

The effects of frequency of exposure, elaboration, and individual differences on incidental vocabulary learning

Muna Alshehri

Lancaster University

Abstract

Incidental vocabulary learning from meaning-focused input has received increased attention in second language acquisition research (Nation, 2007). However, few have investigated the role of oral input (listening) in acquiring word knowledge, especially in the case of young EFL learners. Therefore, the present study measured the short-term word retention of young Saudi EFL learners after listening to a story from the three dimensions of spoken form recognition, meaning recognition, and meaning recall. It also examined the separate and joint effects of frequency of exposure and +/- elaboration on the degree of word retention in addition to the possible moderating effect of a number of individual differences on word retention from listening, namely that of prior vocabulary knowledge, listening competence, and phonological short-term and working memory capacity. Results showed that words could be learned incidentally from listening. Explanation of target words appeared to affect the recognition of form and meaning and recall of meaning while frequency of exposure seemed to only to affect the recall of meaning. Moreover, regression analyses revealed that the provision of definitions of the new words during listening was the most significant predictor of word knowledge retention in all three post-tests.

Keywords: *Incidental vocabulary acquisition; L2 vocabulary knowledge; L2 listening; frequency of exposure.*

Introduction

Vocabulary, in second language acquisition (SLA), is a basic component of language proficiency that constitutes the basis for learners' performance in other language skills such as speaking, reading, listening and writing. It is not an optional part of a foreign language because "words are the building blocks of language and without them there is no language" (Milton, 2009, p.3). It has also been identified by the U.S. National Reading Panel as one of the five key aspects of literacy next to phonemic awareness, phonics, fluency and text comprehension (National Reading Panel). Limitations in vocabulary knowledge can hamper the ability of second language (L2) learners to effectively communicate in the target language because words carry the basic information load of the meanings they wish to express (Read, 2004). However, much of the literature on second language acquisition pays little attention to vocabulary learning (Milton, 2009). One topic which has begun to attract attention from researchers is how much vocabulary acquisition happens in EFL classrooms as a result of meaning-based communicative activities such as reading and listening. These activities could be a crucial source of incidental word learning in addition to the more direct methods of teaching vocabulary used by L2 teachers such as word lists.

Many scholars have agreed that much L2 vocabulary, beyond the first few thousand words, is learned incidentally while learners are engaged in extensive reading or listening (e.g. Huckin & Coady, 1999; Paribakht & Wesche, 1997). Ellis (1999) indicates that "oral input can constitute an effective source of data for incidental vocabulary learning even in the beginning stages of language acquisition" (p.38). Therefore, he calls for more research to be done to examine how incidental vocabulary acquisition can take place from oral input: "given the primacy of oral input in many learning contexts together with its potential to facilitate vocabulary acquisition, it is surprising that so little attention has been paid to it in L2 vocabulary acquisition research" (p.38). The study reported in the present paper serves to investigate the extent to which young EFL learners can acquire words incidentally, in the sense of being a by-product of the main learning activity of listening to a story. It starts with a brief review of relevant L2 empirical studies followed by a report on the experimental study at hand explaining its methodology and results and concludes with discussion and interpretation of those results.

Literature Review

Vocabulary acquisition occurs mainly through spoken input in child first language (L1) learning. Native children's vocabulary knowledge has usually been assumed to develop implicitly, as they grow older, with no explicit instruction needed. They generally develop their vocabulary in an incidental way from communication and through activities such as listening and reading at later ages. The situation differs in an L2 context where vocabulary acquisition often occurs more through written text. Evidence suggests that the vocabulary intake from incidental exposure is usually negligible and that successful L2 learners acquire large volumes of their vocabulary from words explicitly taught in the classroom and supplement their learning by targeting vocabulary in informal activities such as listening to stories, songs, and films (Milton, 2009). However, incidental vocabulary learning from communicative activities has some advantages over direct instruction such as providing the students with the opportunity of being engaged in the activity of reading or listening and vocabulary learning at the same time. They also can gain a richer sense of a word when it is learned through contextualized input. I have found that most L2 studies of incidental vocabulary acquisition have occurred in the reading context while few have been conducted in a listening context.

Benefits of extensive listening (i.e. listening to long, easy texts for fluency and enjoyment) have been mainly researched with native speakers, particularly with elementary school students (Brown, Waring, & Donkaewbua, 2008). An important type of an extensive listening activity practiced with children is listening to stories. In addition to the benefits of improvement in reading and listening skills, listening to stories provides a rich context for incidental vocabulary acquisition. Findings from L1 studies of vocabulary acquisition have indicated that several key factors influence the extent to which story listening benefits vocabulary learning, such as explanation of the meaning of words (e.g. Elley, 1989; Reese & Cox, 1999; Senechal, 1997; Senechal, Thomas, & Monker, 1995; Brett, Rothlein, & Hurley, 1996; Penno, Wilkinson, & Moore, 2002; Beck & McKeown, 2007), frequency of exposure to the word (e.g. Stahl & Fairbanks, 1986; Elley, 1989; Robbins & Ehri, 1994; Beck & McKeown, 2007), frequency of retelling the story (e.g. Eller, Pappas, & Brown, 1988), and story type (Elley, 1989; Penno, Wilkinson & Moore, 2002). Explanations can be provided through various strategies, such as providing a definition, pointing to the illustration, role-

playing, and providing a synonym. Repeated exposures are more effective when coming from both repeated readings of a book and repetition of a word in a story (Collins, 2010). Moreover, children with high initial vocabulary levels show larger gains in new vocabulary than children with low initial vocabulary levels (Reese & Cox, 1999; Robbins & Ehri, 1994; Penno, Wilkinson, & Moore, 2002).

