

Grammatical Sensitivity Task and Reading Comprehension: Evidence from Iranian Undergraduate ESP Learners



Narges Nouri*  0000-0003-1096-3065

Department of English Language, Tonekabon Branch, Islamic Azad University, Tonekabon, Iran.

Email: n.nouri64@yahoo.com



Ramin Rahimy**  0000-0002-0859-7812

Department of English Language, Tonekabon Branch, Islamic Azad University, Tonekabon, Iran

Email: drraminrahimy@toniau.ac.ir



Davood Mashhadi Heidar***  0000-0002-1884-7897

Department of English Language, Tonekabon Branch, Islamic Azad University, Tonekabon, Iran.

Email: davoodm_tarbiatmodares@yahoo.com

ABSTRACT

Teaching foreign language skills to non-EFL learners e.g. ESP learners has been considered a controversial issue since the first sparks of teaching foreign language teaching since the 1950s up to the present time. Scholars have made a variety of attempts to bring novel methodologies into the world of teaching language components to ESP learners. The study reported here is not an exception and has a two-fold purpose i.e. teaching and ESP all together. As a result, it obtained the impetus to investigate whether an intervention of a grammatical sensitivity task would enhance a better reading comprehension achievement among Iranian undergraduate ESP learners majoring accounting. To achieve this purpose, 40 Iranian undergraduate ESP learners of accounting were selected via administering an OPT, and participated in the experiment of the study. They were divided into an experimental and a comparison group and were exposed to a pre-test of reading comprehension; then the experimental group received 5 sessions of grammatical sensitivity task treatment (GJ Tests) while the control group received a placebo. Finally, the posttest was administered to both groups. The data were analyzed via running the independent samples T-test between the posttests, and the paired-sample T-tests was used to indicate the possible progress of the groups. The results revealed a better performance of the experimental group receiving higher scores in the reading comprehension posttest after 5 session of treatment. Investigating the effect of grammatical sensitivity on Iranian ESP reading comprehension learners in a meta-analysis process was supposed to be the main impetus for the present study. It was performed through analyzing the learners' reading comprehension test performance results which were done comparatively between the pretest and the posttest of the experimental and control groups independently. It was revealed that the participants with higher degree of grammatical sensitivity reflected a more acceptable achievement performance in their ESP reading comprehension test.

ARTICLE INFO

Article history:
Received: 23 August 2022
Received in revised form
05 January 2023
Accepted: 06 January 2023
Available online:
Spring2023

Keywords:

Reading Comprehension, Grammatical Sensitivity, English for Specific Purposes, Grammaticality Judgement Test

Nouri, N., Rahimy, R., & Mashhadi Heidar, D. (2023). Grammatical Sensitivity Task and Reading Comprehension: Evidence from Iranian Undergraduate ESP Learners. *Journal of Foreign Language Research*, 13 (1), 93-108.



© The Author(s).

Publisher: University of Tehran Press.

DOI: <http://doi.org/10.22059/jflr.2023.346642.977>

* Ms. Narges Nouri is a Ph.D. Candidate of TEFL in the Department of English Language, Tonekabon Branch, Islamic Azad University, Tonekabon, Iran. She is the author of an article in the ISC-indexed International Journal of Research in English Education.

** Dr. Ramin Rahimy is the assistant professor and faculty member in the Department of English Language, Tonekabon Branch, Islamic Azad University, Tonekabon, Iran. He is the editorial board member in the International Journal of Research in English Education, and the author of numerous articles in reputed journals.

*** Dr. Davood Mashhadi Heidar is the assistant professor and faculty member in the Department of English Language, Tonekabon Branch, Islamic Azad University, Tonekabon, Iran. He is the editorial board member in the International Journal of Research in English Education, and the author of numerous articles in reputed journals.

Introduction

Part of EFL and ESP learners' interest to learn foreign language skills is due to the increasing recognition abilities that will provide for them information from the surrounding world. One of the receptive and recognition skills that will provide the learners with such information is the reading comprehension skill. Reading abilities are considered critical for academic purposes as well; and it is representative of the preliminary ways that learners can learn on their own beyond the classroom environment.

Reading comprehension was defined as the simple process of information decoding and storage to understand any given text (Holmes, 2009). Today, however, it is taken into account as the mental process of uncovering meaning (Zoghi, *Mustapha & Mohammad Maasum*, 2010) which involves identifying words identities drawing on their syntactic connections with other words to build a global coherent (Choi & Zhang, 2018). More precisely, connecting words to their grammatical functions facilitates creating an elaborated mental representation of a text. In this way, if the grammatical categories of individual words do not exploit getting their meanings, the overall understanding of the text will be hampered (Hannon, 2012). Thus, learners' inferred syntactic connection between words and phrases plays a crucial role in reading comprehension (Zhang, 2012).

Apart from the above theoretical explanations, the significance of syntactic knowledge in reading comprehension has been confirmed in the reports on the practical benefits of its integration in EFL (English as A Foreign Language) and L2 (second language) reading courses. According to Avery & Marsden (2019), effective and efficient reading in an L2 partly depends on learners' sensitivity to grammar, which encodes crucial information such as plurality or the assignment of subject and object roles. L2 learners may have different knowledge of this grammar, different access to that knowledge, and/or different processing strategies, when compared to speakers with different language backgrounds, such as native speakers (NSs) or learners with higher proficiencies or different first languages. Such L2

phenomena can result in misinterpretations or processing problems.

