

Original Article

Psychological Attitude of Medical Students towards Course-book Modification: A Case of Text Simplification in ESP Courses

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Abstract

Introduction: The current study sought to investigate the impact of linguistic modification of medical textbooks on reading comprehension ability of medical students and their attitude towards text simplification.

Materials and Methods: 150 male and female medical students coming from Shahid Beheshti University of Medical Sciences participated in this study. The homogeneity of the participants was attained through passing a placement test, followed by completing the pre-requisite and general English courses. For the purpose of modifying the texts, the framework proposed by Van Den Branden (2000) was adopted. Moreover, the questionnaire developed by Saito, Horwitz, and Garza (1999) called Foreign Language Reading Anxiety Scale (FLRAS) was used.

Results: Data analysis was conducted, using one-way analysis of variances (ANOVA). Concerning the major research question, analysis of the data indicated that there were significant differences between the participants' performance on the four reading tests. Thus, the major null-hypothesis as "lexical modification, grammatical modification, and lexical and grammatical modification in comparison with no modification of input do not significantly affect the reading comprehension ability of Iranian medical students differently" was rejected. The last research question deals with medical students' perceptions towards different types of input modifications

Conclusion: The overwhelming majority of the interviewees chose lexically and grammatically modified texts. However, "not modified text" was regarded as the most boring one. Also, the participants believed that grammatically modified texts were best for improving students' work knowledge. Moreover, the interviewees mentioned that grammatically modified texts with fewer complicated structures were more straightforward for them.

Keywords: SLA, ESP, Text Modification, Reading Comprehension; Simplification, Psychological Attitude, Syntax, Lexicon

1. Introduction

A central issue in SLA is how learners' experience of a target language contributes

to language learning. This issue highlights the role of input and the process that leads to intake. A considerable number of second

and foreign language studies have investigated different aspects of input comprehension. Written input or commonly called reading is one of the most important sources of input in EFL contexts and plays a crucial role in obtaining academic excellence in all the areas one cares to imagine.

Most universities require the applicants to demonstrate a considerable command of reading comprehension, should they obtain their entry. Therefore, the ways through which learners can improve their comprehension of texts have become the spotlight of many studies [1,2,3]. As [4] argues, input should be comprehensible if it is to facilitate the process of SLA. Specifically, many second or foreign language research studies have focused on input comprehension, motivated by the hypothesis that the learner must comprehend the input if it is to assist the acquisition process [5,6,7].

All modified texts share the same goal; that is, increased comprehensibility and reduced cognitive load. The primary methods of attaining comprehensibility are in the modification of the lexicon and syntax. Thus, in the present research, the linguistic modifications were divided into lexical and grammatical modifications.

However, the evidence to support the modification of written material seems imprecise. On the one hand, there has always been a belief that linguistic modifications of the majority of textbooks and graded readers through the manipulation of the range of structures and vocabulary items they contain enhance comprehension, and thus learning [8,9,10]. On the other hand, some additional research studies dispute the effectiveness of pedagogical modifications [11,12]. [12] contends that modified texts that alter the authorial cues typical of authentic texts can be more complicated than authentic texts because they are “culturally and linguistically sanitized” and can inhibit learners from guessing or contextualizing

meaning (p.17). It has also been argued that the modification of an original text affects text cohesion and coherence [13]. That is why conducting further research in this field is highly warranted.

Providing effective education has long been a controversial issue in all schools, institutes, and universities in Iran. Indeed, many schools and language teaching institutes are currently encountering crucial problems related to providing students with quality education. Accordingly, the provision of quality education is not only favorable but mandated. Among all parameters pertaining to high-quality education, how to run reading classes has received much attention, which is due to the vital importance of reading skill. Nonetheless, the quality of teaching reading is painfully low in Iran, which probably is the result of the little insight into the nature of the reading skill [14,15]. The underlying assumption of the researchers of the present study was that by equipping Iranian teachers, in our case ESP teachers, with some novel techniques to tackle reading skill in a more informed fashion this negligence could be removed.

