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Learners' Accurate Meaning Inferencing and Vocabulary Gain: Does Concordance Length Play a Role?

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Abstract

Research to date has commonly suggested that meaning inferencing through concordance lines can facilitate vocabulary learning. This facilitative role, however, may be subject to mediation by the expanded contexts of the target vocabulary item in concordance and accurate meaning inferencing. Of these plausible factors, the length of the co-text of vocabulary items in concordance context remains under researched. The present study investigated how inferencing in the context of three varying concordance lengths (i.e., two complete sentences, one complete sentence, and a truncated sentence) affect EFL learners' accurate inferencing and vocabulary gain. To this end, 66 upper intermediate learners were assigned randomly into three groups and were asked to infer the meaning of 63 unknown words over seven sessions (nine words each session). For each unknown word, three examples in three different lengths were selected. Results indicated that two complete sentence co-text led to more accurate inferencing and vocabulary gain. The pedagogical implications of the findings are discussed.

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1. Introduction

As a type of data driven learning (DDL), concordancing allows learners to observe words in authentic rich context and assists them to discover word meanings by themselves in the light of available contextual clues (e.g., Boulton & Cobb, 2017; Flowerdew, 2015; Gilquin & Granger, 2010, Huang, 2012;Johns, 1991; Supatranont, 2005;Van Zeeland, 2014). Concordances can be accessed either directly (i.e., hands-on DDL), where learners self-regulate their learning perusing corpora by themselves on the screen of the computer, or indirectly (i.e., hands-off DDL), where they are exposed to the pre-selected concordance printouts (Boulton & Cobb, 2017).

Regardless of its type, DDL promotes learners' involvement and engages them in meaning inferencing by providing access to the expanded context (e.g., Boulton, 2010; Montero Perez et al., 2013), which in turn yields better vocabulary learning and retention (e.g., Van den Broek et al., 2018; Carpenter et al., 2012; Wesche & Paribakht, 2010).This learning approach raises learners' consciousness (e.g., Huang, 2016; Rezaee et al., 2015) and facilitates autonomous learning (e.g., Boulton, 2009, 2016; Vyatkina, 2020) which is the ultimate goal of an ideal vocabulary learning program (Nation, 2020). Moreover, there has been growing empirical evidence on the benefits of DDL for vocabulary learning (e.g., Boulton & Cobb, 2017; Lee et al., 2020) giving credence to corpora and concordancing as valuable resources in this domain (e.g., Gilquin & Granger, 2010; Lee & Lin, 2019; Lee et al., 2020; Vyatkina, 2020).

Despite the apparent benefits of concordancing on offer, some concerns have been raised about word inferencing from co-text (the words surrounding the target word). It has been argued that in spite of expending ample time on inferring unknown words and verifying the inferred meanings (Kelly, 1990), learners may make wrong inferences (e.g., Hulstijn, 2001; Paribakht & Weche, 2006) which may in turn lead to wrong retention (e.g., Mondria, 2003; Mondria &Wit-De Boer, 1991) or interfere with memory (Mondria, 2003).

Hence, a body of research has focused on exploring the factors that influence learners' accurate inferencing, such as context (Dubin & Olshtain, 1993), part of speech (e.g., Na & Nation, 1985;Wesche & Paribakht, 2010), learners' familiarity with running words (Hu &Nation, 2000), and the strategies that readers use to make lexical inferences (e.g., Ahour & Ranjbar, 2016; Hu & Nassaji, 2014).However, it appears that almost no research, to our knowledge, has examined how accurate meaning inferencing is influenced by the length of the co-text in a concordance.

The key word in context (KWIC) is the most common format of concordance in which the key word is displayed in the center of concordance line with the co-text available on both sides. Although this format can afford learners a valuable opportunity for learning lexical and grammatical patterns by allowing them to read the context along a vertical axis (Ballance, 2016), this context is truncated arbitrarily at either end of the line (Levy, 1990) which may be a barrier to the interpretability of the concordance line (Sinclair, 2004). Therefore, exposing learners to truncated KWIC imposes a heavy burden on learners (e.g., Ballance, 2017; Flowerdew, 2012). To mitigate cognitive load, Ballance (2016) recommended displaying words in expanded context to enrich the environment and facilitate comprehension. He argued

that the length of the co-text in concordance may play a vital role in language learning and merits more investigation.

Since developing digital literacy on the part of learners is conceived essential to hands-on DDL, learners should first get acquainted with concordance or receive scaffolding (Rezaee et al., 2015) to be able to benefit from it. Alternatively, learners can proceed from hands-off DDL to hands-on DDL to get familiarized with concordancing (e.g., Boulton, 2010, 2016). Given the above-mentioned points, pre-selected concordance printouts (hands-off DDL) were used in the present study due to the learners' unfamiliarity with concordancing.

Taken together, the present study addressed the following research questions to fill in the gaps recognized in the literature:

1. Does the length of the co-text in concordance have any significant effect on EFL learners' accurate inferencing?
2. Does EFL learners' accurate lexical inferencing have any significant effect on their vocabulary gain?

