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The Impact of Topic Interest, L2 Proficiency, and Gender on L2 Incidental Vocabulary Acquisition through Reading

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on L2 Incidental Vocabulary Acquisition through Reading

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Dedication

To God and my Lord, Jesus Christ

and

To my parents

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The Impact of Topic Interest, L2 Proficiency, and Gender
on L2 Incidental Vocabulary Acquisition through Reading

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Second language (L2) research has explored various factors promoting vocabulary learning through reading due to its critical role in L2 language and literacy development. One neglected factor is topic interest—interest learners have in the texts they read—a motivational factor purported to contribute to higher involvement with reading tasks and, in turn, incidental vocabulary learning. The present study explored this gap and expanded on the motivational factors considered in the involvement load hypothesis (Laufer & Hulstijn, 2001).

Using a repeated-measures design with 135 Korean EFL students, the study investigated the effects of topic interest, alongside L2 proficiency and gender, on vocabulary learning through reading. Materials included two brief expository passages (one of low, and one of high interest). Control variables included topic familiarity (both highly-familiar topics) and target-word difficulty (a balanced ratio across passages between nouns, verbs, and adjectives of matching word length and concreteness). The study was conducted over several sessions. Students first took a pretest on 30 target

words. Two weeks later, students read both passages and took immediate vocabulary posttests (word-form recognition, translation recognition, and translation production). Four weeks later, similar delayed posttests were administered. The data were analyzed using a repeated-measures MANCOVA and GEE.

Results revealed significant positive effects of topic interest and L2 proficiency, whereby learners gained significantly more new words from the high-interest topic text and more gains were associated with higher proficiency. A nonsignificant interaction between topic interest and L2 proficiency suggested that the effect of topic interest was consistent for higher and lower proficiency learners. A significant interaction between gender and topic interest revealed that boys acquired fewer words than girls on the low-interest topic text. These results were maintained over time.

By highlighting the neglected variable of topic interest, the results expand upon the involvement load hypothesis in considering both motivational and cognitive factors in incidental vocabulary learning. They also advance language educators' understanding of the facilitative role of topic interest in students' vocabulary growth. This study's pedagogical insights on how gender is connected to topic selection will aid teachers in enhancing individual learners' successful L2 reading and vocabulary development.

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CHAPTER 1:   INTRODUCTION

It is impossible to listen, speak, read, or write without the mediation of vocabulary. As "the building block of language" (Schmitt, Schmitt, & Clapham, 2001, p. 55), vocabulary is considered essential in learning a second or foreign language. Even though language learners may not have a strong grasp of basic grammar rules, vocabulary use—in any form—enables many kinds of general communication. Furthermore, researchers have found that vocabulary is a critical determinant of literacy development (Horst, 2005; Lervåg & Aukrust, 2010), substantially impacting students' academic and professional success, especially in English as a second/foreign language contexts. Given the central role of vocabulary in fostering communicative competence and overall language proficiency, determining ways to encourage successful vocabulary learning remains a significant issue for language learners, teachers, and researchers.

Reading represents a major avenue of vocabulary acquisition as well as an advantageous approach to word knowledge development. A number of first language (L1) and second language (L2) studies have demonstrated that words learned from reading constitute a substantial proportion of students' vocabulary growth (e.g., Krashen, 1989; Kweon, & Kim, 2008; Nagy, Herman, & Anderson, 1985; Pigada & Schmitt, 2006; Saragi, Nation, & Meister, 1978). For instance, in L1 research, Nagy et al. (1985) have shown that the probability of learning an unknown word from a single exposure through reading to be approximately 11% − 15%, which means that a typical middle school

student learns about 3,000 – 4,000 new words per year through reading. Given that the average high school senior acquires approximately 40,000 words (Nagy & Herman, 1987), which is a number too large to be taught or looked up in a dictionary, reading is considered to be a main source of vocabulary development. In L2 research, Pigada and Schmitt (2006) have highlighted the significance of lexical knowledge gained from written texts by showing that learners acquire up to 65% of new words through reading. Such empirical studies provide convincing evidence of vocabulary acquisition through reading.

From a pedagogical standpoint, vocabulary development through reading has a range of benefits, including the fact that it enables learners to build essential vocabulary in meaningful contexts and in pleasurable, leisurely manner. It also provides an opportunity to consolidate word knowledge through repeated exposure while developing depth of vocabulary knowledge (Pellicer-Sanchez & Schmitt, 2010; Pigada & Schmitt, 2006). Therefore, language teachers and researchers consider reading an indispensable dimension of vocabulary instruction (Nation, 2008; Schmitt, 2008; Schouten-van Parreren, 1995).

Because of the significance of reading-based vocabulary building, researchers have closely scrutinized modeling L2 lexical development through reading. In particular, L2 vocabulary research has devoted considerable attention to the factors that facilitate this process. Previous studies have identified several factors that influence word learning through reading, including frequency (Rott, 1999), context (Webb, 2008), and

background knowledge (Pulido, 2003; 2004; 2007). One factor researchers have neglected, however, is topic interest[1], or the interest a learner has in the text he or she reads. Because affective and cognitive variables are intertwined in learning (Hidi, Renninger, & Krapp, 2004), topic interest seems to necessitate further exploration for the sake of advancing both theoretical models and instructional practices for vocabulary development.

The idea that interest promotes learning has been well-documented in theoretical literature. In the early 19th century, Herbart (as cited in Schiefele, 1992) posited a very close relationship between interest and learning by asserting that interest is the primary force behind learners' full understanding and retention of knowledge, their meaningful engagement in the learning process, and their desire to continue learning. In the early 20th century, Dewey (1913) theorized about the relationship between interest and learning and postulated differential results from learning with or without interest. Piaget (1954/1981) also claimed that intellectual functioning depends, in part, on affective factors, including interest. More recently, Hidi (1990) supported this position by arguing that interest has "a profound facilitative effect on cognitive functioning and learning" (p. 549) because "interest is central to determining how we select and persist in processing certain types of information in preference to others" (p. 565). On the whole, this line of theoretical literature seems to advocate for the possible facilitative role of topic interest in L2 vocabulary acquisition through reading.

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[1] Topic interest is referred to as the "interest triggered when a specific topic or theme is presented" (Hidi, 2001, p.194)

Empirically, scholars have investigated the hypothesis that interest enhances learning in the area of reading comprehension research extensively. For instance, learners' interest in the texts that they read (i.e., topic interest) has been found to have a significant effect on immediate and long-term recall of the text (Erçetin, 2010; Lee, 2009; Sadoski & Quast, 1990; Shirey & Reynolds, 1988; Wade & Adams, 1990). Research also indicates that topic interest can predict the quality of the reading process, such as increased attention and concentration (Schiefele, 1996), while influencing students' affect, persistence with the texts, and reading comprehension (Ainley, Hidi, & Berndorff, 2002). Given the positive impact of topic interest on reading comprehension, one might expect it to facilitate vocabulary learning, which is an outgrowth of reading.

Thus, the present study focuses on the pedagogical potential of topic interest on L2 vocabulary acquisition through reading, which has been intuitively appealing but empirically untested. This research is motivated by Schmitt's (2010) exhortation: "anything that leads to more and better engagement should improve vocabulary learning…thus, promoting engagement is the most fundamental task for teachers and material writers" (p. 29). Given that reading-based vocabulary building is an essential process in L2 development (Nation, 2008; Schmitt, 2008), learners' genuine interest in the texts that they read (i.e., topic interest) holds considerable potential in L2 pedagogy because it can lead to engagement in reading and subsequent vocabulary growth. Furthermore, illuminating the neglected role of this affective variable will help expand previous studies' limited theoretical models of L2 lexical development through reading,

thereby providing a more precise explanation of the process. As such, the present study seeks to explore the effects of topic interest on L2 vocabulary acquisition through reading. To further understand the possible relationship between topic interest and L2 incidental vocabulary learning, the following section focuses on the overview of theoretical frameworks regarding how learners acquire new words through reading and how topic interest can impact the process.

1.1. Conceptual and Theoretical Frameworks

1.1.1. Theoretical overview of vocabulary development through reading

A large body of theoretical and empirical research suggests that the mechanism for acquiring vocabulary through reading requires learners' mental effort during text processing. This mental effort is required because learners selectively attend to the new words encountered and use a variety of strategies and knowledge sources to figure out the meaning of new words from context (Ellis, 1994; Paribakht & Wesche, 1999). In an attempt to describe this process of L2 vocabulary acquisition while reading, Ellis (1995) outlined the following cognitive steps: "(i) noticing that the word is unfamiliar, (ii) making attempts to infer the word from context…(iii) making attempts to consolidate this new understanding by repetition and associational learning strategies" (Ellis, 1995, p. 107). Because words are acquired through this cognitive endeavor, he emphasized that memory of words is "clearly affected by the depth of processing and the degree to which subjects analyse meaning" (Ellis, 1995, p. 110).

Elaborating on this explanation, de Bot, Paribakht, and Wesche (1997) proposed a theoretical model that illustrates how L2 lexical knowledge can be acquired from written input by adapting Levelt's model of L1 speech processing (1989; 1993). According to their model, the process begins by initially noticing the form of an unknown word; it then moves to activating semantic and syntactic information, and, finally, matching it with a concept. When an unknown word is encountered, "the string of letters that are read [first] has to be matched with a lexeme [i.e., morphological and phonological information]. This form must then activate a lemma [i.e., the semantic and syntactic information]" (de Bot et al., 1997, p. 316). In this step, readers may draw on a range of information types in order to make form-meaning connections. For instance, readers may notice morphemes that indicate the part of speech or meaning elements and gather semantic knowledge from context. Learners may also use the syntax of the sentence, which "reveals the argument structure of the lexical items" (p. 316) to infer the word meaning, a process that the authors refer to as "syntactic bootstrapping" (p. 317). Using syntactic bootstrapping, learners may use SVO (subject-verb-object) as an argument structure in guessing the meaning of verbs. In the sentence *Susan snoozed the alarm*, learners may identify Susan as the subject, the alarm as the object, and *snooze* as the verb. Then, learners apply their knowledge about what people typically do with alarms (e.g., set them, turn them off, etc.). As shown in this example, when a word is unfamiliar, learners can establish a form-meaning connection through these bootstrapping processes. Here, semantic information in a lemma comes from copying the learner's existing concepts because the lemma's

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formal characteristics alone do not reveal precise conceptual information. When a lemma is activated and matched with a concept, the new form-meaning mapping occurs, and is integrated into the learner's mental lexicon (de Bot et al., 1997).

What can be drawn from the two explanations above is that for an unfamiliar word to be learned, readers must first notice the lexical form and adequately process it. Moreover, attention must be allocated to the connection between a word's form and its referent in order to construct meaning (de Bot et al., 1997). Here, the quality of text processing is what is important for L2 vocabulary acquisition through reading (Ellis, 1995; de Bot, et al. 1997). Paribakht and Wesche (1999) add that a reader's degree of effort in understanding the text often brings about greater depth of processing. It also influences reading comprehension and promotes word learning from written texts. L1 and L2 research empirically support these propositions, indicating that vocabulary acquisition is greatly affected by levels of text comprehension (Diakidoy, 1998; Eldredge et al., 1990; Jacob et al., 1994; Pulido, 2004; Pulido & Hambrick, 2008; Rott, 1997). In other words, the depth and quality of text processing influences the degree to which form-meaning connections are made for newly acquired words; the relative strength of form-meaning connections, in turn, affects learners' ability to remember and recall new words (Pulido, 2004). In the following section, theories on depth of processing and vocabulary acquisition will be discussed further in order to better understand their relationships.

1.1.2. Depth of processing and the involvement load hypothesis

The field of psychology has proposed an important concept related to vocabulary learning: depth of processing (Craik & Lockhart, 1972; Craik & Tulving, 1975). This concept maintains that retention of a word in long-term memory is dependent upon depth of processing, where "depth" refers to a "degree of semantic or cognitive analysis" (Craik & Lockhart, 1972, p. 675). Craik and Tulving (1975) expanded on the depth-of-processing concept by adding the notion of elaboration, which means that "what is critical to retention is not simply the presence or absence of semantic encoding, but also the richness with which the material is encoded" (as cited in Hulstijn & Laufer, 2001, p. 540). The depth of processing theory has implications for vocabulary acquisition through reading in that it explains why learning new words in meaningful texts enhances retention. In addition, the theory draws attention to the factors influencing deeper text processing during reading tasks, predicting that deep processing can promote word learning from written texts.

However, critics have argued that the depth-of-processing proposal lacks the necessary rigor to distinguish among various degrees of processing (Hulstijn, 2001; Hulstijn & Laufer, 2001; Laufer & Hulstijn, 2001). Laufer and Hulstijn (2001) have pointed out the drawbacks of this hypothesis by raising the following questions: "(1) what exactly constitutes a 'level' of processing, and (2) how do we know that one level is 'deeper' than another?" (p. 5). For the purpose of offering a more measurable description

of depth of processing with reference to L2 incidental vocabulary acquisition, Laufer and Hulstijn (2001) proposed the "involvement load hypothesis."

This proposal was grounded in depth of processing theory (Craik & Lockhart, 1972), but it also departed from it in two important ways. First, Laufer and Hulstijn (2001) expanded the earlier theory's focus on cognitive factors: they included both cognitive and motivational components, both of which play an important role in human learning. In addition, in order to operationalize depth of processing, they adopted "a bottom-up approach" (p. 22) by consulting not only the theories of deep processing but also empirical research that points to a variety of factors conducive to successful retention of words. The resulting involvement load hypothesis posits that a learner's amount of involvement in a given task will affect their retention of unfamiliar vocabulary.

The involvement load hypothesis (Laufer & Hulstijn, 2001) offers a more precise set of constructs than earlier depth-of-processing studies. The construct of involvement is comprised of three components: need, search, and evaluation. The *need* component is "the motivational, non-cognitive dimension of involvement" (p. 14). Need can occur in two degrees of prominence: need is *moderate* when it is extrinsically motivated, and it is *strong* when intrinsically motivated. In contrast, search and evaluation comprise the cognitive dimension of involvement. *Search* is "the attempt to find the meaning of an unknown L2 word" (p. 14), while e*valuation* requires making a decision about the "semantic and formal appropriateness (fit) of the word" (p. 15) within the context. The

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involvement load hypothesis suggests that the combination of the degrees of involvement in these three components (need, search, and evaluation), as induced by a task, predicts a learner's level of involvement in the task and subsequent retention of words. Hence, Laufer and Hulstijn (2001) proposed that "words which are processed with higher involvement load will be retained better than words which are processed with a lower involvement load" (p. 15).

Because it adds a motivational dimension to L2 incidental vocabulary acquisition, the involvement load hypothesis provides a valuable theoretical framework to explain the role of topic interest in L2 lexical development through reading. Based on Gray's (1999) observation, Laufer and Hulstijn (2001) argue that "human beings…are…not just information-processing devices but they also possess motives and emotions" (p. 6). These motivational and affective factors influence how people select and process certain information according to preference. As the hypothesis states, it can be assumed that learners' intrinsic interest in the topic of the text can lead to a higher degree of involvement, which reflects the learners' greater motivation. This enhanced motivational component, along with the cognitive components of search and evaluation, can increase overall involvement with the reading task. This stronger overall involvement with a more interesting text can result in better retention of new lexical items. Thus, the current study focuses on the affective factors that can increase the involvement in a reading task in an effort to promote better word retention. Specifically, it explores the dimension of learners' interest in the texts that they read—namely, topic interest.

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1.2. Statement of the Problem

Due to its theoretical and pedagogical significance, identifying the factors that facilitate vocabulary growth through reading has been a prominent issue in L2 vocabulary research. Thus, previous research has modeled L2 vocabulary acquisition through reading by considering several factors (e.g., background knowledge) in an aim to better understand the process and thereby improve instructional practices. However, although both affective and cognitive factors are closely related in learning (Hidi et al., 2004), these models have neglected affective variables. The aforementioned theories suggest that a learner's intrinsic motivation (e.g., as triggered by topic interest) can increase the amount of involvement in reading tasks. This involvement, in turn, increases a learner's cognitive effort to establish form-meaning connections for new words, thus improving word recall. Furthermore, a substantial body of empirical research illustrates that (a) topic interest has a positive influence on reading comprehension (e.g., Ainley, Hidi, et al., 2002) and (b) the level of reading comprehension strongly affects the amount of vocabulary acquisition through reading (e.g., Pulido, 2004). These findings lead to the hypothesis that topic interest simultaneously influences reading comprehension and word knowledge development. Taken together, these theoretical propositions and empirical findings suggest the need to further investigate the role of affective variables, such as topic interest, in order to make the theoretical model more precise and comprehensive.

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From a pedagogical point of view, elucidating on the role of topic interest in vocabulary acquisition from reading is crucial for two reasons. First, reading-based vocabulary building is an indispensable dimension of vocabulary learning during L2 development (Nation, 2008; Schmitt, 2008). Second, promoting engagement in tasks to improve vocabulary learning (e.g., reading) is one of the most fundamental factors for effective vocabulary instruction (Schmitt, 2010). Therefore, studies that experimentally investigate whether or not topic interest fosters the acquisition of new words are needed to empirically support the pedagogical value of topic interest.