If texts are deprived of all that is new and unknown, they may act as input for comprehension only, but not as input for learning [2,3,7]. Therefore, further research seems to shed light on the issue of the efficacy of input modification as a factor that facilitates or impedes the process of reading comprehension. It should be noted that there is almost no evidence whether modifications in medical texts can be of any positive effect. Additionally, the impact of modification can well be uncertain in that it may work only for a limited number of readers. Many course designers mistakenly envisage a homogenous target group in mind when developing reading materials. As [16] mentioned, reading is a complicated and challenging process because besides coordinating attention, memory, and comprehension, L2 learners need to decode unfamiliar words and structures.

While a complete review of the literature on reading comprehension is beyond the scope of this review and the current research, it is nevertheless essential to examine how researchers have conceptualized the process. For the past few decades, second language reading has attracted unprecedented research attention. Thus, an overview of the area of academic investigation over reading comprehension is fast becoming impossible. After decades of study, researchers in the field of the reading skill generally have come to an agreement that reading is an interactive, multifaceted, and complex construct in that it involves several components each of which is dependent on a variety of factors. [17] referred to some of the crucial elements of proficient reading as phonological awareness, orthographic awareness, alphabetic knowledge, lexical knowledge, syntactic knowledge, working memory, long-term memory; processing speed, ability to attend to information, and motivation. The elaboration process depicted by [17] gets more complicated when it is applied to reading in a foreign or second language. The picture gets even more complicated when we consider the lack of consensus on whether the skills of L1 reading transfer to L2 reading. The problem, as proposed by [18], is whether reading in a foreign language deals with reading problems or language problems. He believes that it is both a language problem and a reading problem, with the caveat that it is mainly a language problem for students at lower proficiency levels. The complexity of the construct thus makes it challenging to present an all-inclusive definition for reading comprehension.

Reading comprehension definitions have changed over the past thirty years. Although reading comprehension was once defined as the ability to decode texts, the current definitions are far more complex and involve knowledge, experience, thinking, and teaching. As [19] stated, “Comprehension inherently involves

inferential and evaluative thinking, not a just literal reproduction of the author’s words. Most importantly, it can be taught directly” (p.63). Reading with understanding is a highly complex mental activity rather than a matter of passive retrieval. Similar to complicated problem-solving activities, it is a game involving a set of mental activities as usually asserted in the literature [17,20].

The importance of elements of grammar and syntax also cannot be overlooked. [21] examined syntactic causes of difficulty for non-native speakers of English. She stressed the importance of “transparency—the opposite of her term opacity of the kernel sentence: the basic subject-verb-object ordering of sentences” (as cited in [18], p.149). She maintained that if there are many deletions of relative pronouns and *wh* + *be* in post-noun modifiers, or one or do substitutions for repeated lexical material, and the like, the process of decomposing a sentence into its SVO constituents will be delayed and consequently, the understanding of the sentences will become more difficult.

Cohesion is another important syntactic element which refers to the way that the ideas and meanings in a text are related to each other. A text can be called coherent if different cohesive devices are used to make connections and signal relationships. The explicit use of cohesive devices in a text facilitates the understanding of the relationship between sentences, whereas when these words are not employed, inferring such relationships and the meaning of the text becomes difficult. For successful inference of meaning, it is essential to understand the implied connections between ideas.

A crucial factor that has the potential to hinder perception is the use of unfamiliar words in a reading text that can break down its understanding if the number of such words increases. The several possible meanings of any one word can also be another problem in encoding the message in

any reading text. That is to say, the nuances of meaning are as important as knowing the primary meaning of vocabulary. Organization of information, syntax, and grammar, and vocabulary are only a few essential types of text features. The presence or absence of various combinations of these features affects the comprehensibility of a text, the discussion of which goes far beyond the scope of this document.

However simplification of a text is not without its critics. Even if simplification helps facilitate L2 comprehension, it involves removing items that L2 learners need to learn. In other words, it deprives the learners of the opportunity to learn the natural forms of language. As [20] put forward, “removal of possibly unknown linguistic items from a text may facilitate comprehension but will simultaneously deny learners access to the items they need to learn” (p.191). Linguistic simplification, as [20] argued, can be “self-defeating to the extent that the purpose of a reading lesson is not the comprehension of a particular text, but the learning of the language in which the text is written” (p.191).