A number of studies have also examined the vocabulary learning of young ESL learners from listening to stories. For example, a number of school-based studies, referred to as The Fiji Book Flood, showed that ESL children learn the meanings of many new words just by listening to their teacher read aloud in class (Elley, 1980; Elley & Mangubai, 1983). These studies showed that the children in the shared reading groups, who listened to many stories, produced gains of 10% on a general vocabulary test of 30 words. Since it was not clear how much the listening to stories contributed to these improvements, Elley (1989) carried out a series of small follow-up studies on particular books to investigate the extent to which children were learning from listening to a single story. In the first of these studies, with ESL pupils in the South Pacific, the researcher found substantial increases in word knowledge following the reading of a single story, *Three Ducks Went Wandering*, to a class of Fiji Indian students (aged 11-12 years). The pupils were assessed on their understanding of target words from the story before and after three readings of the story over the period of a week. Although there was no teacher explanation of the words, the mean gain in word meanings was approximately 20%. Similar studies were undertaken on two other South Pacific Islands by the researcher, using the same story. In the first study, the story was read once only, with brief explanations of the target words. This time, the gains for the same target words were 26%. The reduction in the number of encounters was counterbalanced by the reader's explanations of the key words, at the point of interest in the story. In the next study, with pupils of 11 to 12 years, the story was again read three times, with brief definitions of the key words, and the gains increased to 38% on the same words. These studies were promising, as they supported the hypothesis that young children learning English as a second language can acquire new vocabulary from listening to stories, with and without some help from the teacher. However, Elley (1989) stated that the number of participants in these micro studies was small and the stimulus text confined to one book. Therefore, the claims were in need of a confirmation in a larger, more tightly-controlled experiment.

In more recent studies, Collins (2005, 2010) examined ESL pre-schoolers' vocabulary acquisition from listening to stories. Participants were 70 pre-school-age native speakers of Portuguese who are also ESL learners. Children were first tested in L1 (Portuguese) receptive vocabulary and in L2 (English) receptive and expressive vocabulary and assigned to experimental or control groups. Eight picture books were selected and between five and nine sophisticated vocabulary words were inserted twice into the text of each book. Participants in the experimental group heard one pair of stories read three times per three-week period with rich explanations of target vocabulary words. While those in the control group also heard one pair of stories read three times per three-week period but without explanation of target words. After the third reading of each book, post-tests on the target words, based on the model of the Peabody Picture Vocabulary Test-III (1997), were administered to the participants individually. Findings revealed that the explanation of new vocabulary caused significant gains in the children's vocabulary acquisition and that children who had higher initial L2 receptive scores learned more words than children with lower initial L2 receptive scores. The study concluded that rich explanation, initial English receptive level, initial English expressive level, and the frequency of reading at home made significant contributions to target vocabulary acquisition. In particular, explanation, initial L2 receptive knowledge, story comprehension, and the frequency of parental reading to children at home accounted for 69% of the variance in target vocabulary scores.

As becomes clear from this review of earlier work, a large amount of research is available about the benefits of listening to stories for developing the vocabulary of native children. However, there is still a lack in L2 studies on the benefits of listening to stories in improving young EFL learners' word knowledge. Most EFL studies on vocabulary learning from listening have been conducted on adult learners (e.g. R. Ellis, 1995, Vidal, 2003, 2011; Brown, Waring, & Donkaewbua, 2008, Van Zeeland & Schmitt, 2013). For example, Ellis (1995) investigated two factors that could affect L2 vocabulary acquisition from oral input: pre-modification and interactional modification, with 51 Japanese high school students. Although more word meanings were learnt by the interactionally modified group than by the pre-modified group, the rate of acquisition (in words per minute) was faster with the pre-modified input. He also found that shorter definitions with fewer defining characteristics resulted in more acquisition and that pre-modified input was more efficient in promoting

acquisition than interactionally-modified input; an encouraging fact for teachers who teach in a context where negotiation is difficult.

Vidal (2003) studied EFL adult learners' vocabulary acquisition through academic listening and explored the effect of EFL proficiency and lecture comprehension on vocabulary learning. Findings showed that listening to academic lectures can be a source of EFL vocabulary acquisition and that vocabulary gain and retention are positively influenced by the participants' EFL proficiency and by their degree of lecture comprehension. Vidal (2011) also conducted a study on 230 Spanish EFL undergraduate students with the aim of comparing between the effects of listening and reading on the incidental acquisition and retention of vocabulary. Participants in the reading condition made greater vocabulary gains than those in the listening conditions. However, findings seemed to indicate that the difference in gains and retention between the reading and listening conditions decreased as the students' proficiency increased.

Reading also resulted in greater retention one month after the input, except for the highest proficiency students. The study also investigated the relationship between vocabulary learning through each of the two modes and the factors: frequency of occurrence, type of word, type of elaboration, and predictability from word form and parts. Of these four factors, *frequency of word occurrence* was revealed as the best predictor of vocabulary acquisition in the reading condition while *predictability from word form and parts* best predicted vocabulary learning through listening. Similarly, Brown, Waring, and Donkaewbua (2008) investigated the rate at which thirty-five EFL Japanese university students could acquire English vocabulary from the three input modes of reading, reading-while-listening, and listening to stories. They found that new words could be learned incidentally in all three modes but that most words were not learned and that the more frequent a word occurs in the text, the more likely that it would be learned and retained. In a more recent study, Van Zeeland & Schmitt (2013) investigated L2 learners' acquisition of three vocabulary knowledge dimensions through listening: form recognition, grammar recognition, and meaning recall. They found that learners start developing knowledge of a word (i.e. form and grammar recognition) long before they master the form-meaning link. It showed that knowledge of the three dimensions immediately after listening was form > grammar > meaning, with the former two being more sensitive to attrition than the last.

From the previous review, it can be concluded that (1) incidental vocabulary learning has been shown to occur in both extensive reading and listening conditions, (2) young L1 as well as young and adult L2 learners of English can ‘pick up’ new words when listening to stories, (3) adult EFL learners can successfully acquire vocabulary from different types of listening, and (4) frequency of exposure and explanation of target words are important factors in increasing vocabulary gain. The aim of the present study to determine if young EFL learners can also acquire vocabulary while listening to stories and whether factors like the amount of exposure, providing elaboration, and individual differences can affect the amount of their vocabulary retention. In order to investigate these issues, the following research questions were posed:

- RQ1: To what extent does listening to stories affect incidental learning of new vocabulary items?
- RQ2: To what extent does frequency of exposure to target words affect incidental learning of new vocabulary items?
- RQ3: To what extent does oral elaboration of target words affect incidental learning of new vocabulary items?
- RQ4: Are there any combined effects of exposure and elaboration on the learning of new vocabulary items through listening to stories?
- RQ5: Do the effects of frequency of exposure and elaboration differ across children with different (a) prior vocabulary knowledge, (b) listening competence, (c) phonological short term memory, and (d) working memory capacity?

