, 000	Total/per 10, 000
468/10.44	123/3.1	149/5.77

L1 English-L1 Persian (LL: 177.07; P < 0.0001; critical value: 15.13; BIC: 163.42
L1 English-L2 English (LL: 43.44; P < 0.0001; critical value: 15.13; BIC: 29.97)
L1 Persian-L2 English (LL: 26.79; P < 0.0001; critical value: 15.13; BIC: 13.40)

L1 English writers roughly use RMs three times more than L1 Persian writers. This enormous difference can be accounted for by the fact that the L1 English psychology academics think of a wider and more varied audience in need of more elaborations and reformulations, while L1 Persian academics write for a limited readership who have a similar background to their own (Murillo, 2012).

Another statistically significant difference exists between the two sub-corpora written by Iranian academics; that is, between L2 English sub-corpus and L1 Persian sub-corpus. In fact, when writing in English, Iranian academics use RMs approximately two times more than when they write in Persian. This inclination towards greater use of RMs by Iranian writers when writing in English clearly indicates that Iranian academics tend to draw on English

conventions when writing in English. That is, Iranian writers tend to adapt to rhetorical conventions of English when writing in English (Murillo, 2012).

Finally, it should be noted that L2 English sub-corpus contains only half as many RMs as they appeared in L1 English sub-corpus, which would seem to indicate that Iranian academics tend to come under the simultaneous influence of English and Persian conventions when they write in English. In other words, Iranian writers who write in English are at an in-between stage when it comes to using RMs in their writing. L1 Persian sub-corpus contains the least frequency of RMs (i.e. 3.1 cases per 10.000 words), while L1 English sub-corpus contains the highest frequency of RMs (i.e. 10.44 cases per 10.000 words).

The frequency of RMs in L1 English sub-corpus in this study (10.44) is comparable with that of Murillo's (2012), where L1 English Business Management sub-corpus contained 11.10 occurrences of RMs per 10,000 words. However, L2 English Business Management sub-corpus written by Spanish academics contained 10.01 occurrences of RMs per 10,000 words. This facet of Murillo's (2012) results suggests that Spanish writers tend to adapt more to English conventions when writing in English than do Iranian writers. It is worth noting Spanish Business Management sub-corpus written by Spanish writers contained 7.31 occurrences of RMs per 10,000 words. Taken together, the normalized frequencies of RMs in this study and those of Murillo's (2012) study indicate that L1 English writers make the most use of RMs, while L1 Persian writers make the least use of RMs, and Spanish writers are at the midpoint.

The frequency patterns of RMs found in our study and those of previous research (Cuenca & Bach, 2007; Murillo, 2012) suggest that the use and meaning of RMs vary not only according to the discipline (Hyland, 2007) but

also and maybe more strongly according to the rhetoric of each language. Put simply, more considerable differences in the use of RMs may arise from different languages than from different disciplines. In fact, differences observed in the use of RMs can be indicative of different styles of building expository texts (Cuenca, 2003).

Compared to the three sub-corpora of English, Spanish, and Catalan used in Cuenca and Bach's (2007) study, the three sub-corpora in our study contains much fewer RMs. The results of their study indicated that the English sub-corpus contained 81 RMs, which would amount to roughly 20.25 per 10,000 words. The Spanish and Catalan sub-corpora contained 44.5 and 34 RMs per 10,000 respectively. As the authors rightly argue, the extensive use of RMs in their study could be the result of the particular make-up of their corpus. The linguistics papers comprising the corpus of their study were written versions of oral presentations in conferences, which favor the use of more RMs. Indeed, two distinct academic contexts characterizing our corpus and that of Cuenca and Bach's (2007) study can account for the different frequencies of RMs in the two studies. As Hyland (2005) put it, " one of the ways that genres vary, both internally and in relation to other genres, is in their use of metadiscourse" (p. 88). More specifically, the means of doing persuasion varies from one genre to another.

The results of another study conducted by Murillo (2007) also lend support to generic differences in the use of RMs. Examining two sub-corpora of written journalistic English and Spanish, Murillo (2007) found that the English sub-corpus contained only .50 occurrences of RMs per 10,000 words, while the Spanish sub-corpus contained 1.89 occurrences. Compared to the very limited use of RM in Murillo's (2007) study, the results of our study confirm the idea that elaborations and reformulations constitute an important

feature of academic discourse (Biber, Johansson, Leech, Conrad, & Finegan, 1999; Hyland, 2007).