Improving students’ reading ability seems crucial for all English ESP learners [22]. Admittedly, Iranian students require a considerable level of reading skills to enter universities and obtain job opportunities. Moreover, in universities and later in their workplaces, they might have to read English articles effectively about the content area of their studies, in our case medical content to broaden their horizons and gain professional benefits.

Thus, it is imperative for university and ESP programs in Iran to improve their understanding of the nature of reading and the factors that influence it. The results of the current study can contribute to the development of the quality of ESP courses in general and can solve the problems among Iranian medical students in particular. This study can contribute to our understanding of the medical students’

reading problems and evaluate their progress as they go through the ESP programs.

Additionally, this study can give rise to further investigation of specific features of reading comprehension items and the extent to which other forms of modifications can influence EFL reading skills. In the same vein, language researchers can analyze how and why modification has an effect on reading comprehension level and thereby provide valuable information for ESP teachers and students, curriculum designers, and ultimately, educational policymakers.

To achieve the objectives of the study, the following major and minor research questions were formulated:

Major RQ1. Do lexical modification, grammatical modification, lexical and grammatical modifications, and no modification of input affect the reading comprehension ability of Iranian medical students differently?

Minor Research Questions

RQ1-1. Does lexically modified input in comparison with not modified input affect reading comprehension of Iranian Medical students?

RQ1-2. Does grammatically modified input in comparison with not modified input affect reading comprehension of Iranian Medical students?

RQ1-3. Do both lexically and grammatically modified input in comparison with not modified input affect reading comprehension of Iranian Medical students?

RQ2. What are Iranian medical student’s perceptions towards different types of input modifications?

2. Materials and Methods

2.1 Design

This study was a quasi-experimental study since the random selection of the participants was not possible. From among different designs in quasi-experimental designs, the counterbalanced design was selected to rotate the treatment and study

the participants' performance under different conditions which were possible in the study.

2.2. Participants

After obtaining the required permissions from the managerial board of the medical faculty, 150 medical students were selected from the whole population of medical students at Shahid Beheshti University of Medical Sciences. They were both male and female students aged between 19 and 24 and were selected based on convenience sampling. The participants were homogeneous due to the reason that they had passed a general English course.

2.3. Instruments and Materials

The 16 medical texts including 4 unmodified, 4 grammatically modified, 4 lexically modified and 4 lexically-grammatically modified texts were selected from the syllabus of Shahid Beheshti University of Medical Sciences randomly. Both lexically simplified input and grammatically simplified input were used as a source of input modifications. Five comprehension questions in multiple choice format followed each of the modified texts. As for the correction method, all 4 types of modifications were treated the same. The researchers of the study employed the modifications based on [23] framework. Based on this framework text simplification can comprise three stages: 1- Reduction of vocabulary level to a basic word list of 2000 word count. 2- Simplification of the syntactic structure of the texts by a reduction of the number of long and embedded sentences. 3- Increase in the

proportion of anaphoric references through the use of verbatim repetitions, rather than through the use of other devices such as pronouns. Cronbach's alpha was used to estimate the reliability index of each type of modified passages. Also, the readability of the passages was estimated by computing the Flesch Reading Ease statistics. This test rates text on a 100 – point scale. The higher the score, the easier it is to understand the document. For most standard files, you want the score to be between 60 and 70. The formula for the Flesch Reading Ease score is:

$$206.835 - (1.015 \times ASL) - (84.6 \times ASW)$$

ASL = average sentence length (the number of words divided by the number of sentences)

ASW = average number of syllables per word (the number of syllables divided by the number of words)

Two EFL and ESP professors were asked to verify the clarity and relevance of the grammatically and lexically simplified medical passages, which could ensure the researchers of the content validity of the passages

2.4 Procedure

Since reading 16 passages in one session could be tiring and thus affect the reliability, the participants were given four passages per session. A counter-balanced design was selected to rotate the treatment to check not only the order, but also the sequences effects. This procedure is shown in figure 1.