Indeed, few L2 vocabulary studies have addressed topic interest as a contributing variable to lexical development during text processing. This study seeks to fill this gap by exploring the impact of topic interest on L2 vocabulary acquisition through reading. Previous studies have shown that the effect of topic interest operates differently depending on learners' language proficiency (e.g., Stevens, 1980) and gender (e.g., Carrell & Wise, 1998). Therefore, this study also investigates how topic interest interacts with individual differences, such as L2 proficiency and gender, in an effort to better understand the role of topic interest in lexical development.

1.3. Research Questions

The following research questions guide the study:

(1) Does topic interest affect L2 vocabulary acquisition through reading?

(2) Does L2 proficiency affect L2 vocabulary acquisition through reading?

(3) Does L2 proficiency moderate the effect of topic interest on L2 vocabulary acquisition through reading?

(4) Does gender affect L2 vocabulary acquisition through reading?

(5) Does gender moderate the effect of topic interest on L2 vocabulary acquisition through reading?

(6) Are the effects of topic interest, L2 proficiency, gender, and interactions between topic interest, L2 proficiency, and gender observed over time?

1.4. Significance of the Study

This study highlights the neglected factor of topic interest, thereby contributing to an advanced modeling of L2 vocabulary acquisition through reading. Moreover, determining how topic interest interacts with L2 proficiency and gender can offer a more comprehensive explanation of L2 lexical development through text processing. By foregrounding variables that have largely remained unexamined in the existing literature, this empirical study attempts to lay the groundwork for future advances in the field of L2 vocabulary research. In addition, understanding the role of topic interest in L2 word

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knowledge development may encourage language educators to maximize engagement, which underlies all effective vocabulary teaching and learning. The insights gained from clarifying the role of individual differences, such as L2 proficiency and gender, might also aid language educators in shaping their instruction to facilitate individual learners' successful L2 reading and vocabulary growth.

1.5. Definition of Terms

The following terms are used throughout the present study:

SLA   The academic field of Second Language Acquisition

ESL   English as a Second Language

EFL   English as a Foreign Language

L1   First language; one's native language

L2   A language learned after having acquired a first language

TW   Target word; the study's selected lexical item

Topic interest   The interest produced by a theme or topic

Gain   Knowledge about the word's form and meaning, as measured by word-form recognition, translation recognition, and translation production immediately after reading

Retention   Knowledge about the word's form and meaning, as measured by word-form recognition, translation recognition, and translation production four weeks after reading

Incidental vocabulary acquisition

      Vocabulary learning that occurs as a byproduct of engaging in another task, such as reading; this term is used in reference to vocabulary acquisition through reading

CHAPTER 2:   REVIEW OF THE LITERATURE

This chapter reviews the theoretical and empirical studies relevant to investigating the effects of topic interest on L2 vocabulary acquisition through reading, as well as its interaction with L2 proficiency and gender. Specifically, the next three sections review the relevant L1 and L2 research for the following factors: topic interest, L2 proficiency, and gender. Subsequently, I highlight the lack of L2 research investigating the impact and interaction of these three factors on L2 incidental vocabulary learning. The final section presents research questions and hypotheses for the current study.

2.1. Topic Interest

Learners' interest is a factor that impacts second language acquisition (SLA) in general (Dörnyei, 2003; 2005), but it has not been addressed by L2 vocabulary research. Due to the absence of studies focusing on topic interest as a primary variable in L2 vocabulary acquisition through reading, the impact of this factor will be discussed below in relation to L1 and L2 reading comprehension.

2.1.1. Topic interest and reading comprehension in L1 research

Research on L1 reading has shown that topic interest is an important factor in reading comprehension (Baldwin, Peleg-Bruckner, & McClintock, 1985; Belloni & Jongsma, 1978; Bray & Barron, 2004; Schiefele, 1992). A substantial body of research

on L1 reading has reported that topic interest impacts learners' comprehension and long-term recall of texts (e.g., Ainley, Hidi, et al., 2002; Sadoski & Quast, 1990).

In a study with 50 under-performing seventh graders, Belloni and Jongsma (1978) investigated the effect of topic interest on reading comprehension. From the titles and abstracts of 12 short stories, students selected the one story they had the highest interest in reading and the one story they had the lowest interest in reading. One week later, students read the stories they had selected and completed a cloze test. The results indicated that low-achieving seventh graders showed significantly greater comprehension of the high-interest passage compared to the low-interest passage.

In another study with 52 high-achieving middle school students, Baldwin et al. (1985) examined a causal relationship between topic interest and reading comprehension. Students were given an interest inventory of ten topics and asked to rate the appeal of each topic on a scale from 1 (*lowest*) to 10 (*highest)*. Students then read the passages and took multiple-choice comprehension tests. The results revealed that topic interest had a significant main effect on reading comprehension.

Bray and Barron (2004) also examined the relationship between interest level and reading comprehension in the context of a standardized reading test. Approximately 20,000 fourth through eighth graders answered tryout units composed of one to three passages and subsequent multiple-choice questions. At the end of the tryout units, students' interest level in the topic of the text was measured via a 5-point Likert scale

from 1 (*really boring*) to 5 (*really interesting*). The results showed a significant relationship between interest and comprehension.

The effect of interest has been documented in the long-term recall of texts as well. In Sadoski and Quast's (1990) study, 54 college students read three articles from popular magazines and rated each article according to their perceptions of its degree of interest and degree of importance. Sixteen days later, they were given a surprise recall task in which they were asked to write about memorable parts of the texts and to describe why they remembered those parts well. The results revealed that interest was a significant predictor for long-term recall, whereas importance was not. Hidi and Baird (1988) and Wade and Adams (1990) reported similar findings; in their studies, interest had a powerful effect on the long-term recall of texts.

While the studies reported above addressed the effects of topic interest on the quantitative aspects of comprehension (e.g., multiple-choice or recall), Schiefele (1992) focused on qualitative aspects. In his two studies, he looked at how topic interest influenced deeper comprehension and the reading process. In Study I, the researcher measured participants' topic interest through feeling-related and value-related valences. Then, the participants, 96 male university students, read two passages with varying interest levels. Three types of questions appeared in the comprehension test: simple questions that asked about concrete details, complex questions that tested students on relationships between facts, and deeper questions that asked students to synthesize ideas across the texts. The results showed that interest had a significant impact on deeper

comprehension. In Study II, participants read 30 sentences, and for each recognition task, they were required to verify whether a sentence was actually presented in the text and whether the sentence was true or false. According to the results, high-interest students performed significantly better in recognizing correct sentences compared to low-interest students, supporting the hypothesis that interest affects the learners' representation of a text. Furthermore, both studies included retrospective measures of process variables in order to account for the effects of interest. Level of activation was assessed by the Activation-Deactivation Adjective Check List (Thayer, 1986). Flow was estimated using an 8-item questionnaire based on Csikszentmihalyi (1975) to measure the experience of deep concentration. Analysis of these variables showed that a high level of topic interest contributed to an increased level of activation, the experience of flow, and deeper concentration.

Anderson (1982) also reported that interest facilitates the reading process and learning outcomes by increasing attention. In his study, 30 fourth graders were each asked to read 36 sentences (with a range of interest ratings) presented on a computer screen. They were asked to respond to any tones from the earphones by pressing the space bar as quickly as possible. Afterwards, students were required to recall the sentences. Here, "attention was operationalized as reading time (attention duration) and secondary task reaction time (attention intensity)" (Shirey & Reynolds, 1988, p. 160). It was assumed that the more involved participants were with the primary task (reading), the longer their reaction time would be to the secondary task (responding to a tone).

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Reading time and secondary reaction time were automatically recorded, and the recall score was determined by the percentage of content words in the recalled sentences. The results revealed that, as the rated interest value of the sentence increased, so did the reading time per sentence, secondary task reaction time, and recall of the sentence. These findings suggested that students allocated more attention to interesting sentences and recalled them significantly better.

De Sousa and Oakhill (1996) also examined how topic interest impacted the reading process by focusing on comprehension monitoring. In their study, 24 children aged 8-9 years old read two types of passages. One type of texts was designed for editing tasks, while the other was designed for detective tasks. In both reading tasks, students first were asked to read each passage, which contained embedded vocabulary and content problems. Afterwards, in order to assess students' comprehension monitoring, students were asked to identify nonsense words, incorrect information, and inconsistent information, and then to explain why they were problematic. According to the results, children found detective passages more interesting and demonstrated significantly better comprehension monitoring performance on detective reading tasks. The researchers concluded that students exhibited higher comprehension monitoring when reading high-interest material than low-interest material.

Extending previous research on the impact of topic interest on reading process, Ainley, Hidi, et al. (2002) examined the processes mediating topic interest and learning. To do so, the researchers used a computer program that recorded students' online

interaction with texts (two science-based texts and two popular culture texts). Topic interest was measured online by a 5-point Likert-type rating scale. The psychological processes that mediated interest and learning were operationalized as affect and persistence. Affect was measured by giving students a choice of emoticons to indicate how they felt at the end of each text, and the intensity of affect was measured by 5-point Likert scales. Persistence was measured by the number of sections students read and the length of time they took to read the text. After reading the online texts, comprehension and recall were measured via multiple-choice items presented online. On the basis of their structural equation models, the researchers concluded that topic interest influenced students' affect; affect influenced the degree of students' persistence; and persistence influenced scores on the reading comprehension test.

In summary, L1 reading research has demonstrated that topic interest significantly facilitates reading process, reading comprehension, and long-term recall of texts. Inspired by the findings of L1 studies, L2 researchers have begun to consider topic interest as a primary factor in L2 reading process and outcome, an issue that the following section will take up in more detail.

2.1.2. Topic interest and reading comprehension in L2 research

In contrast to the results from L1 reading studies, research on L2 reading has shown inconsistent results regarding the role of topic interest in reading comprehension. Some studies report that topic interest is an important factor in L2 reading (Erçetin, 2010;

Lee, 2009; LeLoup, 1993), but others provide contradictory results (Brantmeier, 2003a; Carrell & Wise, 1998; Joh, 2006).

For instance, Carrell and Wise (1998) found no significant effect of topic interest in their study examining the relationship between prior knowledge and topic interest in L2 reading. The researchers utilized an interest inventory, which included a list of ten topics for which students ranked the order of their interest on a scale from 1 (*most interest*) to 10 (*least interest*). Prior knowledge was measured via multiple-choice questions. Then, the 104 college ESL student participants read four passages with different combinations of high/low prior knowledge and high/low interest and took a multiple-choice comprehension test for each passage. The results demonstrated that neither prior knowledge nor topic interest had a significant effect on L2 reading comprehension. The researchers also reported that prior knowledge and topic interest were not correlated. It should be noted, however, that the study's measurement of interest has questionable validity because students were forced to rank the 10 encyclopedia-based topics from 1 to 10, regardless of their actual interest in each topic. The reported interest level might represent students' relative interest to other topics, but not their absolute interest in the topics, thus rendering the results dubious.

Brantmeier (2003a) reported similar results indicating that interest may not be a major factor in L2 reading comprehension. To determine the effects of interest on L2 reading, the researcher had 86 adult intermediate level Spanish learners read two passages and indicate their interest level in each passage on a 5-point Likert scale.

Comprehension was measured through written recall tasks. The results revealed that although participants indicated low levels of interest, these factors did not impede their recall of the texts. The researcher concluded that at this intermediate level, interest did not predict comprehension. Nonetheless, this data provides no information regarding how high topic interest could affect learners with a range of L2 abilities.

Contradicting the findings of Carrell and Wise (1998) and Brantmeier (2003a), LeLoup (1993) demonstrated that topic interest plays an important role in L2 reading comprehension. With 206 high school students learning Spanish as a foreign language (SFL), she investigated the relationship between topic interest and L2 reading comprehension. After ranking five topics in order of interest, students read one individually selected high-interest and one low-interest passage, respectively. After reading, they completed an immediate L1 (English) recall task for each text. The results showed a significant difference in L2 reading comprehension depending on interest level in the topic. The interest variable accounted for 9% of the overall variance in the L2 reading comprehension.

In a more recent study, Lee (2009) also showed that topic interest is an important factor in L2 reading. With 60 upper-intermediate and advanced EFL learners, he examined the effects of topic interest on L2 reading comprehension. The participants were given two passages to read: one advocated for voluntary euthanasia and the other disagreed with the practice. Topic interest was measured by a 4-point Likert scale, ranging from 1 (*not interested at all*) to 4 (*very interested*). The low-interest group

included students who rated the material as a 1 or 2, while the high-interest group included students who assigned ratings of 3 or 4. Comprehension was assessed through an immediate written free recall task. Instead of simply counting the number of ideas, the researcher opted for a finer degree of distinction between ideas. He divided the recall data into pausal units and designated each one as "high-level" or "low-level" based on its informational value. The results revealed that there was no significant difference between the high-interest and low-interest groups in recalling high-level information units. However, the high-interest group significantly outperformed the low-interest group in recalling the low-level information units. The researcher concluded that topic interest is an important factor in L2 reading comprehension because it generated engagement in reading tasks and consequently better retention of information.

In a study examining the effect of topic interest and prior knowledge on L2 reading comprehension, Erçetin (2010) also found a significant effect of topic interest on text recall. In this study, the researcher used a hypermedia text, which is a combination of hypertext where information is presented through embedded links, and multimedia, which involves sound, graphics, and video. To assess topic interest, the researcher employed a combination of feeling-related and value-related valences. Each aspect was rated on a 4-point rating scale and then combined to arrive at a total score. The participants—54 EFL university students—responded to five open-ended questions that assessed prior knowledge about the topic. Comprehension was measured by an immediate written free recall, which was analyzed by pausal units. The results revealed

that topic interest had a significant main effect on text recall, while prior knowledge did not. High-interest students performed significantly better on the written recall than low-interest students. In addition, no significant relationship between topic interest and prior knowledge was observed in participants' comprehension of an L2 hypermedia text.

Whereas previous studies focused on the quantitative aspects of L2 text comprehension, Joh (2006) investigated how topic interest influenced L2 readers' recall of texts both quantitatively and qualitatively. In this study, thirty university EFL students read an expository text and indicated their degree of topic interest on a 4-point Likert scale. Then, they completed a written recall task in their first language (Korean). In addition, in order to collect introspection data, a semi-structured interview was conducted with questions regarding how interest influenced reading and text recall. The quantitative analysis revealed that the high-interest group scored higher in their immediate free recall task than the low-interest group, but the difference did not reach statistical significance. This lack of significance was explained by the disparity in group size (5 in the high-interest group vs. 25 in the low-interest group) and small number of study participants ($N = 30$). The qualitative reports based on the interviews, however, indicated that students had a broad range of opinions about the role of topic interest. Within the low-interest group, some reported that low interest in the topic of the text did not hinder their comprehension and text recall, whereas others said that they abandoned their efforts once they lost interest. Within the high-interest group, some said that interest in the topic did

not help either reading or recalling, while others reported that topic interest encouraged them to make greater efforts to infer the meaning of the new words from the context.

In summary, the findings of L2 reading research have been inconclusive regarding the effects of topic interest. While Carrell and Wise (1998) and Brantmeier (2003a) found no significant differences based on levels of topic interest, LeLoup (1993), Lee (2009), and Erçetin (2010) concluded that topic interest is an important factor in L2 reading. These contrasting findings suggest the need for further investigation into the relationship between topic interest and L2 reading performance. Furthermore, given that incidental vocabulary learning is an outgrowth of reading, it is essential that this study ask if topic interest plays a role in L2 word knowledge development through reading. To better understand this relationship, the following section discusses the role of reading comprehension in incidental vocabulary learning.

2.1.3. The relationship between reading comprehension and incidental vocabulary acquisition in L1 and L2 research

L1 and L2 research on reading and vocabulary has indicated a strong connection between text comprehension and incidental vocabulary acquisition. In L1 research, for instance, Eldredge, Quinn, and Butterfield (1990) examined causal relationships between reading comprehension and vocabulary development. 504 second-grade students participated in the study, which used the Gates-MacGinitie Reading Test to measure students' reading comprehension and vocabulary achievement. The path analysis

revealed that reading comprehension positively influenced growth in vocabulary knowledge. Moreover, the results demonstrated that reading comprehension had a stronger effect on vocabulary growth than vocabulary growth did on reading comprehension. The replication of this path analysis with 1,585 second-grade students confirmed these causal relationships.

Diakidoy (1998) reported similar findings in her study with 73 sixth-grade students. Participants read two expository passages and then followed each reading with a comprehension test and a vocabulary posttest. A sentence verification (yes/no) task measured participants' level of comprehension. Knowledge of each target word (44 items total) was measured by four questions that asked questions regarding the target words' grammatical functions, meanings, associations, and collocations. Hierarchical regression analysis indicated that the degree of comprehension is a determinant factor of incidental vocabulary learning.

In the field of L2 research, Jacobs, Dufon, and Hong (1994) found a significant correlation between reading comprehension and incidental vocabulary acquisition. 85 university-level Spanish learners read a passage with glosses of 32 target words and performed a written recall in their L1 (English). Afterwards, students took a supply-definition test where they translated 32 Spanish words into English. The results revealed a significant correlation between recall scores and vocabulary test scores ($r = .39$).

Rott (1997) reported similar findings when studying the relationship between text comprehension and vocabulary gains and retention with 95 intermediate German

learners. In order to measure reading comprehension, participants were instructed to read a paragraph and recall the content of each passage in their L1 (English). Then, participants took two types of vocabulary tests (translation production and translation recognition) at three intervals: immediately after reading, one week later, and four weeks later. The results revealed moderate to strong significant correlations between text recall and word gain and retention (r = .55 - .95). The study also showed a stronger relationship between text recall and vocabulary retention (one and four weeks after reading) compared to the relationship between text recall and vocabulary gain (immediately after reading).

