Investigating the use of text modifications in L2 reading

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ABSTRACT

Research on text modifications has been around since the 80s until the present day. These studies have come a long way from manual text modification methods to the use of computerized models in its present form. However, there seems to be no resolution to the question of whether modified texts can help language learning. This study went back to the basics, manually modifying a text to find out whether it can help non-native English readers' English reading comprehension. A text taken from a semiotic textbook was modified using the text modification strategies outlined by Parker & Chaudron (1987). The text was then given to an experiment group comprising of 7th semester students studying linguistics at Universitas Pendidikan Indonesia. Having read the text, these students were given a written test alongside a questionnaire. Their scores and their attitudes toward the modified text (from the written test & the questionnaire, respectively) were taken to measure and compare with the scores and attitudes of a control group reading the original text. The results showed a difference between the scores of students in the control group and those in the experiment group, with the latter having more students who scored high. There are also more students in the experiment group with a positive attitude toward the text they read compared to those in the control group. However, the difference in scores proved to be statistically not significant, and also most students who viewed the modified text positively scored low on the written test.

Keywords: *Elaboration of text, Simplification of text, Text modifications,*

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INTRODUCTION

Language learning is the activity of picking up languages for use in communication, so that one is able to use it. It is commonly grouped into acquiring reading, listening, writing, and speaking skills (Leaver, B. L., Ehrman, M., & Shekhtman, B., 2005). However, language learning is something that requires no small amount of effort as well as time. Writing from personal experience, even in a controlled learning situation (e.g. learning programs in schools), language learners may easily stumble during the learning process.

In the researcher's own experience, it often happens during readings of scholarly sources such as textbooks which involves language being used at a technical or specialized level in explaining certain concepts or topics. If nothing is done to solve this problem, language learners/readers will not comprehend what they are reading, and in its turn, language learning is not optimally fulfilled. Experts on language learning have long since dedicated themselves to investigate this exact problem.

Many of the literatures focused on modifying the learning materials themselves. Quoting the earliest literatures, some of them, such as Parker & Chaudron (1987) and Ross, Long, & Yano (1991) believe that those materials ─the "input", in a technical term─, if modified, can help in the process of language learning, particularly to promote the learners/readers' comprehension. Another (Lotherington-Woloszyn, 1993) questioned this belief by conducting a similar study herself. These three studies, among others, can be attributed as pioneers, since what they have set out to do are still practiced in similar studies today, that of modifying input for better comprehension in language learning by reading.

The first one mentioned (Parker & Chaudron, 1987) expanded the discussion further, by emphasizing "elaboration" of input in addition to its "simplification". The two are "input" modifications, in contrast to another type of modification, "interaction" modification, which modifies how the

interaction is conducted (instead of modifying what is exchanged in the interaction). On "input" modifications, they defined them as "…typically considered to be changes in linguistic form, that is, surface syntax [and] lexis and phonology… (Parker & Chaudron, 1987)." The remaining two studies by Ross, Long, & Yano (1991) and Lotherington-Woloszyn (1993) similarly focus on "input" modifications, but limiting themselves only to the "simplification" part. This study also focuses on the various methods of "input" modifications outlined by Parker & Chaudron, those of simplifying and modifying "input" in text modifications.

The prevalent usage of "simplification" strategies in the three studies is in line with another notion in language learning studies, that of toning down the input to make the learning process easier. This is done so as to make it easier for language learners to process what they are learning, therefore being able to progress and acquire the language they are learning (Parker & Chaudron, 1987). In measuring the language learners' comprehension, the three studies made use of various testing methods where the learners answer questions relating to what they have read. It can be said, then, that how well language learners can recall what they have read in a test is proof of their reading comprehension.

Still, the three studies are similar with each other in that they tried to find out whether (linguistically) modified texts can affect readers' comprehension. However, each of them arrived at somewhat different conclusions, perhaps due to the fact that different strategies or participants are involved in each of the study. Nevertheless, the three studies yielded results that show input modifications ─especially using simplification methods─ to help readers' reading comprehension in language learning. Therefore, the belief that input modifications can help in language learning ─particularly language learning by reading─ is corroborated by the three studies.

Further, Ross, Long, & Yano suggested that later studies regarding text modifications should employ

both simplification and elaboration strategies; specifically, to first elaborate a(n) (unmodified) text and then simplify it after. This is due to the results that their research yielded, which shows that both readers of simplified and elaborated texts performed better compared to readers of the unmodified text. The readers of the simplified text performed a little better—that is, not significantly above—than the readers of the modified text. However, due to the simplified nature of the text they are reading, the readers are not exposed to new words of a foreign language, which is in itself an objective in the process of second/foreign language learning (Ross, S., Long, M. H., & Yano, Y., 1991). This suggestion serves as the platform for this study, where it employed both strategies—"input" elaboration and simplification—in its text modifications.