Methodology

Design

The present study used a between-groups design in which the participants who experienced different treatments (single vs. multiple exposure and +/- elaboration) were combined and compared to each other in terms of their word knowledge. Participants of the experimental groups who took part in the listening task were compared to a control group using a post-test/control group design. Participants in the control condition took part in all the testing sessions without taking part in the treatment. Before the experiment commenced, all participants were tested in their receptive vocabulary, listening competence, and working memory (phonological short-term and complex working memory) to measure for their effect as mediating variables.

Participants

Participants in the study were 133 young Saudi female EFL learners from five classes of fourth grade at a private primary school in Riyadh, the capital city of Saudi Arabia. Their age range was between 8 and 10 years old with an average age of 8 years and 9 months. All participants had a similar educational and linguistic background (i.e. typically native speakers of Arabic with an A2 intermediate level of English and had learned English for four years in an EFL classroom context). Five students were excluded from the study later on due to their absence in some parts of the study (such as the listening task or testing sessions) leaving a total of 128 participants.

Materials

Story preparation

A famous read-aloud story *Lon Po Po: A Red Riding Hood Story from China* by Ed Young (1989) used in many Language Arts curriculums in the U.S. and suitable to be read to children from the age of kindergarten to 8 years was selected for this study. Based on the textual analysis of the story using a vocabulary profiler website¹, the text was simplified by substituting low frequency words with easier synonyms so that about 96% of the text contained words from the list of the most frequent 2000 words. This procedure was done to ensure that the text would be easy to comprehend for young intermediate-level EFL students.

Selection of Target Words

Ten words that appeared with similar occurrence frequencies were selected from the read-aloud story *Lon Po Po* and were substituted with nonwords. These substitute words were carefully chosen from the list of nonwords constructed by Waring and Takaki (2003) (see Appendix A). Then, the text was manipulated to allow for an exact occurring frequency of four times per target word in each listening session with a total of twelve occurrences in all three listening sessions. For the second version of the story (+ elaboration), a simple English definition was provided in the text after the first occurrence of each target word (see Appendix B).

¹ <http://www.lex tutor.ca/vp/eng/>

Measurements

The Cambridge Key English Test (KET for schools)

KET for Schools is a Cambridge ESOL qualification that shows if a student can deal with everyday written and spoken English at a basic level. The test is at Level A2 of the Council of Europe's Common European Framework of Reference for Languages (CEFR). The listening section of this test was used in this study to measure the participants' L2 proficiency level in listening. It contained twenty five questions in five parts. Each question was scored 1 point if answered correctly. They heard each recording twice and the time allowed on the test was about 30 minutes. The vocabulary section of the KET was also used as a measure of prior receptive vocabulary knowledge. This test contained 50 questions that focus on vocabulary and language used at KET Level (A2).

Working Memory Tests

An Arabic auditory working memory test was administered to measure the participants' working memory competence in their L1. It contained two tasks: (a) a forward digit span (FDS) to measure the phonological short-term memory (PSTM) of the children, and (b) a backward digit span (BDS) to measure their executive working memory (WM). The researcher, an Arabic native speaker, tested the participants by presenting an oral recording of a series of random numbers in Arabic at a rate of one digit per second and asked them to write down the numbers they heard in forward order in the first task and in backward order in the second task. The stimuli consisted of two lists of numbers for each consecutive sequence length. Sequences were presented in ascending series and ranged from three to nine digits. Both tests were calculated as the total of the highest number of digits that the children could repeat correctly twice.

Post-Tests

Story Comprehension Test (SC)

After listening to the story, the children were presented with a listening comprehension test, from *Tell it Again! Read-Aloud Anthology for Different Lands, Similar Stories* (2010) published by the Core Knowledge foundation. It contained six open-ended short-answer comprehension questions (see Appendix C). The participants had to write a short answer

either in English or Arabic to this question such as “to visit their grandmother for her birthday”.

Vocabulary Acquisition Tests

YES/NO Spoken-Form Recognition Test (FR)

The spoken-form recognition test tested the participants' recognition of the phonological form of the target words (see Appendix D). It was administered by presenting the participants with an oral recording of a random list of the ten substitute words that they had met in the text, plus an additional ten non-words as distractors, which were included to control for guessing. The 20 words are each repeated twice and the participants are asked to determine if they had heard the word when listening to the text by circling 'Yes' or 'No'. 'Yes' responses to target words ('hits') reflects the participant's vocabulary knowledge while 'Yes' responses to distractors ('false alarms') measures the participant's tendency to guess (Mochida and Harrington, 2006, p.74). Even though both hits and the correct rejections of distractors could be regarded as correct responses, researchers are usually interested in the number of hits (Mochida and Harrington, 2006). Therefore, scores of this test were calculated by only scoring the number of hits. This scale reached an acceptable internal consistency, with a Cronbach alpha coefficient of 0.623 (Pallant, 2010).

Multiple-Choice Meaning Recognition Test (MR)

This test is a prompted recognition four-choice test with the correct meaning and three distractors. The option (I do not know) was added to allow the students to indicate when they did not know an item so as to reduce the effect of guessing. The participants listened to an oral list of the ten target words and were asked to circle the L1 words they thought were nearest to these words in meaning. These choices were the same part of speech and were semantically related (see Appendix E). This scale has an acceptable internal consistency, with a Cronbach alpha coefficient of 0.782. Correct answers were given one point each.