2. Literature Review

2.1. Concordance and Vocabulary Learning

Corpora and concordancing are proving as invaluable sources of authentic input (e.g., Boulton, 2017; Boulton & Cobb, 2017; Liu & Lei, 2018; Thurstun & Candlin 1998) which improve learners' command of accurate vocabulary usages (Liu & Lei, 2018) and stretch their analytical ability (Thurstun & Candlin, 1998). There is also a persuasive empirical evidence on the advantage of implementing concordancing in vocabulary instruction. Supatranont (2005), for instance, compared the effect of concordance-based and conventional teaching methods on students' vocabulary learning. The findings confirmed that concordance-based instruction led to higher transferable knowledge, definitional knowledge, and vocabulary retention rate. Moreover, the students found this method interesting. A somewhat similar study was carried out by Frankenberg-Garcia (2014) who compared the effectiveness of using corpus examples to that of dictionary definition. It was found that EFL learners can understand new words and use the words appropriately on a syntactic level through corpus multiple examples. The results of language comprehension and production tests were in favor of multiple examples.

In a meta-analysis, Boulton and Cobb (2017) concluded that DDL is very promising in the domain of teaching vocabulary. Similarly, in another meta-analysis, Lee et al. (2020) acknowledged the effectiveness of corpus use in improving vocabulary learning, particularly when the concordance lines were purposely selected. Huang (2012) also concluded that in the preliminary stages, students should accumulate experiences in using corpora and enhance their metalinguistic skills under the teacher's guidance. Later, they can be granted more autonomy and freedom in using corpora by themselves. Accordingly, a hands-off approach was adopted in the present study by exposing learners to some preselected concordance printouts as an initial step. Although previous research suggests that DDL is promising in developing vocabulary knowledge, the effect of co-text length in concordance remains to be explored in this respect.

2.2. Inferencing and Vocabulary Learning

There is now some convincing amount of experimental evidence to lend support to the claim that inferring the meaning of unknown words encountered in contexts has a facilitative effect on vocabulary development (e.g., Boulton, 2009; Carpenter et al., 2012; Lee & Lin, 2019; Lee et al., 2020; Li, 1988; Paribakht & Wesche, 1999). Meaning inferencing has been regarded a cognitively demanding task (Tsai, 2019), engaging learners in deriving the meaning of an unknown word from cues that exist within or adjacent to the target word, within the same sentence, and beyond the sentence (Paribakht & Wesche, 2006). The cognitive effort learners expend to determine the intended meaning of a word in a given context has been argued to positively affect learners' vocabulary knowledge (e.g., Hulstijn, 2001; Wesche & Paribakht, 2010). Some researchers (e.g., Kaivanpanah & Alavi, 2008; Laufer & Yano, 2001), however, downplayed the role of word inferencing in vocabulary learning. They argued that guessing from context is not always a reliable strategy and learners overestimate their vocabulary knowledge of the unknown words due to trusting their wrong inferences or not recognizing the words as unfamiliar and confusing them with other words.

Furthermore, Schats and Baldwin (1986) revealed that contextual clues had no or little impact on learners' ability to infer the meaning of unknown words, proving in some cases counterproductive ending up in learners' confusion. They concluded that inferencing is not appropriate for comprehending high-information words or learning the meaning of a great number of unknown words. Pursuing this line of research, Knight (1994) confirmed that using dictionary leads to better vocabulary learning and reading comprehension. He rejected the superiority of guessing from context which supports Rouhi and Razinejad's (2017) finding.

The findings on the optimal amount of co-text for word presentation are also inconclusive. Golonka et al. (2015) concluded that learning vocabulary in full context requires processing a large amount of information which places high cognitive demand upon the learners and divert their attention from vocabulary learning. According to Radach et al. (2008), the new words that appear in short co-texts like a single sentence, receive longer gaze duration by the reader compared to the ones which occur in fairly larger co-texts. However, the new words may be ignored in longer co-texts and be less attractive to readers (Freebody & Anderson, 1983). Wochna and Juhasz (2013) formulated two opposing predictions on the role of context length in word learning. While larger co-texts may be more informative by including more contextual clues, shorter co-texts like a single sentence may be conducive to more vocabulary learning due to attracting the readers' attention more than larger co-texts.

3. Method

3.1. Participants

The participants of the present study were 66 (27 male and 39 female) upper-intermediate Iranian EFL learners majoring in English Literature and English Translation. They were native speakers of Persian with an age range of 19 to 22. They were selected out of 84 learners from three intact classes based on their performance on Quick Oxford Placement Test (QOPT). The participants were randomly assigned to one of the three experimental conditions, two complete sentences (n = 22), one complete sentence (n = 22), and a truncated sentence (n = 22). Based

on the learners' reports, they had no prior experience of concordancing which justified adopting hands-off DDL in the present study.