However, the frequency findings of RMs in this study are not confirmed by Validi, et al.'s (2016) study on the Introduction section of research articles in medicine. They did not find statistically significant differences in terms of frequency of code glosses by three groups of writers: L1 English writers, L2 English writers (e.g. Iranian writers) and L1 Persian writers. Indeed, both native and non-native speakers of English and L1 Persian speakers employed more or less the same number of code glosses. One explanation for this discrepancy might be the fact that the researchers in this study did not treat reformulation markers and exemplification devices separately. Besides, their corpus consisted of only the Introduction section of RAs in which there is not enough room for writers to maneuver, and hence irrespective of their native language, the writers tend to use RMs roughly with the same frequency. In the current study, however, the entire articles except References were included in the corpus. It goes without saying that sections such as Discussion and Literature Review are more prone to the use of RMs.

Similarly, Dehghan and Chalak (2016) did not find a statistically significant difference between the frequency count of code glosses used in L1 English sub-corpus written by native English writers and L2 English sub-corpus written by Iranian writers, both in the field of Applied Linguistics. As mentioned previously, treating both types of code glosses, namely, RMs and exemplification, as one metadiscourse device, as well as examining only the introduction section of RMs might be the main reason for this finding. Another possibility is that Iranian Applied Linguistic scholars unlike other academics such as psychology researchers in our study have been socialized into and become aware of the discoursal expectations of the English language and its

discourse community during a long period of studying English and publishing in international Applied Linguistic journals. In other words, it is reasonably likely that Iranian Applied Linguistics scholars who have become established members of this particular discourse community adopt the English writing conventions like their native-speaker counterparts.

Beyond these disciplinary and generic considerations, it can be argued that Persian rhetoric which has been under the powerful influence of Arabic or the language of the Holy Quran favors brevity (Najafi, 2000). Indeed, the language of the Quran is known as the language of brevity to the point that brevity is viewed as the "adornment of Quran" (Al-Zamakhshari, 1987). Basically, the Arabic language does not have a propensity for verbiage and redundancy, and brevity is viewed as the cornerstone of powerful and effective rhetoric (Al-Zamakhshari, 1987). Likewise, in Persian rhetoric, a distinction is made between brevity and verbiage. According to Askari (1993), brevity involves the omission of redundancy and making a long way short. On the other hand, verbiage is the use of too many explanations and elaborations for added emphasis (Shamse Qeis, 1994). Whereas verbiage might be used extensively in literary works for some rhetorical purposes such as exaggeration (Rajaee, 1993), the scientific and academic texts are concerned with a clear and vivid expression of propositions with a focus on and preference for being concise and brief (Shamse Qeis, 1994). Thus, it can be argued that the sub-corpus of articles written in L1 Persian favors brevity and conciseness at least in the case of RMs frequency.

The existing differences regarding the frequency of RMs in the three sub-corpora suggest that there are different rhetorical strategies involved in English and Persian languages. In other words, cultural variation can be reflected not only in overt grammatical devices but also in less overt rhetorical

strategies like the use and functions of RMs in order to build expository texts (Cuenca, 2003). As far as the results of the current study are concerned, it seems that Iranian writers "…avoid any kind of superfluous information in order to preserve discourse economy" (Cuenca, 2003, p. 1089). This finding is consistent with reader-responsible rhetoric such as Persian (Validi, et al., 2016) where readers are expected to make plausible interpretations when reading a text. On the other hand, a writer-responsible style of writing such as English encourages the writers to make their texts as clear as possible for readers by more extensive use of RMs.

Various Types of RMs in the Three Sub-corpora

To answer the second research question, we examined the various forms of RMs in three sub-corpora. Persian texts include roughly the same number of markers as do English texts. Besides, both Persian and English academic writers prefer grammatical markers that are both simple and fixed when building expository texts. For example, “or” is a fixed and simple marker in English which is similar to its equivalent in Persian “یا". That is, we cannot expand this marker in another way. This is true with regard to most of the markers in both English and Persian texts. Table 2 displays different types of RMs in each sub-corpus, the raw frequency of each marker, and finally the percentage of each marker within each sub-corpus. As Table 2 demonstrates, "i.e." is the most frequent marker in both L1 English and L2 English sub-corpora. This facet of results is consistent with previous research (Murillo, 2012; Barabadi & Golparvar, in press) where "i.e." was found to be the most frequent marker. The widespread use of "i.e." in English texts might be due to the fact that this marker is the most grammaticalized and the simplest marker in English, making it the prime candidate for reformulation especially in the

case of a language like English that prefers linearity (Cuenca, 2003). Additionally, the fact that "i.e." is the most frequent marker in L2 English sub-corpus implies an adaptation process by Iranian academics to the conventions of L1 English writing. That is to say, despite the fact that there is no equivalence for "i.e." in the Persian language, it is the most frequent in L2 English sub-corpus indicating the obvious and strong influence of English writing conventions on Iranian academics when writing in English.

