Grammatical Knowledge and Reading Performance in L2 Dutch: The Role of Morphosyntax

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ABSTRACT

Reading comprehension in L2 has been shown to be correlated to vocabulary and grammatical knowledge. However, little is known about the relative contribution of morphosyntactic knowledge in this language competence. In the present study we investigated the contribution of morphosyntactic knowledge of some particular grammatical elements to the reading comprehension of L2 learners of Dutch (n = 33) at a B1 level. A multiple regression analysis on the participant's scores obtained in a grammaticality judgment task and a reading task was carried out. The results showed that morphosyntactic knowledge of verbs, personal pronouns and past participles in passive constructions did not significantly contribute to reading comprehension in L2 Dutch, in contrast to demonstrative pronouns. Based on the results, we may conclude that morphosyntactic information to be identified in lower order reading processes, does not contribute to the reading comprehension of L2 learners at B1 level. We furthermore conclude that, in the L2 educational practice, the focus on grammar exercises targeting the morphosyntax of particular grammatical elements, might not be effective to enhance reading comprehension.

INTRODUCTION

A good comprehension of written texts has been shown to be related to the social and educational success of language users. Förrer (2011) for example, demonstrated that native language users with a good reading comprehension are more successful at school than those with a decreased reading comprehension. In a similar vein, Gioia (2007) showed that 'good readers' are more successful in their career than 'weaker readers'.

The same holds for reading comprehension in a second language (henceforth: L2). More precisely, Franke & Mennella (2017) showed that, in our multicultural and international world, an increased reading comprehension of second language learners enhances communication between people, organizations and enterprises. Within such a context, reading competence is actually considered as one of the most important language competences and therefore receives much attention in the educational practice. Despite the fact that thorough attention is paid to this particular language competence in L2 education, many readers face problems when it comes to the comprehension of written texts. The Dutch association of Reading and Writing (Stichting Lezen en Schrijven 2017) for example, found that almost half a million immigrants in the Netherlands does not have reached a sufficient proficiency of reading to actively participate in the society.

This paper is mainly concerned with the reading performance of this particular population of second language learners. More specifically, the relative contribution of grammatical knowledge in the reading competence of second language learners of Dutch is under investigation in this study. The results of this study may be of help for reading instruction in second language learners.

The reason for investigating the role of grammar in reading competence, can be found in a psycholinguistic perspective. Within such a perspective, reading comprehension has been shown to strongly correlate to vocabulary and grammatical knowledge, rather than processing speed or metacognitive knowledge (e.g. Van Gelderen et al. 2004; Zhang 2012). Van Gelderen et al. (2004) for instance, tested the potential role of grammatical and vocabulary knowledge, processing speed and metacognitive knowledge in the reading comprehension of Dutch learners of English (n = 397). The results showed that both grammatical and vocabulary knowledge explained a considerable part of the variance observed in the reading comprehension of these language learners.

To date, no studies have been dedicated to in-depth analyses of the particular role of grammar in L2 reading comprehension. This is precisely the topic of this paper.

The paper is organized as follows: in the first section we will describe the cognitive processes underlying reading comprehension. In the second section we will present some relevant studies on the particular role of grammatical knowledge in the L2 reading process. Then, in the third section, the research question and the hypotheses will be presented. In the fourth section, the methodology and the results will be described, followed by the discussion of the results in the fifth section. Finally, in the sixth section, we will draw some conclusions based on these results.

COGNITIVE PROCESSES IN READING COMPREHENSION

As shown by Van Gelderen et al. (2004), grammatical knowledge strongly correlates to the reading comprehension of second language learners. This finding can best be explained by the cognitive processes underlying reading comprehension. More specifically, reading comprehension is shown to be built on three cognitive processes: lower and higher order processes and reading strategies (Grabe 2009; Bossers 2015). Lower order processes consist of both word recognition in a sequence of letters and syntactic parsing. In this respect, word recognition is taken to be influenced by the phonological and orthographical identification of letters (Alderson et al. 2015). On top of the identification of individual words, readers need to syntactically parse the morphemes of these words to construct the syntactic configuration in which the particular words are hosted. For example, they need to detect grammatical inflections, lexical categories or word order parameters to identify the coherence of words in the sentence (Givón 1995; Grabe 2009). The identification of coherence via morphological decomposition is taken to be the basis of the establishment of propositional meanings in text model constructions (Fender 2001; Kintsch 1998). Based on these processes, the sequence of letters in a particular sentence is recognized as decomposable into individual semantic entities. Problems with the detection of grammatical elements may lead to difficulties in reading comprehension (e.g. Urquhart & Weir 1998; Miller 2006; Mokhtari & Thompson 2006).