According to Alderson (1984), the focus on grammar can build the threshold grammar knowledge for lower level learners. Also, it can enhance advanced level learners' understanding of the global meaning of texts (Gascoigne, 2005). To achieve these goals, EFL teachers have to pre-teach not only the new vocabularies but also the main grammatical points of the reading texts (Clarke, 1980). Zhang (2012) goes beyond that to say that EFL/ L2 curriculum designing should be done considering learners' grammatical needs in reading comprehension.

However, the effect of grammar on second language reading does not seem to be given much focus by scholars and researchers (Alderson, 1984; Nassaji, 2007; Shiotsu & Weir, 2007; Urquhart & Weir, 1998). This may be attributed to the essence of reading as "a receptive language skill" used for grasping the themes of different texts. Hence, knowing about language structure was considered to be of less connection to text comprehension than the levels of other features including "Vocabulary", "Background Knowledge", and "Reading Strategies". Additionally, during the ages of the Communicative Language Teaching (CLT), a sort of emphasis was given to macro-language skills. Also, the necessity of addressing "the role of grammar in second language reading" was somewhat underestimated (Han & D'Angelo, 2009; Urquhart & Weir, 1998).

Statement of the Problem

The main problem of the current study turns round ESP learners' English language problems (here their reading comprehension ability). There have been extensive studies regarding ESP issues since the problems seem to have remained unsolved. The related literature on the variables mentioned, as well as observations and experiences, have indicated that there are obvious differences between EFL and ESP learners reading comprehension abilities. For the reading comprehension problem at ESP level, there are pieces of evidence: for instance, Rezaei Fard, Shahrokhi and Talebinezhad (2022) held that casting a further light on factors that could support or inhibit L2 learner engagement at the

task-level might provide ESP instructors with a more informed decision regarding applying an appropriate teaching methodology for ESP contexts.

Jung (2009) holds that although grammatical competence is supposed to be essential for the identification of syntactic relationships of sentence elements, few studies have examined how readers' grammatical knowledge may contribute to their second language reading comprehension. (Alderson, 1984; Shiotsu & Weir, 2007; Urquhart & Weir, 1998). Most studies pointing to the grammar role in second language reading investigated the issue via assessing the connectivity between learners' grammar knowledge and their second language ability in reading comprehension (Urquhart & Weir, 1998). For instance, Alderson (1993) surveyed the data from the English Language Testing Services (ELTS) Revision Project and came up with a significant overlap between scores on the grammar test and the reading test, which led him to propose a significant grammar role in second language reading. Similarly, Kuhn and Stahl (2003) reviewed theories and studies on reading instruction, it was indicated that instructing second language readers to "parse" sentences into meaningful phrases and giving them text which were previously segmented syntactically would promote second language reading comprehension to a notable degree. That is to say, the capabilities of identifying the syntactic roles of lexis, break sentences into meaningful sections, and distinguish the "syntactic structure" of sentences apparently contribute to grasp the textual meaning.

According to Zoghi (et al, 2010), reading, whether in first language (L1) or second/foreign language (L2), has drawn a considerable degree of pros and cons debates among experts over its interpretation during the past 40 years. It has been conceptualized in many ways; however, such similarities appear to have priority over the typology. Simultaneously, much attention has been paid to comprehension in the reading skill now and in past years. A general agreement of views concerning the definition that focuses on "reading comprehension" as the process of uncovering the meaning from connected text. However, the related literature makes one to have the inference that less attention has been given to empirical studies made since then on poor

comprehension of ESL, EFL and even ESP learners. Regarding this, here attempt has been made to re-discuss the problem of L2 deficient reading comprehension but not among EFL and rather, among ESP learners, that was the motivation of this study. Reading as a dynamic cognitive function involving a collection of mechanisms and strategies is one of the most critical learning challenges students face. According to Elahi & Mashhadi Heidar (2021), although the majority of Iranian English institutes' and schools' curricular pro-grams are reading-oriented, there is no emphasis on using various strategies of reading.

In terms of the reading comprehension skill as a problem for L2 learners, and that Iranian EFL and ESP learners are not exceptions, there are three elements can be considered that make up the reading comprehension process: vocabulary knowledge, grammatical competence and text comprehension. In order to understand a text the reader must be able to comprehend the vocabulary used in the piece of writing directly in relation to its grammatical aspects. If the individual words do not make the sense resulting from their grammatical arrangements, then, the overall story will not be got either. Teachers should pre-teach new grammatical points as well as those words that learners will encounter in a text or aid them in the grammatical points used in the reading passage. Thus, it is concluded that language learners should have the ability to put the words together to develop an overall conception of what it is trying to say in addition to being able to understand each distinct word in a text. This is text comprehension and refers to the significance of the learners' degree of sensitivity to grammatical rules as to the words. Readers use various text-comprehension techniques to promote their reading comprehension ability. These include "monitoring" for "understanding", "answering" and "generating questions", "summarizing" and "being aware of and sensitive to using the grammatical structure of a text structure to aid comprehension".