In a more recent study, Pulido (2004) also found significant effects of passage comprehension on word gain and retention. In order to assess passage comprehension, the researcher had 99 adult Spanish learners read four narratives and complete a written recall of the texts in their L1 (English). Participants completed measures of word-form recognition, translation production, and translation recognition two days and 28 days after reading, respectively. Results revealed significant main effects of passage comprehension on word-form recognition and translation recognition. In particular, the impact of text comprehension was noticeably larger than that of L2 reading proficiency, as measured by a standardized Spanish reading test. Additionally, the magnitude of correlations between passage comprehension and the translation production scores was larger than that of the correlations between general L2 reading proficiency and the translation production scores. These results empirically demonstrate that the student's

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level of comprehension is a "more robust predictor of incidental vocabulary acquisition than general L2 reading ability" (p. 497).

In sum, L1 and L2 research on reading and vocabulary has found that text comprehension is a significant factor influencing gains in vocabulary knowledge through reading. Given that topic interest facilitates reading comprehension, and reading comprehension facilitates word gain and retention, it seems to follow that topic interest would promote lexical acquisition through reading. This relationship between topic interest and vocabulary acquisition will be discussed in the following section.

2.1.4. Topic interest and vocabulary acquisition

To date, little research exists on the role of topic interest in L2 vocabulary learning through reading; only Elley's (1989) L1 vocabulary study reports on this relationship. With 127 eight-year-old children in New Zealand, Elley (1989) examined whether L1 vocabulary acquisition occurred through listening to stories. In the study, teachers read aloud two stories of varying interest, after which students completed a multiple-choice vocabulary test. Three months later, a delayed posttest was administered. The results showed that students learned 39.9% of new words from the story identified as interesting, compared to 17.1% of new words from the less appealing story. These word gains were maintained over time with a decrease of only 0.70 and 0.40 points, respectively. Elley (1989) argued that learners' interest in stories produced intrinsic motivation that sustained attention and enhanced vocabulary acquisition.

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In the context of explicit and intentional vocabulary instruction, Endo's (2010) L1 vocabulary study also examined the effects of topic interest on vocabulary learning. The researcher chose *Harry Potter* for the high-interest topic based on interviews with 10 students. Ancient Mesopotamia was selected for the low-interest topic due to the target population's low interest in social studies. 40 third grade students were placed into two groups (high vs. low proficiency) according to their Gates-MacGinitie reading comprehension test scores. In the first session, students were asked about their familiarity with the topics and then indicated their interest level in the topics on a scale of 1 to 5. In the following session, students learned 12 unfamiliar words from *Harry Potter* and 12 unfamiliar words about Ancient Mesopotamia via a PowerPoint presentation. Following the presentation, students took posttests comprised of multiple-choice tasks and semantic judgment tasks. The results showed that topic interest had a significant effect on high-proficiency students' vocabulary gain. Topic interest, however, did not significantly facilitate low-proficiency students' vocabulary gain. Nonetheless, it should be noted that participants' mean score of the reading comprehension test was one year below their grade level; as a result, the high proficiency students in the study may not be representative of actual high proficiency students at their grade level. This limitation should be considered when interpreting the interaction between topic interest and proficiency level.

In summary, the L1 research reported above demonstrates the positive effect of topic interest on vocabulary gain and retention. In contrast, the literature review revealed

an overall dearth of research concerning direct and related effects of topic interest on L2 lexical development through reading. Nonetheless, the findings above, point to the hypothesis that topic interest could have similar positive effects on L2 vocabulary acquisition. Thus, further research is needed to discern the relationship between interest and incidental vocabulary acquisition when reading in a second language.

2.1.5. Limitations of L1 and L2 research on topic interest

The L1 and L2 reading research reviewed above provides insight into how the current study could improve on previous research in terms of assessing interest. For instance, most of the previous studies measured participants' interest only once before reading (e.g., Baldwin et al., 1985; Erçetin, 2010; Lee, 2009; Schiefele, 1992). This method has a limitation in that responses to titles and brief summaries prior to reading do not always guarantee that participants' interest levels will be maintained over time. Students' high and low levels of pre-reading interest might change while interacting with actual texts, which suggests a need for further confirmation of their interest levels through post-reading interest ratings. Therefore, the present study measured participants' interest in the passages both before and after reading[2].

The studies dealing with the effect of topic interest on vocabulary acquisition also have several limitations. First, in Elley's (1989) study, the difficulty of target words

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[2] Pre-reading interest (topic interest) is also known as a type of individual interest, which is a person's "relatively stable predisposition" (Hidi, 2001, p.194) towards particular objects, topics, or activities. Post-reading interest (text-based interest) is generally referred to as a type of situational interest, which is provoked by external stimuli, such as seductive details (Hidi, 1990, 2001).

across high- and low-interest stories was not controlled. According to the literature on vocabulary, word length, class, and concreteness are the main factors affecting the difficulty of learning words (Ellis & Beaton, 1993; Ellis, 1994; Laufer, 1990; Ludwig, 1984; Schmitt, 2010). The study's lack of control for these factors in target word selection leads to the question of whether or not higher word retention from the more appealing story resulted from high interest or the characteristics of target words. In order to address these limitations, the current study carefully selected the target words by balancing the ratios between word classes and matching the word length and concreteness rating between the high- and low-interest texts.

Endo's (2010) study is also problematic in four aspects: (a) lack of control for prior knowledge; (b) lack of differentiation between high and low interest levels; (c) restricted range of proficiency in the research sample; and (d) limited vocabulary measures. First, the varying levels of prior knowledge between high- and low-interest topics might have confounded the results. According to the results from the topic familiarity questionnaire, 73% of the students had seen the *Harry Potter* movies, and 25% had read the *Harry Potter* books, whereas none of the students were familiar with the topic of Ancient Mesopotamia. This different level of prior knowledge leads to the question of whether or not the increased word gains from *Harry Potter* resulted from greater interest or higher prior knowledge. Second, the researcher was not successful in differentiating between the high and low levels of topic interest. According to students' interest ratings, 80% of the students noted that it would be interesting to learn more about

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Harry Potter, and 68% of the students noted that it would be interesting to learn more about Ancient Mesopotamia. This small difference in interest levels between the two topics could interfere with a clear examination of the differential effects of high and low levels of topic interest. The selection of the two topics should have been based on the participants' actual interest level in each topic rather than the researcher's arbitrary determination of interest. Third, participants' low reading ability (i.e., one year below grade-level) does not provide an accurate picture of how topic interest affects both higher and lower proficiency learners. Finally, the vocabulary tests (multiple-choice and semantic judgment tasks) did not reflect the incremental process of vocabulary acquisition and were limited to measuring recognition of word meaning. Assessing the initial stage of partial knowledge (e.g., word-form recognition) and fuller knowledge (e.g., translation production) in addition to multiple-choice would better describe the effect of topic interest on vocabulary acquisition. The present study addressed these limitations by (a) selecting two topics about which participants have a high level of prior knowledge so as to control for topic familiarity; (b) assessing participants' actual interest level in each topic rather than relying on the researchers' arbitrary selection of topics in order to clearly differentiate between high and low levels of topic interest; (c) including a broad range of learners from low to high proficiency levels; and (d) employing three vocabulary measures—word-form recognition, translation recognition, and translation production—so as to assess partial-to-fuller receptive vocabulary knowledge.

2.2. Language Proficiency

Language proficiency has been found to be the most powerful determinant of vocabulary acquisition through reading in L1 and L2 studies. In L1 research, Stanovich (1986) proposed the Matthew Effect, which explains how "the rich get richer" (p. 380) and the poor get poorer in vocabulary development. That is, the higher proficiency learners will read more and accrue higher lexical knowledge, thus becoming even stronger readers. In contrast, because the lower proficiency readers are less engaged, they spend less time reading and learn fewer words, which consequently impedes their reading development. In L2 research, Pulido (2009) suggested that the Matthew Effect occurs in vocabulary acquisition through reading. In addition to being a primary factor of language learning from reading, language proficiency has been found to moderate the effect of topic interest on reading process and outcome (Bray & Barron, 2004; Stevens, 1980; Vaughan, 1975; Walker, Noland, & Greenshields, 1979). Therefore, this section elaborates on the roles of language proficiency as both a main and moderating factor.

2.2.1. Language proficiency and incidental vocabulary acquisition in L1 research

In their theory of verbal comprehension, Sternberg and Powell (1983) suggested that differing levels in the ability to glean new knowledge from written contexts led to individual variations in verbal comprehension. They also considered vocabulary learning from reading to be one of the best ways of measuring acquisition of new knowledge from

written contexts. Based on this concept, the researchers provided empirical evidence of a high correlation between reading ability and vocabulary learning from reading a passage.

In a related study, Stanley and Ginther (1991) investigated how purpose and frequency affected vocabulary learning from reading for students with high and low proficiency levels. 119 sixth graders were placed into high or low reading proficiency groups according to their standardized reading comprehension scores; specific information about the test was not provided. Students who scored in the upper 33% were placed into the high-proficiency group, while students who scored in the lower 33% were placed into the low-proficiency group. Students read passages and completed both supply- and select-definition tasks for nonsense target words. The results revealed that high-proficiency students performed significantly better than low-proficiency students. This study supports Sternberg and Powell's proposition that high and low reading abilities cause differences in vocabulary learning from reading.

In a more recent study on how reading purpose impacts incidental word learning from context, Swanborn and de Glopper (2002) found that the impact of reading proficiency was significant for three reading goals: reading for pleasure, reading to become informed about a topic, and reading for text comprehension. Based on their standardized reading comprehension test (Staphorsius & Krom, 1998) scores, students were classified into low, average, and high reading proficiency levels. Students who scored within one standard deviation of the mean score were labeled as average readers. After students read an expository text according to one of the three purposes mentioned

above, they completed a supply-definition task for 15 target words. The results showed that low-proficiency learners gained no new words, while high-proficiency learners gained 27% of new words by reading for comprehension. This result is consistent with Stanovich's (1986) proposition that the higher an individual's reading ability, the more words they learn.

2.2.2. Language proficiency and incidental vocabulary acquisition in L2 research

In a study examining the impacts of topic familiarity and L2 proficiency with 99 adult learners of Spanish, Pulido (2003) found robust effects of L2 proficiency on incidental vocabulary acquisition. L2 reading proficiency was assessed through the Spanish version of the Adult Basic Learning Examination's reading comprehension section. Participants read two more familiar and two less familiar narratives. Two days after reading, participants took vocabulary posttests (translation recognition and translation production) to assess word gain, and these tests were readministered 28 days after reading to assess word retention. Analyses revealed that L2 proficiency had significantly positive correlations with word gain and retention.

Using structural equation modeling, Pulido and Hambrick (2008) investigated the *vicious* and *virtuous circles* (Nuttall, 1982) in L2 reading and vocabulary growth. In their model, the language processing experience—"the amount of time spent in reading, writing, speaking, and listening outside of class time" (p. 170)—was a variable, along with L2 passage sight vocabulary, passage comprehension, and vocabulary retention. The

results revealed the following: the language processing experience had a positive effect on L2 passage sight vocabulary; L2 passage sight vocabulary had a positive effect on passage comprehension; and L2 comprehension had a positive effect on L2 vocabulary development. These results illustrated the virtuous circle wherein higher L2 reading proficiency positively contributed to L2 vocabulary growth through reading.

Tekmen and Daloğlu (2006) reported similar findings in their study investigating incidental vocabulary acquisition in relation to learner proficiency level and word frequency. The participants, 99 Turkish ESL university students, were at the intermediate, upper intermediate, and advanced levels; proficiency was determined by students' performance on the university's in-house English placement test, which was designed on the basis of Cambridge University's FCE (First Certificate in English). Students read a passage and took vocabulary tests for 30 target words. The formats of the tests mirrored the Vocabulary Level Test (Nation, 1990) in which students pair words with their appropriate meanings. The results demonstrated that the advanced group learned significantly more words from the reading passage than did the intermediate and upper intermediate groups. However, this study is limited due to the fact that the subjects included only learners at intermediate and advanced proficiency levels.

In a more recent study, Cheng and Good (2009) also researched how L2 proficiency and three kinds of glosses affect L2 vocabulary retention through reading. 135 Taiwanese EFL college students were recruited from the lowest to the highest English proficiency courses, ranging from Levels 1 to 4. This placement was based on

their scores on a standardized English placement test developed by the University of Michigan. Students in Levels 1 to 3 read a text on marriage ceremonies. To avoid a ceiling effect, students in Level 4 read a more difficult text on addiction. Immediately after reading, students took a vocabulary recall test. One week after reading, the first delayed posttest was administered; two weeks after reading, a second delayed posttest was administered. The results revealed that Level 2 and Level 3 students showed significant word gains; however, for Level 1 and Level 4 subjects, no significant differences in word gains were found. The researchers concluded that language proficiency was a significant factor in vocabulary acquisition, but this significance did not hold for all proficiency levels included in the study. There are, however, several limitations that prevent the generalization of this study. First of all, the cut-off points for classifying participants into four levels may not match the classification criteria of the standardized test, and thus, may not represent students' actual proficiency. Moreover, as the researchers acknowledged, the readability level of the text for Level 4 was so far above students' reading proficiency that they could not acquire the target words. Additionally, the target words for Level 4 were also more difficult in terms of word length and word class in comparison to those for Levels 1 to 3. This failure to control for the difficulty of text and target words might have resulted in higher proficiency students' nonsignificant word gains.

In summary, L2 research generally provides evidence for the Mathew Effect whereby "the rich get richer" (Stanovich, 1986, p. 380) in L2 vocabulary development

through reading; however, some conflicting findings were observed due to methodological limitations. The following section discusses how L2 proficiency interacts with topic interest.

2.2.3. The interaction of language proficiency with topic interest

Proficiency level has also been found to interact with the effect of topic interest on the reading process and its outcome. A substantial body of research on reading comprehension has reported that the effects of topic interest vary depending on students' levels of language proficiency (Bray & Barron, 2004; Stevens, 1980; Vaughan, 1975; Walker et al., 1979). Unfortunately, research findings remain inconclusive in terms of which level of student—high, intermediate, or low—is more influenced by topic interest. This line of research has been conducted primarily in L1 reading comprehension studies with few L2 reading and vocabulary studies. As a result, the summary that follows mostly will review L1 research.

Vaughan (1975) examined how interest differentially impacted reading comprehension according to reading ability (high, intermediate, and low) and grade levels (Grades 4, 6, 8, and 11). 524 students were classified into high, intermediate, and low reading ability groups according to their scores on the SRA Achievement Test and the Sequential Test of Educational Progress. Participants were defined as good readers if they read one standard deviation above the mean. Average readers consisted of students who were within one-half a standard deviation above or below the mean. Students were

labeled as poor readers if they read one standard deviation below the mean. After receiving the titles and brief summaries of seven passages, students ranked them according to their preference. Each student read his or her highest and lowest interest texts. 50-item cloze tests then assessed their reading comprehension. The results revealed that interest in reading materials had a more positive influence on less proficient readers' comprehension than on proficient readers' comprehension.

Walker et al. (1979) reported similar findings in their study of 120 fifth and sixth graders. The participants were placed into high, intermediate, and low reading proficiency groups according to their scores on the Houghton-Mifflin reading tests. Students who read one year or more above grade level were categorized as having a high reading ability. Students who read within their grade level were considered intermediate level. Students who read one year or more below grade level were classified as having low reading ability. Each student ranked three topics according to their content preference. Then, they read high- and low-interest passages and answered comprehension questions. The study found that low and middle reading ability groups performed better on texts of high topic interest.

Stevens (1980), however, presented contradictory results, concluding that topic interest only affects higher proficiency readers' comprehension. In her experiment, 93 fifth and sixth graders were stratified into three reading ability groups, based on each individual's score on the SRA Assessment Survey Comprehension subtest. The high ability group included students above the 83rd percentile. The low ability group included

students below the 57th percentile, while the intermediate group included students between the 57th and 83rd percentile. Students rated their interest in the 25 topics on a scale from one to seven. Afterwards, each student read two texts he or she had indicated as being of high interest and two texts he or she had indicated as being of low interest. Reading comprehension was assessed via multiple-choice questions. The researcher discovered that topic interest facilitated reading comprehension for high-ability readers, but not for the intermediate- and low-ability readers. However, due to the researcher's decision to select difficult passages in the interest of avoiding the ceiling effect, the effect of interest became more evident in the higher proficiency learners' performance rather than in that of lower proficiency learners.

2.2.4. Limitations of the L1 and L2 research on language proficiency

The L1 and L2 research has demonstrated inconsistent results regarding the effect of language proficiency on incidental vocabulary learning. In the L1 research, the findings consistently support the Matthew Effect, which explains a "rich-get-richer" phenomenon (Stanovich, 1986, p. 381). The L2 research, however, is inconclusive. While Tekmen and Daloğlu (2006) showed significant word gains from advanced students, Cheng and Good (2009) found significant word gains only from intermediate students. The discrepancies in such findings could be explained in terms of the difficulty of texts and target words. Cheng and Good's (2009) lack of control for difficulty of text and target words for higher level students seems to have impeded their performance. In

addition, Cheng and Good's (2009) artificial classification of proficiency levels and Tekmen and Daloğlu's (2006) restricted range of proficiency in their research sample hindered precise examination of proficiency effects for learners of all proficiency levels.

