The Role of Grammar in L2 Lexical Inferencing

1. Zahra Alimorad

zahra.alimorad@gmail.com

Shiraz University, Shiraz, Iran

2. Seyyedeh Rezwan Ghalebi

ms.ghalebie@yahoo.com

Shiraz University, Shiraz, Iran

3. Seyyed Mohammad Ali Soozandehfar

soozandehfar@yahoo.com

Shiraz University, Shiraz, Iran

Abstract

The role of grammatical knowledge in foreign language lexical processing is not clear. Providing evidence from a recent introspective study, this paper intends to demonstrate the significant contribution that such knowledge can make to inferring the meanings of unfamiliar words while reading, and to possible consequent acquisition of L2 vocabulary. 5 intermediate learners of English participated in this study. Concurrent think-aloud and immediate retrospective data collection procedures was used in individual research sessions followed by think-aloud protocols. The findings of the study reveal the importance of learners' knowledge of grammar in L2 lexical processing and L2 vocabulary acquisition process, and lend support to the intrinsic value of grammar instruction.

Keywords: grammar, lexical inferencing, L2 reading, vocabulary

Introduction

Lexical inferencing is a major strategy that learners use when they encounter unfamiliar words when reading or listening. It means making informed guesses as to the meaning of unfamiliar words. Several studies have been carried out that investigated the relationship between different variables and lexical inferencing ability of L2 learners. Nassaji (2006) examined the relationship between English as a second language (ESL) learners' depth of vocabulary knowledge, their lexical inferencing strategy use, and their success in deriving word meaning from context. Participants read a passage containing 10 unknown

words and attempted to derive the meanings of the unknown words from context. Introspective think-aloud protocols were used to discover the degree and types of inferencing strategies learners used. The Word-Associate Test (WAT) (Read, 1993) was used to measure the learner's depth of vocabulary knowledge. Results indicated a significant relationship between depth of vocabulary knowledge and the degree and type of strategy use and success. They revealed that (a) those who had stronger depth of vocabulary knowledge used certain strategies more frequently than those who had weaker depth of vocabulary knowledge; (b) the stronger students made more effective use of certain types of lexical inferencing strategies than their weaker counterparts; and (c) depth of vocabulary knowledge made a significant contribution to inferential success over and above the contribution made by the learner's degree of strategy use. The findings provided empirical support for the centrality of depth of vocabulary knowledge in lexical inferencing and the hypothesis that lexical inferencing is a meaning construction process that is significantly influenced by the richness of the learner's preexisting semantic system.

In her study, Paribakht (2005) investigated the relationship between first language (L1) Farsi lexicalization of the concepts represented by the second language (L2); English target words and learners' inferencing behavior while reading English texts. Participants were 20 Farsi-speaking university students of English as a foreign language. The results indicated that these learners knew fewer, and inferred meanings for more, nonlexicalized target words than lexicalized words. Although they used similar types and proportions of knowledge sources when inferring meanings for both groups of words, they were far less successful in decoding the meanings of the nonlexicalized words. Lexicalization in the L1 may be one of the factors influencing learners' differential success in L2 text comprehension and vocabulary development.

In another study, Morrison (1996) examined the inferencing procedures used by university-level second language (L2) learners of French to guess at the meaning of unfamiliar words in a written L2 text. He combined qualitative and quantitative research methodologies and compared the strategies used by students assessed as high or low in French proficiency relative to their classmates.

The purpose of the present study is to examine the role of grammar in foreign language lexical inferencing. It is clear that grammar has a significant role in L2 learning. In recent years, grammar has been an important part of curriculum. Without knowledge of grammar, learner's language development would be constrained. Judicious attention to grammatical form in adult classroom is not only helpful, if appropriate techniques are used, but essential to a speedy learning process (Fotos, 1994; Doughty & Williams, 1998).There is general agreement that grammar learning can provide the learner with useful knowledge to produce and comprehend novel sentences. Research has provided evidence that such knowledge also promotes accuracy in both receptive and productive use of the target language, leading to more effective communication and consequently accelerating and enhancing the L2 acquisition process (Paribakht, 2004).