As for Iranian EFL and ESP learners, the same reading problems exist. According to Khoshsima & Rezaeian-Tyiar (2014), quoting from Rausch (2000), acceptable ability of reading comprehension can be taken into account as the main target to learners' success in their education. Because reading is a complicated cognitive process, it will be of notable significance for instructors to teach their students to gain ability in taking dynamic supervision over their own

comprehension process. Thus, a fundamental part of learning a foreign language is to have mastery over learning.

Accordingly, this study will focus on the grammatical sensitivity from among the three mentioned variables and will hypothesize that through grammatical sensitivity some modifications and perhaps impacts can be made on Iranian ESP learners.

Theoretical Framework

The theoretical framework of the current research includes two parts: one the one side, it has L2 reading comprehension theories, and on the other side, it encompasses Skehan's (1989, 1991) concept of grammatical sensitivity. Regarding "reading comprehension", this study's main concern will be tasks to teach reading comprehension to Iranian ESP learners, however, regarding the sensitivity of grammar, more explanations should be given. Skehan (1989) draws together Carroll's (1981) "grammatical sensitivity" and "inductive language learning ability". This melding is partly justified because the evidence requiring distinct factors here is not extensive (Skehan 1989). Grammatical sensitivity tends to represent the left-hand pole of each of these dimensions, while inductive language learning ability is more concerned with the right-hand side. Grammatical sensitivity allows concentration on one word (though in a larger structure), and only requires the test-taker to recognize, in whatever manner, the function the word fulfils so that it can be matched with another word. Inductive language learning operates upon longer structures and involves manipulation of a pattern at a greater degree of consciousness (ibid, 1989). Zhang (2019) considers grammatical sensitivity as one of the important components of linguistic aptitude, the issues of which play an important role in the second language acquisition and English teaching.

Further, According to Skehan (1991), sensitivity is whether the learner is able to distinguish the roles that words play in sentences (not whether the learner is able to make sentence analysis explicitly). Grammatical sensitivity shows gradual development with age, and there are pieces of evidence for it: English-speaking a young child performs more weakly in a test of grammaticality judgment than his/her peers who are older. Children, higher in age, indicated more accuracy and faster following time than the younger children. Despite the group difference, both younger and older children showed better

sensitivity to word order violations than to agreement violations. In contrast, adults showed equal sensitivity to both violation types (Wulfeck & Bates, 1991). In this study, the grammatical sensitivity will include a series of judgemental exercises on the grammaticality of English sentences that will be given to learners for checking their degree of sensitivity.

In the current study, attempts have been made to investigate the possibility of removing the weaknesses of Iranian ESP learners' reading comprehension via treating them with sessions of grammatical sensitivity task intervention. As will be discussed in the method section here, the concept of grammatical sensitivity has been designated in the form of tasks; and it is hypothesized that the intervention of such a task may exert significant impact on the participants of the study.

Review of the Literature

Different researchers have investigated the relationship between syntactic knowledge and EFL/L2 reading comprehension. Rodrigo, Krashen and Grobbons (2004) for example, conducted a study in an English speaking university in Spain and concluded that there is a positive relationship between L2 syntactic knowledge and students' extensive reading abilities. Shiotsu and Wier (2007) conducted a similar study in Japan and argued that syntactic knowledge encompassing knowledge of verb forms, morphology and transfer is a stronger predictor of EFL reading comprehension success than lexical knowledge. Nergis (2013), in the same vein, stated that the performance of Turkish students in L2 reading comprehension revealed the primacy of grammar over vocabulary knowledge. They could construct propositions in different clauses and recognize the contribution of each clause to the overall meaning of a text. Likewise, Kuhn and Stahl (2003) claim that L2 learners' ability of parsing sentences into meaningful phrases can significantly increase their reading comprehension scores. Therefore, the more students are involved in L2 reading tasks, the better they can perform in grammar tests (Lee, Schaller & Kim, 2015; Pratiwi, 2019). Despite that, however, Choi and Zhang (2018) assert that both syntactic and lexical knowledge is contributing to EFL learners' reading comprehension performance and none of them should be left at cost of the other one.

Barry and Lazarte (1995, 1998) investigated the effect of additive embedded clauses on the recall performance of two groups of L2 Spanish

readers: accordingly, those with high topic knowledge and those with low topic knowledge. The results of their study indicated that syntactic complexity of sentence structures had priority over the advantage of having text-related background knowledge. Based on the results, they proposed that grammatical competence could be essential to constructing propositions across clauses without taxing the limited working memory capacity and to bringing relevant background knowledge into the reading task.

While it is still possible to lament the lack of good solid causally interpretable research in the area of reading comprehension instruction (Jenki & Pany, 1980; Tierney & Cunningham, 1980), there can be little question that more research about the basic processes and instructional practices of reading comprehension has been packed into the last half decade (1978-1982) than in any previous period (however long). The purpose of this review is to characterize, summarize, and evaluate that re- search in terms of its contribution to principles of instructional practice. The first and most formidable task of a reviewer is to limit his or her search for potentially relevant studies. This is especially important in the area of reading comprehension given the enormous output of the field in each of the last 6 or 7 years. Since our focus is on instruction rather than basic processes or the development of processes, we will deal with process or crossage studies only to establish a feeling for the milieu in which research about instruction has been conducted or only if the implications for instruction of a particular, say developmental, study are so strong as to compel comment about it.