In higher order processes the individual semantic entities are considered to be building blocks of sentences which constitute elements of a text. Along this line, readers construct a text model and a situation model to interpret the information of particular sentences within the context of the text (Alderson et al. 2015). In the text model the individual sentences are connected to each other and to other semantic entities to summarize the main body of information presented in the text. As shown by Carrell (1983), background knowledge of the

subject of the text is taken to also play an important role in reading comprehension. This aspect can be found in the situation model. More specifically, the situation model is the concept in which the text model is interpreted from the perspective of the readers' background knowledge.

Both the lower and higher order processes are the fundaments of reading comprehension and are unconscious cognitive processes. The final process consist in the determination of the reading strategy and takes place consciously. As such, determining the reading strategy enables the reader to efficiently structure the information of the text and consequently, enhances reading comprehension (McNamara 2012).

THE ROLE OF GRAMMATICAL KNOWLEDGE IN L2 READING PERFORMANCE

The important role of grammatical knowledge in reading comprehension has also been shown by recent studies on L2 reading performance. Zhang (2012) for instance, tested Chinese learners of English (n = 190; M_{age} = 23.8), studying at university level, by means of a reading comprehension test, two vocabulary tests and two grammar tests. The vocabulary tests aimed to measure both the size and the depth of vocabulary knowledge. The grammar tests aimed to measure the explicit and implicit grammatical knowledge. More precisely, the implicit grammatical knowledge was tested by means of a timed grammaticality judgment task covering several English grammatical structures, such as past tense, plural, third-person singular, present progressive, determiners, pronominalization, particle movement, subcategorization, yes/no questions and word order. The explicit grammatical knowledge was tested by means of a grammatical error correction task targeting the same grammatical elements as those tested in the grammaticality judgment task. The reading comprehension task comprised six texts for which three multiple choice questions needed to be answered per text. In a multiple regression analysis reading comprehension scores were compared to those of the vocabulary and grammar tests. The results showed that both vocabulary and (implicit) grammatical knowledge significantly correlate to the reading comprehension scores.

In a similar experimental design, Shiotsu & Weir (2007) focused on the relative contribution of grammatical and vocabulary knowledge in second language reading. More precisely, they tested second language learners of English (n = 107), studying at university level, by means of a reading competence test, a vocabulary test and a grammar test. The scores of the vocabulary and grammar test were compared to those of the reading competence test to investigate the relative contribution of each factor to second language reading. The results showed that both factors are highly correlated to reading competence, but that grammatical knowledge is the best predicator for reading in a second language.

The results of both studies are in agreement with the meta-analysis carried out by Jeon & Yamashita (2014). This meta-analysis investigated the average correlation between L2 reading performance and ten key components previously shown to be correlated with L2 reading. More specifically, high-evidence correlates (i.e. L2 decoding, L2 vocabulary knowledge, L2 grammar knowledge and L1 reading comprehension) and low-evidence correlates (i.e. L2 phonological awareness, L2 orthographic knowledge, L2 morphological knowledge, L2 listening comprehension, working memory and metacognition) were included in the analysis. Overall, L2 grammar knowledge (r = .85), L2 vocabulary knowledge (r = .79) and L2 decoding (r = .56) revealed to highly correlate with L2 reading comprehension. Based on the findings of the aforementioned studies, we may conclude that grammatical knowledge is one of the most important factors influencing L2 reading comprehension.

However, to the best of our knowledge, no in-depth analysis of the role of grammar in second language reading has been done in recent L2 literature.