3.2. Target vocabularies

A total of 63 target words including verbs (n = 49) and nouns (n = 14) taken from *Mosaic 2 Reading* (Wegmann & Knezevic, 2002) were selected. This book has been designed for upper-intermediate learners with an emphasis on interpretation, inference, and critical analysis which makes it suitable for the participants of the present study. Wesche and Paribakht (2010) argued that verbs and nouns are among the most common words and the easiest to guess. Moreover, they lead to more accurate inferencing than other parts of speech (Paribakht & Wesche, 1999). For each target word three examples in the three lengths were elicited from Corpus of Contemporary American English (COCA). Each session, the learners received examples for nine target words (three examples for each word) and attempted meaning inferencing from the co-texts provided.

3.3. Quick Oxford Placement Test (QOPT)

QOPT, that is a reliable test developed by Oxford University Press and University of Cambridge Local Examinations Syndicate (2001), consists of 60 multiple-choice items on vocabulary and grammar in two parts. The total score of this test varies from 0 to 60. Based on the test rubric, the first part (questions 1–40) is taken by all candidates, while the second part (questions 41–60) is for higher ability learners only. Accordingly, all participants of the present study were asked to complete part one. However, part two was only taken by those who scored more than the predetermined score (above 35 out of 40) in part one. According to the scoring scale, the learners whose overall scores in the two parts ranged from 40 to 47 out of 60 were selected as the upper-intermediate leaners. The participants were allotted 30 min to complete the test.

3.4. Corpus

The hands-off version of COCA was used in the present study to provide concordance printouts for the three groups. This corpus contains more than 560 million words of spoken, magazines, fiction, newspapers, and academic texts. According to Davis (2009), this corpus has the benefit of having a large size which gives a sufficient pattern of English words and grammar. COCA is available online (https://www.english-corpora.org/coca/accessedMarch2019), although the number of searches is restricted when the free version of this corpus is used. To overcome this limitation, the concordance co-texts were elicited over several queries. As illustrated in Figure 1, after submitting a query for a target word like “grit”, a list of concordance lines containing the word are displayed. It is noteworthy that COCA allows users to see the target words in even more context (approximately one paragraph), which paved the way for preparing concordance examples in one or two-sentence co-texts.

Figure 1 *A snapshot of Concordance Lines from COCA*

anning.org	A	B	C	standard of living that's worse than their parents or grandparents. # The true **grit** associated with being an American is to rise up in the face of adversity
cynics.com	A	B	C	actually be my favourite Sam Mendes film, for its smooth combination of wit, **grit** and action, but without the usual pretense of " like, it's so
ny.com	A	B	C	replaced them with younger and harder-working guys who helped make the transition from flash to **grit** easier. # But the coaches can only do so much. A
m	A	B	C	even with families, jobs, and the whole 9(-5), have nothing of the **grit**, determination, or interest in awakening or going beyond as the ancestors they reac
ecycling.org	A	B	C	sing me to sleep and up tough hills. Or Jens Voigt for inspiration and **grit**. It would be hard to choose! # How about you, who would
.org	A	B	C	at ground zero. This must be stopped immediately. Anyone out there with any **grit** to start the ball rolling on prohibiting this mosque from being built at
m	A	B	C	, fire department, or our family doctor, everyone is dependent on their own **grit**, wit, ingenuity, and resources, and FEMA may or may not show
ournal.com	A	B	C	of these is even checked out. That's a real shame since this True **Grit** for kids title from the author of The Roman Mysteries is a hoot. You
ious.com	A	B	C	you pointed out in your reviews on Paul Tough's book and article, " **grit** " and other character traits are needed for student success. And it really does
ocal.com	A	B	C	up on 49th and Springfield and now live in CC. I did appreciate the **grit** of West Philly, but it just wasn't safe back then. Also,
on.com	A	B	C	rush and riotous life of the city, the night life, the dirt and **grit**, or tar beaches. # Instead, Greg Fleming introduces us to interesting people
rs.com	A	B	C	Friday to Sunday), without going under, will win a copy of True **Grit** - Special Collector's Edition. Entries must be received by 10 a.m., Pacific
rs.com	A	B	C	without going under the actual opening weekend will be the potential winner of: True **Grit** - Special Collector's Edition on DVD. In the event of a tie,
s.com	A	B	C	this or that. " when in reality I just need to buckle down, **grit** my teeth and WORK at it. This is the first time I have read
et	A	B	C	process as old as time. It requires a rotating grinding wheel covered with abrasive **grit**. The carver places the knife perfectly against the wheel to create a
ward.com	A	B	C	dealt with alone, with a head full of steam and a little bit of **grit** and determination. Silly " others ". # I think we're seeing Poe
ward.com	A	B	C	the Loser Brigade around here! # I know I left my 20lb bag of **grit** and 60gal barrel of steam around here somewhere... # I detected the sarcasm right
rg	A	B	C	. # Happiness will not save a failing enterprise. That will require gumption and **grit**, as well as a strong business plan and marketable products and servic
eau.com	A	B	C	going to get you through it. It will have to be your own **grit**. You did it! I wonder how many hours it took you to get