Empirical research has shown that texts can have particular rhetorical organizational patterns, and that readers' background knowledge of text structure and discourse cues significantly exert effect on their reading in a second or foreign language (Carrell, 1984a, 1984b). Moreover, training research studies have also been carried out that indicate the facilitating effects on foreign or second language reading of teaching students to understand and use text mapping strategies to represent the rhetorical structure of texts (Carrell, 1985; Carrell, Pharis and Liberto, 1989; Raymond, 1993; Tang, 1992).

Carrell (1992), in a study of university-level ESL students' awareness (recognition and use) of text structure and reading comprehension, found that those students who used the structure of the original passages to organize their written recalls

could remember significantly more total ideas from the original passage than did those who did not. Hence, this research study indicates that students who had a specialized kind of background knowledge—awareness of different patterns used by authors to organize expository texts—were more likely to use a structure strategy at the time of reading and, thus, were also more likely to understand and remember the read content more.

While there seem to be rather few studies of reading and discourse structure awareness in the past years, Jiang and Grabe (2007) focused on the positive impact of discourse structure awareness on reading abilities, providing a comprehensive review of research on visual representations of text structure on reading comprehension. Their study indicated that training with graphic features which explicitly indicated how the text information was organized (for example, cause-effect, comparison-contrast, problem-solution) improved students' reading comprehension abilities.

Grabbe's (1991) notion of reading as an interactive process implies that the ESP reader most probably has more limited content and formal schemata as well as less knowledge of language used in the text than the author has, thus, while an ESP reading course usually emphasizes building up student's knowledge of rhetorical structures and improving their knowledge of the target language. The gap in content schemata should not be ignored. The issue of ESP reading instructor as a content specialists raised in ESP literature (e.g. Robbinson, 1991). Grabbe's interactive model of reading dictates that ESP instruction should focus both on decoding language and on global reading strategies which (Duffy, 1988:763) defined them as "plans for solving problems, encountered in constructing meaning". They can be taught to students and when taught strategies help student's performance on tests of comprehension and recall.

Another related study in the background can be Skehan (1991) according to whom sensitivity is the ability to recognize the functions that words fulfill in sentences (not the ability to analyze sentences overtly). Grammatical sensitivity shows gradual development with age, and there are pieces of evidence for it: English-speaking younger children perform more poorly than their older peers in grammaticality judgment tests. Mitrofanova et al (2018) doubted about the clarity of the extent to which children were sensitive to gender cues or whether certain

agreement patterns were simply memorized. To investigate this, they used both existing nouns and nonce words and tested both transparent and opaque gender cues. The results were checked against a number of background factors measuring exposure, proficiency, and dominance; and their findings showed that bilingual children were clearly sensitive to morphophonological cues for gender assignment.

Further, Mun-Hong (2020) in their study investigated child language learners' sensitivity to grammatical constraints that were not sufficiently evident in the input that they received. The results revealed that although there was a measurable degree of individual difference, all the children sensitively discerned grammatical and ungrammatical forms. In particular, they often dropped illegitimate case markers when repeating sentences containing them, implying that they have a firm internal representation of relevant syntactic well-formedness.

Finally in Iranian context of EFL research, a number of studies focused on the impact of different variables on Iranian EFL or ESP learners' achievement in reading comprehension. As an instance, Karimi et al. (2021) examined Iranian EFL learners' reading motivation orientations and investigated the motivational and textual factors and affordances in reading, considering the learners' reflections. In addition, Khoshsiman & Rezaeian-Tyiar (2014), quoting from Raush (2000), elaborated on the cognitive aspect of the reading comprehension skill believing that well-developed reading comprehension ability is considered the major goal to students' educational success. Since reading is a complex cognitive process; it is of great importance for teachers to train students to be able to take active control of their own comprehension process. Therefore, one of the basic parts of learning a foreign language is mastering learning. The process of creating learners who become successful and autonomous at various stages of learning, results in learning the content more successfully and contributes to the development of lifelong learners.

Research Question and Hypothesis of the Study

Based on the problem stated and the theoretical framework explained, additionally, based on the literature that was reviewed, the following research question and hypothesis was posed:

RQ: Is there any difference between the experimental and control group of the study in term of reading comprehension ability posttest means after receiving treatment with grammatical sensitivity task and the existing method?

H0: There is no difference between the experimental and control group of the study in term of reading comprehension ability posttest means after receiving treatment with grammatical sensitivity task and the existing method.