Table 2.

The Raw Frequencies and Percentages of Different Markers

L1 English			**L2 English**			**L1 Persian**		
Form	Freq	%	Form	Freq	%	Form	Freq	%
i.e	217	46.36	i.e	30	20.13	باید گفت	1	.81
In other words	16	3.41	In other words	19	12.75	به بیان دیگر	3	2.43
Namely	10	2.1	Namely	9	6	به عبارت دیگر	21	17
Put simply	1	.21	Put simply	0	0	به عبارتی	9	7.31
Simply put	1	.21	Simply put	1	.67	به هرحال	1	.81
That is	7	1.49	That is	3	2	خلاصه اینکه	0	0
Called	16	3.41	Called	5	3.35	در مجموع	12	9.75
Especially	22	4.7	Especially	28	18.79	در واقع	26	21.13
In particular	31	6.6	In particular	8	5.36	همچنین	10	8.13
Known as	23	.64	Known as	9	6	می توان گفت	12	9.75
Or	29	6.19	Or	26	17.44	یااینکه	0	0
Particularly	51	10.89	Particularly	6	4	یا	28	22.76
Specifically	39	8.33	Specifically	0	0			
This means that	4	.85	This means that	1	.67			
Which means that	1	.21	Which means that	4	2.68			

Aside from "i.e.", the next noticeable frequent marker in L1 English sub-corpus is "particularly" accounting for 10.89 % of all the markers in this sub-corpus. The results in Table 2 demonstrate that there is a more even use of RMs in L1 English sub-corpus, whereas in the other two sub-corpora, there is an inclination towards one or two particular markers. In particular, while the three markers of "especially", "or", and "in other words" are quite frequent, accounting for 18.79%, 17.45%, and 12.73% of all markers in L2 English sub-corpus respectively, they account for a negligible portion of RMs in L1 English sub-corpus. The extensive use of "in other words" and "or" by the Iranian academics when writing in English might be the result of the morphological proximity of these markers to the Persian markers of به عبارتی "دیگر" and "یا " respectively, which are among the most frequent markers in Persian sub-corpus. However, it should be noted that the marker "or" was found to be the most frequent marker in L1 English sub-corpus examined by Cuenca and Bach's (2007) study as well as Cuenca's (2003) study. That is, the widespread use of "or" in L2 English sub-corpus can be the simultaneous influence of English writing convention (e.g. adaptation process) or the influence of Persian (e.g. the transference process).

As Cuenca (2003) noted, RMs can be simple or complex. The former refers to grammatically fixed markers such as "that is" and "namely" in English and "به عبارتی دیگر " and " یا" in Persian, while the complex markers tend to be variable in a sense that some elements within the phrase can be added or substituted like "this means that". Table 2 indicates that the vast majority of RMs in the three sub-corpora are simple or grammatically fixed, so it is not permissible to add or substitute some elements in the marker. The only complex marker in the two English sub-corpora are "this means that" and

"which means that" which account for a very small portion of all markers in these two sub-corpora. In the Persian sub-corpus, there is no complex marker.

Functions of RMs in the Three Sub-corpora

In order to provide answer to the third research question, we examined the specific functions of RMs in their linguistic context. All the RMs found in the three sub-corpora were analyzed and classified based on Murillo's (2004; 2007; 2012) functional classification. This classification is based on the process of utterance interpretation as explicated by Relevance Theory. According to Murillo (2004), RMs are procedural items facilitating the recovery of both explicatures of the host utterances and higher explicatures. In other words, RMs make a meaningful contribution to utterance interpretation by helping hearer/reader make references when they try to interpret utterances. As mentioned in the methods section, we drew on seven functions identified in Murillo's classification in order to identify the markers functionally. Besides, two more functions identified by Author (Barabadi & Golparvar, in press); namely, "clarification" and "exemplification" were used. These two functions are related to the interpretation of explicit content. Before illustrating these functions with specific examples from our corpus, it is worth noting that English and Persian languages display clear preferences for certain functions (see Table 3).