Studies on the interaction between proficiency and topic interest are also inconclusive. While Vaughan (1975) and Walker et al. (1979) found that the effects of topic interest were greater for lower proficiency students, Stevens (1980) demonstrated that the effect was stronger for higher proficiency students. These inconsistent results from the L1 reading research warrant further investigation regarding the nature of the relationship between topic interest and proficiency. Another reason for pursuing this research inquiry is the fact that no L2 studies have considered such interaction in the area of L2 reading and vocabulary learning.

Therefore, the present study examined the role of L2 proficiency and its interaction with the effect of topic interest on L2 vocabulary acquisition through reading. The methodological limitations in previous studies were addressed by (a) including a broad range of learners from low to high reading ability; (b) using L2 proficiency scores as a continuous variable rather than using an artificial division of proficiency groups; and (c) designing texts that are of appropriate difficulty but contain unfamiliar target words for participants of all proficiency levels. These methodological considerations allowed for more precise observation of how L2 proficiency operates in isolation and in relation to topic interest in vocabulary development through reading.

2.3. Gender

The variable of gender has been investigated extensively in areas such as psychology and sociolinguistics. In the field of SLA, however, the role of gender only recently has received increased attention. Due to the paucity of research on gender in relation to vocabulary acquisition through reading, this section describes studies on the effect of gender on first and second language reading. Specific attention is paid to studies focusing on the interaction between gender and topic interest on reading process and outcome.

2.3.1. Gender in L1 and L2 reading research

In the field of L1 research, Hummel (1985) examined sex differences in reading attitudes and reading comprehension within a population of 513 fourth, fifth, and sixth graders (252 males and 261 females). Reading attitude was measured using the multi-dimensional scale in the Survey of Reading Attitudes, and reading comprehension was measured using Gates-MacGinitie Reading Test scores. The results showed that girls tended to be more externally encouraged to read and were also more intrinsically motivated to read due to their perceived value of reading in terms of information and enjoyment. However, no significant main effect of gender on reading comprehension scores was found.

In L2 research, Brantmeier (2003b) examined the effects of readers' gender and passage content on L2 reading comprehension. 78 intermediate Spanish as a Foreign

Language (SFL) college students read two passages. One story focused on a boxing match, and the other story featured a frustrated housewife. Reading comprehension was assessed via written recall and multiple-choice questions. The results revealed no significant difference between males and females in overall comprehension scores across passages.

Young and Oxford (1997) also found that gender made no difference in L2 reading strategies and comprehension. In their study, 49 native English-speaking participants (26 females and 23 males) read two Spanish texts and one English text. From think-aloud protocols and recall tasks, the researchers revealed that there was no significant difference between genders in the use of global and local strategies. Furthermore, no significant differences in recall scores by gender were observed for any of the three texts.

In summary, the L1 and L2 research reviewed above suggests that there were gender differences in certain dimensions of reading attitudes, but no gender differences in reading comprehension. The following section will discuss the interaction of gender with topic interest.

2.3.2. The interaction of gender with topic interest

Research shows that gender differences are relevant in the relationship of topic interest to reading comprehension. A number of L1 reading studies have discovered that gender difference in reading performance depends on learners' interest in the material

(Ainley, Hillman, & Hidi, 2002; Asher & Markel, 1974; Oakhill & Petrides, 2007). In contrast, L2 reading studies are lacking in this area of research. Moreover, neither L1 nor L2 vocabulary studies have examined gender in terms of either its main effect or its interaction with the effect of topic interest. Thus, the section that follows provides an overview of L1 and L2 reading studies germane to the issue of interaction between topic interest and gender.

In a study involving 87 fifth-grade children (49 boys and 38 girls), Asher and Markel (1974) investigated how gender differences affect comprehension when reading high- and low-interest passages. Each participant read six passages: the three highest and three lowest interest texts indicated by each individual. Cloze tests were administered to measure comprehension. The results revealed that both boys and girls had higher reading comprehension for high-interest materials. On the low-interest passages, however, boys performed significantly worse than girls, whereas interest level did not significantly influence the girls' reading comprehension.

A more recent study by Oakhill and Petrides (2007) also dealt with gender differences in the effects of interest on reading comprehension. In their experiment, 32 fifth graders (16 girls and 16 boys) read two passages about spiders and children's evacuation during World War II. The researchers found that boys strongly preferred the spider passage, whereas girls preferred the passage about child evacuees. The boys performed significantly better when reading the spider passage, whereas the girls' level of comprehension did not differ according to their level of interest in the two passages.

Another L1 reading study by Baldwin et al. (1985) reported similar results; boys were more positively influenced by high topic interest than girls. Furthermore, in an L2 reading study, Carrell and Wise (1998) discovered a similar interaction between topic interest and gender, wherein males were more facilitated by high topic interest compared to females. Nonetheless, it should be noted that the Oakhill and Petrides' (2007) study faces a limitation in that the text difficulty between the high- and low-interest passages was not controlled. Specifically, the significant main effect of text indicated that the spider passage was easier than the World War II passage. Moreover, the majority of male participants were poor readers (5 good vs. 11 poor). Thus, it is ambiguous whether boys performed better on the spider text due to their high interest or because of the ease of the text.

With interactive electronic texts, Ainley, Hillman, et al. (2002) investigated the relationship between gender and topic interest in processing literary texts through the participation of 86 Grade 10 students (39 males and 47 females). For reading material, the researcher used four passages, which were the first 900 words from four novels. Students' topic interest in the texts was measured via a 5-point Likert-type rating scale. The processing variables in reading were students' affective response to the texts and persistence with the texts. The variable of affect was measured by giving students a choice of emoticons. The variable of persistence was assessed by both the number of sections students read and the length of time they spent reading the text. The results from their path analysis revealed that for the higher interest passages, topic interest had a direct

effect on affect. In addition, affect directly impacted persistence, and persistence directly influenced text recall. Thus, topic interest facilitated students' interaction with the texts, and, consequently, students' better recall of the texts. For lower interest passages, gender had a direct effect on persistence. In other words, gender was a significant factor that influenced persistence with the texts; females were more likely to continue reading lower interest texts, while males tended to discontinue reading. An L2 reading study by LeLoup (1993) reported similar findings; males hardly expended effort on understanding the lower interest stories, whereas females were more likely to stick with them.

The studies reported above have demonstrated that males tend to be more facilitated by high topic interest and females tend to be more persistent with low-interest texts; however, several studies have reported contrasting findings regarding the interaction between gender and topic interest. Stevens (1980) and Cecil (1984), for example, found that the effect of topic interest on reading comprehension did not differ by gender. Meanwhile, Bray and Barron (2004) demonstrated that topic interest was a more significant factor for females than for males. In this study, the girls found female-oriented passages more interesting and comprehended more from them relative to the male-oriented passage; by comparison, boys' comprehension was similar for both the male-oriented and female-oriented passages. These inconsistent findings on the interaction between gender and topic interest suggest the need for further investigation of this relationship.

2.3.3. Limitations of L1 and L2 research on gender

L1 and L2 studies regarding the effect of gender on reading comprehension consistently demonstrate that gender does not influence reading comprehension scores significantly. However, contrasting findings in studies examining the interaction between gender and topic interest indicate an area for further investigation. The current study expands this issue raised in L1 and L2 reading comprehension research to the other dimension of learning from reading—L2 vocabulary acquisition through reading. The present study also addresses previous studies' limitations by controlling for text difficulty between high- and low-interest passages and different levels of L2 proficiency between males and females. Specifically, this experiment uses high- and low-interest expository passages with equivalent text difficulty. It also uses L2 proficiency scores as a covariate to control for the effect of different L2 proficiency levels between males and females.

2.4. Summary

Taken together, this literature review has revealed that there is scant research concerning the effect of topic interest on L2 vocabulary learning through reading. In addition, L1 and L2 reading studies have shown inconclusive results regarding the impact and interaction of the factors of topic interest, language proficiency, and gender on reading process and outcome. While the majority of reading studies have demonstrated a positive relationship between topic interest and reading comprehension (e.g., Erçetin, 2010; Joh, 2006; Lee, 2009; LeLoup, 1993), a few found no relationship between them

(Brantmeier, 2003a; Carrell & Wise, 1998). In addition, some researchers determined that higher proficiency students were more influenced by interest in the material (Stevens, 1980; Endo, 2010), while others found the opposite: lower proficiency students were more affected by interest in the text (Vaughan, 1975; Walker et al., 1979). The interaction between topic interest and gender also produced inconsistent results across the studies. The majority of studies found that males responded more to high topic interest and females were more persistent with low-interest texts (Ainley, Hillman, et al., 2002; Asher & Markel, 1974; Baldwin et al., 1985; Carrell & Wise, 1998; LeLoup, 1993; Oakhill & Petrides, 2007); however, a few studies revealed either no interaction between topic interest and gender (Steven, 1980; Cecil, 1984) or a stronger impact of topic interest for females than for males (Bray & Barron, 2004). For its part, the present study further investigates these relationships in the context of L2 vocabulary acquisition through reading.

The current study also improves upon previous research in a number of ways: (a) measuring topic interest both before and after reading; (b) assessing participants' actual interest level in each topic rather than relying on forced ranking or researchers' arbitrary selection of topics; (c) controlling for text difficulty and prior knowledge; (d) controlling for the difficulty and unfamiliarity of target words; (e) including a broad range of learners from low to high reading ability; (f) using L2 proficiency scores as a continuous covariate; and (g) employing vocabulary measures that consider the incremental process of word knowledge development through reading.

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2.5. Research Questions and Hypotheses

Based on the review of the existing literature and the limitations presented above, the following research questions and hypotheses guided the study:

Research Questions:

(1) Does topic interest affect L2 vocabulary acquisition through reading?

(2) Does L2 proficiency affect L2 vocabulary acquisition through reading?

(3) Does L2 proficiency moderate the effect of topic interest on L2 vocabulary acquisition through reading?

(4) Does gender affect L2 vocabulary acquisition through reading?

(5) Does gender moderate the effect of topic interest on L2 vocabulary acquisition through reading?

(6) Are the effects of topic interest, L2 proficiency, gender, and interactions between topic interest, L2 proficiency, and gender observed over time?

Hypotheses:

(1) Topic interest will have a significant effect on incidental vocabulary learning such that students will acquire significantly more words through reading a higher interest passage compared to a lower interest passage.

This prediction derives from several bodies of research: (a) L1 reading research illustrating the consistently positive relationship between topic interest and reading comprehension (Ainley, Hidi, et al., 2002; Baldwin et al., 1985; Bray & Barron, 2004; Sadoski & Quast, 1990; Schiefele, 1992); (b) the majority of L2 reading research that has found a significant effect for topic interest on reading comprehension (Erçetin, 2010; Lee, 2009; LeLoup, 1993); and (c) L1 vocabulary research reporting the significant effect of topic interest on word gains (Elley, 1989; Endo, 2010).

(2) L2 proficiency will have a significant impact on incidental vocabulary learning in that higher proficiency students will acquire significantly more words through reading compared to lower proficiency students.

This prediction is drawn from the L1 incidental vocabulary acquisition research (Stanley & Ginther, 1991; Stanovich, 1986; Sternberg & Powell, 1983; Swanborn & de Glopper, 2002) and L2 incidental vocabulary acquisition research (Pulido, 2003; Pulido, 2004; Puldio & Hambrick, 2008; Tekmen & Daloğlu, 2006), which have consistently demonstrated a "rich-get-richer" pattern (Stanovich, 1986, p. 381) in lexical development through reading.

(3) L2 proficiency will moderate the effect of topic interest on L2 vocabulary acquisition such that higher topic interest will influence higher proficiency students more than lower proficiency students, or vice versa.

This prediction is based on the L1 reading studies (Stevens, 1980; Vaughan, 1975; Walker et al., 1979) illustrating a significant interaction between language proficiency and topic interest on reading comprehension.

(4) Gender will not have a significant impact on incidental vocabulary learning, and there will be no significant difference between males and females in L2 word gain and retention through reading.

This prediction stems from L1 research (Hummel, 1985) and L2 research (Brantmeire, 2003; Young & Oxford, 1997) indicating no significant main effect of gender on reading comprehension scores.

(5) Gender will moderate the effect of topic interest on L2 vocabulary acquisition so that (a) males will acquire more words than females when reading a high-interest passage, and (b) females will acquire more words than males when reading a low-interest passage.

This prediction is consistent with the majority of L1 reading research (Ainley, Hillman, et al., 2002; Asher & Markel, 1974; Baldwin et al., 1985; Oakhill & Petrides, 2007) and L2 reading research (Carrell & Wise, 1998; LeLoup, 1993), which reports that males are more facilitated by high topic interest, while females are more persistent with low-interest texts.

(6) The significant effects obtained will be observed over time such that significant effects found immediately after reading will be observed four weeks later.

This prediction follows from (a) the L1 reading research (Sadoski & Quast, 1990) illustrating the significant effect of interest on the long-term recall of texts; (b) L1 incidental vocabulary acquisition research by Elley (1989) demonstrating that learners' interest in stories significantly enhanced the long-term retention of words; and (c) L2 incidental vocabulary acquisition research (Pulido, 2003; 2004; 2009) reporting a significant correlation between L2 proficiency and word retention.

CHAPTER 3: METHOD

The present study aims to investigate the effect of topic interest on L2 vocabulary acquisition through reading, as well as its interaction with L2 proficiency and gender. This chapter provides the overall methodology of the study in three sections. The first section describes the participants and materials used for the experiment. The second section delineates measurement instruments for each variable. The final section presents the procedures of the study and data analysis.

Overview of the Study

This study was conducted in four sessions over eight weeks. Seven intact classes of students in a Korean middle school were invited to participate in the study, and the experimental conditions were the same for all participants. In the first session, participants completed a topic interest inventory to assess students' level of interest in the passages. One week later, participants completed pretests to determine their L2 reading proficiency, prior topic knowledge, and prior target word (TW) knowledge. Two weeks later, participants read two expository passages, one with a high level of topic interest and the other with a low level of topic interest. Immediately after reading, students completed an interest rating scale, reading comprehension questions, and vocabulary posttests (word-form recognition, translation production, and translation recognition) to measure vocabulary gain. Four weeks later, participants completed the same vocabulary posttests to measure vocabulary retention (see Figure 3.1. for design).

Repeated Measures Study Design

Independent variables

1. Topic interest – within-subject variable

   • High-interest topic ("Psy's Gangnam Style" story)

   • Low-interest topic ("Medieval Life" story)

2. Gender – between-subject variable

   • Males vs. Females

Control variables (not included in the final model)

1. Prior topic knowledge

   • Scores on the prior topic knowledge test

2. Prior target word (TW) knowledge

   • Scores on the vocabulary pretest for 30 target words

Covariate

1. L2 reading proficiency

   • Scores on the reading section of the National Academic Achievement Test of English

Dependent variables

1. Word-form recognition (Scores on word-form recognition test)

2. Translation recognition (Scores on translation recognition test)

3. Translation production (Scores on translation production test)

Figure 3.1. Design of the study.

3.1. Participants

The present study was conducted at a middle school in a large metropolitan area in Korea. Participants consisted of 175 ninth graders aged 15 to 16 years old. Due to absences on one or more testing occasions, 33 students were omitted from the study, leaving a total of 142. Because this school had a three-to-one ratio of females to males, subjects included 103 females and 39 males. They had studied English as a Foreign Language (EFL) for more than seven years on average, and, based on the school curriculum, they received four hours of English lessons per week. According to their English scores from the National Academic Achievement Test, 24% of the students ranked at a high level, 46% ranked at an intermediate level, and 30% ranked at a low level. Thus, the participants included a broad range of learners—from low to high L2 proficiency. The research employed a background questionnaire to collect more participant information (see Appendix A), which is summarized in Table 3.1.

Table 3.1

Background Characteristics of Participants

Variable	M	SD
English study (in years)	7.11	2.13
Age of starting English study	8.71	2.12
Private English courses (in years)	3.44	1.66
Study abroad (in years)	0.16	0.59
Listening (hours per week)	1.80	1.13
Speaking (hours per week)	1.67	1.03
Reading (hours per week)	2.20	1.42
Writing (hours per week)	2.13	1.42
Grammar (hours per week)	2.34	1.53
Vocabulary (hours per week)	2.02	1.32

3.2. Materials

3.2.1. Reading passages

This study used two expository texts, one with a high level of topic interest and the other with a low level of topic interest. In order to select two texts for the study, the researcher administered a topic interest inventory with subjects drawn from pop culture, science, and social studies (see section 3.3.1.1. for further detail). In the topic interest inventory, only highly familiar topics were included to ensure that background knowledge of the text would not play a role in the results. Based on the outcome of this inventory, "Psy's Gangnam Style" was chosen as the high-interest text and "Medieval Life" as the low-interest text. The former was adapted from an article entitled "Psy's Gangnam Style Craze" on the website TheEduTimes (www.theedutimes.com), and the latter was based on DK Publishing's *Medieval Life* (see Appendix B for the two passages). These two passages were used with permission from the publishers to adapt their materials. The "Psy's Gangnam Style" (Psy) story focused on the Korean rapper Psy's global hit, "Gangnam Style", explaining the reasons for the video's international success, including the song's catchy lyrics, contagious beat, hilarious horse-riding dance, and the role of Twitter and YouTube in spreading its popularity globally. The "Medieval Life" (Medieval) story describes the feudal system in European societies in the Middle Ages. It explains the relationship between the king, noblemen, knights, and peasants based on the allocation of land in exchange for labor. Participants, in general, had a high level of prior knowledge for both topics because the content of "Medieval Life" was

covered in their social studies class prior to the experiment, and Psy's "Gangnam Style" was internationally well known at the time of this study. Both texts were similarly designed in terms of linguistic characteristics, which allowed for control of text difficulty between the two passages (see Table 3.2).