The Basis of the Meta-Analysis

The impetus for a meta-analysis came from the specific design of this study with a number of steps. First, the practicality of the study demanded that it had to follow a quasi-experimental design since there were two intact groups: the experimental and control. The intact groups provided the background for the study to enjoy controlling the investigated variable(s) and maximizing internal validity. Second, the pretest-posttest intact group design was applied as suited for the selected groups to provide the base for the treatment of the experimental group and its comparison with the control group. Finally, the data analysis procedure including the inferential statistical method of independent samples t-test was planned to infer the possible effect of the independent variable on the dependent variable. The assumption of using the independent samples t-test between the posttest scores of the study was the homogeneity between the pretest scores that was shown by running another independent samples t-test as indicated in table (1) below:

Table 1. Independent samples T-test result of the pretest of the study (Homogeneity Assumption)

		t_{obs}	df	Sig. (2-tailed)
Reading Comprehension (Pretests of the Study)	Equal variances assumed	1.652	38	0.121
	Equal variances not assumed	1.652	37.4	0.121
	T-critical	2.021		

As is indicated in table (1), the observed t -value of the study was calculated between the pretests of reading comprehension skill in the experimental and the control group of the study. The observed t value was calculated as 1.652 ($t_{obs} = 1.652$), and the degree of freedom was 38 ($df = 38$). The critical value of t is 2.021 ($T_{crit} = 2.021$). Thus, $t_{obs} < T_{crit}$. Finally, the level of significance was calculated as to be 0.121 ($p = 0.121$) which indicates that the difference between the posttest scores has not been significant; as a result, the groups scores in pretest indicates that they are homogeneous before the treatment of the study.

Method

Participants

The participants of this study contained a population of 50 freshmen ESP learners of accounting out of whom 40 participants were selected as the samples via both an OPT test (1 standard deviation below to 1 standard deviation above the mean of the test) to assure that they had the necessary prerequisite proficiency for participating in the reading comprehension tests of the study and the Cochran formula. They had also declared their consent to participate in the study experiment. The 40 participants were divided in two groups: one experimental group and one control group.

Materials

OPT Test of Proficiency: This included the paper and pen version of OPT to determine the proficiency level of the participants. This test was the Oxford Placement Test which was commonly used by Iranian universities in their experimental studies on language to estimate proficiency. The test includes 40 (Cronbach Alpha Reliability=0.90) multiple-choice items assessing learners' knowledge of vocabulary and grammar since the two factors were necessary for the participants as criteria for a test of reading comprehension. Those who scored between -1 to

+1 standard deviation from the mean of the test were considered as best-fit sample members since the groups were supposed to be divided into experimental and control.

Reading Comprehension Test: A false-true test of reading comprehension as the pretest and posttest of the study (Cronbach Alpha Reliability=0.81) with the scoring scheme out of 20 was formed and administered. Two reading comprehension passages were selected from the ESP book for the students of accounting, and underwent Edward Fry (2021) online readability test of text difficulty level [<https://readabilityformulas.com/free-fry-graph-test.php>], and was determined as suitable because the result was spotted in the grey area and not in the dark area of the diagram. The passages were used as a re-test in the posttest of the study as well.

Grammaticality Judgement Test: Grammaticality Judgement sentences adopting from Skehan's Grammar Sensitivity Data Collecting Exercise (Skehan, 2001) for treating the participants on grammatical sensitivity. This included a combination of grammatically well-formed and grammatically ill-formed provided to the participants while they were asked to distinguish between the two sentence classes.

Procedure

The procedure began with selecting the participants via administering an OPT as was explained. Then, a pretest of reading comprehension at ESP level was administered to the experimental and the control group of the study to assess their reading comprehension ability before the treatment. Next, the experimental group was exposed to a 10-session treatment (60 Min. for each session) on grammatical sensitivity during which the participants were asked to read the

grammaticality judgement sentences and decide on their grammaticality. There was no treatment in the control group; however, the participants were exposed to an existing reading comprehension instruction (placebo). Finally, a posttest of reading comprehension ability (a retest of the pretest of the study) was administered to the participant groups.

Data Analysis

The data were analyzed via running an Independent Samples T-test between the posttest scores of reading comprehension and Paired-Samples T-test between the pretest and posttest scores of each single group of the study. The assumption for using the T-test category of statistics in the current study was previously explained in the meta-analysis section. As there were two groups of experimental and control in this study, a mean difference could be supposed to be shown if the researcher hypothesized the difference of the groups' performance in the reading comprehension test; further, the degree of the hypothesized achievement from the pretest to the posttest of each single group necessitated the run of a paired-samples t-test between the pretest and the posttest of each group of the study.

Results

Findings

The findings of this study are presented below in descriptive and inferential statistics. The descriptive statistical analysis of the study has been illustrated in tables (1) and (2):

Table 2. Descriptive results of the experimental group

	Mean	N	Std. Deviation	Std. Error Mean
Con Posttest	11.70	20	2.98656	.54527
Con Pretest	11.55	20	3.33563	.60900

As is indicated in table (2), the number of participants has been 20 in the experimental group (NExPre=20; NExPos=20). The mean for the posttest scores of the experimental group was shown to be 14.50 ($\bar{X}_{EXPRE}= 14.50$) as compared to the mean for the pretest of the experimental group scores which was 13.40 ($\bar{X}_{EXPOS}= 13.40$). As for the standard deviations obtained, there seems to be less variability among the pretest scores than the scores in the posttest of the experimental group. This may give an image of the experimental participants' scores to be of less variability before conducting the treatment of the study.