Table 3.

Frequency and Percentage of Various Functions of RMs across Three Sub-corpora.

Macro-functions	**Specific Functions**	**L1 English**		**L1 Persian**		**L2 English**	
		Fre	**%**	**Fre**	**%**	**Fre**	**%**
Explicit Meaning Functions	Identification	42	7.89	24	19.51	77	51.67
	Specification	228	48.71	4	3.25	24	16.10
	Explanation	46	9.82	36	29.26	15	10.06
	Clarification	31	6.62	1	.81	8	5.36
	Exemplification	5	1.06	0	0	1	.67
	Total	352		65		125	
Conceptual Knowledge Functions	Definition	56	11.96	13	10.56	8	5.36
	Denomination	45	9.61	1	.81	9	6.04
	Table	101		14		17	
Implicit Meaning Functions	Conclusion	9	1.92	40	32.52	4	2.68
	Math Operation	6	1.28	3	2.43	3	2.01
	Total	15		43		7	

As Table 3 illustrates, writers in different sub-corpora draw on almost completely different sets of functions to reformulate a previous utterance, so to summarize L1 English writers prefer "specification" and "definition", L1 Persian writers exhibit a definite preference for "conclusion" and "explanation", while L2 English writers have a clear preference for "identification" and "specification". The exact reasons for these preferences are unclear but are perhaps related to differences between English and Persian grammars, differences between rhetorical strategies used to build expository texts in English and Persian (Cuenca, 2003), or to different cultural expectations held by English and Iranian readership. For example, one possible reason for the dominance of the "specification" function in L1 English sub-corpus and to some extent in L2 English sub-corpus is that this function entails a cataphoric element which is very common in English

grammar but not in Persian grammar. The most frequent function in L1 Persian sub-corpus is "conclusion" which comprises 32.52% of all functions. It seems that Iranian readership, at least psychology readership, expect the writers to draw a definitive and obvious conclusion after presenting some implicit content in the text. Moreover, "explanation" rises to the top of frequent functions in all three sub-corpora, along with "identification" and "specification". The predominance of these functions in almost all three sub-corpora (except "specification" in L1 Persian sub-corpus) has been confirmed by previous corpus-based research examining reformulation in research articles (Murillo, 2012) and advanced student writing (Author, Barabadi & Golparvar, in press). The remainder of this section aims at illustrating various functions of RMs by providing just one example from the corpus. Due to short of space, one prime example is chosen from one of the three sub-corpora in which that function has the highest frequency.

(1) Functions dealing with the interpretation of explicit content:

(a) **Identification:** to identify the referents; the most frequent markers used to identify referents in the two English sub-corpora are "i.e." and "or". In example (1), the reformulator "i.e." is used to identify "both variables".

1. A follow-up test was not performed because the research team considered both variables (i.e. academic achievement motivation and academic performance) as a whole. (L2 English sub-corpus)

(b) **Specification:** being signaled by a cataphoric element, this function is used not only to restate an idea but to specify more accurately the thesis of a previous proposition. In example (2), the marker "in particular" helps the reader to further narrow down the cataphoric element "other etiologies".

2. In support of this view, Karnath and Steinback (2011) argue that it is best to restrict patient samples to those suffering strokes and reject other etiologies, in particular, tumors. (L1 English sub-corpus)

(c) **Explanation**: to explicate the explicit meaning of a previous proposition/statement is very common in the three sub-corpora used in this study. In example (3), the reformulation introduced by "در واقع" (in fact) more clearly explains the previous statement.

۳. اندرسون، آسبرن و تیرنی بر این باورند که خواندن یک فرایند پیچیده ی شناختی است که شامل مهارت های مختلفی می باشد. در واقع، خواندن تعادل بین فرایند های درک مطلب، شناخت، دانش و فرایندهای فراشناخت می باشد.

3. Anderson, Osborn, and Tierney (1984) believe that reading is a complex cognitive process which include various skills. In fact, reading is the balance between comprehension, cognition, and knowledge processes as well as metacognition skills. (L1 Persian sub-corpus)

(d)**Clarification:** to clarify the meaning of previous content by underscoring some additional but crucial aspects, features, or conditions of a specific event, thing or person. In the following example, the reformulation does not provide a more exact explanation of the previous content (e.g. at short retention intervals), rather it only mentions a thing that occurs at intervals (e.g. easier final tests).