However it is not clear how learners use grammatical knowledge in their L2 lexical processing and subsequent vocabulary acquisition. But it is evident that grammatical knowledge is implicated in the process. For instance, research on the acquisition of formulaic expressions or lexical phrases is a case in point. Lexical phrases or formulaic expressions, which are largely responsible for production of fluent language, are first acquired as chunks, and are then gradually segmented into smaller lexical units. This segmentation process normally continues by use of syntactic analysis until the entire component words are recognized as separate units (Schmitt, 2000).

Research on L2 lexical inferencing also indicates that knowledge of grammar is involved in the process (e.g. De Bot, Paribakht and Wesche, 1997; Paribakht and Wesche 1999; Bengeleil, 2001). The term 'inferencing' has been used in many texts and teaching books to mean a process or a discrete skill in reading and implies the process of gap-filling. Other texts call this 'pragmatic inferencing', meaning the incorporation of world knowledge into the meanings reconstructed during the processing of a text. This paper utilizes the term after Haastrup (1991, p. 40) to mean "making informed guesses as to the meaning of a word in light of all available linguistic cues in combinations with the learner's general knowledge of the world, her awareness of context and her relevant linguistic knowledge". Since lexical inferencing is a major strategy that learners use when they encounter unfamiliar words when reading or listening, a clearer understanding

of the process may not only provide insight into the learners' language comprehension processes and problems and their subsequent incidental vocabulary acquisition, it may also shed some light on the role that knowledge of grammar may play in lexical processing.

One of the studies that explored the role of grammar in L2 lexical inferencing in reading is directed by Paribakht (2004). In her study, she used evidence from an introspective study (Paribakht and Wesche, 1999) that examined lexical processing strategies of a group of ESL learners at a Canadian university. The results of the study, which was, in fact, a follow up to an earlier experimental study (Paribakht and Wesche, 1997), showed that extensive reading leads to significant gains in vocabulary knowledge. The findings of the subsequent introspective study, using the same materials as the previous study, illustrated that the way such learning occurs depends, specifically, upon the kinds of strategies learners use and the types of knowledge sources they draw upon in their attempt to construct the meanings of unfamiliar words while reading English texts.

The present study intends to demonstrate the significant contribution that such knowledge can make to inferring the meanings of unfamiliar words while reading, and to possible consequent acquisition of L2 vocabulary. The findings of the study pointed to the importance of learners' knowledge of grammar in L2 lexical processing and L2 vocabulary acquisition process, and lent support to the intrinsic value of grammar instruction. The objective of this paper is to further illustrate the role of grammar in L2 lexical inferencing while reading.

Method

Participants

The participants were 5 intermediate level male students from the same L1 backgrounds (Farsi) studying English at Shiraz State University.

Instruments

As far as the participants' level of proficiency is concerned, a reading text was chosen that contained some words which were beyond their level of proficiency, i.e. upper-intermediate words, and, consequently, unfamiliar to the participants.

Data Collection Procedures

Concurrent think-aloud and immediate retrospective data collection procedures was used in individual research sessions, which last up to one hour each and was conducted by the same researcher. At the beginning of each session, the participant was trained in think-aloud procedures. This was followed by collecting think-aloud protocols as the participants went through two reading comprehension tasks (Question Task and Summary Task) based on the target text on the topic of Acid Rain (see Appendix A for the text). They were also instructed to verbalize what they were thinking and doing while performing the tasks in Persian. The participants had access to a dictionary, but the researcher did not answer any questions. However, she guided the participants, as was needed and she tried to encourage them to speak whenever they remained silent for a relatively long period of time.

The Summary Task involved reading the text in segments and summarizing each paragraph, immediately after which the learners were asked how they had dealt with each unknown word they have encountered while performing the task.

The Question Task required the participants to read the text and answer a series of comprehension questions. Immediately after answering each question, they were asked if they had come across any unfamiliar words, and if so, how they had dealt with each of them.