Table 3. Descriptive results of the control group

	Mean	N	Std. Deviation	Std. Error Mean
Ex Posttest	14.50	20	2.40149	.45671
Ex Pretest	13.40	20	2.10866	.40324

As is indicated in table (3), the number of participants has been 20 in the control group (NConPRE=20; NConPOS=20). The mean for the posttest scores of the control group was shown to be 11.70 ($\bar{X}_{CONPOS}= 11.70$) as compared to the mean for the pretest of the control group scores which was 11.55 ($\bar{X}_{CONPRE}= 11.55$). As for the standard deviations obtained for the posttest scores of the control group, there seems to be less variability among the posttest scores than the scores in the pretest of the control group. This may give an image of the participants' scores to be of more variability before conducting the treatment of the study.

Table 4. Independent-Samples T-test results of the groups

		t_{obs}	df	Sig. (2-tailed)
Reading Comprehension	Equal variances assumed	4.842	38	0.000
	Equal variances not assumed	4.842	37.4	0.000
	T-critical	2.021		

As is indicated in table (4), the observed t-value of the study was calculated between the posttests of reading comprehension skill in the experimental and the control group of the study. The observed t value was calculated as 4.842 ($t_{obs} = 4.842$), and the degree of freedom was 38 ($df = 38$). The critical value of t is 2.021 ($T_{crit} = 2.021$). Thus, $t_{obs} > T_{crit}$. Finally, the level of significance was calculated as to be 0.000 ($p = 0.000$) which indicates that the difference between the posttest scores has been significant.

Table 5. Paired Samples T-test results of the experimental group

	t	df	Sig. (2-tailed)
Ex Posttest-Ex Pretest	3.595	19	0.001
T-critical	2.093		

As is indicated in table (5), the observed t-value between the pretest and posttest of the experimental group of the study was calculated as 3.595 ($t_{obs} = 3.595$), and the degree of freedom was 19 ($df = 19$). The critical value of t is 2.093 ($T_{crit} = 2.093$). Thus $t_{obs} > T_{crit}$. As is seen, the observed t is significantly higher than the critical t which shows that there is a noticeable difference. Finally, the level of significance was calculated as to be 0.001 ($p = 0.001$) which,

additionally, indicates that the difference between the pretest and posttest scores in the experimental group has been significant.

Table 6. Paired Samples T-test results of the control group

	t	df	Sig. (2-tailed)
CON Posttest-CON Pretest	1.720	19	0.106
T-critical	2.093		

As is indicated in table (6), the observed t-value between the pretest and posttest of the control group of the study was calculated as 1.720 ($t_{obs} = 1.720$), and the degree of freedom was 19 ($df = 19$). The critical value of t is 2.093 ($T_{crit} = 2.093$). Thus $t_{obs} < T_{crit}$. As is seen, the observed t is lower than the critical t which shows that there is no significant difference between the pretest and posttest of the control group. Finally, the level of significance was calculated as to be 0.106 ($p = 0.106$) which, additionally, indicates that there is no significant difference between the pretest and posttest scores in the control group.

Conclusion

Discussion

The obtained results of this study pointed to a positive effect of grammatical sensitivity task on Iranian ESP learners' reading comprehension enhancement on the one hand, and the importance of reading comprehension itself as an important research issue and as a skill in foreign language learning on the other hand.

The positive impact of the grammatical sensitivity task can be justified by focusing on the fact that reading comprehension is a cognitive process which is in line with the results of the study made by Khoshima & Rezaeian-Tyiar (2014) stating that since reading is a complex cognitive process; it is of great importance for teachers to train students to be able to take active control of their own comprehension process. Therefore, one of the basic parts of learning a foreign language is mastering learning. As a result, treating the experimental group participants with the GS task may have caused them to be able to have more control over their comprehension process since the grammaticality judgment sentences will provide a challenging environment for the learners' minds and strengthen them as a result.

As an important research issue and as a skill in foreign language learning, reading was seen so controversial that it still have the room to be investigated at all levels even ESP and even among university students whose native language a completely different non-roman language (here Persian). Accordingly, different this study indicates a high degree of use of syntactic information by ESP learners during the grammatical sensitivity treatment. This may lead to correction of certain grammatical error which in turn causes the readers to be more sensitive to the syntactic structure in text. As Bialystok and Ryan have argued (1985), the grammatical sensitivity required for reading connected discourse involves both analyzed knowledge of sentence structure and the deliberate control to access that knowledge appropriately and to coordinate it with other information to interpret the meaning of the text. Here, we use the term grammatical sensitivity to refer to performance reflecting the necessary grammatical components of sentence structure that ESP learners need to master for their reading comprehension.

Thus, the significance of this study is actually two-fold: on the one hand, it will have theoretical significance regarding the theories of reading comprehension at ESP level; on the other hand, it will have pedagogical or practical significance to be employed in actual classroom situations. The significance of the study lies in the fact that grammatical sensitivity task has been focused to be intervened to the reading comprehension performance as an innovation for teaching reading at ESP level. The innovative aspect of the

current study lies in the fact that it can be considered a mild contribution in the latest theories and models of teaching reading comprehension to Iranian ESP learners. This includes the investigation of the effectiveness of grammatical sensitivity task which is supposed to lead to a communicative and interactive way of teaching reading comprehension. Another aspect of the results of such a study is that it seems to be more practical and compatible to a situation of foreign language learning particularly for ESP learners who encounter problems regarding their reading comprehension ability. In this study, the case of Accounting-Major ESP learners was considered, and all innovational aspects mentioned were attributed to them.