Translation Test (T)

This is a meaning by translation test, also called a meaning recall test (Nation, 2001). This test presented the ten substitute words in an aural list. The participants are asked "What do these words mean? Write the meaning in Arabic." For each correct translation, one point

was awarded. This scale has an acceptable internal consistency, with a Cronbach alpha coefficient of 0.780. The test appears in Appendix F.

Procedures

Following the methodology of previous incidental learning studies, participants in this study were asked to take part in a listening task by listening to a story and answering comprehension questions. After finishing the task, they were given a surprise vocabulary test that measured their form recognition, meaning recognition, and meaning recall. The study was administered over a period of four weeks starting on the 8th of December, 2012 until the 4th of January, 2013. The children listened to the story across constant time intervals of one week between listening sessions. The story was recorded to ensure that there would be no difference in listening time for different groups. There were two recordings of the story: one with only the target words included and the other with simple English definitions given after each target word's first occurrence. The difference between the two recordings respectively for session length was small (Time 1= 7.54 min., Time 2= 8.14 min.).

Results

Effect of listening on incidental vocabulary learning

The purpose of this section is two-folded: first, it investigates the extent to which listening to an oral context (i.e. stories) could affect word retention, in terms of overall word knowledge as measured by the total gain score for the three vocabulary tests for the treatment groups (listening condition) vs. the control group (no listening condition); and second, it examines the effect of listening vs. no listening on three types of word knowledge: spoken form recognition, meaning recognition, and meaning recall.

The mean scores in Table (1) demonstrate that the treatment groups outperformed the control group in the total post-test score. Examination of the performance of the treatment and control groups in the total scores of the word acquisition tests suggested that participants did indeed learn new words from listening to the story. In addition to significant differences in total word retention, treatment groups also significantly outperformed the control group in all three types of word knowledge measured in this study: spoken form recognition, meaning recognition, and meaning recall as shown in the descriptive statistics.

Table 1: Means (Ms), standard deviations (SDs), and t-test analysis: Overall word score for treatment and control groups

Groups	N	Overall word score		Form recognition		Meaning recognition		Meaning recall	
		M	M	M	SD	M	SD	M	SD
Treatment	87	41.65	41.03	41.03	20.29	54.60	22.09	28.98	22.39
Control	26	8.85	20	20	19.39	6.54	9.36	.00	.00

An independent samples t-test, similarly, revealed that the treatment groups significantly outperformed the control group in overall word knowledge ($t(111) = 10.30, p < .001$). Participants performed significantly better in the treatment condition than in the control condition, showing that listening to meaning in an oral context does lead to gains in word knowledge. Moreover, an independent samples t-test also revealed that the treatment groups scored significantly higher in all three vocabulary post-tests: the form recognition test ($t(111) = 4.80, p < .001$), the meaning recognition test ($t(111) = 10.78, p < .001$), and the meaning recall test ($t(112) = 6.58, p < .001$).

Separate and combined effects of exposure and elaboration

Table 1: Two-way Anova (Exposure and Elaboration): Overall word knowledge

Source	Sum of Squares	df	Mean Square	<i>F-value</i>	<i>p-value</i>	η^2
Exposure	243.607	1	243.607	13.108	.001	.136
Elaboration	95.350	1	95.350	5.131	.026	.058
Exposure * Elaboration	22.767	1	22.767	1.225	.272	.015
Error	1542.547	83	18.585			

df=degrees of freedom, η^2 =partial eta squared (effect size)

A two-way ANOVA in Table 2 reveals the effects of frequency of exposure and elaboration on the increase in participants' overall word knowledge. Results found a statistical effect for the main effect of elaboration ($F(1, 83) = 5.131, p = .026$, partial eta squared = .058) and for the main effect of exposure ($F(1, 83) = 13.108, p = .001$, partial eta squared = .136). The effect size shows that elaboration accounted for $R^2 = 6\%$ of the variance in the data, which is a small effect, and exposure accounted for $R^2 = 14\%$ of the variance in

the data, which is a large effect. The main effect of the interaction between exposure and elaboration were found to be non-statistical.

Moreover, a second two-way ANOVA (Table 3) examining the effects of frequency of exposure and elaboration on the increase in participants' form recognition knowledge found a statistical effect for the main effect of elaboration only ($F(1, 83) = 3.999$, $p = .049$, partial eta squared = .046). The effect size shows that this factor accounted for $R^2 = 5\%$ of the variance in the data, which is a small effect. Neither the main effect of exposure nor the interaction between exposure and elaboration were found to be statistical.

Table 2: Two-way Anova (Exposure and Elaboration): Form recognition test

Source	Sum of Squares	f	Mean Square	<i>F-value</i>	<i>p-value</i>	η^2
Exposure	1065.416	1	1065.416	2.695	.104	.031
Elaboration	1581.229	1	1581.229	3.999	.049	.046
Exposure *						
Elaboration	.051	1	.051	.000	.991	.000
Error	32817.552	83	395.392			

df=degrees of freedom, η^2 =partial eta squared (effect size)

Table 3: Two-way Anova (Exposure and Elaboration): Meaning recognition test

Source	Sum of Squares	f	Mean Square	<i>F-value</i>	<i>p-value</i>	η^2
Exposure	533.373	1	533.373	1.207	.275	.014
Explanation	4537.925	1	4537.925	10.267	.002	.110
Exposure * Explanation	393.763	1	393.763	.891	.348	.011
Error	36684.172	83	441.978			

df=degrees of freedom, η^2 =partial eta squared (effect size)

A third two-way ANOVA (Table 4) studying the effects of frequency of exposure and elaboration on the increase in participants' meaning recognition knowledge found a statistical effect for the main effect of elaboration only ($F(1, 83) = 10.267$, $p = .002$, partial eta squared = .110). The effect size shows that elaboration accounted for $R^2 = 11\%$ of the variance in the data, which is a moderate effect. Neither the main effect of exposure nor the interaction between exposure and elaboration were found to be statistical. Table 5 shows the fourth two-way ANOVA, which investigates the effects of frequency of exposure and elaboration on the increase in participants' meaning recall knowledge. Results found a statistical effect for the

main effect of elaboration ($F(1, 84) = 5.680, p = .019$, partial eta squared = .063) and for the main effect of exposure ($F(1, 84) = 4.216, p = .043$, partial eta squared = .048). The effect size shows that elaboration accounted for $R^2 = 6.3\%$ of the variance in the data and exposure accounted for $R^2 = 5\%$ of the variance in the data, which are both small effects. Moreover, the main effect of the interaction between exposure and elaboration was found to be non-statistical.