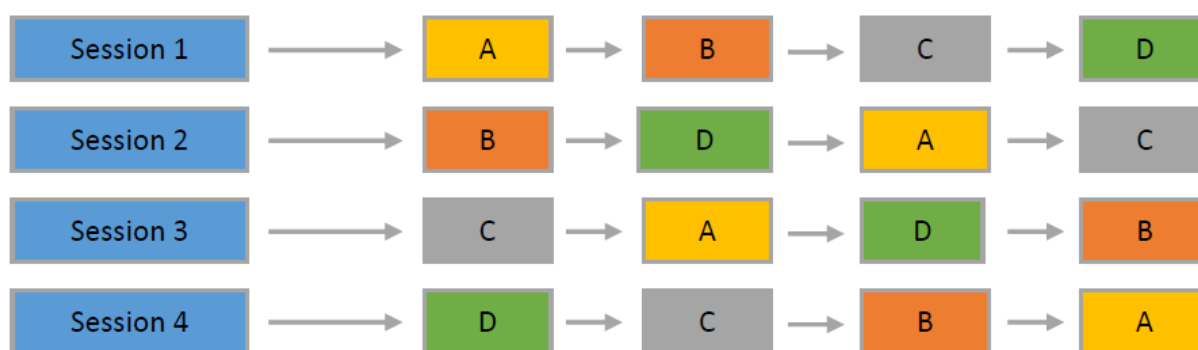


Figure 1. Counterbalancing the treatment

- * Lexically modified input (A)
- * Grammatically modified input (B)
- * Lexically and grammatically modified input (C)
- * Not modified input (D)

The last instrument was an interview through which the participants' attitudes towards the four input types were elicited. The purpose of the interview was generally to explore the views, experiences, beliefs or motivations of individuals on specific matters (e.g., factors that influence their job performance). In the present study, 32 face to face semi-structured interviews comprising 9 questions were conducted via which the participants verbalized their feelings about different versions of the medical passages. All the interviews were recorded to enable further analytical assessment. It should be noted that the participants were notified of the recording procedure, for the sake of meeting the ethical considerations in this regard. Two ELT professionals reviewed and revised the questions to ensure content validity. The reviewers modified the wording of some of the questions to adjust them to the purposes of the study. The following questions were conducted for the purpose of this study.

- 1- Did you study both the modified and not modified texts?
- 2- Which one did you find more reader-friendly? Why?
- 3- Which one was easier to read and understand?
- 4- Which one was better in boosting your motivation?

- 5- In your opinion which one could be more appropriate for practicing reading comprehension?
- 6- Which one was more straightforward, with fewer complicated structures?
- 7- Did you find any of them boring? Why?
- 8- Which one do you recommend for group work and class discussions?
- 9- Which one do you think could be more effective in improving student's word knowledge?

The participants read the passages and answered the comprehension questions that followed them within the time limit (25 minutes). Four sessions were required for the completion of the study, and the participants were given four passages per session. The time devoted to the assigned passages remained equal, regardless of which of the four conditions of the study was undertaken. The questions were in the multiple-choice format. As stated in the design section, a counter-balanced design was employed to rotate the treatment and study the participants' performance under different conditions. Right after the reading test, 32 participants who were randomly selected sat for the interview. The interviews were conducted individually in a non-threatening and face-saving manner giving the assurance to the participants that their opinions would not affect their semester score.

3. Results

As the reading tests were multiple choice tests (with four choices) with 80 items , they were corrected as 80 items. The item analysis and item-total correlations were computed based on the zero and one data.

Table 1 displays the item-total correlations for the 20 items of the test. The results indicated that all items had at least moderate contributions to the total score; i.e. => .30; except for items 4, 7 and 19.

Table 1. Item-Total Statistics: Grammatically Modified Texts

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
q1	9.95	18.743	.372	.788
q2	10.01	18.510	.423	.785
q3	10.07	18.968	.315	.791
q4	10.02	19.094	.283	.793
q5	9.97	18.778	.361	.789
q6	9.99	18.705	.377	.788
q7	10.00	19.329	.229	.796
q8	10.01	18.879	.334	.790
q9	9.96	18.817	.353	.789
q10	9.98	18.530	.420	.785
q11	9.99	18.698	.379	.788
q12	10.01	18.651	.389	.787
q13	10.03	18.738	.368	.788
q14	10.01	18.409	.448	.784
q15	10.00	18.483	.430	.785
q16	10.05	18.662	.386	.787
q17	9.94	18.943	.325	.791
q18	9.97	18.899	.332	.790
q19	10.07	19.129	.277	.794
q20	9.97	18.590	.406	.786

Table 2 displays the item-total correlations for the 20 items of the test. The results

indicated that all items had at least moderate contributions to the total score; i.e. => .30.