To date, only the study by Akbari (2014) tackles the issue of which grammatical elements may correlate with reading performance. In this study the author tested the reading comprehension and grammatical knowledge amongst Persian learners of English (n = 120; age range = 18 – 20 years), studying at university level, in a qualitative design. More precisely, the participants were asked to complete a reading comprehension task followed by grammar tasks. These grammar tasks involved paraphrasing difficult sentences and translating sentences from English into Persian. Then, the participants were asked to raise their comprehension problems whilst reading the texts and to indicate to which grammatical elements these problems could be related. A qualitative classification of these problems was made based on the participants' reading problems. The results revealed that comprehension problems may be related to the lack of morphosyntactic knowledge such as problems with the recognition of the reference of pronouns, the recognition of verbal tense and the understanding of passive sentences. This classification, however, only revealed which grammatical elements *could* be related to L2 reading comprehension. To investigate the potential contribution of these elements to L2 reading performance, a multiple regression analysis needs to be done.

THE RESEARCH QUESTION AND HYPOTHESES

In this study we will investigate which grammatical elements (i.e. personal and demonstrative pronouns, number and verb tense morphology and past participles in passive constructions) account for the strong contribution of grammatical knowledge to L2 reading comprehension. More specifically, we will focus on the morphosyntactic part of grammar. We will address the following research question:

Which grammatical elements are good predicators for the reading comprehension of second language learners of Dutch?

We hypothesize that the morphosyntactic knowledge of pronominal reference, verbal morphology and passive sentences are good predictors of the reading performance of these particular language learners.

THE EXPERIMENT

In order to test the hypothesis we administered a reading performance test and a grammaticality judgment task in second language learners of Dutch. The reading performance task was a standardized reading exam of the Dutch assimilation course. The grammaticality judgment task was controlled for pronominal reference (i.e. personal and demonstrative pronouns), verbal morphology (i.e. number and verb tense morphology) and passive constructions. In the next sections we report the details of the experiment.

4.1. Method

4.1.1. Participants

The participants of this experiment were second language learners of Dutch (n = 33) who participated in the Dutch assimilation course at a B1 level of the Common European Framework of Reference. There were 20 men (M_{age} = 33.8; SD = 8.5) and 13 women (M_{age} = 31.3; SD =

7.5) with different L1's (see table 1). All participants gave written informed consent for the experiment.

Table 1. native language of the participants

Native language	#participants
Arabic	17
Farsi	5
Italian	1
Russian	2
Tigrinya	1
Turkish	2
Luganda	1
Kurdish	1
Ukrainian	2
Portuguese	1

4.1.2. Materials

The test methodology consisted of a reading performance task and a timed grammaticality judgment task. The reading performance task was a standardized reading exam of the Dutch assimilation course and equals the B1 level of the Common European Framework of Reference. Regarding the content, the exam consisted of eight texts which were categorized with respect to the text goal. More specifically, there were three descriptive texts, four instructive texts and one persuasive text. Each text was followed by a set of multiple choice questions assessing the participants' comprehension of the particular text. In total, 40 questions were included in the reading task.

With respect to the grammaticality judgment task, the test items were controlled for three morphosyntactic elements which could have an effect on the reading performance of the participants under investigation in this study (cf. Akbari 2014). More precisely, the stimuli targeted pronominal reference (i.e. demonstrative and personal pronouns), verbal morphology i.e. number and tense inflection) and passive constructions. Each test condition contained 20 sentences which were either correct (10) or incorrect (10). Furthermore, all sentences consisted of approximately the same number of words and the target item was in a non-final position in the sentence. The reason for this choice can be sought in the fact that target words in a final position in the sentence are processed more slowly than those in a non-final position. This may lead to a different accuracy rate when it comes to the judgment of inflectional morphology (Buijs, van Reijen & Weerman 2013). In (1) – (5) we will present some examples of the test items. Here, the first item (a) is an incorrect sentence, whereas the second one (b) exemplifies a correct sentence of the focused condition.

Number inflection in verbs
(1a)   *In de regen   **zwaait**   **wij**   naar het meisje met de krullen
          In the rain   waves-3SG   we-1PL to the girl with curly hair
          *'In the rain we waves to the girl with curly hair'

(1b)   Op dinsdag   **ga**   **ik**   naar de grote markt in de stad
          Tuesday's   go-1SG   I-1SG to the big market in the center
          'Tuesday's I go to the big market in the center'

Verbal tense
(2a)   *Drie uur geleden   **maak**   ik een foto van mijn opa en oma
         Three hours ago   take-PRES   I a picture of my grandparents
          *'Three hours ago I take a picture of my grandparents'

(2b)   Op dit moment **kookt**   Tessa aardappelen voor het avondeten
         At this time   boils-PRES   Tessa potatoes for the dinner
         'At this time Tessa is boiling potatoes for dinner'