Table 4: Two-way ANOVA (Exposure and Elaboration): Meaning recall test

Source	Sum of Squares	F	Mean Square	<i>F-value</i>	<i>p-value</i>	η^2
Exposure	1938.172	1	1938.172	4.216	.043	.048
Explanation	2611.231	1	2611.231	5.680	.019	.063
Exposure *	461.469	1	461.469	1.004	.319	.012
Explanation						
Error	38614.740	84	459.699			

df=degrees of freedom, η^2 =partial eta squared (effect size)

Effects of Instructional, Linguistic and Cognitive factors on Incidental Vocabulary Retention

This section reports the results of the final aspect of the study – the impact of frequency of exposure, +/- elaboration, and individual differences on vocabulary retention. Using objective testing (regression analysis) is necessary to determine the extent to which these four factors – prior vocabulary, listening competence, phonological short-term and working memory – have a differential impact on the vocabulary post-test scores in comparison to the effect of the main instructional factors – elaboration and exposure. The multiple Linear Regressions and the simple Linear Regression were applied to compare the effects of the two independent variables (elaboration and exposure) and the four mediator variables (prior vocabulary, listening, phonological short-term and working memory) on form and meaning retention.

First, the results of the main effects of the six factors on the overall word knowledge (total scores of all three post-tests) are presented in Table (6). In overall word knowledge, Table 6 reveals significant relationships between the two factors – elaboration and listening – and the total scores: $F(1, 87) = 13.24, p < .001$ for ELAB; $F(1, 87) = 5.63, p = .020$ for LIST. However, the main effects for the other four factors – exposure, vocabulary, phonological

short –term memory, and working memory – are not significant.

Table 5: Comparative fixed effects of the six factors: Overall word knowledge

Source	Numerator df	F	F-value	p-value
Elaboration (ELAB)	1	87	13.243	.000
Exposure (EXP)	1	87	3.706	.057
Vocabulary (VOC)	1	87	3.772	.055
Listening (LIST)	1	87	5.626	.020
Phonological Short-term Memory (PSTM)	1	82	.013	.909
Working Memory (WM)	1	82	.021	.886

Since the effect for four factors were insignificant, the Simple Regression was performed only for the two significant factors in order to determine which one better predicted the total scores. The results are shown in Table 7. ELAB clearly appears to be the best predictor for the total post-test scores as its Beta-value (β) was the highest (.363); whereas LIST was the second best predictor ($\beta = .246$).

Table 6: Comparative Beta-values: Overall word knowledge

Source	B	SE	β	p-value
Elaboration (ELAB)	3.431	.943	.63	.000
Listening (LIST)	.767	.323	.246	.020

Based on the results of the multiple and simple regression analyses, it could be proposed that providing explicit elaboration of the meanings of new words by means of definitions had the strongest impact on vocabulary retention. Listening competence was also significant with less powerful effect.

Following the report on overall word knowledge, the results of the main effects for the six factors on the outcomes of the three vocabulary post-tests individually are presented in Table (8) to Table (13). In word-form knowledge, Table 8 reveals significant relationships between only one factor – elaboration– and the form recognition scores: $F(1, 88) = 4.502$, $p = .037$. However, the main effects for the other five factors – EXP, VOC, LIST, PSTM, and WM – are not significant. A Simple Regression analysis showed that ELAB was the only significant predictor for the form recognition scores with a Beta-value (β) of .221.

Table 7: Comparative fixed effects of the six factors: Form recognition test

Source	Numerator df	F	F-value	p-value
Elaboration (ELAB)	1	88	4.502	.037
Exposure (EXP)	1	88	2.599	.111
Vocabulary (VOC)	1	88	1.051	.308
Listening (LIST)	1	88	.379	.540
Phonological Short-term Memory (PSTM)	1	83	.111	.740
Working Memory (WM)	1	83	.008	.928

Table 8: Beta-values: Form recognition test

Source	B	SE	β	p-value
Elaboration (ELAB)	.884	.417	.221	.037

In word-meaning knowledge, Table 9 reveals significant relationships between the two factors – elaboration and listening – and the meaning recognition scores: $F(1, 91) = 11.43$, $p = .001$ for ELAB; $F(1, 91) = 7.35$, $p = .008$ for LIST. However, the main effects for the other four factors – EXP, VOC, PSTM and WM – are not significant.

Table 9: Comparative fixed effects of the six factors: Meaning recognition test

Source	Numerator df	F	F-value	p-value
Elaboration (ELAB)	1	91	11.430	.001
Exposure (EXP)	1	91	.335	.564
Vocabulary (VOC)	1	91	3.221	.076
Listening (LIST)	1	91	7.349	.008
Phonological Short-term Memory (PSTM)	1	86	.315	.576
Working Memory (WM)	1	86	.037	.847

Therefore, a Simple Regression was performed only for the two significant factors to see which one better predicted the scores. Table 11 shows that ELAB seems to be the best predictor for the meaning recognition scores with a higher Beta-value ($\beta = .334$); followed by LIST as the second best predictor ($\beta = .273$).

Table 10: Comparative Beta-values: Meaning recognition test

Source	B	SE	<i>B</i>	<i>p</i> -value
Elaboration (ELAB)	1.476	.437	.334	.001
Listening (LIST)	.401	.148	.273	.008

In word-meaning recall, Table 12 reveals significant relationships between only one factor – elaboration– and the translation scores: $F(1, 92) = 7.153$, $p = .009$. However, the main effects for the other five factors – EXP, VOC, LIST, PSTM, and WM – are not significant.