As for recent studies, their focus has slightly shifted compared to the previous ones mentioned. They still modify input, but mainly for identification purposes. They mainly test out automated (computer) models in performing text simplifications, such as the studies conducted by Candido Jr., Maziero, Gasperin, Pardo, Specia, & Aluisio in 2009 and Saggion, Esteban Etayo, Anula, & Bourg in 2011. The two studies set out to see how proficient their automated (computer) models were in simplifying texts; in other words, identifying whether their models have simplified a text properly. Paetzold's (2015) study is a bit different from the previous two, where they identified suitable or "state-of-the-art" simplified texts by surveying actual people.

It can be seen that current studies on language learning, represented by the three studies previously mentioned, no longer entertain the main question that used to underlie studies on language learning: how to make the various methods of language learning easier for the learners; in other words, questions that yield applied solutions to language learning. Of course, all this hints at a much more developed stage in studies on language learning, that of employing computer models in studying input modification.

On the other hand, studies on improvements in language learning are—to the researcher's knowledge—uncommon in the context of linguistic studies on language learning in Indonesia. Thus, it is necessary to conduct this kind of "back-to-basics" study instead of picking up the current trend of using automated models in modifying texts. This is because to get to that , the input modification strategies that are suitable to the context of Indonesian foreign language learners must be (manually) identified first before dealing with automated computer models.

METHODOLOGY

This research is mixed in design, in that it is both quantitative and qualitative in nature. It is inspired by the three studies of Parker & Chaudron (1987), Ross, Long, & Yano (1991), and Lotherington-Woloszyn (1993). The experiment in this study involves research participants who were asked to read two versions of a text—the unmodified and modified version—and then participate in a written test based on what they have read. The research participants' scores serve as evidence of their reading comprehension of the texts they read, which helped to answer the question whether modified texts can positively affect reading comprehension. Additionally, the research participants' were also asked of their attitudes on the texts they read through a questionnaire; this is necessary to find out in what ways the texts have affected the research participants'.

As for the choice of text, this study chose to differ from other studies, particularly the three mentioned previously. Whereas those three studies employed short, genre-specific texts in English — such as descriptive and news item texts commonly found in English proficiency tests — , this study employed an English text found in a linguistic textbook. This kind of text was chosen due to the fact that such texts are deemed more relevant to the research participants' context; these texts are regularly perused by the

research participants as study materials, as they are college students studying linguistics.

The text is taken from a linguistic textbook titled Semiotics: The basics (2017) by Daniel Chandler. This text on semiotics was chosen due to the subject being considered one of the most difficult to learn by the research participants. The text is an introductory section of the first chapter titled Models of the sign (pp. 32-88). This section was chosen specifically because it introduces the readers to a main concept in the study of semiotics, "sign". Although the book has an introductory chapter of its own – the chapter before the one cited above – , its focus is on introducing the field of semiotics itself, explaining the definitions of "semiotics", how the field came to be, and the reasons for studying it. Perhaps the reason for this is because the book was formulated and intended for a general readership not limited to the practitioners of linguistics themselves.

An unmodified text taken from Daniel Chandler's book and the modified version of that same text were given to the research participants to read. One group was given the unmodified text to read, while another was given the modified one. The text itself was modified by way of the various input modification strategies formulated by Parker & Chaudron (1987), in particular the strategies of text simplification and elaboration such as reducing the number of clauses in a sentence, deletion of sentence elements, paraphrasing, and use of synonyms.

Further, Beinborn, Zesch, & Gurevych's (2014) approach of using and repeating cognates was also employed in this study due to it being able to increase readability in foreign language learning. In addition, the balance of complex sentences was preserved due to the original text being academic in nature. This is because academic texts commonly – perhaps even naturally – consist of complex sentences, as Analisti (2016) in her study of samples of academic writings has shown. Therefore, the simplification processes were done moderately so that the modified text still retains its academic nature.

In addition, the texts—both the unmodified and the modified versions － were evaluated using Halliday's lexical density formula (Halliday, 2004). This formula presents a sentence's lexical density through a simple calculation: the total number of lexical items in a sentence is divided by the number of clauses the sentence has. The acquired number, in its turn, contributes to how lengthy a text is. This formula is important not only in its ability to measure a text's (lexical) density, but also due to the fact that Halliday theorized that a lexically dense text will be more difficult for the readers to process/comprehend. In this study, the numbers acquired through this formula serve as pointers of how lengthy a text is, and also as indicators of how different a text has become once it is modified.