Table 2. Item-Total Statistics: Lexically and Grammatically Modified Texts

	Scale Mean IF Item Deleted	Scale Variance IF Item Deleted	Corrected Item- Total Correlation	Cronbach's Alpha IF Item Deleted
q21	10.41	36.378	.640	.919
q22	10.37	36.262	.664	.918
q23	10.45	36.236	.667	.918
q24	10.39	36.964	.540	.921
q25	10.37	36.370	.645	.918
q26	10.33	36.597	.614	.919
q27	10.39	37.098	.517	.921
q28	10.40	37.087	.518	.921
q29	10.39	36.829	.564	.920
q30	10.39	36.791	.570	.920
q31	10.37	36.945	.546	.921
q32	10.36	36.527	.619	.919
q33	10.39	36.588	.605	.919
q34	10.33	36.895	.561	.920
q35	10.33	36.881	.563	.920
q36	10.34	36.521	.624	.919

Table 2. Item-Total Statistics: Lexically and Grammatically Modified Texts

q37	10.35	36.725	.587	.920
q38	10.39	37.299	.483	.922
q39	10.39	36.413	.636	.919
q40	10.35	36.631	.604	.919

Table 3 displays the item-total correlations for the 20 items of the test. The results indicated that all items had at least moderate

contributions to the total score; i.e. => .30; except for item 45.

Table 3. Item-Total Statistics: Lexically Modified Texts

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
q41	8.86	21.705	.383	.825
q42	8.93	21.531	.422	.823
q43	8.93	21.136	.513	.819
q44	8.94	22.043	.310	.828
q45	8.87	22.259	.260	.831
q46	8.91	21.669	.390	.825
q47	8.89	21.868	.346	.827
q48	8.91	21.865	.347	.827
q49	8.91	21.830	.355	.826
q50	8.93	21.445	.443	.822
q51	8.91	21.194	.498	.819
q52	8.95	21.568	.416	.823
q53	8.89	21.908	.337	.827
q54	8.95	21.092	.526	.818
q55	8.92	21.685	.388	.825
q56	8.97	21.691	.393	.824
q57	8.91	21.991	.319	.828
q58	8.85	21.835	.354	.826
q59	8.97	21.053	.538	.817
q60	8.94	20.983	.549	.817

Table 4 displays the item-total correlations for the 20 items of the test. The results

indicated that all items had at least moderate contributions to the total score; i.e. => .30.

Table 4. Item-Total Statistics: Not-Modified

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
q61	7.30	29.326	.583	.893
q62	7.22	29.394	.543	.894
q63	7.31	29.355	.581	.893
q64	7.27	29.448	.547	.894
q65	7.26	29.335	.565	.894
q66	7.22	29.542	.514	.895
q67	7.29	29.964	.449	.897
q68	7.25	29.731	.483	.896
q69	7.27	29.395	.558	.894
q70	7.29	29.189	.608	.893
q71	7.26	29.603	.512	.895
q72	7.27	29.784	.481	.896
q73	7.27	28.952	.647	.891

Table 4. Item-Total Statistics: Not-Modified

q74	7.19	29.808	.458	.897
q75	7.27	29.593	.516	.895
q76	7.21	29.471	.527	.895
q77	7.22	30.294	.370	.899
q78	7.27	29.421	.553	.894
q79	7.25	29.331	.564	.894
q80	7.25	29.774	.477	.896

Before data analysis, the normality of the data was explored. As noted by [24] and [25], the present data met the normality assumption because the absolute values of the skewness and kurtosis indices were lower than 2.