Table 3.2

Linguistic Characteristics of the Texts

Text	Words	Sentences	Paragraphs	Average characters per word	Average words per sentence	Sentences per paragraph
Psy	318	27	5	5.0	11.8	5.4
Medieval	317	25	5	4.9	12.6	5.0

3.2.2. Target words

Thirty lexical items were chosen evenly from the two stories, with 15 target words drawn from each story (see Table 3.3 and Appendix C for target words). In order to select target words, the researcher first asked 10 very advanced students who were not participants of this study to read the two texts and underline every unfamiliar word. This task sought to ensure that the participants were unlikely to know the target words. Based on the unfamiliar words that students reported from each passage, a rigorous set of criteria was further applied to establish similar difficulty of target words between high-

and low-interest passages. Schmitt (2010) has discussed criteria for target word selection such as frequency, word class, word length, and concreteness. These were considered in the target word selection of the present study as follows:

(1) Words that appeared only once in the text were selected to control for the effect of frequency. Frequency has been identified as the most important factor influencing the learning of words (Kweon & Kim, 2008; Pellicer-Sanchez & Schmitt, 2010; Pigada & Schmitt, 2006; Rott, 1999; Waring & Takaki, 2003).

(2) The ratio of content words was balanced between the two texts (i.e., five nouns, five verbs, and five adjectives from each passage). As Ellis (1994) noted, "The part of speech of a word affects its learning: nouns are the easiest to learn and adjectives next, while verbs and adverbs are the most difficult to learn" (p. 250).

(3) Word length was matched between the two texts. Laufer (1990; 1997) observed, for example, that "longer words are more difficult to learn than the shorter ones" (Laufer, 1990, p. 298).

(4) Across both texts, each group of words had equivalent concreteness[3] of meaning. Ellis and Beaton (1993) reported that "concrete FL [foreign language] words are generally learned earlier and more easily than are abstract words" (p. 566).

In sum, the word-selection method outlined above guarantees the unfamiliarity of the target words and employs the aforementioned criteria to balance the difficulty of target words between high- and low-interest texts. Furthermore, as much as possible,

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[3] This concreteness rating is based on Brysbaert, Warriner, and Kuperman (2013), who conducted a norming study that collected concreteness ratings for 40,000 English words from 4,000 participants by using a 5-point rating scale from 1 (*abstract*) to 5 (*concrete*).

words deemed worth learning were employed in the interest of the study's pedagogical

value for its EFL participants.

Table 3.3

List of Target Words

	Psy			Medieval		
	Word	Length	Concreteness	Word	Length	Concreteness
Noun	hub	3	3.59	toil	4	2.67
	throng	6	3.15	fealty	6	2.36
	fanatic	7	2.25	cathedral	9	4.86
	denizen	7	3.32	allocation	10	2.32
	component	9	3.04	obligation	10	2.04
Verb	reel	4	3.04	grant	5	3.53
	portray	7	2.18	pledge	6	2.61
	perceive	8	1.72	derive	6	2.00
	contradict	10	2.24	comprise	8	1.89
	attribute	9	2.33	emancipate	10	2.29
Adjective	viral	5	2.96	meager	6	2.08
	absurd	6	1.64	arduous	7	1.74
	eccentric	9	1.81	majestic	8	2.04
	whimsical	9	1.93	obsolete	8	2.10
	contagious	10	2.71	adequate	8	1.97
Mean		7.27	2.52		7.40	2.43

Note. Length = word length, as measured by the number of characters in a word. Concreteness = concreteness ratings, as measured by a 5-point rating scale from 1 (*abstract*) to 5 (*concrete*). Psy = "Psy's Gangnam Style." Medieval = "Medieval Life."

3.3. Measures

3.3.1. Independent variables

3.3.1.1. Topic interest

The topic interest inventory was used to assess learners' level of interest in the stories (see Appendix D). Three weeks before the experiment, the researcher administered a topic interest inventory consisting of a 5-item Likert scale questionnaire. The Likert-type scale has been used extensively in research on topic interest and reading comprehension (Ainley, Hidi, et al., 2002; Baldwin et al., 1985; Erçetin, 2010; Lee, 2009; Schiefele, 1992) due to its validity in clearly distinguishing the variability of interest level in relation to specific topics (Ainley & Patrick, 2006; Renninger & Hidi, 2011). In their response to each item, participants indicated their degree of interest in the topic based on a scale from 1 (*not interesting*) to 7 (*very interesting*). The degrees of interest that students showed for "Psy's Gangnam Style" and "Medieval Life" determined students' level of topic interest in each of the two texts. Immediately after reading, students' interest level in the two stories was assessed again via the interest rating scale (see Appendix E). This task sought to ascertain whether or not students' initial interest level was maintained throughout the reading tasks.

3.3.1.2. Gender

The variable of gender was included to examine its impact and interaction with topic interest in L2 vocabulary acquisition through reading. Gender information was gathered from the background questionnaire (see Appendix A).

3.3.2. Control variables

3.3.2.1. Prior topic knowledge

The variable of prior topic knowledge was considered a control variable, controlling for the potential confounding effect of background knowledge (Pulido, 2003; 2004; 2007). Prior knowledge for each topic was assessed via an 8-item true-false test on the content of the text (see Appendix F). Previous research has used true-false tests to measure learners' background knowledge (e.g., Aurah, 2013; Johnson & Lawson, 1997; Salmeron, Canas, Kintsch, & Farjardo, 2005) due to their comparable validity and reliability to multiple-choice tests as well as their ability to allow for a greater sampling of the content (Frisbie & Sweeney, 1982; Kreiter & Frisbie, 1989; Tasdemir, 2010). In this test, four sentences described information contained in the reading passages. The other four sentences described content that pertained to the topic of the text even if it was not explicitly stated in the text. These four sentences served as distractors. Participants were instructed to read the sentences written in their first language (i.e., Korean), and check "T" if they thought it was true and "F" if they thought it was false. On this test, 0

points were awarded for an incorrect answer, and 1 point for a correct answer. The prior knowledge test had a reliability of .67 (Cronbach's alpha).

3.3.2.2. Prior target word (TW) knowledge

In order to ensure that learners had little to no familiarity with the target words that were to be learned, the present study employed a vocabulary pretest, which collected each participant's baseline measure of target words. The pretest scores were then used as a control variable. Prior knowledge of 30 target words was assessed via a test combining a yes/no checklist component with a translation component (see Appendix G). The yes/no checklist measured students' familiarity with the target words. This self-report checklist has been supported due to its efficiency and strong correlation with multiple-choice test results (Anderson & Freebody, 1983; Meara & Buxton, 1987). However, the current study added a translation task to confirm learners' exact receptive knowledge of word meanings and to take into account possible unreliability in the self-report results alone (Rott, 1997). This combination of two tasks has been employed in previous vocabulary acquisition research in order to test learners' prior target word knowledge (e.g., Rott, 1997). In this pretest, students were first instructed to answer a yes/no question to indicate whether or not they were familiar with the words. Then, they were required to translate, define, or explain the words for which they had marked "yes," either in their L1 (Korean) or L2 (English). On this test, 0 points were awarded for an incorrect meaning,

0.5 points for a partially correct meaning, and 1 point for a correct meaning. The vocabulary pretest had a reliability of .46[4] (Cronbach's alpha).

3.3.3. Covariate

3.3.3.1. L2 reading proficiency

L2 reading proficiency was included as a continuous independent variable, or covariate. This variable was measured by the reading section of the National Academic Achievement Test of English. Standardized tests of L2 reading ability have been used as a reliable and appropriate measure of L2 proficiency in L2 reading and vocabulary research (e.g., Erçetin, 2010; Lee, 2009; Pulido, 2003). The test had been administered to the ninth graders from the previous year and was considered to be at an appropriate level for participants in the present study, as they were entering the ninth grade. The test was composed of 19 reading passages and encompassed both functional texts, such as advertisements and forms, as well as academic ones, such as persuasive or literary essays. Each passage was approximately 100 words long and was followed by one multiple-choice question designed to test the student's ability to comprehend main ideas, make inferences, and understand the relationship between sentences/paragraphs. The reliability coefficient of the measurement was .93, which was considered to be very reliable (Park et

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[4] Because 93% of the students scored 0 points on all 30 items of the vocabulary pretest, there was very little variability across items. The low variation in scores led to nonsignificant correlations between the 30 items and the relatively low Cronbach's alpha.

al., 2006). The Kuder-Richardson Formula 21 estimate of reliability from the present study was .83, which is also considered to be very reliable.

3.3.4. Dependent variables

Three measurements were administered to assess both vocabulary gain (i.e., vocabulary posttest scores measured immediately after reading) and vocabulary retention (i.e., vocabulary posttest scores measured four weeks after reading) of the target words. These three tests included word-form recognition, translation recognition, and translation production. The research employed this combination of tests to measure the range of partial-to-fuller receptive vocabulary knowledge, with an aim to consider the incremental process of vocabulary acquisition through reading. To control for effects from the presentation order of the texts, the 30 target words were randomized. In addition, to avoid the possibility that students would copy each other, two versions of each test were made by switching the order of words. Half of the participants were given Version 1, and the other half completed Version 2.

3.3.4.1. Word-form recognition

The word-form recognition test was employed to measure the first phase in vocabulary acquisition (see Appendix H). This test required the student to respond "yes" if he or she remembered having seen the word in the texts or "no" if he or she did not. As Pulido (2004) argued, "This task of verifying whether or not certain words were

presented within the stories that were read is assumed to…be an indirect measure of having noticed the TWs [target words] while reading" (p. 485). The word recognition test consisted of 30 target words and 20 distractors. The distractors were included to correct for imprecise guessing. The ratio of 3 to 2 reflects the ratio of word recognition tests that proved to be reliable and valid (Meara & Buxton, 1987; Mochida & Harrington, 2006; Waring & Takaki, 2003). The 20 distractors were selected from the 10,000-word level vocabulary list (Nation, 2008) in order to use low frequency real words, instead of pseudowords, in the interest of pedagogical value (Mochida & Harrington, 2006). The test counted each correct answer as one point. Each false recognition also counted as one point, but was subtracted from the total number of correct answers to control for guessing (Waring & Takaki, 2003). The word-form recognition test had a reliability of .82 (Cronbach's alpha).

3.3.4.2. Translation recognition

The translation recognition test measured learners' receptive word knowledge of meaning focusing on the dimension of recognition (see Appendix I). Each item in this test included the correct meaning, three distractors, and a fifth option "I do not know." Each distractor was chosen based on meeting one of these criteria: "(a) contextually proximate to the TW, (b) schematically appropriate, (c) orthographically or phonologically close to another known word in the L1 or L2 and plausible for the given context" (Pulido, 2003, p. 252). For instance, for the target word, *fealty*, presented in the

following sentence: *He kneeled before the king and swore his fealty with words*, the choices provided were (a) fealty (correct), (b) avowal (contextually proximate), (c) feeling (orthographically or phonologically similar), and (d) labor (schematically appropriate). In addition, these answer options derived from the same part of speech as each target word. For example, the target word *obsolete* is an adjective, so the three alternative answer choices were also adjectives. These four choices were written in participants' first language (i.e., Korean). Finally, in order to diminish guessing, (e) "I do not know" was included as an answer option (Waring & Takaki, 2003). Among these five options, the students were instructed to check the words which were closest in meaning. On the translation recognition test, only correct answers were counted as one point. The translation recognition test had a reliability of .86 (Cronbach's alpha).

3.3.4.3. Translation production

The translation production test measured learners' receptive word knowledge of meaning focusing on the dimension of production (see Appendix J). This task required students to translate, define, or explain the target words either in their L1 (Korean) or L2 (English). This measure has been widely used as a supply-definition task in previous L2 vocabulary research (e.g., Knight, 1994; Pulido, 2003; Rott, 1999; Waring & Takaki, 2003). Word gain was scored as follows: 0 points for an incorrect answer; 0.5 points for a partially correct answer; and, 1 point for a correct answer. The translation production test had a reliability of .85 (Cronbach's alpha).

The tests were given in the following order. First, the word-form recognition test was administered. The translation production test was given next so that participants could not use the meanings from the translation recognition test. Finally, participants took the translation recognition test. All three tests were completed within the span of 15 minutes; answers were collected at the completion of each individual test.

3.4. Procedure

This study was conducted in four sessions over eight weeks. Seven intact classes of students in a Korean middle school were invited to participate in the study. All four sessions took place during the students' regularly scheduled English class. Parental permission forms were obtained prior to the beginning of the sessions (see Appendix K). During Session 1, students were told about the importance of the study and its procedures, given a chance to ask questions, and were asked to sign the consent forms (see Appendix L). At this time, students were informed that the study focused on reading comprehension, but they were not apprised of the vocabulary test that would measure word gains. At the end of the session, students completed a background questionnaire and a topic interest inventory. One week later during Session 2, participants completed the reading section of the National Academic Achievement Test of English, vocabulary pretest, and prior topic knowledge test. This step was followed two weeks later with Session 3. At the beginning of Session 3, participants were informed that there would be comprehension questions after they read the passages, but there was no mention of

vocabulary tests. In an effort to control for order effect, reading passages were assigned to the participants in a counterbalanced manner. Each group of participants read the first assigned passage (either Psy or Medieval), completed an interest rating scale, and answered multiple-choice comprehension questions written in their L1 (see Appendix M). Students then read the second assigned passage (either Medieval or Psy) followed, again, by an interest rating scale and multiple-choice comprehension questions written in their L1. Afterwards, participants performed an intervening number task to minimize the effect of immediate memory of target words (Pulido, 2003). Participants then completed the immediate vocabulary posttest, which was a combination of a word-form recognition test, a translation production test, and a translation recognition test. Each vocabulary test included a randomized list of target words from both passages. All tasks were completed during a 45-minute class session. Session 4, conducted four weeks after the completion of Session 3, assessed the retention of vocabulary via the delayed posttest, which was the same combination of three tests as in Session 3. After completion of the delayed posttest, students were debriefed on the purpose of the experiment. Figure 3.2 summarizes the study's procedures.

Session 1	1. Informed consent form (15 min)
	2. Background questionnaire (5 min)
	3. Topic interest inventory (3 min)
Session 2	One week after Session 1
	1. The reading section of the National Academic Achievement Test of English (35 min)
	2. Vocabulary pretest (5 min)
	3. Prior topic knowledge test (3 min)
Session 3	Two weeks after Session 2
	1. Reading the first text (12 min)
	2. Interest rating scale and R/C questions for the first text (2 min)
	3. Reading the second text (12 min)
	4. Interest rating scale and R/C questions for the second text (2 min)
	5. Intervening number task (2 min)
	6. Immediate posttest using the combination of a word-form recognition test, a translation production test, and a translation recognition test (15 min)
Session 4	Four weeks after Session 3
	Delayed posttest using the combination of a word-form recognition test, a translation production test, and a translation recognition test (15 min)

Figure 3.2. Procedure for the experiment.

3.5. Data Analysis

A repeated measures multivariate analysis of covariance (MANCOVA) was conducted to test the significance of the main effects of topic interest, L2 proficiency, and gender, as well as the interactions of topic interest with each of L2 proficiency and gender on the two dependent variables associated with vocabulary acquisition: word-form recognition and translation recognition. Topic interest (high versus low) and time (immediate posttest versus delayed posttest) represented the within-subject factors, and gender (male versus female) represented the between-subject factor. L2 proficiency served as a covariate (i.e., a continuous independent variable). Before starting this analysis, the assumptions of MANCOVA (multivariate normality, homogeneity of variance-covariance matrices, independence, linearity, homogeneity of regression slopes, and no measurement error in the covariate) were assessed and found to be satisfied, thus, supporting the use of MANCOVA for data analysis. In the interest of parsimony, the control variables (prior topic knowledge and prior target word knowledge) were not included in the final model for two reasons. First, multiple regression analyses, which were conducted prior to running MANCOVA, revealed no significant relationships between the control variables and the dependent variables. Second, results from paired-samples t tests showed nonsignificant differences in prior topic knowledge and prior TW knowledge between the Psy and Medieval passages. Generalized estimating equations (GEE, Zeger & Liang, 1986) were used for the dependent variable of translation production, which did not satisfy the normal distribution assumptions. The GEE approach

was employed due to "its ability to analyze non-normally distributed data" (Cupit, 2010, p. 51) with repeated measurements. Because one MANCOVA and one GEE were completed, a Bonferroni adjustment required an alpha level of .025 (.05/2) to be used for all statistical tests. In addition, if multivariate results were significant at the alpha level of .025, an alpha level of .05 was used for follow-up univariate analyses.

CHAPTER 4:   RESULTS

Divided into three main sections, the present chapter aims to summarize the results of the data analysis. The first section reports descriptive statistics for each of the main variables. The second and third sections present inferential statistics in reference to the research questions. Specifically, the second section focuses on the results of the MANCOVA performed on word-form recognition and translation recognition. The third section describes the results of the GEE analysis performed on translation production. The chapter concludes with a summary of the hypothesis tests and results.