Considering the short length of the text used in this study, the questions in the questionnaire only numbered ten in total. These questions were formulated along the categories that Heaton (1990), in his book regarding the writing of English language tests, has outlined. There are

10 categories of questions regarding testing reading comprehension in the book, but only 4 categories were used in this study, which are: pictures and sentence matching (1 questions) true/false reading tests (2 questions), multiple-choice items (5 questions), and completion items (2 questions).

This research design, besides facilitating data collection from afar － as was required in the context of the study's formulation －, also allows the inclusion of a range of questions consisting of the 4 types previously mentioned. These types of questions, in their turns, have differing testing objectives, but still fall within the range of testing reading comprehension. For example, multiple-choice items type or the completion items type do not require advanced reading comprehension as much as the pictures and sentence matching type.

After the data collection, the quantitative data were analyzed with the help of SPSS. In order to find out a statistically significant probability of the test already conducted, a non-parametric test (the Mann-Whitney U

test) was conducted to compare the two datasets of the control group (who read the unmodified text) and the experiment group (who read the modified one). The Mann-Whitney U test was chosen specifically because apparently, the control group is not normally distributed, therefore annulling the requirements of doing parametric tests. It is hoped that a statistically significant result of the test would emerge, so that this study can answer its first research question with a convincing 'yes'.

As for the qualitative data, they were analyzed quite literally due to their obvious nature of telling the attitudes of the research participants toward the text they have read. Further, they were grouped so as to make the analysis easier, and then put into pie chart to differentiate from the charts/graphs used to depict the quantitative data. Of particular concern to this study is the attitudes of the experiment group towards the modified text. This is due to the fact that this study concerns linguistically modified texts, not only finding out whether they can affect reading comprehension towards the better, but

also finding out what effects − be they positive or negative − those texts may incur on their readers.

FINDINGS AND DISCUSSION
General Findings

The findings of this research are varied. This study still cannot answer convincingly the question of whether linguistically modified texts can be helpful for reading comprehension. However, the modified text seems to be well-received by its readers. The findings may help connect these conflicting answers while explaining the inherent complications in them. Before getting to the findings, the data will be discussed first.

There are two datasets, each of which comprised of the control and experiment group. In total, there are 37 research participants in this study, which is the whole population of a linguistics classroom. There are 6 male students compared to 31 female students in the classroom, therefore 18 and 19 people were assigned to the control and experiment groups, respectively. This is in keeping with the balance of the gender, so that each

group would have 3 male participants each, the rest being female. However, one male participant in the experiment group, due to a technical error, mistakenly read both versions of the text in the questionnaires. Thus, this person's data was rendered invalid for analysis. This accident evened out the total number of participants in both groups at the expense of equal gender distribution in both groups.

As for the findings, they are varied in more sense than one. In the written test, participants in both groups mostly scored low. Most participants scored 50 or lower, with a total of 25 participants in both groups, or 67% of the total population. Following them are 7 participants who scored 60, and 4 participants who scored 70 and 80, respectively. The first dataset (the control group) ranges as low as 40 and as high as 70. Meanwhile, the second dataset ranges as low as 0 (the outlier in the dataset and the data as a whole) and as high as 80.

Table 1. The test scores of the research participants

Control group (those who read the original text)	Experiment group (those who read the modified text)
50	50
60	40
40	30
50	50
60	80
40	60
70	70
40	40
50	40
60	60
60	80
60	50
50	30
50	0
50	40
50	40
50	20
50	20

Judging from the quantitative data, this study found no conclusive answer to the question of whether modified texts can help to promote reading comprehension. This conclusion is acquired from a statistical test conducted to determine

whether there is a statistically significant difference between the two datasets.

The qualitative data, on the other hand, shows much confidence on the participants' part, several of them admitting that the respective text they read did not help or even hinder their reading process. This is notwithstanding that their reading comprehension, represented by the test scores, are all low. These confident participants consist of 22% of the population, or in other words, 8 people in both datasets. These research participants seem to overestimate their reading ability, even though they scored low in the written test.

On the other hand, their attitudes toward the modified text seem to be balanced between negative and positive, a trait not shared by the original text. Some are even apologetic in this, meaning they defer to the fact that academic texts are usually written that way. More on these will be discussed in more detail in the next subsection.