Results

The collected data indicated that topic familiarity and using sufficient reading strategies along with good knowledge of grammar play important roles in inferencing the meaning of unknown words efficiently.

Students who were familiar with scientific issues and were interested in the topic had better capability of making informed guesses and taking assistance from their relevant world knowledge. Being acquainted with most of the technical words for

instance, cyanoric acid, hydrocarbon, terpenes, etc, they did not spend their time guessing the words or looking them in dictionary. However, relevant world knowledge by itself was not sufficient.

Those students with proper world knowledge but inadequate linguistic knowledge either were not capable of making guesses about words meaning or made wrong guesses. For instance one of the students relying on her activated schemata, actually the wrong one, based on hibernation, bears, and heavy weight wrongly inferred bears as heavy animals hibernating during winter. While just by being more careful and diagnosing the true subject, potent dose of sulfuric acid, based on sentence structure and its metaphoric discourse they were able to make more informed guesses.

Another important factor effecting inferencing was appropriate use of reading strategies. Students who were strategic readers, i.e. those with some knowledge of reading strategies, used more inferencing strategies and made right guesses while others just by reading one paragraph attempted to infer the word. But, as they did not pay any attention to the whole context and text organization they immediately referred to dictionary and were not able to reach the correct meaning.

Two major source of strategies were used in this research i.e. inferencing and dictionary assistance. However, inferencing was the most frequent strategy used by the students. In this study almost all knowledge sources were employed in the process of inferencing. A taxonomy of knowledge sources that is adopted from Paribakht (2004) is presented in Figure1. Both linguistic and world knowledge were used by students during inferencing procedures but, L1 linguistic knowledge did not have any role in inferencing procedures as Persian English cognates are so rare and limited to special fields of language use. It was also observed that learners often used multiple sources of knowledge while inferring the meaning of unfamiliar words.

Figure 1

Taxonomy of Knowledge Sources Used in Inferencing adopted from Paribakht (2004)

I. Linguistic knowledge

    A. L2-based linguistic knowledge (intralingual sources)

1. Sentence-level grammatical knowledge

2. Word morphology

3. Punctuation

4. Discourse/text

5. Homonymy

6. Word association

B. L1-based linguistic knowledge (interlingual sources)

1. Cognates

II. Extralinguistic/world knowledge

The definitions of these knowledge sources and illustrative examples are provided below. (P =participant)

Sentence-level grammatical knowledge:

This refers to the knowledge of speech parts and syntactic relationships among words within a sentence (e.g. word order and word class). This was the major knowledge source used by most of the students.

با توجه به اینکه به کلمه spring اضافه شده است باید مربوط به spring باشد و چون با حرف اضافه in آمده است کل کلمه spring run off باید قید زمان باشد .

Word morphology:

This is knowledge of grammatical inflections (e.g. -s, -ed, -ing) and word derivations (i.e. stems and affixes) in inferencing.

از اجزاء کلمه prize به معني جايزه و fighter به معني كسي كه مي جنگد در كل prize fighter به معني كسي مي تواند باشد كه براي چيز مهمي تلاش مي كند.

Punctuation:

This indicates Knowledge of punctuation and capitalization rules.

Jesus چون با حرف بزرگ نوشته شده است باید اسم يك شخص باشد.

Discourse/text:

This refers to cues from beyond sentence boundaries.

<div dir="rtl">

Heavyweight, prizefighter, knockout همه اصطلاحاتي هستند كه در كشتي استفاده مي شوند و چون با باقي متن ارتباطي ندارند احتمالا اينجا براي تشبيه استفاده شده اند.

</div>

Homonymy:

This is knowledge of phonetic similarity between the target word and another familiar L2 word in inferencing. Such association may also occur with an L1 word and is often misleading and a cause of wrong guessing.

<div dir="rtl">

Heavyweight به خرس ها برمي گردد كه حيوانات سنگين وزني هستند.

</div>

Word association:

This refers to the association of the target word with other words in the mental lexicon.

<div dir="rtl">

از آنجا كه wallop با prizefighter, heavyweight و knockout آمده است بايد مربوط به ورزش باشد.