Table 11: Comparative fixed effects of the six factors: Meaning recall test

Source	Numerator df	F	F-value	<i>p</i> -value
Elaboration (ELAB)	1	92	7.153	.009
Exposure (EXP)	1	92	3.539	.063
Vocabulary (VOC)	1	92	2.299	.133
Listening (LIST)	1	92	2.372	.127
Phonological Short-term Memory (PSTM)	1	87	.217	.643
Working Memory (WM)	1	87	.169	.682

A Simple Regression analysis showed that ELAB was the only significant predictor for the translation scores with a Beta-value (β) of .269 (see Table 13).

Table 12: Beta-values: Meaning recall test

Source	B	SE	<i>B</i>	<i>p</i> -value
Elaboration (ELAB)	1.201	.449	.269	.009

Discussion

Results of this study suggest that words can be learned incidentally from a controlled and structured listening activity. It lends support to previous L1 and L2 studies which show that children can ‘pick up’ new words from listening to stories. It also adds to the scarce literature on young EFL learners’ vocabulary learning from oral input. This study also confirms that oral input provides important contextual support for young EFL learners to acquire different types and degrees of word knowledge. Children in treatment conditions in

the present study learned the phonological form of 41% of the target words. They also were able to recognize the meaning of 55% of the new words and recall the meaning of 29% of the target words in all treatment conditions. However, they differed in the proportion of their retention of word form and meaning and their degree of word knowledge according to the different treatments they received.

Findings also revealed that providing explicit elaboration (i.e. L2 definitions) of target words during listening seems to facilitate the learning of their form and their meaning (i.e. form-meaning connections). In other words, children who were provided with an oral definition of the target words were able to recognize their form and meaning and also recall their meanings better than those who learned by inferring from context only. This is line with previous L1 research that showed that vocabulary learning increased significantly (and sometimes doubled) when explanations were provided for the children (Elley, 1989; Reese & Cox, 1999; Senechal, 1997; Senechal, Thomas, & Monker, 1995; Brett, Rothlein, & Hurley, 1996; Penno, Wilkinson, & Moore, 2002; Beck & McKeown, 2007). These findings could also lend support to previous literature that have argued for the importance of learner attention or 'noticing' as a crucial factor in incidental learning (e.g. Schmidt, 1994; Hulstijn, 2003). Noticing has been coined by Schmidt (1994) as the conscious registration of the occurrence of a stimulus. Within this framework, noticing involves attention and a low level of awareness, results in intake, and is considered crucial and necessary for learning to take place. However, Schmidt (2001) explains that what is relevant may not be if awareness is necessary or not, but rather the fact that more awareness results in more learning.

Moreover, frequency of exposure was a significant factor in the recall of word meaning. Meanings were better remembered as a result of both repeated listening and repeated occurrences of the target words. Studies have found that multiple encounters are beneficial for children to gain more than a temporary or surface level understanding of new vocabulary, whether these encounters are provided in repeated occurrences of the word within a story or in repeated readings of the same story (Elley, 1989; Justice, Meier, & Walpole, 2005; Penno et al., 2002; Senechal, 1997; Wilkinson & Houston-Price, 2013).

Results also revealed that elaboration was the best predictor of word retention in all three types of vocabulary knowledge out of all the instructional and learner factors investigated in the study. Providing definitions of the new words played an important facilitating role in children's word learning, regardless of their individual differences in

linguistic and cognitive abilities. Prior vocabulary did not seem to play a significant role in the participants' vocabulary learning which suggests that both children with high and low levels of prior vocabulary were able to acquire new words from listening. Research has suggested that elaborated exposure to new words in stories may narrow the gap between children with high and low vocabulary knowledge (Coyne, Simmons, Kame'enui & Stoolmiller, 2004). Phonological short-term and working memory also did not seem to have a significant affect on the children's vocabulary learning in this study. This supports research that claims that as a learners' language proficiency develops, the less they rely on their short-term memory to remember words. Gathercole and Baddeley (1993) suggest that the role of phonological short-term memory is probably most significant when beginning to learn another language because there is usually little other relevant knowledge to relate new forms to. The only learner factor that appeared to have a mediating effect on students' vocabulary learning was listening competence. Results of the regression analysis revealed that the children's listening ability was the second best predictor of their meaning recognition after the availability of elaboration. This suggests that learners with better L2 listening skills were able to learn the form-meaning connections better than those with lower listening competence. Studies have found statistically significant differences in strategy use in which skilled listeners reported larger use of strategies such as comprehension monitoring and questioning elaboration, while less-skilled listeners reported more use of on-line translation (e.g. O'Malley & Chamot 1990; Goh 2002; Vandergrift 2003; Chamot 2005). An exclusive bottom-up approach to L2 listening does not leave L2 listeners with adequate attentional resources to construct meaning (Vandergrift, 2007).

Conclusions

The present study has revealed several important findings and implications. Firstly, it supports the notion that words can be learned incidentally from oral context. The data suggests that more new words appear to be learned from a repeated reading than a single reading context. Moreover, providing verbal explanation of the new words significantly facilitates the construction of meaning to which the new word can be fast mapped. Secondly, the test type affects the gain scores that are shown from listening. Hence, researchers should be careful about only selecting multiple-choice tests to validate the learning of vocabulary.

Finally, individual differences in listening competence appear to play a significant role in word learning. Children with higher listening competence were better at recognizing meanings of new words. This supports previous research that has reported that lower-proficiency listeners had more difficulty with word recognition and word segmentation skills than higher-proficiency listeners (Goh, 2000; Hasan, 2000). Therefore, it is recommended to combine instruction in (bottom-up) word segmentation skills and (top-down) compensatory strategies such as inferencing when teaching listening skills for children.