The results of the current study are supposed to be beneficial to a number of target groups. Language teachers, particularly those who teach an ESP reading book, will benefit from the results of the study in that they can follow new orientations and refreshed techniques such as grammatical sensitivity task. That teacher can strengthen his learners' sensitivity through the channel. Ordinary (Non-ESP) teachers work with learners through the transition channel. Language learners can benefit from the results of the current study via strengthening himself by being trained with such a practice. That is, a task written in reading and based on the theory of sensitivity. It is hoped that the orientations adopted in this study would pave the way to motivate the learners towards more acceptable reading comprehension ability at ESP level. Material designers will use the results of this study by seeing that if the current ESP textbooks of reading are to be based on the grammatical sensitivity task, they will probably be more beneficially interactive and cognitive to the learners and they will probably work better if they are authored based on a grammaticalized curriculum or syllabus of reading comprehension. Language testers and examiners can also benefit from the results of this study. The examiners will have the opportunity to test the language knowledge of a learners based on his/her grammatical sensitivity ability. These can be considered innovative criteria to evaluate the reading comprehension achievement at ESP level.

Investigating the effect of grammatical sensitivity on Iranian ESP reading comprehension learners in a meta-analysis process was supposed to be the main impetus for the present study. It was performed through analyzing the learners'

reading comprehension test performance results which were done comparatively between the pretest and the posttest of the experimental and control groups independently. It was revealed that the participants with higher degree of grammatical sensitivity reflected a more acceptable achievement performance in their ESP reading comprehension test. This could mean that the treatment could assist them to indicate their reading-related needs during the process of learning and help them make advancements in their reading comprehension activities. The findings of such studies provided information regarding grammatical sensitivity as one of the effective factors in reading comprehension and one of the sources of difficulty that may act as a hindrance on their way. Grammatical sensitivity practice can provide appropriate feedback, to meet ESP learners' reading deficiencies. This helps to improve learning effectiveness particularly among those walks of learners who need foreign language skills but not as a specialty, but rather as a tool for another field. Learners who are proficient enough to read in English can improve their reading skill through working on grammatical sensitivity. Further research studies can be made on different populations including both male and female ESP and non-ESP learners with different levels of proficiency to find the differences in their degree of reading comprehension achievement. Further studies can also investigate the impact of other variables as well as different cognitive, metacognitive and motivational varieties of variables on the reading comprehension skills. Future studies may apply various forms of grammar as well as lexical components as treatments on the reading comprehension skill to suggest novel strategies for improving the skill. Grammatical sensitivity as a rather innovative variable can be investigated not only on the reading comprehension skill, but also, on those skills which are directly or indirectly related to grammatical patterns and the strategies to strengthen and as a result to learn them.

References

- Alderson, J. C. (1984). Reading in a foreign language: A reading or a language problem? In J. C. Alderson & A. H. Urquhart (Eds.), *Reading in a foreign language* (pp. 1-24). London: Longman.
- Avery, N. & Marsden, E.J. (2019). A meta-analysis of sensitivity to grammatical information during self-paced reading: Towards a framework of reference for reading time effect sizes. In: *Studies in Second Language Acquisition*. pp. 1055-1087. <https://doi.org/10.1017/S0272263119000196>.
- Barry, S., & Lazarte, A. A. (1995). Embedded clause effects on recall: Does high prior knowledge of content domain overcome syntactic complexity in students of Spanish? *The Modern Language Journal*, 79, 491-504.
- Barry, S., & Lazarte, A. A. (1998). Evidence for mental models: How do prior knowledge, syntactic complexity, and reading topic affect inference generation in a recall task for nonnative readers of Spanish? *The Modern Language Journal*, 82(2), 176-193.
- Bernhardt, E. (2005). Progress and procrastination in second language reading. *Annual Review of Applied Linguistics*, 25, 133-150.
- Bialystok, E. & Ryan, E. (1985). A metacognitive framework for the development of first and second language skills. In D. L. Forrest-Presley, G. Mackinon, & T. Waller (Eds). *Meta-cognition, cognition, and human performances*, pp.207-252. New York: Academic Press.
- Carroll, J. B. (1981). Twenty-five years of research on foreign language aptitude. In K. C. Diller (Ed.), *Individual differences and universals in language learning aptitude* (pp. 83-118). Rowley, MA: Newbury House.
- Carrell, P.L. (1984a). The effects of rhetorical organization on ESL readers. *TESOL Quarterly*, 18, 441- 469.
- Carrell, P.L. (1984b). Evidence of a formal schema in second language comprehension. *Language Learning*, 34, 87-112.
- Carrell, P. L. (1985). Facilitating ESL reading by teaching text structure. *TESOL Quarterly*, 19, 727-752.
- Carrell, P. L., Pharis, B. G., & Liberto, J. C. (1989). Metacognitive strategy training for

L2 reading. *TESOL Quarterly*, 23, 647-678.

Duffy, G. G. (1988). Modeling mental processes helps poor readers become strategic readers. *The Reading Teacher*, 41, 762-767.