Personal pronouns
(3a)   ***De moeder**   valt op de grond.   **Wij** heeft pijn aan haar been
         The mother-SG.FEM.   falls on the ground.   We-PL has a leg ache
          *'The mother falls on the ground. We has a leg ache'

(3b)   **Soumaima**   moet naar huis lopen. **Ze**   heeft een lekke band
         Soumaima-SG.FEM. must home walk.   She-SG.FEM. has a flat tire
         'Soumaima must walk home. She has a flat tire'

Demonstrative pronouns
(4a)   *Vera heeft een **kat**.   **Dat**   slaapt 's nachts in de woonkamer
         Vera has a   cat-NNEUTER.   That-NEUTER sleeps at night in the living
          *'Vera has a cat. That sleeps in the living at night'

(4b)   Het meisje draagt een **jurk**.   **Die**   heeft ze vandaag gekocht
         The girl wears a   dress-NNEUTER.   It-NNEUTER has she today bought
         'The girl wears a dress. She bought it today'

Passive constructions
(5a)   *Gisteren is het brood   **eten**   door de dieren op de boerderij
         Yesterday has the bread (been)   eat-INF   by the animals on the farm
          *' Yesterday the bread has been eat by the animals on the farm'

(5b)   Een uur geleden is het gat   **gegraven**   door de jongens
         One hour ago has the gap (been)   dug-PART   by the boys
         'One hour ago the gap has been dug by the boys'

4.1.3. Procedure

Both the grammaticality judgment task and the reading performance task were administered in a class room setting under the supervision of a teacher. In these tasks the presentation order of test items was counterbalanced resulting in two versions of each task. Before the starting of these tasks a general instruction on the procedure was given. In this instruction the participants were told that they had to answer every question (of the reading task) and to judge every sentence (in the grammaticality judgment task). They were also told that both tasks were time-limited (i.e. 100 minutes for the reading task, a total of 30 minutes for the grammaticality task and 10 seconds to judge each sentence of the grammaticality task). Furthermore, a dictionary was allowed to be used for the reading task.

To avoid tiredness, there was a 15 minutes break between both tasks. Every participant finished the tasks well within the focused time space.

4.2. Results

We computed the participants' scores of the reading performance task and each grammatical category of the grammaticality judgment task. More specifically, the score of the reading task was expressed in terms of the number of correct answers and that of the grammaticality judgment task was expressed in terms of the number of correct judgments within a particular grammatical category. To test whether the statistical assumptions for a multiple regression analysis were met, we conducted a Kolomogorov-Smirnov test for normality. This test revealed that the data were normally distributed ($p > .05$). For the multicollinearity assumption the variance inflation factor (VIF) of each grammatical category was inspected. Here, the VIP value of number inflections in verbs was 3.05, verbal tense 1.90, personal pronouns 2.17, demonstrative pronouns 1.12 and passive constructions 1.52. As no VIP value was higher than 10, the assumption for multicollinearity was met (Bowerman & O'Connell 1990).

However, the mean of the VIP values may be related to a potential bias in the statistical model when it is higher than 1 (Bowerman & O'Connell 1990). With respect to our experiment, the mean of the VIP values was 1.94. Therefore, the accuracy scores of the category of number inflections in verbs and verbal tense were grouped in the new category *verbs*. The raison for this choice can be sought in the high VIP value of the category of number inflections in verbs and the fact that in L2 literature the acquisition of number inflection in verbs goes hand in hand with the acquisition of verbal tense morphology (e.g. Housen 2002; Ionin & Wexler 2002). In this new model the average VIP value was 1.3 and might thus reveal a less biased model.

Since the relevant statistical assumptions for a multiple regression analysis were met, this analysis was conducted in which the dependent variable was the score of the reading task and the independent variables were the scores of the grammatical categories tested in the grammaticality judgment task. Here, the categories of verbal tense and number inflection were jointly analyzed in the *verbs* category. For all statistical tests the α level of significance was set at .05. An overview of the descriptive data is given in table 2. The Pearson's correlations and regression weights are presented in table 3.