4.1. Descriptive Statistics

Table 4.1 presents the means and standard deviations for the independent variable (topic interest), the covariate (L2 proficiency), and the control variables (prior topic knowledge and prior target word knowledge). The independent variable, topic interest, was measured before and after reading two passages ("Psy's Gangnam Style" and "Medieval Life") in order to gauge whether or not the differences in students' interest levels between the Psy and Medieval texts were maintained over time. Topic interest was assessed via a 7-point Likert-type scale ranging from 1 (*not interesting*) to 7 (*very interesting*). The mean values for the topic interest in the Psy and Medieval passages were 5.26 and 2.10. The mean scores for the post-reading interest in the Psy and Medieval passages were 4.78 and 2.50. Paired-samples *t* tests revealed that students

demonstrated significantly higher topic interest in the Psy passage than in the Medieval one, t (134) = 20.27, $p < .001$, $d = 1.75$ and significantly higher post-reading interest in the Psy passage than in the Medieval one, t (134) = 19.01, $p < .001$, $d = 1.64$. These results suggest that a significantly large difference in students' interest levels between the two stories occurred before and after reading.

Table 4.1

Descriptive Statistics for Independent Variables, Covariate, and Control Variables

Variables	"Psy's Gangnam Style"		"Medieval Life"	
	M	*SD*	*M*	*SD*
Topic interest	5.26	1.37	2.10	1.31
Male	5.44	1.13	2.65	1.57
Female	5.20	1.44	1.91	1.16
Post-reading interest	4.78	1.39	2.50	1.40
Male	4.88	1.34	2.68	1.55
Female	4.74	1.41	2.45	1.35
L2 proficiency	68.78	18.28	68.78	18.28
Male	66.77	19.05	66.77	19.05
Female	69.46	18.06	69.46	18.06
Prior topic knowledge	6.70	1.01	6.61	1.40
Male	6.62	1.10	6.79	1.39
Female	6.73	0.98	6.55	1.40
Prior TW knowledge	0.05	0.25	0.02	0.15
Male	0.09	0.38	0.06	0.24
Female	0.04	0.18	0.01	0.10

Note. TW = target word. $N = 135$ (Male = 34, Female = 101).

The covariate, L2 reading proficiency, was measured by the reading section of the National Academic Achievement Test of English, and the mean score was 68.78 out of 100 points. The control variable, prior topic knowledge, was assessed via an 8-item true-false test for each topic. On average, participants correctly answered 6.70 out of 8 questions for the Psy passage and 6.61 out of 8 questions for the Medieval one. A paired-samples t test revealed no significant differences in prior topic knowledge score between the Psy and Medieval passages, t (134) = 0.90, p = .096, d = 0.08. These similar high scores showed that participants had a high level of prior topic knowledge on both "Psy's Gangnam Style" and "Medieval Life" stories. With regard to prior target word (TW) knowledge, the mean score of the vocabulary pretest for both the Psy and Medieval texts was 0.05 words out of 15 words and 0.02 words out of 15 words, respectively. These low mean scores confirmed that generally, students were not familiar with the 30 target words prior to reading the two stories. In addition, a paired-samples t test revealed no significant differences in vocabulary pretest scores between the Psy and Medieval passages, t (134) = 1.58, p = .117, d = 0.14 . Because of the nonsignificant differences in the levels of prior topic knowledge and prior TW knowledge between the two texts, both control variables were omitted from the statistical models in the interest of parsimony. The results from multiple regression analyses, which were conducted prior to running MANCOVA, also revealed no significant relationships between the control variables and the dependent variables, thus supporting the decision to not include the control variables.

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Table 4.2 displays the mean and standard deviation for the dependent variables, which include gain (immediately after reading) and retention (four weeks after reading) in word-form recognition, translation production, and translation recognition. The mean scores for gain in word-form recognition in the Psy and Medieval texts were 13.51 out of 15 words (90.10%) and 7.93 out of 15 words (52.87%), respectively, suggesting a high level of word gain in the initial step of vocabulary acquisition. However, the scores decreased to 4.47 (29.80%) and 1.43 (9.53%), respectively, in the retention of word-form recognition (four weeks after reading). Floor effects were observed for both gain and retention in translation production for the Psy and Medieval passages. For example, students accurately translated less than two words (9%) from each story. The mean scores for gain in translation recognition in the Psy and Medieval texts were 7.87 out of 15 (52.47%) and 4.27 out of 15 (28.47%). In the delayed posttests, these scores decreased to 5.81 (38.73%) and 3.42 (22.80%), respectively, suggesting a relatively low level of attrition. On the whole, greater overall vocabulary gains were observed in the Psy passage compared to the Medieval one. In addition, in the immediate posttests, students showed the highest gains in word-form recognition, followed by translation recognition and then translation production. However, in the delayed posttests, students performed the best on translation recognition, followed by word-form recognition and then translation production.

Table 4.2

Descriptive Statistics for Dependent Variables

	Variables	Psy		Medieval	
		M	*SD*	*M*	*SD*
Gain	Word-form recognition	13.51	6.25	7.93	7.19
	Male	13.94	6.87	6.00	7.45
	Female	13.37	6.06	8.57	7.02
	Translation production	1.27	2.08	0.35	0.67
	Male	1.52	1.92	0.32	0.60
	Female	1.20	2.14	0.36	0.70
	Translation recognition	7.87	3.51	4.27	3.25
	Male	7.79	3.10	4.20	3.39
	Female	7.89	3.65	4.29	3.22
Retention	Word-form recognition	4.47	6.54	1.43	6.01
	Male	4.70	6.86	-0.29	7.07
	Female	4.40	6.46	2.01	5.53
	Translation production	0.47	0.98	0.16	0.40
	Male	0.43	0.91	0.18	0.39
	Female	0.48	1.00	0.15	0.41
	Translation recognition	5.81	3.46	3.42	2.60
	Male	5.44	3.44	3.35	2.51
	Female	5.93	3.47	3.44	2.64

Note. Gain = immediately after reading. Retention = four weeks after reading. Psy = "Psy's Gangnam Style." Medieval = "Medieval Life." *N* = 135 (Male = 34, Female = 101).

4.2. Inferential Statistics

The current study examined the effect of topic interest on L2 vocabulary acquisition through reading. The study also investigated whether L2 proficiency and gender moderated the effect of topic interest on L2 vocabulary acquisition. To answer the research questions, a repeated measures multivariate analysis of covariance (MANCOVA) was performed on two dependent variables associated with vocabulary acquisition: word-form recognition and translation recognition. The independent variables were topic interest (high vs. low) and gender (male vs. female). The continuous variable of L2 proficiency was used as a covariate to control for and assess its effect on L2 vocabulary acquisition. If multivariate results were significant at the alpha level of .025, univariate analyses of variance (ANCOVAs) were conducted using an alpha level of .05 to evaluate the model on each measure of vocabulary acquisition. For significant interactions, mean comparisons were made for each level (interest, gender, and time) to investigate interaction effects. Partial eta-squared (η_p^2) was also reported to interpret effect size in addition to statistical significance. For effect sizes, partial eta-squared is interpreted as small (.01), moderate (.06), or large (.14) (Cohen, 1988).

The effect of independent variables on the translation production variable was tested via generalized estimating equations (GEE). Because the translation production variable did not satisfy the normal distribution assumption, the variable was transformed into a binary variable, either 0 = no gain or 1 = any sign of gain (Pulido, 2003). The GEE method was used for its ability to analyze a binary outcome with repeated measurements

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(Ballinger, 2004; Burton, Gurrin, & Sly, 1998; Zeger & Liang, 1986). For each predictor, regression coefficients (b) were examined to test whether they significantly predicted vocabulary acquisition through reading. Odds ratios were reported in order to interpret effect sizes in addition to statistical significance. The assumptions that underlie the use of MANCOVA and GEE will be addressed in the following section.

4.2.1. Evaluation of assumptions

Prior to the main data analyses, the researcher examined the assumptions of the repeated measures multivariate analysis of covariance (MANCOVA): (a) multivariate normality; (b) homogeneity of variance-covariance matrices; (c) independence; (d) linearity; (e) homogeneity of regression slopes; (f) no measurement error in the covariate; and, (g) sphericity (Stevens, 2009). First, the skewness and kurtosis of word-form recognition and translation recognition scores lay between -1.0 and +1.0, suggesting that the multivariate normality assumption was met. Second, the p value associated with Box's M test was greater than .05 ($p = .604$), and the p values associated with Levene's test were all greater than .05, satisfying the homogeneity of variance-covariance matrices. Third, given that participants read the texts and responded to the vocabulary measures individually, the independence assumption was met. Fourth, examination of bivariate scatterplots for the dependent variables and the covariate revealed linear relationships, suggesting that the linearity assumption had been met. Fifth, the lack of interaction between the independent variables and the covariate suggests that the assumption of

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homogeneity of regression slopes was satisfied. Sixth, the measure of L2 proficiency was reliable, suggesting that there was no measurement error in the covariate. Finally, because both within factors (interest and time) had only two levels, the assumption of sphericity did not require assessment[5].

For the GEE approach, which was used for repeated measures logistic regression, the researcher examined the assumptions of logistic regression using the GEE: (a) independence; (b) no measurement error; and (c) convergence of the GEE (Tate, 1998; Hardin & Hilbe, 2013). First, given that participants read the texts and responded to the vocabulary measures individually, the independence assumption was met. Second, the measures of independent variables were all reliable, suggesting that there was no measurement error. Third, given that there was no convergence error, the convergence criterion of the model was satisfied.

With regard to sample size, the original N of 142 (39 males and 103 females) was reduced to 135 (34 males and 101 females). Seven cases were omitted because these individuals indicated the opposite interest for two passages. In other words, these students showed high interest in "Medieval Life" and low interest in "Psy's Gangnam Style." Results from a power analysis (power = 0.80, alpha = 0.05, Cohen's f = .25) revealed that a minimum sample size of 128 was needed to find significance. Therefore, the study's sample size (N = 135) was adequate to detect a medium effect size.

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[5] There needs to be at least three levels in a within factor to test for sphericity because it looks for differences between pairs of repeated measures.

4.2.2. Presentation of results by research question

One repeated measures MANCOVA test was performed with two dependent variables: scores on the word-form recognition and scores on the translation recognition. Topic interest, gender, and time were the independent variables, and L2 proficiency was the covariate. Two- and three-way interactions under investigation were also included in the model. In addition, one GEE was performed with the scores on the translation production as the dependent variable; topic interest, gender, and time as the independent variables; and L2 proficiency as the covariate. Two-way and three-way interactions under investigation were entered into this model as well.

Results from the MANCOVA analysis showed main effects of topic interest, L2 proficiency, and time; significant interactions of topic interest by gender; and a significant interaction of topic interest by time. Results from the GEE analysis revealed a main effect of L2 proficiency. All other main effects and interactions in the two models were nonsignificant.

The following section presents the results organized by research question. Each research question and hypothesis is followed by statistical tests and a brief interpretation of the statistical results. First, the results of MANCOVA performed on word-form recognition and translation recognition will be reported. Then, the results of the GEE analysis performed on translation production will be presented. Following the presentation of results for each research question, a summary of the results is provided in Table 4.19 at the conclusion of this section.

(1) Does topic interest affect L2 vocabulary acquisition through reading?

It was hypothesized that students would demonstrate higher vocabulary acquisition from a higher interest passage than from a lower interest one. Table 4.3 presents descriptive statistics pertaining to the research question, and Table 4.4 summarizes the results of the MANCOVA used to test this hypothesis. In the multivariate results for MANCOVA, a significant main effect of topic interest was obtained for L2 vocabulary acquisition with a moderate effect size, Wilks's $\Lambda = .94$, $F(2,131) = 3.96$, $p = .021$, $\eta_p^2 = .06$. Follow-up univariate analyses revealed a significant main effect of topic interest on word-form recognition, $F(1,132) = 4.87$, $p = .029$, $\eta_p^2 = .04$ as well as a significant main effect of topic interest on translation recognition, $F(1,132) = 5.03$, $p = .027$, $\eta_p^2 = .04$.

Table 4.3

Descriptive Statistics for Topic Interest and Recognition Scores for Each Passage

	Variables	Psy (high)		Medieval (low)	
		M	*SD*	*M*	*SD*
IV	Topic interest	5.26	1.37	2.10	1.31
DV Gain	Word-form recognition	13.51	6.25	7.93	7.19
	Translation recognition	7.87	3.51	4.27	3.25
Retention	Word-form recognition	4.47	6.54	1.43	6.01
	Translation recognition	5.81	3.46	3.42	2.60

Note. IV = independent variable. DV = dependent variable. Gain = immediately after reading. Retention = four weeks after reading. Psy = "Psy's Gangnam Style." Medieval = "Medieval Life."

Table 4.4

MANCOVA and ANCOVA Results for the Effect of Topic Interest on L2 Vocabulary Acquisition

	Wilks's Λ	F	df	η_p^2	p
Multivariate results					
Topic interest	.94	3.96	2/131	.06	.021
Univariate results					
Word-form recognition		4.87	1/132	.04	.029
Translation recognition		5.03	1/132	.04	.027

The results demonstrated that students learned significantly more words from the more interesting story in comparison to the less interesting story. Specifically, in word-form recognition tests, students recognized an average of 5.05 more word forms from the Psy passage than from the Medieval one, controlling for L2 proficiency. Similarly, in translation recognition tests, students recognized an average of 2.96 more word meanings from the Psy text than from the Medieval one, controlling for L2 proficiency. These findings provide support for Hypothesis 1.

(2) Does L2 proficiency affect L2 vocabulary acquisition through reading?

It was hypothesized that higher proficiency students would learn more words through reading than lower proficiency students. Table 4.5 summarizes the results of the MANCOVA used to test this hypothesis. In the multivariate results for MANCOVA, a significant covariate effect of L2 proficiency was obtained for L2 vocabulary acquisition with a large effect size, Wilks's Λ = .62, F (2,131) = 40.13, p < .001, η_p^2 = .38. Follow-up univariate analyses revealed a significant effect of L2 proficiency on word-form recognition, F (1,132) = 61.85, p < .001, η_p^2 = .32, along with a significant effect of L2 proficiency on translation recognition, F (1,132) = 63.19, p < .001, η_p^2 = .32. Table 4.6 presents the significant positive Pearson correlations between L2 proficiency and L2 vocabulary acquisition (i.e., word-form recognition and translation recognition), indicating that as L2 proficiency increased, L2 vocabulary gain and retention also increased. In addition, the r-squared values, computed by squaring the bivariate correlations, suggest that L2 proficiency accounted for 26% of the variance in word gain for word-form recognition (r^2 = .26), 28% of the variance in word gain for translation recognition (r^2 = .28), 24% of the variance in word retention for word-form recognition (r^2 = .24), and 28% of the variance in word retention for translation recognition (r^2 = .28). These findings suggest that higher proficiency students acquired significantly more words through reading than lower proficiency students, therefore supporting Hypothesis 2.

Table 4.5

MANCOVA and ANCOVA Results for the Effect of L2 Proficiency on L2 Vocabulary Acquisition

	Wilks's Λ	F	df	η_p^2	p
Multivariate results					
L2 proficiency	.62	40.13	2/131	.38	<.001
Univariate results					
Word-form recognition		61.85	1/132	.32	<.001
Translation recognition		63.19	1/132	.32	<.001

Table 4.6

Correlations and Squared Correlations Between L2 Proficiency and L2 Vocabulary Acquisition

	Gain				Retention			
	WF		TR		WF		TR	
	r	r^2	r	r^2	r	r^2	r	r^2
L2 proficiency								
Total	.51**	.26	.53**	.28	.49**	.24	.52**	.28
Psy	.50**	.25	.49**	.24	.50**	.25	.49**	.24
Medieval	.42**	.18	.48**	.23	.41**	.17	.46**	.21

Note. Gain = immediately after reading. Retention = four weeks after reading. WF = Word-form recognition. TR = Translation recognition.
* $p < .05$. ** $p < .01$. *** $p < .001$.

(3) Does L2 proficiency moderate the effect of topic interest on L2 vocabulary acquisition through reading?

It was hypothesized that the effect of topic interest on L2 vocabulary learning from reading would differ by students' level of L2 proficiency. Table 4.7 summarizes the results of the MANCOVA used to test this hypothesis. In the multivariate results for MANCOVA, no significant interaction effect between topic interest and L2 proficiency was obtained for L2 vocabulary acquisition, Wilks's $\Lambda = .97$, $F(2,131) = 2.06$, $p = .131$. This finding suggests that the effect of topic interest was consistent for higher and lower proficiency students. Therefore, Hypothesis 3 was not supported.

Table 4.7

MANCOVA Results for Interaction Between Topic Interest and L2 Proficiency on L2 Vocabulary Acquisition

	Wilks's Λ	F	df	η_p^2	p
Multivariate results					
Topic interest $\times$ L2	.97	2.06	2/131	.03	.131

(4) Does gender affect L2 vocabulary acquisition through reading?

It was hypothesized that gender would not have a main effect on L2 vocabulary acquisition through reading. Table 4.8 summarizes the results of the MANCOVA used to test this hypothesis. In the multivariate results for MANCOVA, a nonsignificant effect of gender on L2 vocabulary acquisition was observed, Wilks's $\Lambda = 1.00$, $F(2,131) = 0.35$, $p = .705$. The nonsignificant effect for gender suggested that there is no difference in L2 vocabulary learning through reading between males and females, thus supporting Hypothesis 4.