The Quantitative Data

First to be discussed is the quantitative data, particularly its nature. As was already mentioned, they are not normally distributed, particularly the first dataset. Further, a couple of statistical tests, the Kolmogorov-Smirnov and Shapiro-Wilk tests, were conducted to determine whether the datasets are normally distributed. For the first dataset, the p value is only 0.001, which is smaller than 0.05, therefore declaring the population being studied is not normally distributed. For the second dataset, however, the p value is 0.200, larger than 0.05, thus making the dataset fall within the normally distributed category. The Shapiro-Wilk test also yielded similar results, where the first dataset have a p value lower than 0.05 at 0.017 but the second one is greater at 0.689. Due to the first dataset not passing the normality tests, both of the datasets were considered not normally distributed.

Due to the datasets being considered such, a non-parametric test was conducted to prove whether the difference between the datasets

are statistically significant. The non-parametric test in question is the Mann-Whitney U test. The results are as follows.

Table 2. Mann-Whitney U test on the datasets

Ranks

	Text	N	Mean Rank	Sum of Ranks
Scores	1	18	21.25	382.50
	2	18	15.75	283.50
	Total	36		

Test Statistics^a

	Scores
Mann-Whitney U	112.500
Wilcoxon W	283.500
Z	-1.611
Asymp. Sig. (2-tailed)	.107
Exact Sig. [2*(1-tailed Sig.)]	.118^b

a. Grouping Variable: Text

b. Not corrected for ties.

The Z score from the table takes significance here, since the p value is 2-tailed while the one-tailed p value is not corrected for ties. The value, -1.611 or -1.61 is lower than the z value at 0.05, which is 0.537 for a one-tailed test. This means that the difference between the participants' test scores in the control group and the experiment group has no statistically significant difference. This translates to a 'no' as an answer to the first research question of this study, which is "Can linguistic modifications of a text positively affect readers' English reading comprehension?" In other words, the null hypothesis that original texts and modified texts affect readers' English reading comprehension equally cannot be rejected.

The failure to yield a statistically significant difference of this study is nothing new. Parker & Chaudron's (1987) and Lotherington-Woloszyn's (1993) studies also failed to acquire a statistically significant difference. In the former study, the researchers suspect the failure is due to the text's level being higher than the proficiency of the research participants'. In the latter study, the research participants, much like the ones in this study, overrated their comprehension of the modified texts. Ross, Long, & Yano's (1991) study, on the other hand, found a statistically significant difference between the scores of participants who read a simplified text compared to its

unmodified version. However, no statistically significant differences were found between the participants who read an elaborated text compared to its unmodified version, and also those who read the elaborated text compared to the simplified version.

This study, much like those three, has not found a statistically significant difference between the scores of those who read a modified text compared to those who read an unmodified/original one. Nevertheless, it is still too early to settle the question of modified texts versus original texts. The qualitative data will be examined and elaborated in the next subsection.

The Qualitative Data

Regarding attitudes toward the modified text, there seems to be no significant difference compared with the original text. In the experiment group, 9 people viewed the modified text as easy enough for them to read, compared with 6 people with such attitudes toward the original text. Put into perspective, this means that half of the research participants viewed the modified text positively, and a

third of the participants viewed the original text positively. However, this is not backed by those same people having a large score on the written test. The same can be said of those reading the original text. Only six of these 15 participants scored higher than 50 on the written test. This shows that most of them seem to overestimate their reading abilities.

Therefore, it can be concluded that most of the population/research participants viewed the respective texts they read as difficult. This is backed by statements from those who scored high on the written test, but still viewed the texts they read as academic in nature, therefore it is natural to be difficult and also reading them requires concentration. These views are more apparent in the control group rather than the experiment group, with 12 people in the former and 9 people in the latter. However, a significant difference stating that modified texts are superior cannot be derived from these differences since they are low, not unlike the previous case.

As for the reasons why their scores are low, the participants

attributed this to various reasons. The reason mostly attributed is the linguistic elements of the text. Within the control group and the experiment group, linguistic elements seem to be the inhibiting factor towards reading comprehension. The most attributed reason that inhibited the participants' reading comprehension is the linguistic elements of the text. In total, there are 19 participants in both the control group and the experiment group attributing their failure to comprehend the texts because of their linguistic elements. These 19 can be divided further into those who emphasized truly linguistic elements such as words/phrases used, and those who emphasized how the texts are structured/organized. The former has 13 participants while the latter has 5 participants in both the control group and the experiment group.

These 19 participants are quite unevenly distributed among the control group and the experiment group, the former has 12 while the latter has 9 participants attributing their failure in comprehending the text to linguistic elements. There is a difference in number, but again, it is

not significant enough to declare the modified text's superiority over the original.