3.5. Vocabulary Knowledge Scale

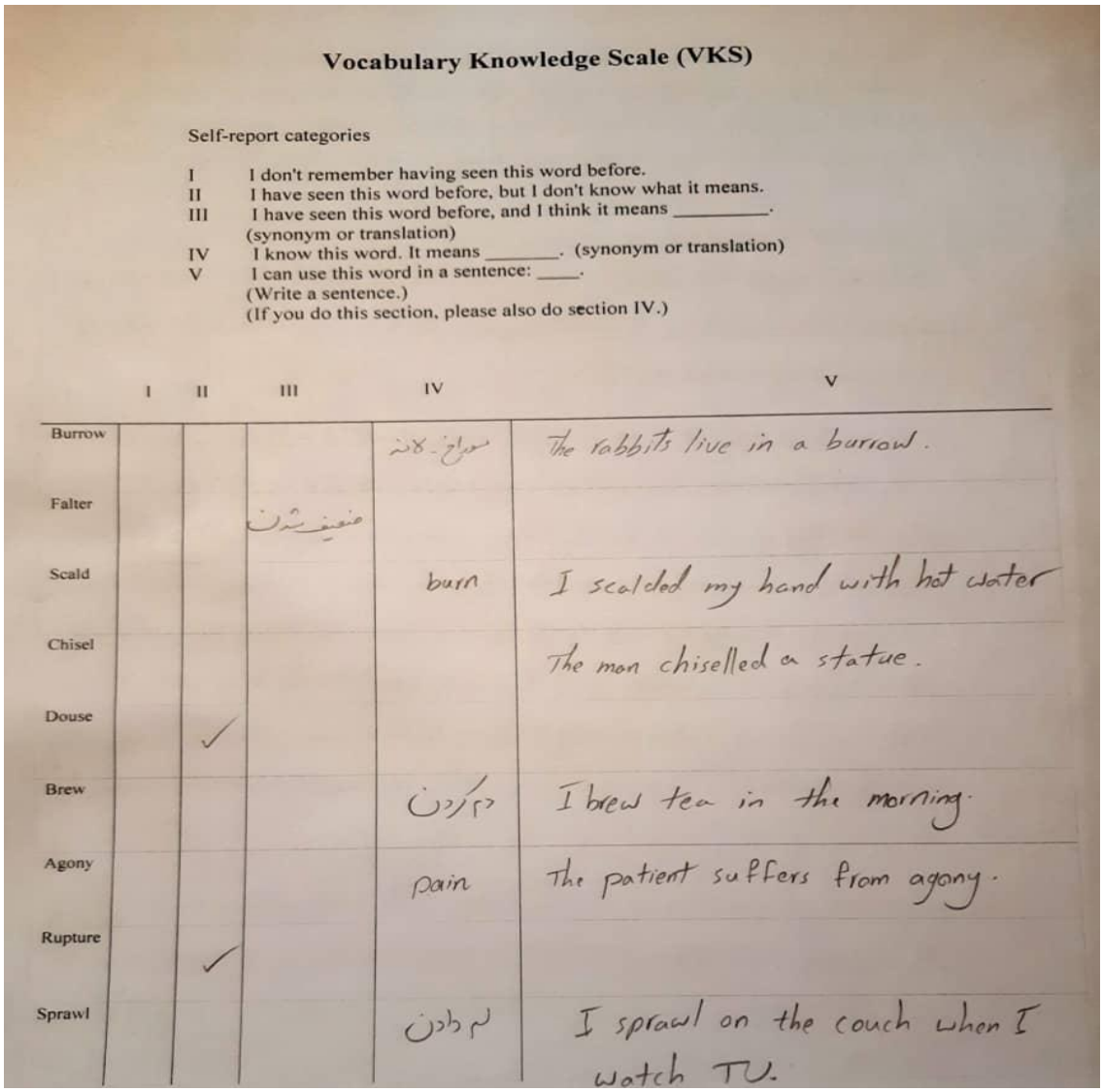
The learners' vocabulary knowledge was ranked using Vocabulary Knowledge Scale (VKS) designed by Paribakht and Wesche (1996). As shown in Figure 2, this classical scale consists of five categories, representing five degrees of word knowledge. The VKS scoring scale allows for five possible scores: 1(being totally unfamiliar with the word), 2 (having seen the word but not knowing its meaning), 3 (being able to guess the meaning of the word and provide synonym or translation), 4 (being able to use the word in a sentence with semantic appropriateness only), and 5 (being able to use the word in a sentence with both semantic appropriateness and grammatical accuracy).

Figure 2 *Vocabulary Knowledge Scale* (Paribakht & Wesche, 1996, p.178)

Self-report categories
I I don't remember having seen this word before.
II I have seen this word before, but I don't know what it means.
III I have seen this word before, and I think it means _____.
(synonym or translation)
IV I know this word. It mean _____. (synonym or translation)
V I can use this word in a sentence: ____.
(Write a sentence.)
(If you do this section, please also do section IV .)

As presented in figure 3, a learner who used the word 'brew' in the following sentence "I brew tea in the morning.", was awarded 5 due to the semantic appropriateness and grammatical accuracy of the sentence.