Table 5 illustrates the descriptive statistics for the four tests. The results indicated that

the participants had the highest mean on lexically/grammatically modified ($M = 10.96$) test followed by the lexically modified ($M = 10.92$), grammatically modified ($M = 8.70$) and not-modified ($M = 7.64$) reading tests

Table 5. Descriptive Statistics of Four Reading Comprehension Tests

Reading	Mean	Standard Deviation	95% Confidence Interval	
			Lower Bound	Upper Bound
Grammatical	8.700	4.599	7.958	9.442
Lexical/Grammatical	10.967	4.648	10.217	11.717
Lexical	10.927	.6.359	9.901	11.953
Not-modified	7.640	5.706	6.719	8.561

It is worth mentioning that the assumption of sphericity—as tested through the Mauchly's test—was not retained. As displayed in Table 7, the results of the Mauchly's test were significant ($W = .172$, $p < .0001$). However, there is no need to

worry about the violation of this assumption, because as noted by [27], the corrections displayed in Table 4 can be reported instead of the “Sphericity Assumed.”

Table 6. Mauchly's Test of Sphericity

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Tests	.172	260.018	5	.000	.481	.484	.333

The results ($F(1.44, 214.88) = 34.87$, $p = .000$, partial eta squared = .190 representing a large effect size) (Table 7) indicated that there were significant differences between the participants' performance on the four reading tests. Thus, the major null-hypothesis one as “lexical modification,

grammatical modification, lexical and grammatical modifications in comparison with no modification of input did not significantly affect the reading comprehension ability of Iranian medical students differently” was rejected.

Table 7. Tests of Within-Subjects Effects of Four Reading Comprehension Tests

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared	
Tests	Sphericity Assumed	1240.872	3	413.624	34.879	.000	.190
	Greenhouse-Geisser	1240.872	1.442	860.417	34.879	.000	.190
	Huynh-Feldt	1240.872	1.452	854.307	34.879	.000	.190
	Lower-bound	1240.872	1.000	1240.872	34.879	.000	.190
Error(factor1)	Sphericity Assumed	5300.878	447	11.859			
	Greenhouse-Geisser	5300.878	214.884	24.669			
	Huynh-Feldt	5300.878	216.421	24.493			
	Lower-bound	5300.878	149.000	35.576			

Table 8 signifies the results of the LSD post-hoc comparison tests. Based on these results it can be concluded that the participants' performance on the lexically modified reading ($M = 10.92$) was significantly better than their performance on the not-modified test ($M = 7.64$) (Mean

Difference = 3.28, $p < .001$). Thus, the minor null-hypothesis that stated "lexically modified input in comparison with no modified input did not significantly affect reading comprehension of Iranian EFL students" was rejected.

Table 8. Pairwise Comparisons of Four Reading Comprehension Tests

(I) Reading	(J) Reading	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
Grammatical	Not-modified	1.060*	.535	.049	.003	2.117
	Grammatical	2.267*	.336	.000	1.602	2.931
	Lexical	.040	.323	.902	-.599	.679
Lexical	Not-modified	3.327*	.316	.000	2.703	3.950
	Grammatical	2.227*	.553	.000	1.134	3.320
	Not-modified	3.287*	.198	.000	2.896	3.678

*. The mean difference is significant at the .05 level.

The participants' performance on the grammatically modified reading ($M = 8.70$) was significantly better than their performance on the not-modified test ($M = 7.64$) (Mean Difference = 1.06, $p = .049$). Thus, the minor null-hypothesis that stated "grammatically modified input in comparison with no modified input did not significantly affect reading comprehension of Iranian EFL students" was rejected. The participants' performance on the lexically/grammatically modified reading ($M = 10.96$) was significantly better than their performance on the not-modified test

($M = 7.64$) (Mean Difference = 3.32, $p < .001$). Therefore, the minor null-hypothesis that proposed "lexically and grammatically modified input in comparison with no modified input did not significantly affect reading comprehension of Iranian EFL students" was rejected.