Table 2. Descriptive data of the reading task and grammaticality judgment task expressed in terms of the number of correct answers (reading task) and correct judgments per category (grammaticality judgment task)

Variable	*Mean*	*SD*
Reading performance	23.58	6.87
Verbs	34.55	3.68
Personal pronouns	17.91	1.51
Demonstrative pronouns	13.33	2.51
Passive constructions	14.52	3.24

Table 3. Pearson's correlations and standardized regression weights between L2 reading performance and grammatical knowledge (α < .05; two-sided)

Dependent variable	Explained variance	Verbs	Personal pronouns	Demonstrative pronouns	Passive constructions
L2 reading performance	34%				
r		.38	.35	.40	.43
β		.51	.17	.34*	.26

* $p < .05$; model significance: $p = .017$

Based on the correlations depicted in table 3, we can infer the strength of the relations between reading performance and the selected grammatical elements. According to Cohen (1988), correlations above .30 can be considered as moderate and those above .50 as high. Within such a view, all correlations can be taken as moderate.

The standardized regression weights represent the relative contribution of the particular morphosyntactic element to the participants' reading performance. It is noteworthy that only 34% of the variance in reading performance is explained by the selected morphosyntactic elements. Furthermore, only grammatical knowledge of Dutch demonstrative pronouns reveals a significant contribution (β = .34) to the explanation of reading performance in L2 Dutch.

DISCUSSION

The results of this experiment show that morphosyntactic knowledge of Dutch verbs, personal pronouns and passive constructions does not significantly contribute to the reading performance of L2 learners of Dutch. However, morphosyntactic knowledge of demonstrative pronouns reveals to significantly contribute to the reading performance of this particular group of language users. The significant contribution of this particular grammatical element partially confirms our hypothesis predicting that morphosyntactic knowledge of the grammatical elements under investigation in this study can be taken as good predictors for L2 reading performance. With respect to morphosyntactic knowledge of Dutch verbs, personal pronouns and passive constructions our hypothesis is to be rejected.

This interesting finding is in contrast to the studies by Zhang (2012) and Shiotsu & Weir (2007) in which grammatical knowledge has been shown to be one of the most important predictors for L2 reading performance. The contrast between their observations and the results of the present study may be related to the fact that in Zhang (2012) and Shiotsu & Weir (2007), grammatical knowledge was tested in grammar tasks covering several syntactically different elements of grammar. More precisely, in Zhang (2012) for instance, both knowledge of morphosyntax (e.g. verbal morphology) and syntactic word order (e.g. particle movement) was tested in the grammar tasks. Therefore, the high correlation between grammatical knowledge and reading performance observed in these studies, was based on the *overall* grammatical knowledge of second language readers. However, no in-depth analysis was carried out on the individual contribution of morphosyntax and syntactic word order to L2 reading comprehension.

In the present study we focused on the potential contribution of morphosyntactic knowledge to the reading performance of learners of Dutch and found that knowledge of this particular part of grammar does *not* (except morphosyntactic knowledge of demonstratives) significantly contribute to L2 reading comprehension. This is also supported by the fact that morphosyntactic knowledge of the grammatical elements under investigation in our experiment explained only 34% of the variance observed in the participants' reading performance. The significant correlation between grammatical knowledge and reading performance observed in Zhang (2012) and Shiotsu & Weir (2007), might be explained by the knowledge of grammatical elements other than morphosyntactic ones. Hosenfeld (1977) for instance, found that advanced second language readers primarily rely on top-down reading strategies. More specifically, advanced readers focus on text structures, identify main ideas of passages and skip words that seem to be unimportant in sentences (see also Block 1986). Unlike advanced readers, less skilled second language readers focus on meanings at the word-level and translate sentences word-by-word. As the participants tested in Zhang (2012) and Shiotsu & Weir (2007), were advanced readers, morphosyntactic knowledge might have no significant contribution to the reading performance of these language users. In contrast, grammatical knowledge that involve

information structure, such as word order, or text structure might strongly contribute to the reading performance of advanced second language learners. This idea can be supported by Droop & Verhoeven (2003) who demonstrated that the development of reading comprehension in second language learners is influenced more by top-down comprehension processes than bottom-up word decoding processes. Furthermore, they did not observe a significant correlation between morphosyntactic knowledge and reading comprehension in skilled readers.