Figure 3 *A snapshot of a learner's vocabulary knowledge in post-test*



Vocabulary Knowledge Scale (VKS)

Self-report categories

I I don't remember having seen this word before.
II I have seen this word before, but I don't know what it means.
III I have seen this word before, and I think it means _____. (synonym or translation)
IV I know this word. It means _____. (synonym or translation)
V I can use this word in a sentence: ____. (Write a sentence.) (If you do this section, please also do section IV.)

	I	II	III	IV	V
Burrow				سوراخ، لانه	The rabbits live in a burrow.
Falter			ضعیف شدن		
Scald				burn	I scalded my hand with hot water
Chisel					The man chiselled a statue.
Douse		✓			
Brew				دم کردن	I brew tea in the morning.
Agony				pain	The patient suffers from agony.
Rupture		✓			
Sprawl				لم دادن	I sprawl on the couch when I watch TV.

4.3. Procedures

To investigate the effect of accurate word inferencing and concordance length on learners' vocabulary gain, a seven-session study was conducted in two universities in an EFL setting (Kerman). The participants were initially 84 EFL learners (35 male and 49 female) attending Reading Comprehension course in three intact classes. During the first session, they were asked to sign the consent form written in their native language (Farsi). In this form the learners were informed that their participation in this study is completely voluntary and they were presented with the aim and the procedures of the study. They were assured that their information would be kept confidential. Fortunately, all learners volunteered to participate in this study. Moreover, the learners were asked about their prior experience of concordancing. Since the learners stated that they had little or no experience of this tool, concordance printouts were used in this study. As the next step, QOPT was administered to select the upper-intermediate learners. It is worth

mentioning that the learners who were not at the level of proficiency intended by the researcher were also provided with the same materials for vocabulary instruction in each group. However, their performance was excluded from the present study. Additionally, to exclude the known words, the learners were presented with VKS of the target words (n = 90) as the pretest to assess their familiarity with each word. To this end, learners' knowledge of each target word was scored 1-5 based on the VKS scale and 63 totally unfamiliar vocabularies (the words scored 1) were chosen for the study.

To provide concordance printouts for each group, COCA was utilized. Since the corpus presents a key word in numerous co-texts, the co-texts which contained a few difficult words were selected. Figure 4 illustrates three examples in the three concordance lengths for the word "agony".

Figure 4 *Concordance Examples for the Three Concordance Lengths Elicited from COCA*

Two complete sentences

You're a young woman. It could be you dying in **agony** because a Catholic hospital refuses to provide a lifesaving abortion some day.

No pain, no **agony**, no needing to spend minutes if not hours debating if a particular bite of food is really worth your time. You can just eat, and drink, and breathe.

Bob Easton thinks he has a cold. Before he dies in **agony**, four days later, he infects dozens of people.

One complete sentence

It could be you dying in **agony** because a Catholic hospital refuses to provide a lifesaving abortion some day.

No pain, no **agony**, no needing to spend minutes if not hours debating if a particular bite of food is really worth your time.

Before he dies in **agony**, four days later, he infects dozens of people.

Truncated sentence

It could be you dying in **agony** because a Catholic hospital refuses to provide