Analyses of the interviews revealed that the overwhelming majority of the interviewees chose lexically and grammatically modified texts. However, regarding which type of text was boring to them, they mentioned not modified texts. Also, the participants believed that grammatically modified texts

are best for improving students' work knowledge. Moreover, the interviewees mentioned that grammatically modified

4. Discussion

It has been widely acknowledged that input should be comprehensible if it is to help the process of SLA [4]. To make input comprehensible, several methods have been proposed. [5] suggested two solutions, namely the use of context by the learner and the use of simplified input by the teacher. Therefore, this study revolved around simplification of medical passages to investigate whether this approach could have any significant effect on reading comprehension.

The present study confirmed [20], who showed that the effects of input modification on reading comprehension could vary regarding the kind of comprehension process required. For a learner trying to extract main ideas or detailed information from a text, simplification of syntax and lexis may be enough help.

The results of this study are also consistent with those of [28] who found beneficial effects for input modification on comprehension. The findings, however, are not entirely in line with those of [29,30] in this regard. They had found just a selective beneficial effect for input simplification on reading comprehension. Also, [29] observed that linguistic elaboration worked more effectively for high-proficient students than for low-proficient students. [30], however, found that low-proficiency students benefited from linguistic modifications, but the more-proficient students did not.

However, for the acquisition to take place, input needs to be comprehended by second language learners [31]. Facilitating the process of reading for second or foreign language learners and ESP students is of high priority for language researchers, teachers, and learners. The question of how to make the reading process more effective has resulted in the creation of a wide variety

texts were more straightforward, with fewer complicated structures for them.

of theories, approaches, and texts [32]. Among all, recent research on input modification has widely addressed the effectiveness of one type of modification; that is simplification [33]. This trend, therefore, accounted for the initial idea of conducting this study. Overall, the results indicated the positive impact of lexical and grammatical simplifications on reading comprehension.

Finally, regarding Iranian medical students' perceptions towards different types of input modifications, it was found that the participants generally favored text simplification, both in lexical and grammatical forms of it. Given that eliciting students' perceptions towards text simplification was indeed part of the novelty of this study, extremely few studies have been conducted with this focus. As a result, it was hard to spot other studies to compare and contrast this finding. Among the rare studies found, the one carried out by [34] similarly reported that Taiwanese students preferred modified versions of reading passages, as they found them more understandable and readable. As this area is quite understudied, more empirical endeavors are keenly awaited.

This study not only can boost the understanding of effective simplification strategies to use with medical texts but also it can help gain a broader perspective on the importance of research in the field of ESP education. The knowledge gained regarding the process of research followed during this study can contribute to determining the credibility of a research study and looking more critically at how valid and reliable the study is.

This study excluded gender from the primary variables under investigation. However, some studies have reported that generally female learners are more concerned about language complications compared to male ones and that they tend to

be more anxious and worry-oriented than male students [35,36]. Almost no study has been carried out to examine whether gender as a factor can affect the comprehension of simplified passages and seems to be a domain worth studying.

Finally, the assessment tool which was used to measure student comprehension in this study was multiple-choice questions. This format is notorious at times for giving researchers a misrepresentation of what students know because there is the possibility that students are only making good guesses [11]. A more robust assessment tool, therefore, could add new insights into the students' level of comprehension. Future researchers are recommended to consider this topic as an area of investigation.

5. Conclusion

Reading comprehension has drawn the attention of many second and foreign language researchers and has been studied from different perspectives because reading is

the most important source of input for second language learners. Hence second language learners must be able to comprehend input.

The results of the present study regarding the impact of different types of text modification on reading comprehension ability of medical students indicated that from among the four types of input, lexical and grammatical modification had the greatest effect on improving the participants' comprehension of the medical passages administered to them. Lexical modification was the second influential type of input followed by grammatical modification as the third one. Accordingly it was confirmed that the effects of input modification on reading comprehension could vary regarding the kind of comprehension process required and that simplification strategies can be effective in better understanding medical texts.

The main components or themes of respondents' perceptions from their opinions in terms of each type of text. The results of the interview revealed that the overwhelming majority of the interviewees chose lexically and grammatically modified texts. The unmodified text was considered as the most boring. Grammatically modified texts were regarded as best for improving students' work knowledge and more straightforward, with fewer complicated structures.

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Conflict of interest

The authors declare no conflict of interest.

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