Elahi, A.M. & Mashhadi Heidar, D. (2021). The Impact of Integrating Blended Learning with Task-Based Language Learning on Reading Comprehension of Iranian EFL Learners. *Journal of Language Horizons*, Alzahra University, Volume 5, Issue 1, Spring – Summer 2021 (Biannual – Serial No. 9), pp. 125-144.

Grabbe, W. (1991). Current developments in second language research. *TESOL Quarterly*, 25, 375-406.

Han, Z-H., & D'Angelo, A. (2009). Balancing between comprehension and acquisition: Proposing a dual approach. In Z. -H. Han & N. J. Anderson (Eds.), *Second language reading research and instruction: Crossing the boundaries* (pp. 173-191). Ann Arbor, MI: The University of Michigan Press.

Jenkins, J., & Pany, D. (1980). Teaching reading comprehension in the middle grades. In R. Spiro, B. Bruce, & W. Brewer (Eds.). *Theoretical issues in reading comprehension*. Hillsdale, NJ.: Erlbaum, 1980.

Jiang, X., Grabe, W. (2007) Graphic organizers in reading instruction: Research findings and issues. *Reading in a Foreign Language* 19: 34–55.

Jung, J. (2009). Second Language Reading and the Role of Grammar. *TESOL & Applied Linguistics*, Vol. 9, No. 2 , Pp. 29-48.

Karami, N., Babaii, E. & Daftarifard, P. (2021). Motivational and Textual Factors and Affordances in Iranian EFL Learners' Reading: Using Semi-Structured Reflections Written During Reflective Learning Process. *Journal of Language Horizons*, Alzahra University, Volume 5,

Issue 1, Spring – Summer 2021 (Biannual – Serial No. 9), pp. 205-225.

Khoshsima, H. & Rezaeian-Tyiar, F. (2014). The effect of summarizing strategy on reading comprehension of Iranian intermediate EFL learners. *International Journal of Language and Linguistics*. 2(3): 134-139.

Kuhn, M. R., & Stahl, S. A. (2003). Fluency: A review of developmental and remedial practices. *Journal of Educational Psychology*, 95, 3-21.

Mitrofanova, N., Rodina, Y., Urek, O. & Westergaard, M. (2018). Bilinguals' Sensitivity to Grammatical Gender Cues in Russian: The Role of Cumulative Input, Proficiency, and Dominance. *Frontiers in Psychology*, Vol. 9. Article 1894, P. 1-20.

Mun-Hong, C. (2020). Children's grammatical sensitivity to the uninterpretable case feature in Korean long-form negation: A pilot study. *Global Creative Leader: Education & Learning*, Research Institute for Gifted & Talented Education, Soongsil University.

Nassaji, H. (2007). Schema theory and knowledge-based processes in second language reading comprehension: A need for alternative perspectives. *Language Learning*, 57, 79-113.

Rausch, A. S. (2000). Language learning strategies instruction and language use applied to foreign language reading and writing: A simplified "menu" approach. *Literacy Across Cultures*, 4(1), 18-24.

Raymond, P.M. (1993) The effects of structure strategy training on the recall of expository prose for university students reading French as a second language. *Modern Language Journal* 77: 445–458.

Rezaei Fard, Z., Shahrokhi, M., & Talebinezhad, M.R. (2022). Flipped classroom approach in ESP courses: Focus on ESP students' critical thinking and engagement. *Journal of Foreign Language Research*, Volume 12, Number 1, Spring 2022, Page 74 to 93.

- Robinson, P. (1991). *ESP Today: a Practitioner's Guide*. Hemel Hempstead: Prentice Hall International.
- Shiotsu, T., & Weir, C. J. (2007). The relative significance of syntactic knowledge and vocabulary breadth in the prediction of reading comprehension test performance. *Language Testing*, 24, 99-128.
- Skehan, P. (1989). *A Cognitive Approach to Language Learning*. Oxford: Oxford University Press, 1998.
- Skehan, P. (1991). Individual Differences in Second Language Learning. *SSLA*, 13, 275-298. Printed in the United States of America.
- Tang, G. (1992) The effect of graphic representation of knowledge structures on ESL reading comprehension. *Studies in Second Language Acquisition* 14: 177–195.
- Tierney, R., & Cunningham, J. (1980). Research on teaching reading comprehension (Tech. Rep. No. 187). Urbana: University of Illinois, Center for the Study of Reading, November 1980.
- Urquhart, A. H., & Weir, C. J. (1998). *Reading in a second language: Process, product, and practice*. New York: Longman.
- Wulfeck, B. & Bates E. (1991). Differential sensitivity to errors of agreement and word order in Broca's aphasia. *Journal of Cognitive Neuroscience*. 1991;3:258–72. [[PubMed](#)] [[Google Scholar](#)]
- Zhang, M. (2019). Correlation Study on Grammatical Sensitivity Test Indexes in Intercultural Communication. *Revista de cercetare si interventie sociala* – vol. 65, 2019, p. 260-275. Doi: <https://doi.org/10.33788/rcis.65.16>
- Zoghi, M.; Mustapha, R. & Mohd-Maasum, TgNRTg. (2010). Looking into EFL Reading Comprehension. International Conference on Learner Diversity 2010. *Elsevier, Procedia, Science Direct*. Pp. 439-445.