Table 4.8

MANCOVA Results for the Effect of Gender on L2 Vocabulary Acquisition

	Wilks's Λ	F	df	η_p^2	p
Multivariate results					
Gender	1.00	0.35	2/131	.01	.705

(5) Does gender moderate the effect of topic interest on L2 vocabulary acquisition through reading?

It was hypothesized that the effect of topic interest on L2 vocabulary learning from reading would differ according to students' gender, although there might not have been a main effect of gender as stated in the Literature review section. Table 4.9 presents descriptive statistics pertaining to the research question, and Table 4.10 summarizes the results of the MANCOVA used to test this hypothesis. The multivariate results for the MANCOVA indicated a significant interaction effect between topic interest and gender for L2 vocabulary acquisition with a moderate to large effect size, Wilks's $\Lambda = .89$, F (2,131) = 7.87, $p = .001$, $\eta_p^2 = .11$. Follow-up univariate analyses revealed a significant interaction between topic interest and gender for word-form recognition, F (1, 132) = 14.20, $p < .001$, $\eta_p^2 = .10$ (see Figure 4.1), but not for translation recognition, F (1, 132) = 0.13, $p = .722$. As shown in Table 4.11, differences in means demonstrated that females recognized significantly more word forms than males on the lower interest text "Medieval Life" ($p = .046$). Although it appears that males recognized more word forms from the higher interest text "Psy's Gangnam Style" than females, this difference did not reach significance. These findings provide partial support for Hypothesis 5.

Table 4.9

Descriptive Statistics for Recognition Scores by Gender, Interest, and Time

	Variables	Gender	Psy (high)		Medieval (low)	
			M	*SD*	*M*	*SD*
Gain	Word-form recognition	Male	13.94	6.87	6.00	7.45
		Female	13.37	6.06	8.57	7.02
	Translation recognition	Male	7.79	3.10	4.20	3.39
		Female	7.89	3.65	4.29	3.22
Retention	Word-form recognition	Male	4.70	6.86	-0.29	7.07
		Female	4.40	6.46	2.01	5.53
	Translation recognition	Male	5.44	3.44	3.35	2.51
		Female	5.93	3.47	3.44	2.64

Note. Gain = immediately after reading. Retention = four weeks after reading. Psy = "Psy's Gangnam Style." Medieval = "Medieval Life."

Table 4.10

MANCOVA Results for the Interaction Between Topic Interest and Gender on L2 Vocabulary Acquisition

	Wilks's Λ	*F*	*df*	η_p^2	*p*
Multivariate results					
Topic interest × Gender	.89	7.87	2/131	.11	.001
Univariate results					
Word-form recognition		14.20	1/132	.10	<.001
Translation recognition		0.13	1/132	.00	.722
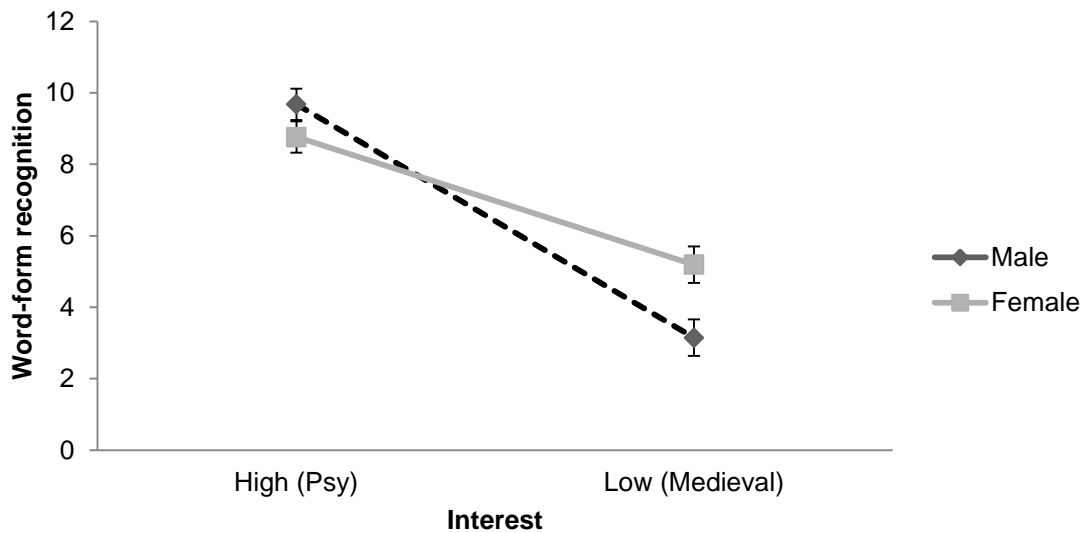
Figure 4.1. Interaction between topic interest and gender on word-form recognition.

Table 4.11

Differences in Means of Recognition Scores by Gender at Each Topic Interest Level

DV	Interest	Gender		Mean difference (male – female)	*SE*	*p*
Word-form	High (Psy)	Male	Female	0.92	0.88	.296
recognition	Low (Medieval)	Male	Female	-2.05	1.02	.046
Translation	High (Psy)	Male	Female	-0.04	0.54	.937
recognition	Low (Medieval)	Male	Female	0.12	0.46	.791

Note. DV = dependent variable. Psy = "Psy's Gangnam Style." Medieval = "Medieval Life."

(6) Are the effects of topic interest, L2 proficiency, gender, and interactions between topic interest, L2 proficiency, and gender observed over time?

It was hypothesized that the significant effects obtained would be maintained over time. Thus, to answer this research question, the study focused on the effects of topic interest, L2 proficiency, and topic interest by gender, which were significant in the previous analyses. Table 4.12 summarizes the results of the repeated measures MANCOVA used to test this hypothesis.

With regard to topic interest, the multivariate results for the MANCOVA showed a significant interaction between topic interest and time, Wilks's Λ = .91, F (2,131) = 6.77, p = .002, η_p^2 = .09. Follow-up univariate analyses revealed a significant interaction effect between topic interest and time on both word-form recognition, F (1, 132) = 4.90, p = .029, η_p^2 = .04 and translation recognition, F (1, 132) = 8.34, p = .005, η_p^2 = .06. Figures 4.2 and 4.3 illustrate steeper decreases for the Psy passage in comparison to the Medieval one in both word-form recognition and translation recognition. The results of the mean comparisons in Table 4.13 revealed that word-form recognition scores significantly decreased over time for both the Psy (p < .001) and Medieval (p < .001) passages. Significant decreases over time in translation recognition scores were also observed for both the Psy (p < .001) and Medieval (p = .001) passages. In addition, as shown in Table 4.14, the results of the mean comparisons revealed that the difference in word-form recognition between the high- and low-interest passages was significant immediately after reading (p < .001), and this difference remained significant four weeks

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later ($p < .001$). However, the difference was smaller than it had been immediately after reading. Similarly, the difference in translation recognition between the high- and low-interest passages was significant immediately after reading ($p < .001$), and this difference was still significant four weeks later ($p < .001$). Once again, however, the difference was smaller than it had been immediately after reading.

Table 4.12

Repeated Measures MANCOVA and ANCOVA Results for the Effects of Topic Interest, L2 Proficiency, Gender, Topic Interest ✕L2 Proficiency, and Topic Interest ✕Gender on L2 Vocabulary Acquisition

Multivariate	Univariate	Wilks's Λ	*F*	*df*	η_p^2	*p*
Time		.90	7.11	2/131	.10	.001
	WF		14.04	1/132	.10	<.001
	TR		0.99	1/132	.01	.321
Topic interest✕Time		.91	6.77	2/131	.09	.002
	WF		4.90	1/132	.04	.029
	TR		8.34	1/132	.06	.005
L2 proficiency✕Time		.99	0.59	2/131	.01	.554
	WF		0.22	1/132	.00	.640
	TR		1.08	1/132	.01	.301
Gender✕Time		1.00	0.13	2/131	.00	.879
	WF		0.00	1/132	.00	.978
	TR		0.26	1/132	.00	.612
TI ✕ L2 ✕ Time		.97	1.87	2/131	.03	.158
	WF		1.31	1/132	.01	.255
	TR		2.36	1/132	.02	.127
TI ✕ Gen ✕ Time		1.00	0.25	2/131	.00	.782
	WF		0.10	1/132	.00	.759
	TR		0.39	1/132	.00	.533

Note. WF = Word-form recognition. TR = Translation recognition. TI = Topic interest. L2 = L2 proficiency. Gen = Gender.
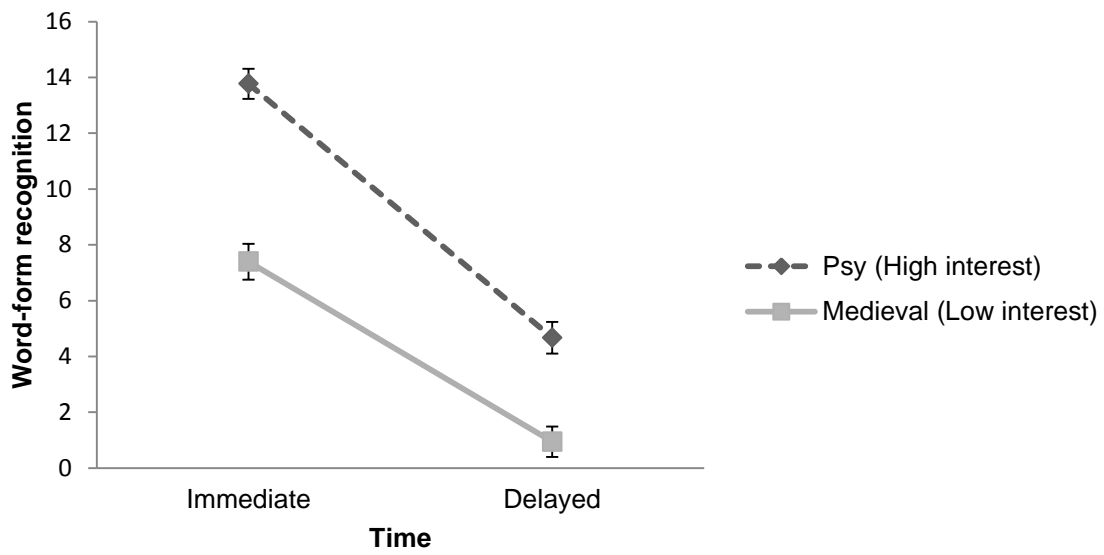
Figure 4.2. Interaction between topic interest and time on word-form recognition.
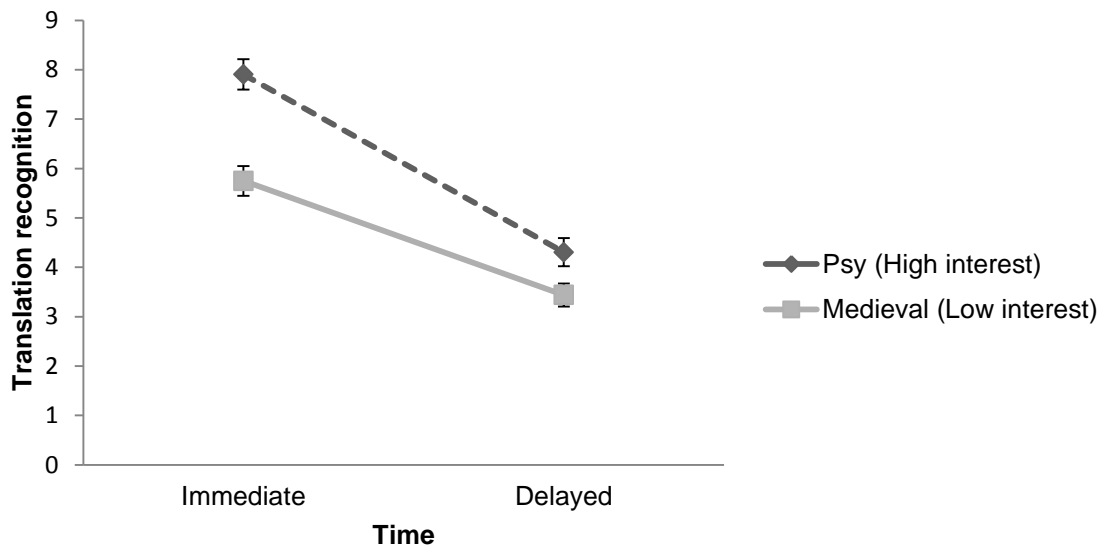

Figure 4.3. Interaction between topic interest and time on translation recognition.

Table 4.13

Differences in Means of Recognition Scores by Time at Each Topic Interest Level

DV	Interest	Time		Mean difference (imm – del)	SE	p
Word-form	High (Psy)	immediate	delayed	9.10	0.67	<.001
recognition	Low (Med)	immediate	delayed	6.45	0.62	<.001
Translation	High (Psy)	immediate	delayed	2.16	0.27	<.001
recognition	Low (Med)	immediate	delayed	0.87	0.25	.001

Note. DV = dependent variable. Psy = "Psy's Gangnam Style." Med = "Medieval Life."

Table 4.14

Differences in Means of Recognition Scores by Topic Interest at Each Time Point

DV	Time	Interest		Mean difference (high – low)	SE	p
Word-form	immediate	High (Psy)	Low (Med)	6.37	0.59	<.001
recognition	delayed	High (Psy)	Low (Med)	3.73	0.45	<.001
Translation	immediate	High (Psy)	Low (Med)	3.60	0.27	<.001
recognition	delayed	High (Psy)	Low (Med)	2.31	0.26	<.001

Note. DV = dependent variable. Psy = "Psy's Gangnam Style." Med = "Medieval Life."

With respect to L2 proficiency, the multivariate results for the MANCOVA showed a nonsignificant interaction between L2 proficiency and time, Wilks's Λ = .99, F (2,131) = 0.59, p = .554, η_p^2 = .01. Specifically, Table 4.15 illustrates that a significant positive Pearson correlation between L2 proficiency and L2 vocabulary acquisition (i.e., word-form recognition and translation recognition) was observed immediately after

reading as well as four weeks later. The variable of L2 proficiency accounted for 26% of the variance in word gain for word-form recognition ($r^2 = .26$) and 24% of the variance in word retention for word-form recognition ($r^2 = .24$). L2 proficiency also accounted for 28% of the variance in word gain for translation recognition ($r^2 = .28$) and 28% of the variance in word retention for translation recognition ($r^2 = .28$). These results indicate that L2 proficiency explained similar amounts of variability in vocabulary gain and retention.

Table 4.15

Correlations and Squared Correlations Between L2 Proficiency and L2 Vocabulary Acquisition

| | Gain | | | | Retention | | | |
| | WF | | TR | | WF | | TR | |
	r	r^2	r	r^2	r	r^2	r	r^2
L2 proficiency								
Total	.51**	.26	.53**	.28	.49**	.24	.52**	.28
Psy	.50**	.25	.49**	.24	.50**	.25	.49**	.24
Medieval	.42**	.18	.48**	.23	.41**	.17	.46**	.21

Note. Gain = immediately after reading. Retention = four weeks after reading. WF = Word-form recognition. TR = Translation recognition.
* $p < .05$. ** $p < .01$. *** $p < .001$.

With regard to the interaction between topic interest and gender, the multivariate results for the MANCOVA showed a nonsignificant three-way interaction between topic interest, gender, and time, Wilks's $\Lambda = 1.00$, $F(2,131) = 0.25$, $p = .782$, $\eta_p^2 = .00$. Figures

4.4 and 4.5 demonstrate that a similar interaction between topic interest and gender on word-form recognition occurred in both the immediate and delayed posttests. These findings suggest that the interaction between topic interest and gender was maintained over time.
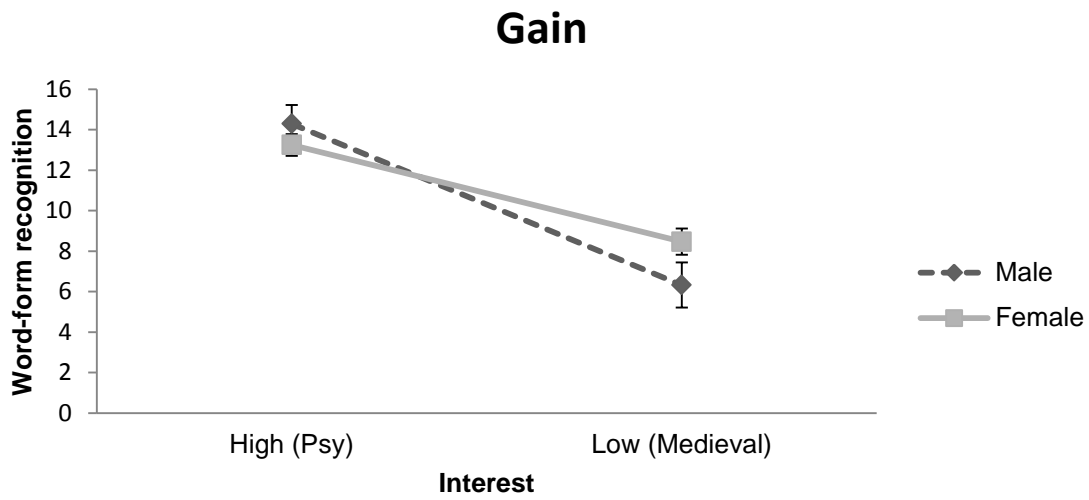
Gain

Figure 4.4. Interaction between topic interest and gender on word-form recognition gain (immediately after reading).
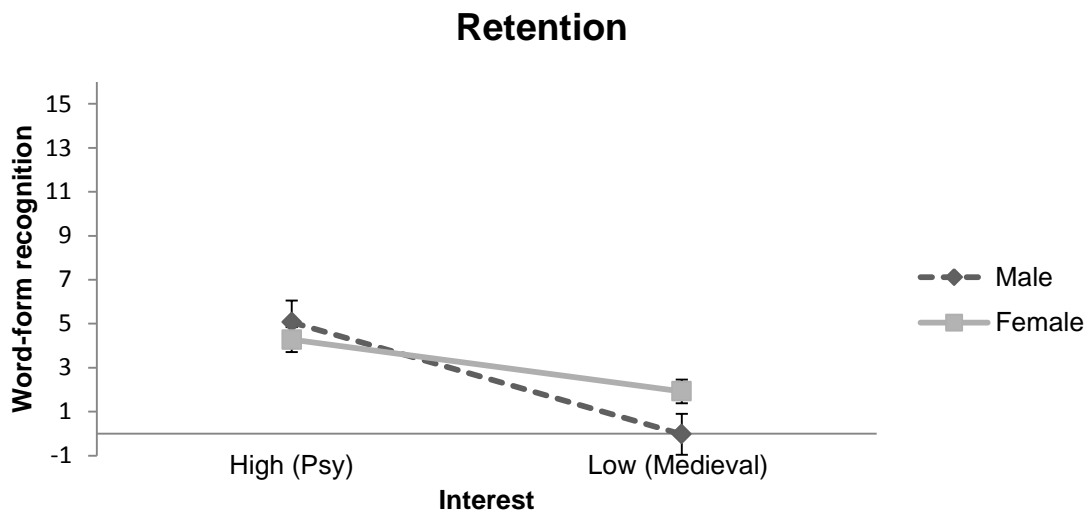
Retention

Figure 4.5. Interaction between topic interest and gender on word-form recognition retention (four weeks after reading).