References

- Beck, I. & M. McKeown (2007). Increasing young low-income children's oral vocabulary repertoires through rich and focused instruction. *The Elementary School Journal*, 107(3): 251-271.
- Brett, A., L. Rothlein & M. Hurley (1996). Vocabulary acquisition from listening to stories and explanations of target words. *The Elementary School Journal*, 96(4): 415-422.
- Brown, R, R Waring & S Donkaewbua (2008). Incidental vocabulary acquisition from reading, reading-while-listening, and listening to stories. *Reading in a Foreign Language*, 20(2): 136-163.
- Chamot, A.U. (2005). Language learning strategy instruction: Current issues and research. *Annual Review of Applied Linguistics*, 25, 98–111.
- Collins, M. (2010). ELL preschoolers' English vocabulary acquisition from storybook reading. *Early Childhood Research Quarterly*, 25: 84-97.
- Collins, M. (2005). ESL preschoolers' English vocabulary acquisition from storybook reading. *Reading Research Quarterly*, 40(4): 406-408.
- Core Knowledge Foundation (2010). Tell It Again! Read-Aloud Anthology: Different Lands, Similar Stories. Core Knowledge Foundation Website. <<http://www.coreknowledge.org/ckla>>.
- Coyne, M. D., Simmons, D. C., Kame'enui, E. J., & Stoolmiller, M. (2004). Teaching vocabulary during shared storybook readings: An examination of differential effects. *Exceptionality*, 12, 145–162.

- Eller, R., Pappas, C. & Brown, E. (1988). The lexical development of kindergarteners: learning from written context. *Journal of Reading Behaviour*, 20: 5-24.
- Elley, W. B. (1980). A comparison of content-interest and structuralist reading programs in Nuie primary schools. *New Zealand Journal of Educational Studies*, 15: 30-55.
- Elley, W. B. & Mangubhai, F. (1983). The impact of reading on second language learning. *Reading Research Quarterly*, 19: 53-67.
- Elley, W. B. (1989). Vocabulary acquisition from listening to stories. *Reading Research Quarterly*, 24(2): 174-187.
- Ellis, R. (1999). *Learning a second language through interaction*. Amsterdam: Philadelphia: John Benjamins Publishing Company.
- Ellis, R. (1995). Modified oral input and the acquisition of word meanings. *Applied Linguistics*, 16: 409-441.
- Gathercole, S. E. & Baddeley, A. D. (1993). *Working Memory and Language*. Hove, New Jersey: Lawrence and Erlbaum.
- Goh, C. (2000). A cognitive perspective on language learners' listening comprehension problems. *System*, 28: 55-75.
- Goh, C. (2002). *Teaching listening in the language classroom*. Singapore: SEAMEO Regional Language Centre.
- Hasan, A. (2000). Learners' perceptions of listening comprehension problems. *Language, Culture and Curriculum*, 13: 137-153.
- Huckin, T. & J. Coady, J. (1999). Incidental vocabulary acquisition in a second language: A review. *Studies in Second Language Acquisition*, 21: 181-193.
- Hulstijn, J. H. (2003). Incidental and intentional learning. In C. Doughty & M. H. Long (Eds.), *The handbook of second language research* (pp. 349-381). London: Blackwell.
- Justice, L. M., Meier, J., & Walpole, S. (2005). Learning new words from storybooks: An efficacy study with at-risk kindergartners. *Language, Speech & Hearing Services in Schools*, 36, 17-32.
- Milton, J. (2009). *Measuring Second Language Vocabulary Acquisition*. Bristol: Multilingual Matters.
- Mochida, K. & Harrington, M. (2006). The Yes/No test as a measure of receptive vocabulary knowledge. *Language Testing*, 23(1): 73-98.

- Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge: Cambridge University Press.
- Nation, I. S. P. (2007). The four strands. *Innovation in Language Learning and Teaching*, 1(1), 1-12.
- O'Malley, J. M. & A. U. Chamot (1990). *Learning strategies in second language acquisition*. Cambridge: Cambridge University Press.
- Pallant, J. (2010). *SPSS Survival Manual: A step by step guide to data analysis using the SPSS program*. England: Open University Press.
- Paribakht, T. S. & Wesche, M. (1997). Vocabulary enhancement activities and reading for meaning in second language vocabulary acquisition. In J. Coady & T. Huckin (Eds.), *Second language vocabulary acquisition: A rationale for pedagogy* (pp. 174-199). New York: Cambridge University Press.
- Penno, J., Moore D. & Wilkinson, I. (2002). Vocabulary acquisition from teacher explanation and repeated listening to stories: do they overcome the Matthew effect? *Journal of Educational Psychology*, 94(1): 23-33.
- Reese, E. & A. Cox. (1999). Quality of adult book reading affects children's emergent literacy. *Developmental Psychology*, 35(1): 20-28.
- Robbins, C. & Ehri, L. C. (1994). Reading storybooks to kindergartners helps them learn new vocabulary words. *Journal of Educational Psychology*, 86(1): 54.
- Schmidt, R. (1994). Implicit learning and the cognitive unconscious: of artificial grammars and SLA. In N. Ellis (Ed.), *Implicit and explicit learning of languages* (pp.165-209). London: Academic Press.
- Schmidt, R. (2001). Attention. In P. Robinson (Ed.), *Cognition and second language instruction* (pp.3-32). Cambridge: Cambridge University Press.
- Senechal, M. (1997). The differential effect of storybook reading on preschoolers' acquisition of expressive and receptive vocabulary. *Journal of Child Language*, 24: 123-138.
- Senechal, M., E. Thomas & Monker, J. (1995). Individual differences in 4-year-old children's acquisition of vocabulary during storybook reading. *Journal of Educational Psychology*, 87(2): 218-229.
- Stahl, S. & Fairbanks, M. (1986). The effects of vocabulary instruction: A model-based meta-analysis. *Review of Educational Research*, 56: 72-110.