4. The framework can neatly account for the reliable testing effect found at short retention intervals (i.e. with presumably easier final tests) when….(L1 English sub-corpus)

(e)**Exemplification:** to spell out the previous content by providing a tangible example.

5. Hearing damage can cause secondary problems (i.e. perceptual, communicational, emotional, social problems, and so on) (L1 English sub-corpus)

In example (5), the explicit content of the previous statement (secondary problems) is made clear by offering several instances of what these secondary problems might be.

(2) Functions dealing with conceptual knowledge

(f) Definition:

In example (6), a definition is provided for the special term or jargon belonging to the field of psychology.

6. Evidence for the second type of influence comes from effects known as the attentional blink (i.e. stimulus fails to reach consciousness when attention is consumed by another stimulus that is presented about 200 ms earlier (Raymond et al., 1992) (L1 English sub-corpus)

Having provided the definition for the special term, the author also mentions the sources of the definition by the bibliographic reference.

(g) **Denomination:** to provide a technical term or jargon for previous content. In example (7), a specific term is provided for a previous content which acts as a definition or explanation of a specific process or event.

7. The tendency for transpositions to cluster around their correct positions or the locality constraint is…(L1 English sub-corpus).

(3). Functions dealing with implicit meaning

(h) Conclusion

In example (8), the reformulator "به عبارتی" (in other words) points to a conclusion drawn from previous sentences which act as premises.

۸. اما کودکان نارساخوان نمی توانند این آگاهی و مهارت را در خود ایجاد کنند، لذا کودکان نارساخوان هنگام خواندن سرگردان و بدون هدف در متن پیش می روند و این امر موجب می شود که چون از قبل به هدف متن توجه ندارند، نتوانند به طور مستقل با متن کتاب به چالش بپردازد، به همین دلیل باید این راهبردها از طریق آموزش مستقیم به آنها آموزش داده شود تا به یک خواننده ی فعال و مستقل تبدیل شود. به عبارتی، هر چه توانایی های شناختی فراگیر بالاتر باشد، فرایند یادگیری موفقیت آمیزتر خواهد بود.

8. But dyslexic children cannot develop this awareness and skill, hence these children tend to be confused and without any purpose when reading, and this failure to attend to the purpose does not allow them to rise to the challenge. For this reason, these guidelines should be taught to them via direct instruction so that they become active and independent readers. In other words, the higher the cognitive ability of the learner, the more successful the learning process.

(i) Mathematical operations

In example (9), the marker "i.e" introduces a reformulation whose purpose is to restate previous numerical data (e.g. 42 studies) in a more accessible and tangible way (e.g. 33% of the studies).

9. In addition, a random sample of 42 studies (i.e. 33% of the studies) was coded for the moderator variables…..(L2 English sub-corpus).

Overall, similar trends exist within the two English sub-corpora regarding the macro-functions that RMs fulfill (see Table 3). Similar to Barabadi and Golparvar's (in press) findings, our results indicated that explicit meaning functions are the most frequent, followed by conceptual meaning functions,

while implicit meaning functions are the least frequent. This similarity between our results and those of Barabadi and Golparvar (in press) regarding the macro-functions that RMs fulfill, suggests that irrespective of genre or discipline, the overall frequency of macro-functions follows a similar pattern. However, in the L1 Persian sub-corpus in this study, implicit meaning functions are the second most frequent after explicit meaning functions. Specifically, the micro-function "conclusion" is very common in this sub-corpus. In Murillo's (2012) study, the Spanish sub-corpus of RAs also contained a large number of "conclusions" leading one to conclude that compared to English, Persian and Spanish writers have an inclination towards drawing conclusions after presenting some sentences that act as premises.

Parenthetical Uses of RMs in the Three Sub-corpora

The second part of research question three dealing with parenthetical uses of RMs is addressed here. As can be observed in Table 4, almost half of RM sequences are placed within parentheses or dashes in L1 English sub-corpus, while the parenthetical sequences in L2 English sub-corpus is much less frequent (e.g. 16.77%). Surprisingly, in L1 Persian sub-corpus, no RM sequence is enclosed between parentheses or dashes. The heavy use of parenthetical sequences by L1 English writers indicates that although these writers use reformulation much more extensively than L2 English writers and particularly more than L1 Persian writers, they like to preserve the rhetorical linearity of the text, and therefore generate a more dynamic discourse (Murillo, 2012). That is to say, L1 English writers tend to use RMs extensively because they feel "…primarily responsible for effective communication" (Validi et al., 2016, p. 94). Yet, they try not to disrupt the rhetorical linearity of the text by enclosing the reformulation sequences between parentheses.