</div>

Cognates:

Knowledge of Farsi and English cognates was occasionally used by a few participants.

<div dir="rtl">

فكر ميكنم همان ناك اوت باشد كه در زبان فارسي و در مسابقات ورزشي به معني ضربه نهايي است.

</div>

Extra linguistic/world knowledge:

The participants frequently used their background knowledge, mainly their knowledge of the theme and topic of the text in inferencing.

<div dir="rtl">

با توجه به متن هاي علمي يكي از موضوعاتي كه بحث روز است پديده ي گلخانه اي است كه باعث گرم شدن هوا شده است. حدس مي زنم كه green house همان پديده گلخانه اي باشد.

</div>

The proportions of use of the above knowledge sources were also calculated for both tasks and the combined data. Sentence-level grammar, word morphology, word associations, and world knowledge constituted the major sources used and accounted for 76% of cases for both tasks. Other knowledge sources, which included knowledge of

discourse, homonymy punctuation, and cognates, were grouped together as 'other sources' and accounted for 24% of the total. Knowledge of cognates and homonymy were used just by one participant each.

Table 1 presents the percentages of use of different knowledge sources. It shows that of all the sources used in inferencing, knowledge of sentence level grammar was the source most frequently used by these participants (i.e. 42%). This result was along with findings gained from study performed by Paribakht (2004).

Table 1 *Percentages of Knowledge Sources Used in Inferencing.*

Major linguistic sources

Sentence-level grammatical knowledge 42%

Word morphology 17%

Word association 9%

Minor linguistic sources 24%

 Discourse/text

 Homonymy

Cognates

Extra linguistic sources 8%

Total 100%

Discussion and Conclusion

The results of this study confirmed the idea of the significant role of grammar knowledge in inferencing word meaning. They support the fact that good knowledge of grammar can enhance reading comprehension and can help learners improve other types of knowledge. Inadequate knowledge of vocabulary can, to some extent, be improved by adequate knowledge of grammar. According to Paribakht (2004), most researchers agree that lexical and syntactic knowledge bases are fundamentally interrelated in a kind of lexicogrammar. As it is mentioned by Schmitt (2000, p. 14), "much of what was previously considered grammar is actually constrained by lexical choices". He further argues that vocabulary and grammar can be conceptualized "as partners in synergy, with

no discrete boundary" (p. 14). The collected data in this study is a further support for the important role of second language linguistic knowledge.

Another important finding gained in this study was the difference between students who used more inferencing strategies and those who referred to dictionary frequently without making any effort to guess the words meaning. Students who used more inferencing strategies considered guessing as a problem solving challenge and it made them enjoy their reading and comprehend the text better. On the other hand, students who used less inferencing and used appeal for dictionary assistance were not so motivated in reading and performed reading task mechanically and had problem with making right judgments about text meaning.

At the end based on the results it is suggested that teachers pay more attention to grammar instruction and students linguistic knowledge. Also, it is implied that using inferencing strategies can enhance reading comprehension and vocabulary development.

References

Bengeleil, N. (2001). Lexical Inferencing Processes of Libyan EFL Medical Students While Reading: The Role of Reading Proficiency and the Arabic Language. (Unpublished PhD thesis, University of Ottawa).

De Bot, K., T.S. Paribakht and M. Wesche (1997). Towards a Lexical Processing Model for the Study of Second Language Vocabulary Acquisition. *Studies in Second Language Acquisition, 19,* 309-329.

Haastrup, K (1991). *Lexical Inferencing Procedures or Talking about Words* .Tübingen: Gunter Narr.

Morrison, L. (1996). Talking about words: a study of French as a second language learners'lexical inferencing procedures. *Canadian Modern Language Review, 53*(1), 41-75.

Nassaji, H. (2006). The relationship between depth of vocabulary knowledge and L2 learners' lexical inferencing strategy use and success. *The Modern Language Journal, 90*(3), 387-401.

Paribakht, T. S. (2005). Inferencing: a study of Farsi-speaking learners of English as a foreign language. *Language Learning, 55*(4), 701-748.