- Vandergrift, L. (2003). From prediction through reflection: Guiding students through the process of L2 listening. *The Canadian Modern Language Review*, 59.3, 425–440.
- Vandergrift, L. (2007). Recent developments in second and foreign language listening comprehension research. *Language Teaching*, 40 (3), pp. 191 - 210
- Van Zeeland, H. and Schmitt, N. (2013). Incidental vocabulary acquisition through L2 listening: A dimensions approach. *System*, 41: 609-624.
- Vidal, K (2003). Academic listening: A source of vocabulary acquisition? *Applied Linguistics*, 24(1): 56-86.
- Vidal, K. A. (2011). Comparison of the effects of reading and listening on incidental vocabulary acquisition. *Language Learning*, 61(1) (2011): 219-258.
- Waring, R. and Takaki, M. (2003). At what rate do learners learn and retain new vocabulary from reading a graded reader? *Reading in a Foreign Language*, 15(2).
- Wilkinson, K. S., & Houston-Price, C. (2013). Once upon a time, there was a pulchritudinous princess...: the role of word definitions and multiple story contexts in children's learning of difficult vocabulary. *Applied Psycholinguistics*, 34 (3), p.591-613.
- Young, E. (1989). *Lon Po Po: A Red Riding Hood Story from China*. Penguin Putnam Books for Young Readers.

Appendices

Appendix A. The list of English words, their substitute word equivalents, definitions, and Arabic translation

No.	English Word	Substitute word	Definition	Arabic Translation
1	House (n.)	Windle	a building in which people live.	منزل
2	Latch (v.)	Vack	to close and lock with a bar.	يقفل
3	Old (adj.)	Greal	lived for many years; not young.	عجوز
4	Clever (adj.)	Tantic	smart and clever.	ذكي
5	Top (adj.)	Mear	the highest area or point.	أعلى
6	Taste (n.)	Sind	the taste of something.	طعم
7	Pluck (v.)	Mork	to take with the fingers and pull off; pick.	يقطف
8	Shout (v.)	Tance	to call out (or speak) loudly.	ينادي
9	Touch (v.)	Prink	to feel something with your hand or fingers.	يلمس
10	Pull (v.)	Nase	to bring something closer to you by using force.	يسحب

Appendix B: Extracts from the Story

Version 1: Story with non-words only

Once, long ago, there was a woman who lived alone in the country with her three children, Shang, Tao, and Paotze. On the day of their grandmother's birthday, the good mother went to see her, leaving the three children at their **windle**.

Before she left, she said, "Be good while I am away, my heart-loving children; I will not return tonight. Remember to close the door tight at night and **vack** it well."

But a **greal** wolf lived nearby and saw the good mother leave. At night, pretending to be a **greal** woman, he came up to the **windle** of the children and knocked on the door twice: bang, bang.

Version 2: Story with non-words and added definitions

Once, long ago, there was a woman who lived alone in the country with her three children, Shang, Tao, and Paotze. On the day of their grandmother's birthday, the good mother went to see her, leaving the three children at their **windle** (*Windle is a building in which people live*).

Before she left, she said, "Be good while I am away, my heart-loving children; I will not return tonight. Remember to close the door tight at night and **vack** it well." (*Vack means to close and lock with a bar*).

But a **greal** wolf lived nearby and saw the good mother leave. (*Greal means lived for many years; not young*). At night, pretending to be a **greal** woman, he came up to the **windle** of the children and knocked on the door twice: bang, bang.

Appendix C: Listening Comprehension Test

Answer the following questions about the story:

1. Why does the mother leave her three children alone at the beginning of the story?

To visit their grandmother for her birthday.

2. Who does the wolf pretend to be?

The children's Po Po, or grandmother.

3. What does the wolf want with the children?

He wants to eat them.

4. How does Shang discover that the wolf is not really their Po Po?

She feels the wolf's bushy tail and sharp claws, and when she lights the candle briefly, she sees his hairy face.

5. What is Shang's clever plan to keep the wolf from eating the children?

Getting the wolf to want the ginkgo nuts; she tells him they are magical and can make him live forever.

6. Why do the three children climb the ginkgo tree?

To get away from the wolf; to get closer to the ginkgo nuts.

Appendix D: Spoken-Form Recognition Test

Listen to a list of words and tell me if you have heard any of them in the story. Circle the answer YES or NO.

Windle	1.	YES	NO
Rimple	2.	YES	NO
Vack	3.	YES	NO
Greal	4.	YES	NO
Yoot	5.	YES	NO
Blund	6.	YES	NO
Tance	7.	YES	NO
Toker	8.	YES	NO
Prink	9.	YES	NO
Tantic	10.	YES	NO
Tring	11.	YES	NO
Sind	12.	YES	NO
Mand	13.	YES	NO
Cadle	14.	YES	NO
Smorty	15.	YES	NO
Mear	16.	YES	NO
Palk	17.	YES	NO
Mork	18.	YES	NO
Jurg	19.	YES	NO
Nase	20.	YES	NO

Appendix E: Multiple Choice Meaning Recognition Test

Listen to a list of words and circle the word with the nearest meaning to the word you hear.

Windle	لا أعلم	سوق	حديقة	منزل	مدرسة	1
Vack	لا أعلم	يصلح	يكسر	يفتح	يقفل	2
Greal	لا أعلم	حزين	عجوز	صغير	سعيد	3
Tance	لا أعلم	يضحك	يسأل	يغني	ينادي	4
Prink	لا أعلم	يسمع	يشاهد	يلمس	يشم	5
Tantic	لا أعلم	جميل	غني	هادئ	ذكي	6
Sind	لا أعلم	شكل	طعم	صوت	رائحة	7
Mear	لا أعلم	أيسر	أيمن	أسفل	أعلى	8
Mork	لا أعلم	يأكل	يطبخ	يقطف	يزرع	9
Nase	لا أعلم	يأخذ	يدفع	يعطي	يسحب	10

Appendix F: Translation Test

Listen to a list of words and write the meaning of each word in Arabic.

Windle	منزل ، بيت ، سكن ، دار	1.
Vack	يقفل ، يعلق	2.
Greal	عجوز ، كبير في السن	3.
Tance	ينادي، بصيح ، يصرخ	4.
Prink	يلمس ، يحس	5.
Tantic	ذكي ، نبیه	6.
Sind	طعم ، ذوق	7.
Mear	أعلى ، فوق	8.
Mork	يقطف ، يأخذ ، ينزع	9.
Nase	يسحب ، يشد	10.