Table 4.

The Parenthetical Use of RMs

	L1 English		L2 English		L1 Persian	
	freq	%	freq	%	freq	%
Parenthetical	220	47	25	16.77	------	-----
Non-parenthetical	248	53	124	83.22	123	100

Conclusion

A cross-linguistic analysis of the use of RMs in RAs of the psychology discipline indicated that L1 English writers make the greatest use of RMs, followed by L2 English writers, while L1 Persian writers make very limited use of RMs. The striking difference between the two L1 sub-corpora in terms of using RMs can be attributed to different audience configurations (Murillo, 2012): L1 English writers who think of a more global and wider readership feel more obliged to provide more explanation using reformulation than L1 Persian writers who "…could be writing for a smaller, national audience whose background is similar to theirs" (p. 83). Another explanation for this divergence might be the existence of two different rhetoric: the existing differences between English and Persian with regard to the amount and frequency of RMs suggest that Persian academic prose is more concise (less wordy) than English academic prose, lending support to Jalilifar's (2011) assertion that Persian as a reader-responsible language encourages the writers to make limited use of some rhetoric devices, whereas English as a writer-responsible language allows more reformulation markers in order to guide the readers through text comprehension (Hinds, 1987). Thus, what can be considered as being non-relevant, redundant, and wordy in one writing culture might be interpreted as indicative of a brilliant and intelligent writing convention in another cultural context (Cuenca, 2003). We can conclude that

compared to Persian, which seems to constitute a formal-oriented culture favoring linearity and discouraging verbosity, English seems to be more aligned with content-oriented culture in which complexity of expression, digression, and verbosity may be valued in the form of more widespread use of reformulation markers (Clyne, 1994).

Moreover, the intermediate position of L2 English sub-corpus concerning the frequency of RMs compared to L1 English sub-corpus and L1 Persian sub-corpus can be interpreted in terms of what Atkinson (2004) refers to as binary opposition between big culture and small culture in his discussion of contrastive rhetoric. The argument is simple, Iranian academics who write in English seem to be under the interactive influence of a big culture (e.g. Persian language rhetoric) and a small culture (e.g. applied linguistics as a community of practice). There might even be other cultures at play here which overlap with the previous two cultures but not subsumed by them like the psychology academic culture with its own norms, practices, and genre that might influence the way professional writers in this field make use of meta-discourse markers including RMs. It is very likely that the communities of practices constituting Iranian psychologists and English psychologists have developed some distinct practices and norms for professional communication. In sum, academic writers seem to be under the influence of different cultural sources.

Overall, our results suggest that academic writing encourages the writers to leave some textual traces such as RMs in order to help the readers comprehend the academic discourse, specifically English academic discourse (Biber et al., 1999; Hyland, 2007). Salas (2015) rightly argues that compared to other languages, English scientific prose is more reader-friendly. Given the results of our study, one important implication can be put forward especially for Iranian academics who want to write in English as their L2: these writers

or researchers need to raise their awareness of how reformulation is accomplished in English so that they can produce reader-friendly academic prose for an international audience. Likewise, EAP instructors can draw their students' attention to these cross-linguistic differences in order to reduce the interference of L1 writing conventions when they want to write in English as their L2. This awareness can accelerate and facilitate the adaptation process. In fact, non-native-speaking writers like Iranian academics who write in L2 English might be confronted with serious problems arising from the interference of L1 linguistic and rhetorical conventions, preventing them from developing academic competence in L2 writing. As such, L2 writing pedagogy should make L2 learners aware of the fact that two different cultures might impart information and express ideas differently. However, it should be noted that L2 learners should not be taken hostage by one specific culture and language in a sense that they commit themselves strictly to one language and culture; rather, L2 learners should be encouraged to make use of conflicting rhetorical structures for their benefits (Canagarajah, 2002).

To the best of our knowledge, this is the first study comparing reformulation sequences and their functions between Persian and English, and therefore we need to sound a note of caution regarding our findings. Examining RMs and their functions across Persian and English in other disciplines in future studies can offer more corroborative evidence regarding cross-linguistic differences. Moreover, future research can compare the use of reformulation by English and Persian writers in other genres such as journalistic writing or student essays to see whether the findings in this study are limited to the genre of RAs or generalizable to other genres as well.

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