, no **agony**, no needing to spend minutes if not hours debating if a

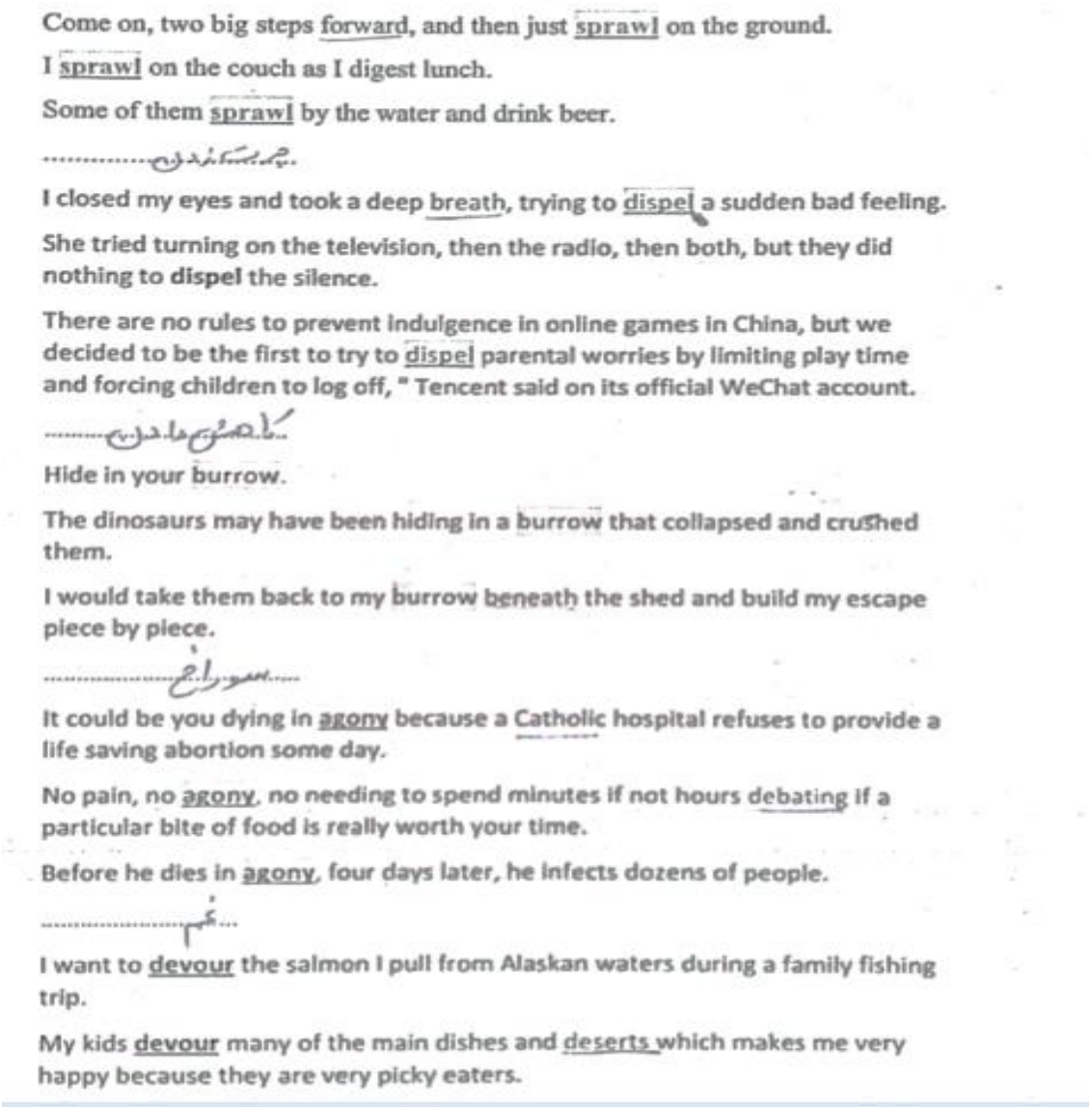
Before he dies in **agony**, four days later, he

To ensure that the lexical content of the concordance examples in the three lengths was of the same difficulty level and the students were cognitively ready to learn the new words, the examples were piloted on 14 upper-intermediate learners other than the individuals involved in main groups. To this end, the learners who participated in the pilot study were asked to read the pre-selected concordance examples in each length and underline the unfamiliar words. The items in which 95% or more of the words in co-text (Hu &Nation, 2000) were known by the learners, were used in the experiment. Although most of the preselected examples contained less than 5% unfamiliar words based on the underlined words, only three examples in the three co-text lengths were selected for each word due to time limitation.

Afterwards, the three groups (22 learners in each group) were assigned randomly to the three different conditions (two complete sentences, one complete sentence, and a truncated

sentence). This study lasted for seven sessions (2 sessions per week). Each session, the learners of each group were asked to infer the meaning of nine highlighted unknown words. In the two complete sentence group, the learners were provided with two complete sentence co-text, within the same concordance line for each target word, and were asked to infer the meaning of the unknown words and write their inferences down in L1 or L2 in the provided space on answer sheet. Learners could either provide synonyms or definitions in English or translations in Farsi. (see Figure 5).

Figure 5 *A Snapshot of a Learner's Inferences*


Come on, two big steps forward, and then just sprawl on the ground.

I sprawl on the couch as I digest lunch.

Some of them sprawl by the water and drink beer.

.....پهن شدن.....

I closed my eyes and took a deep breath, trying to dispel a sudden bad feeling.

She tried turning on the television, then the radio, then both, but they did nothing to dispel the silence.

There are no rules to prevent indulgence in online games in China, but we decided to be the first to try to dispel parental worries by limiting play time and forcing children to log off, " Tencent said on its official WeChat account.

.....کاهش دادن.....

Hide in your burrow.

The dinosaurs may have been hiding in a burrow that collapsed and crushed them.

I would take them back to my burrow beneath the shed and build my escape piece by piece.

.....سوراخ.....

It could be you dying in agony because a Catholic hospital refuses to provide a life saving abortion some day.

No pain, no agony, no needing to spend minutes if not hours debating if a particular bite of food is really worth your time.

Before he dies in agony, four days later, he infects dozens of people.

.....عذاب.....

I want to devour the salmon I pull from Alaskan waters during a family fishing trip.

My kids devour many of the main dishes and deserts which makes me very happy because they are very picky eaters.

By allowing the participants more freedom in how they infer meaning (i.e. L1 or L2), they were supposed to invest less mental effort in meaning conveyance. It is noteworthy that majority of the participants of this study preferred to write their inferences in L1. Their inferences were collected for further analysis. This procedure was repeated for the one complete sentence and the truncated sentence groups with different lengths. Since retaining

wrong inferences is a big concern in vocabulary learning (e.g., Hu & Nation, 2000) running the risk of ending up in counterproductive results (Kaivanpanah &Alavi, 2008), the learners of all three groups were given the correct meaning of the new words after their inferences were collected.