Within such a context, the interesting finding that grammatical knowledge of demonstrative pronouns significantly correlates to L2 reading performance in our experiment, may be explained by the fact that this particular grammatical element is related to anaphoric reference in our test items and is therefore concerned with relations between sentences, instead of in the same sentence. More specifically, as shown by Yuill & Oakhill (1988), less skilled readers have difficulties with the detection of anaphoric relations between individual sentences, while more skilled readers do not. As morphosyntactic cues of demonstratives reveal to which antecedent the anaphor is referring, this grammatical information needs to be identified at the sentence-level and not at the word-level. Along these lines, less skilled readers may not be able to identify the anaphoric relation, while more skilled readers may be able to detect the morphosyntactic cues of demonstratives on the basis of anaphoric relations. With respect to the other morphosyntactic categories tested in our test materials (i.e. verbal morphology, past participles in passive constructions and personal pronouns), morphosyntactic information needed to be detected at the word-level or in the same sentence. This may explain why morphosyntactic knowledge of these categories does not significantly contribute to the reading comprehension of L2 readers at a B1 level.

Within the context of the cognitive processes underlying reading comprehension, lower order processes are mainly concerned with the identification of syntactic information. In these processes the detection of coherence between words in the sentence takes place on the basis of (morpho-)syntactic cues. Based on the results of our experiment, the identification of morphosyntactic information of verbs, personal pronouns and past participles in passive constructions, however, does not significantly contribute to the reading performance of the group of language users under investigation. From the perspective of the cognitive processes in reading comprehension, morphosyntactic information in the lower order processes seems therefore not to influence reading performance in second language readers at a B1 level. The reason for this may be explained by the fact that skilled readers rely more upon top-down processes than upon bottom-up processes (Hosenfeld 1977). As such, grammatical knowledge of (anaphoric) demonstrative pronouns is concerned with top-down processes taking place in higher order reading processes. This may explain why the identification of morphosyntactic information on anaphoric demonstratives significantly correlates to the reading performance of these language learners.

In contrast to morphosyntactic knowledge, it is noteworthy that morphological knowledge does correlate to second language reading (e.g. Jeon & Yamashita 2014), especially derivational morphology (Jeon 2011). Within such a context, morphological knowledge and morphosyntactic knowledge need to be considered as two individual factors when it comes to L2 reading performance (cf. Jeon & Yamashita 2014).

Within the educational setting the results of this study can be of help for both language teachers and learners. More precisely, focusing on grammar exercises targeting grammatical elements concerned with relations between sentences in the text model, might be effective to improve the reading comprehension of advanced second language learners. However, focusing on grammar exercises targeting the morphosyntax of the grammatical elements tested in this study (i.e. grammatical information at the word-level or in the same sentence), might not be effective in advanced L2 Dutch reading instruction. Further research needs to be done to test

whether the focus (e.g. focus-on-form(s)) on particular grammatical elements enhances reading comprehension.

Further research needs to also be done to investigate the potential role of language proficiency in the contribution of morphosyntactic knowledge in L2 reading. As shown by Hosenfeld (1977), less skilled readers mainly focus on meaning of individual words in sentences, while more skilled readers mainly rely upon top-down reading processes. Within such a perspective, morphosyntactic knowledge may significantly contribute to the reading performance of less skilled L2 learners. Furthermore, more in-depth analyses need to be done to disentangle the relative contribution of morphosyntactic knowledge and other parts of grammatical knowledge to L2 reading comprehension.

6. CONCLUSION

In the present study we investigated the relative contribution of grammatical knowledge in L2 reading comprehension. More specifically, we focused on the potential contribution of the morphosyntactic knowledge of verbs, personal pronouns, demonstrative pronouns and past participles in passive constructions in L2 learners of Dutch at a B1 level. By means of a multiple regression analysis the scores of a grammaticality judgment task and a reading task were analyzed to reveal potential correlations between these particular grammatical elements and the reading performance of L2 learners of Dutch. The results showed that morphosyntactic knowledge did not significantly contribute to reading comprehension. Yet, grammatical knowledge of demonstrative pronouns revealed to contribute to this particular language competence. Based on the results, we may conclude that morphosyntactic information to be identified in lower order reading processes, does not contribute to the reading comprehension of L2 learners at a B1 level. We furthermore conclude that, in the L2 educational practice, the focus on grammar exercises targeting the morphosyntax of particular grammatical elements, might not be effective to enhance reading comprehension in advanced readers.

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