Paribakht, T. S. (2004). The role of grammar in second language lexical processing. *RELC, 35*(2), 149-160.

Paribakht, T.S., and M. Wesche (1997). Vocabulary Enhancement Activities and Reading for Meaning in Second Language Vocabulary Development. In J. Coady and T. Huckin (eds.), *Second Language Vocabulary Acquisition: A Rationale for Pedagogy* New York: Cambridge University Press. pp. 174-200.

Paribakht, T.S., and M. Wesche (1999). Reading and "Incidental" L2 Vocabulary Acquisition: An Introspective Study of Lexical Inferencing. *Studies in Second Language Acquisition, 21*(2), 195-224.

Schmitt, N. (2000). *Vocabulary in Language Teaching* .Cambridge: Cambridge University Press.

APPENDIX A

Reading Text

Acid Rain

For almost half the year, most of northeastern North America is covered in a thick layer of snow. Hibernating among the snowflakes, awaiting the bears of springtime, is a potent dose of sulfuric acid that, when released in the spring runoff, packs the knockout wallop of a heavyweight prizefighter.

As the snow melts and enters lakes and rivers, parts of these bodies of water can become as much as 100 times more acidic in a very short time. While this acid bath usually only lasts for a few days to a few weeks, the pH values are often acutely lethal even in lakes that otherwise do not appear to be in danger, Dr David Schindler of the Freshwater Institute in Winnipeg, a pioneer researcher into effects of acid rain on fish, told an Ontario government committee investigating acid rain. As an example, Dr Schindler pointed out that Panther Lake in the Adirondacks normally has a pH of 7. But in the spring runoff it drops to a pH of 5.

Yet the air pollution picture is not totally bleak. Continuing research offers some hope of improvement. In late 1986 two scientists reported a chemical process capable of eliminating nitrogen oxides from diesel exhaust gases and coal-fired boilers. The hot gases, passed over a nontoxic chemical called cyanuric acid, break down into harmless nitrogen and water. If later research supports the findings, a giant step could be taken toward eliminating a major contributor to acid rain and man-made ozone.

Perhaps the most controversial environmental issue of the decade is acid rain, but that too is clouded in mystery. We are in the infancy of understanding the full effects of an atmosphere acidified by burning fossil fuels, Dr Chris Bernabo, an air-quality expert, told me. In order to really understand it, we must conduct years of research.

The federal Clean Air Act of 1970, amended in 1977, expired in 1981. As of this writing it continues on extensions, outdistanced by the growing knowledge about air pollution.

We live on a forgiving planet, with mechanisms to deal with natural pollutants. Decay, sea spray, and volcanic eruptions annually release more sulfur than all the power plants, smelters, and other industries in the world. Lightning bolts create nitrogen oxides just as automobiles and industrial furnaces do, and trees emit hydrocarbons called terpenes. Their release triggers a bluish haze that gave the Blue Ridge its name.

For millions of years the ingredients of such substances have been cycling through the ecosystem, constantly changing form. They pass through plant and animal tissues, to sink into the sea, return to the earth, and are vaulted aloft in some geologic event to begin the cycle again. An atom of oxygen completes the cycle approximately once every 2,000 years. A portion of the next breath you take could have last been breathed by Jesus.

Can the earth assimilate the additional 70 millions tons of sulfur that we release each year? What happens to plants that absorb the additional nitrogen oxides (NOx) we create with our miniature lightning bolts inside car cylinders? Can the atmosphere take on the extra load of carbon dioxide (CO_2), methane, man-made ozone, and chlorofluorocarbon refrigerants that scientists say could raise global temperatures by the greenhouse effect?

APPENDIX B

Percentages of Knowledge Sources Used in Inferencing in Each Task Condition

_____

Major linguistic sources	Summary T	. Question T.
Sentence-level grammatical knowledge	35%	33%
Word morphology	14%	16% 0
Word association	12%	15%012
Extra linguistic sources	9%	11% 0
Minor sources	30%	25%
Total	100%	100%

_____