To evaluate the learners' inferences, Wesche and Paribakht's (2010) scoring system was used and inferences classified under completely accurate, partially accurate, and completely inaccurate were awarded 2 points, 1 point, and 0, respectively. (See Table 1).

Table 1 *Instances for Successful, Partially Successful, and Unsuccessful Inferences*

Level of success	I **sprawl** on the couch as I digest lunch	
Successful	ولو میشوم	۲ points
Partially successful	می نشینم	۱ point
unsuccessful	فکر میکنم	0

To ensure the reliability of scoring, two raters awarded 0 to 2 to 15% of randomly selected inferences based on Wesche and Paribakht's (2010) scoring system. The agreement between raters was 92% and any disagreements were resolved through negotiation.

To assess learners' immediate vocabulary gain, each session an immediate posttest was administered. To this end, the VKS comprising 63 words (i.e. the target words in the pretest) was given to the participants to demonstrate their knowledge of each word. It is noteworthy that the same scoring system were used in the pretest and posttest. After scoring the participants' knowledge of each word 1-5, two raters scored 15% of the scales separately and a high agreement was obtained between them (94%) and the discrepancies were resolved through negotiation. Moreover, the learners' accurate inferences, semantically and syntactically appropriate ones, were calculated every session to specify the length that resulted in more accurate inferences.

5. Data Analysis and Results

The rate of accurate inferences for each concordance length and the effect of accurate inferencing on learners' vocabulary gain were investigated quantitively through one-way ANOVAs and post-hoc multiple comparisons. To answer the first research question as to the effect of concordance length on learners' accurate lexical inferencing, the number of learners' accurate inferences in every session alongside their vocabulary gain (presented in Table 2) were determined.

Table 2 *Descriptive Statistics for Total Successful Inferences*

Groups	*N*	M	SD
A	597	3.89	.92
B	553	3.77	1.05
C	515	3.40	1.12
Total	1665	3.70	1.05

Mean = the mean of vocabulary gain for successful inferences

N = the number of successful inferences

Group A: two complete sentences

Group B: one complete sentence

Group C: truncated sentences

As shown in Table 2, the group who received the new words in two complete sentences, surpassed the other groups in total accurate inferences and vocabulary gain within seven sessions (*N* = 597, *M* = 3.89, *SD* = .*92*).The one complete sentence group (*N* = 553, *M* = 3.77, *SD* = 1.05) also surpassed the truncated sentence group(*N* = 515, *M* = 3.40, *SD* = 1.12). Afterwards, a one-way ANOVA (presented in Table 3) revealed that the three groups' total vocabulary gain was significantly different, *F* (2, 16) =32.98, *p*= .000.

Table 3 *ANOVA of Learners' Total Vocabulary Gain*

Successful inferences					
	SS	*df*	*MS*	*F*	*p*
Between Groups	70.60	2	35.30	32.98	.000
Within Groups	1778.77	16	1.07		
Total	1849.38	16			

Post-hoc comparisons using *LSD* test, presented in Table 4, indicated that the mean of the two-sentence group (*M*= 3.89, *SD*=0.92) was significantly different from the truncated sentence group (*M*= 3.40, *SD*= 1.12) and the one complete sentence group (*M*= 3.77, *SD*= 1.05). Moreover, the mean score of the one complete sentence group was significantly different from the truncated sentence group.

Table 4 *Post Hoc Multiple Comparisons of Means*

Dependent Variable: successful inference							
						95% Confidence Interval	
	(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
LSD	A	B	.12025*	.06	.049	.00	.24
		C	.49006*	.06	.00	.36	.61
	B	A	-.12025*	.06	.049	-.24	-.00
		C	.36981*	.06	.000	.24	.49
	C	A	-.49006*	.06	.000	-.61	-.36
		B	-.36981*	.06	.000	-.49	-.24

*. The mean difference is significant at the 0.05 level.

Based on these findings the group who inferred the meaning of unknown words from the co-text of two complete sentences significantly outperformed those in the other two groups in accurate inferencing and vocabulary gain followed by the one complete sentence group which had better performance than the truncated sentence group.

6. Discussion

The aim of the present study was two-fold: First, it sought to examine the effect of three varying co-text lengths on the EFL learners' accurate inferencing. The findings demonstrated that the learners who received words in two complete-sentence co-texts could infer the meaning of the new words more than those who were provided with one complete sentence and truncated sentence. The outperformance of the two-sentence group can be attributed to the more

contextual information available in a larger co-text. This lends support to the findings of other researchers (e.g., Ahour & Ranjbar, 2016; Hamada, 2014; Mondria, 2003; Li, 1988) who gave credence to the role of contextual information as an influential factor in accurate word inferencing. Moreover, this finding agrees with Hamada (2009) finding that longer passage leads to more accurate meaning inferencing. However, our finding was inconsistent with that of Nassaji (2003) who reported a low rate of accurate inferencing (25.6 %) for learners. This inconsistency might be due to the co-text in which the target words were embedded (reading text) and the frequency of word exposure in the co-text (single exposure) in Nassaji' s study.