Another reason the research participants failed to comprehend the texts is elements not belonging to the linguistic part, such as punctuations and habits. These participants only numbered 2 people, 1 in each group. The one attributing punctuations to their failure of comprehending the text belonged to the experiment group, thus they are reading the modified text. The punctuations in question are quotation marks, most heavily used in the 3rd paragraph of both the original and modified texts. As for the other one, they attributed their failure in comprehending the text to their own reading habit, which requires them to read a text more than once to achieve better comprehension. These cases are unique and incite curiosity, since no other person in both the control group and the modified group attributed their failure in comprehending the text to similar reasons. Also, in this study's defense, the time for participants to read their respective texts and to work on the written test

was allotted generously (1 hour in a day), thus allowing for multiple readings of the texts.

These reasons need to be brought out because they serve as the answer to the question of how linguistic modifications affect reading comprehension. In conclusion, then, the research participants' attitudes toward the modified text is mixed, but more of them viewed the modified text still difficult to comprehend, the most attributed factor being the linguistic elements of said text. In other words, the answer to the second research question of this study (In what ways do linguistic modifications affect readers' English reading comprehension?) is 'in a similar way to how the original text affected its readers.'

As for the positive attitudes toward the texts, there are a couple of things that can be derived. First is that from the 9 participants in the experiment group, they viewed the modified text as having languages/words that are easy enough for them to read and digest the text. These views are apparent in 8 participants out of nine. The

remaining 1 participant did not give any detailed information in their statements such as the other 8, only adding that the modified text is interesting for he/she to read. This is somewhat shared by the 5 participants in the control group who viewed the (original) text positively, in which 3 out of the 5 viewed the original text as having languages/words easy enough for them to digest.

Further, 5 of the 9 participants in the experiment group attributed their positive reading experiences to how the text was structured. These 5 emphasized such points as how the text is straight to the point and the terms used in it are well-elaborated. The remaining 4 were either apathetic toward the text, did not add detailed statements regarding the text, or even feel that some parts of the text hindered their reading process. This fact is also shared by the 5 participants in the control group who viewed the (original) text positively. Out of these 5, 3 participants attributed their positive reading experiences to linguistic elements in the text. The remaining 2 were confident in their reading—meaning

that they admitted the text they read as neither helpful nor hindered their reading process.

In conclusion, there are differences between the two, the evidence being that the highest grades on the written test belonged to those reading the modified text, and more participants viewed the modified text as easy enough compared with the same attitude towards the original text. However, these differences are not significant enough to help readers' comprehension, with half of the participants in the experiment group still viewing the modified text as difficult to comprehend, even those with the highest grades.

These findings, much like the quantitative data, are consistent with a previous study by Parker & Chaudron (1987) who found that their research participants viewed their elaborated text as more natural compared to its simplified version. This view is shared by several of this study's participants, who still identified the modified version as an academic nature. More on these and also on why there seems to be no conclusive answer to both of this

study's research question, and also detailed discussion of the modified text will be included in the next subsection.

CONCLUSION

This study aims to find out whether linguistically modified texts can affect reading comprehension. It has addressed two research questions: (1) Can linguistic modifications of a text positively affect readers' English reading comprehension? and (2) In what ways do linguistic modifications affect readers' English reading comprehension?. The answer to these questions are all but varied.

The answer to the first question is, unfortunately, a 'no'. This study did not find a statistically significant difference when comparing the scores of participants who read an unmodified text and a modified one. There are differences between the two groups, such as the latter group comprising of participants with some of the highest scores, besides half of the latter group's participants viewed the (modified) text as easy enough for them to read. However, those

differences are not significant, in that they are not backed by high scores in the written test.

As for the second (research) question, the modified text this study provided has been able to help half of its readers in reading them. This is proven by half (9) of the 18 participants who read the modified text, viewed the text as easy enough for them to read. This is not withstanding that these participants mostly scored low in the written test. Therefore, it can be concluded that the text has alleviated their reading experience, but not yet helped them in achieving reading comprehension. This is only half of the picture, however. The remaining 9 participants viewed the modified text as difficult for them to read, even though some of these 9 scored high on the written test. Thus, the answer to the second research question is varied unlike the first one.

The modified text has affected its readers equally in a good way and also in a bad way. On one hand, half of them viewed the text as easy enough while the other half viewed the text as difficult. For those who were affected in a good way, they attributed this to how the text was structured, such as how the languages/words in the text were perceived as easy enough to be read and how the terms in it are well-elaborated. On the other hand, those who were affected in a bad way thought the opposite. They viewed the text as difficult to read due to its languages/words which they struggle to comprehend, thus making their reading process hindered and their reading experience negative.

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