Moreover, larger co-texts may entail more inspection (Wochna & Juhasz, 2013) or prompt higher degrees of search, a component of the involvement load hypothesis (ILH) whose presence affects the retention of unknown words (Laufer & Hulstijn, 2001). Inadequate clues accessed in shorter co-texts are likely to end up in confusion and prove counterproductive (Cobb, 1999) and impose excessive cognitive demands on learners (e.g., Balance, 2016; Flowerdew, 2012). Additionally, the more contextual clues in two sentence co-texts may activate more schemata leading to better knowledge construction.

Second, the present study attempted to explore the effect of accurate word inferencing on the learners' vocabulary gain. The results indicated that the two-sentence group outperformed the comparison groups with regard to vocabulary gain index. This finding is in line with Li (1988) who found a positive relationship between learners' capability to infer the meaning of unknown words and their word retention. Additionally, this finding lends support to depth of processing theory (Craik & Lockhart, 1972) which posits that the degree of cognitive and semantic analysis influences word learning and retention significantly. However, it conflicts with some previous studies (e.g., Mondria, 2003; Mondria & Wit-De Boer, 1991) who found that in spite of engaging learners in deep processing, accurate word inferencing from rich contexts did not result in higher retention due to low quality and quantity of memorizing in word inferencing method. Our finding also contradicts the conclusion reached by Golonka et al. (2015) and Radach et al. (2008) that shorter co-texts induce more attention and result in better vocabulary learning.

Additionally, it has been argued that different combinations of the ILH components (i.e., need, search, and evaluation) contribute differently to vocabulary learning (e.g., Kim, 2008; Laufer, 2003). Although in the three concordance lengths learners were required to infer the meaning of unknown words (need), the larger co-text could involve them more in searching for clues (search), and verifying their inferences against the wider co-texts (evaluation). Accordingly, the better performance of the learners in two-sentence co-text can be attributed to the higher search value induced by the co-text available. Another explanation for better learning outcome in the larger co-text seems to be related to contextual richness. This finding lends more support to previous studies (e.g., Reynolds, 2020; Webb, 2008) which demonstrated that the availability of more contextual clues promotes the likelihood of word acquisition. In contrast, a truncated sentence provided the learners with the least contextual clues.

In sum, word inferencing in the context of concordance (hands-off DDL) appeared to result in substantial accurate inferences and vocabulary gain in the three different lengths. However, the two complete sentence co-text was conducive to relatively more accurate inferences by

providing the learners with more contextual clues and comprehensible input. Accurate inferencing also contributed to better vocabulary gain which is in line with Hulstijn (1992). The one sentence group did not have access to contextual clues beyond a sentence. Interestingly, vocabulary gain in one sentence co-text was a little different from that of two complete sentences. This can be due to the availability of sufficient clues at the sentence level to derive the meaning of the unknown word which is in line with Paribakht and Treville's (2007) claim that most of knowledge sources are within the sentence that the target word is embedded. The total number of accurate inferences in truncated sentences was lower than the comparison groups which accordingly affected their vocabulary gain. This finding can be attributed to wrong inferences they made which interfere with memory (Mondria, 2003), ending up in counterproductive results (e.g., Cobb, 1999; Kaivanpanah & Alavi, 2008).

7. Limitations and Suggestions

Admittedly, the present study has a number of limitations which require further research. First, the present study was limited to exploring the effect of accurate inferencing on vocabulary gain. It would be worth exploring the effect of partially accurate inferences as well to gain a better understanding of the effect of different levels of accurate inferencing on vocabulary gain. Since the learners were provided with the word definition after inferencing, further studies can explore how providing the word meaning after partially accurate or even inaccurate inferences affects vocabulary learning. Moreover, a larger concordance co-text can be used in future studies to test whether larger co-texts lead even to better results. Finally, the participants in the present study were upper-intermediate EFL learners. To increase the generalizability of the findings and shed more light on the contradictory findings on the role of proficiency in DDL (e.g., Allan, 2010; Boulton, 2010), further research on other proficiency levels is suggested.

8. Conclusion

Adopting a hands-off DDL approach, the present study set out to explore the role of concordance length in accurate inferencing and vocabulary gain. It was found that the two complete sentence co-texts resulted in more accurate inferences and vocabulary gain than comparison co-text lengths. The findings of the present study have pedagogical implications for vocabulary instruction. Teachers are recommended to facilitate the process of meaning construction by providing EFL learners with sufficient co-text (two complete sentences or more). However, it seems that teachers and learners are not fully aware of the advantages of corpora or the availability of such resources. This claim was also evident in the context of the present study where learners were mostly unfamiliar with corpora and its potential benefit and had no experience in concordance-based language learning. Thus, training sessions are suggested to familiarize learners with the potential benefits of corpora for vocabulary learning.

Material developers can also incorporate concordance-based activities into textbooks. Since finding appropriate concordance lines for different proficiency levels is a laborious task, preparing such materials beforehand would be of great assistance to language teachers and learners. Moreover, accurate inferencing and vocabulary gain were found to be significantly related. Hence, integrating inferencing training sessions into education seems propitious.

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