The impact of the independent variables and their interactions on the translation production dependent variable was tested via generalized estimating equations (GEE). The translation production score did not satisfy the normal distribution assumption (shown in Table 4.16), so the variable was transformed into a binary variable, either $0 =$ no gain or $1 =$ any sign of gain (Pulido, 2003). The GEE method was used due to its ability to analyze a binary outcome with repeated measurements (Zeger & Liang, 1986). The analysis (shown in Table 4.17) revealed a significant main effect of L2 proficiency ($b = 0.05$, $p = .004$), with an odds ratio of 1.05. The odds ratio suggests that each 1-point increase in L2 proficiency increased the odds of acquiring vocabulary through reading by 5%. In addition, given the Bonferroni adjustment, the three-way interaction between topic interest, gender, and time approached significance. This finding suggests that the odds of acquiring vocabulary for females reading a high-interest text at the immediate posttest is higher than for all other combinations of topic interest by gender by time. None of the other variables were found to be statistically significant. Table 4.18 presents the biserial correlations between L2 proficiency and translation production. The significant positive correlations indicate that, as L2 proficiency increased, so did students' translation production. In addition, the significant positive correlation between L2 proficiency and translation production was observed immediately after reading as well as four weeks later. The r-squared values suggest that the variable L2 proficiency accounted for 10% of the variances in word gain ($r^2 = .10$) and 11% of the variances in word retention ($r^2 =$

.11). L2 proficiency explained similar amounts of variability in vocabulary gain and retention.

Table 4.16

Descriptive Statistics for Translation Production

	"Psy's Gangnam Style"					"Medieval Life"				
TP	*M*	*SD*	Skew	Kurt	% of 0	*M*	*SD*	Skew	Kurt	% of 0
Gain	1.27	2.08	1.27	0.83	50.40	0.35	0.67	1.74	1.99	73.30
Retention	0.47	0.98	2.26	4.41	71.90	0.16	0.40	2.19	4.02	84.40

Note. TP = Translation production. Gain = immediately after reading. Retention = four weeks after reading. Skew = Skewness. Kurt = Kurtosis. % of 0 = percent of "0" values.

Table 4.17

GEE Results for Variables on Translation Production

Parameter	*B*	*SE*	*p*	*OR*	CI
Topic interest	1.31	1.68	.434	3.72	[0.14, 99.37]
L2 proficiency	0.05	0.02	.004	1.05	[1.02, 1.08]
Gender	0.63	0.54	.250	1.87	[0.64, 5.42]
Time	0.90	1.27	.480	2.46	[0.20, 29.89]
Topic interest × L2	-0.00	0.02	.873	1.00	[0.96, 1.04]
Topic interest × Gender	-0.88	0.50	.077	0.42	[0.16, 1.10]
Topic interest × Time	0.20	1.63	.904	1.22	[0.05, 29.57]
L2 × Time	0.00	0.02	.999	1.00	[0.97, 1.03]
Gender × Time	-0.53	0.54	.325	0.59	[0.21, 1.69]
Topic interest × L2 × Time	-0.00	0.02	.870	1.00	[0.96, 1.04]
Topic interest × Gender × Time	1.28	0.63	.043	3.61	[1.04, 12.46]

Note. OR = odds ratio

Table 4.18

Correlations and Squared Correlations Between L2 Proficiency and Translation Production

	Translation production			
	Gain		Retention	
	r	r^2	r	r^2
L2 proficiency				
Total	.31**	.10	.33**	.11
Psy	.34**	.12	.33**	.11
Medieval	.34**	.11	.27**	.07

Note. Gain = immediately after reading. Retention = four weeks after reading.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4.19

Summary of the Results

Hypothesis	Results
Hypothesis 1 Students will acquire significantly more words through reading a higher interest passage compared to a lower interest passage.	Supported
Hypothesis 2 Higher proficiency students will acquire significantly more words through reading compared to lower proficiency students.	Supported
Hypothesis 3 L2 proficiency will moderate the effect of topic interest on L2 vocabulary acquisition such that higher topic interest will impact higher proficiency students more than lower proficiency students, or vice versa.	Not Supported
Hypothesis 4 There will be no significant difference between males and females in L2 vocabulary acquisition through reading.	Supported
Hypothesis 5 Gender will moderate the effect of topic interest such that (a) males will acquire more words than females from a high-interest text. (b) females will acquire more words than males from a low-interest text.	Partially supported (a) No (b) Yes
Hypothesis 6 The significant effects obtained will be observed over time. (a) The significant effect of topic interest will be observed four weeks later. (b) The significant effect of L2 proficiency will be observed four weeks later. (c) The significant interaction between topic interest and gender will be observed four weeks later.	Supported (a) Yes (b) Yes (c) Yes

CHAPTER 5:   DISCUSSION AND CONCLUSION

The present study was conducted in order to illuminate neglected, albeit significant, questions about L2 vocabulary acquisition through reading. The research questions guiding this study included the following: What role, if any, does topic interest play in vocabulary learning? Might individual differences, such as L2 proficiency and gender, moderate the effects of topic interest? This chapter discusses the findings in three sections. The first section will summarize the results in light of the research questions and discuss the theoretical and methodological implications with reference to previous theoretical and empirical research. The second section will offer pedagogical implications, while the third section will address limitations of the study and offer suggestions for further research.

5.1. Discussion of the Findings

Research Question 1: Does topic interest affect L2 vocabulary acquisition through reading?

The results of this study are the first to provide empirical evidence of the positive impact of topic interest on L2 incidental vocabulary acquisition. In support of the hypothesis, the results generally show that learners gained significantly more new vocabulary from the text that was more interesting to them compared to the text that was

less interesting. The variable of topic interest, although not significant in the translation production measure, was consistently significant in the word-form recognition and translation recognition measures. These findings are supported by L1 and L2 reading research showing that topic interest significantly facilitates reading comprehension and text recall (Ainley, Hidi, et al., 2002; Baldwin et al., 1985; Belloni & Jongsma, 1978; Bray & Barron, 2004; Erçetin, 2010; Lee, 2009; LeLoup, 1993; Schiefele, 1992). The results from the current study also correspond with findings in Elley's (1989) L1 incidental vocabulary acquisition research, which revealed that students acquired significantly more words from an interesting story than from a less appealing story. While prior L2 research investigating the effect of topic interest on reading comprehension revealed a range of moderate ($d = 0.63$) to large ($d = 0.92$) effect sizes (e.g., Erçetin, 2010; LeLoup, 1993), the present study on L2 vocabulary acquisition shows a moderate effect size ($d = 0.49$).

This impact of topic interest on vocabulary acquisition can be explained by Laufer and Hulstijn's (2001) involvement load hypothesis, which was introduced in Chapter 1. In their proposal, Laufer and Hulstijn (2001) posited that retention of a word in long-term memory is dependent upon depth of processing (i.e., involvement), where the construct of involvement is composed of both motivational and cognitive factors. With regard to the motivational dimension of involvement, Laufer and Hulstijn (2001) argued that intrinsic motivation makes a stronger contribution to learners' involvement in a task and affects their retention of unfamiliar vocabulary. Based on this theoretical framework, it seems

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plausible that students' intrinsic interest in "Psy's Gangnam Style" may have resulted in deeper processing of the text and greater word gains. This finding supports inclusion of a motivational component in the involvement load hypothesis (Laufer & Hulstijn, 2001), which expands the cognition-centered depth-of-processing theory (Craik & Lockhart, 1972). The current study thus affirms that both cognitive and motivational factors play an important role in second language learning. In attending to the neglected affective variable of topic interest, the present study also refines the previously limited theoretical model of L2 lexical development through reading.

The aforementioned theory-based interpretation is also supported by two causal relationships that have been observed in previous theoretical and empirical research: (1) topic interest influences reading comprehension, and (2) reading comprehension influences incidental vocabulary acquisition. First, an extensive body of empirical research has shown the positive impact of topic interest on the reading process and text comprehension. For instance, Anderson's (1982) L1 research found that readers allocated more attention to interesting sentences (i.e., spent a longer time reading) and recalled significantly more content words from interesting sentences. Schiefele (1992) also reported that topic interest impacted deeper text processing (e.g., increased attention and concentration) and comprehension. More recently, Ainley, Hidi, et al. (2002) examined mediating processes between topic interest and text learning. They found that topic interest had a positive impact on students' affect; in turn, affect increased the degree of students' persistence, and persistence improved scores on the reading comprehension test.

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In a similar vein, a number of studies conducted with L2 readers have reported that topic interest positively impacts reading comprehension (e.g., Erçetin, 2010; Lee, 2009; LeLoup, 1993). Taken together, these studies have consistently demonstrated that topic interest facilitates text comprehension.

In addition, another body of research illustrates the second causal relationship mentioned above: reading comprehension affects incidental vocabulary acquisition. In their theoretical research on the L2 incidental vocabulary acquisition processes, Ellis (1995) and de Bot et al. (1997) explained that for L2 vocabulary acquisition to occur through reading, readers must first pay attention to a new word form. Then, readers must closely attend to the link between the lexical form and its referent in order to construct text meaning (de Bot et al., 1997). Therefore, given this mechanism, depth of text processing is critical for word knowledge development because the extent to which learners process the written input directly affects the degree to which form-meaning connections are established for new words (de Bot et al., 1997; Ellis, 1995; Paribakht & Wesche, 1999). This proposition has been supported by empirical research reporting that reading comprehension is a major factor affecting word gain and retention (Diakidoy, 1998; Eldredge et al., 1990; Jacob et al., 1994; Pulido, 2004; Rott, 1997). In particular, Pulido (2004) found that the degree of passage comprehension greatly affected the amount of vocabulary acquisition. In addition, text comprehension had a significantly larger impact on word gain and retention than did general L2 reading ability. In short,

these theoretical and empirical studies demonstrate a strong connection between text comprehension and incidental vocabulary acquisition.

The present study draws together the aforementioned two lines of research to argue for the role of topic interest in L2 incidental vocabulary acquisition. Given that vocabulary learning is one of the outcomes of the reading process, it can be anticipated that topic interest facilitates the reading process and reading comprehension; meanwhile this deeper text processing and greater comprehension can enhance vocabulary acquisition. In other words, learners interacting with texts depicting topics that are more interesting to them allocate more attention to those texts, as well as the vocabulary contained within them; consequently, they learn more new words. In the current study, interest produced by the presentation of the text, "Psy's Gangnam Style," is assumed to have influenced the level of involvement with the text and the construction of text meaning, including meanings of any new words encountered within that text. This involvement may have spilled over into vocabulary gain and retention from that reading. The findings illustrated above provide empirical support for the positive and consistent impact of topic interest on L2 incidental vocabulary acquisition.

In approaching this first question, the present study expands upon the methods used in previous research in several ways. First, prior research employed only a pre-reading interest rating, which did not guarantee maintenance of participants' interest levels over time (e.g., Baldwin et al., 1985; Erçetin, 2010; Lee, 2009; Schiefele, 1992). Compared to previous research, the present study used both pre- and post-reading interest

ratings in order to gauge students' interest level throughout the reading task, thus yielding more reliable results. In addition, prior research demonstrated a limited ability to clearly differentiate between high and low level of topic interest due to forced ranking (e.g., Carrell & Wise, 1998; LeLoup, 1993) or researchers' arbitrary selection of topics (e.g., Endo, 2010). The current study used participants' actual interest level in each topic, thus leading to better discernment of the differential effects of high and low levels of topic interest. Finally, previous studies confounded the effect of topic interest due to the lack of control for prior topic knowledge (e.g., Endo, 2010) and the difficulty of target words (e.g., Elley, 1989). The present study controlled for prior topic knowledge and the difficulty of target words by selecting two highly familiar topics and by considering factors that affect word learnability (e.g., word length, word class, and concreteness). By diminishing the role of confounding variables, these methodological considerations increased the probability of observing the true effects of topic interest.

In sum, the present findings related to the variable of topic interest not only corroborate the results from previous studies, but also expand upon the current database of research on L2 reading and vocabulary acquisition. In addition, this study's methodology allowed for more precise examination of the role of topic interest in L2 lexical development through reading by gauging learners' topic interest over time and controlling for confounding variables.

Research Question 2: Does L2 proficiency affect L2 vocabulary acquisition through reading?

The hypothesis that L2 proficiency would be a significant predictor of vocabulary learning through reading was supported by its consistently strong impact across all dependent measures: word-form recognition, translation recognition, and translation production. These findings parallel those obtained by Stanley and Ginther (1991) and Swanborn and de Glopper (2002) for L1 incidental vocabulary learning. The findings also correspond with Pulido (2003; 2004; 2007), Pulido and Hambrick (2008), and Tekmen and Daloğlu (2006) for L2 vocabulary acquisition, wherein learners with higher levels of L2 proficiency acquired significantly more L2 words from reading than did learners with lower levels of proficiency. These results further mirror Pulido's (2003; 2004; 2007) and Pulido and Hambrick's (2008) conclusions concerning the performance gap in incidental vocabulary acquisition between stronger and weaker readers. As Pulido (2003) explained, because stronger readers process texts more automatically due to their larger vocabulary size and advanced encoding ability, they are able to devote more cognitive resources to higher-order tasks, such as inferring the meaning of unfamiliar words and using context clues to construct meaning. Thus, by establishing stronger form-meaning connections while reading the text, these higher proficiency learners are able to recall the target vocabulary and their related meanings in subsequent tasks eliciting such information. Therefore, the present results lend support for previous research and provide

further evidence for a Matthew Effect (i.e., a phenomenon whereby the higher an individual's L2 proficiency, the more L2 words they gain through reading).

The results also expand upon previous L2 research in that the present study used L2 proficiency scores as a continuous variable rather than employing arbitrary proficiency categories (e.g., Cheng & Good, 2009). Furthermore, while prior research samples included a restricted range of proficiency (e.g., Endo, 2010; Tekmen & Daloğlu, 2006), the current study included learners with low to high L2 proficiency, thus leading to more generalizable conclusions for a broad range of learners. These improvements in methodology made it possible to more precisely examine how L2 proficiency operates in isolation and in relation to topic interest in vocabulary development through reading.

Research Question 3: Does L2 proficiency moderate the effect of topic interest on L2 vocabulary acquisition through reading?

The results from the present study revealed no significant interaction of topic interest by L2 proficiency, indicating that the effect of topic interest is stable across all levels of L2 proficiency. This finding differs from Vaughan's (1975) and Walker et al.'s (1979) L1 reading studies, which found that lower proficiency students were better facilitated by high topic interest. It also differs from Stevens's (1980) L1 reading study, which found the interest effect to be stronger for higher proficiency students. Moreover, the present finding contradicts Endo's (2010) L1 vocabulary research, which revealed

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that topic interest had a significant effect on higher proficiency students' vocabulary gain, but not on lower proficiency students' gain.

Previous L1 research has suggested the limited role of topic interest in incidental vocabulary acquisition, even though findings have been contradictory. Where topic interest was found to promote higher proficiency students' vocabulary learning (e.g., Endo, 2010), the results reflected a kind of Matthew Effect, indicating that topic interest reinforced only advanced students' development of lexical knowledge. On the other hand, some studies (e.g., Belloni & Jongsma, 1978; Vaughan, 1975; Walker et al., 1979) suggested that the positive effect of topic interest applied only to students with lower proficiency. In comparison to the aforementioned L1 research, the results of the current L2 study illustrate that learners at all proficiency levels learn a greater number of new words when reading more interesting stories in a second language. This finding provides more robust empirical evidence of the significance of topic interest, thus lending support to its pedagogical potential.

Research Question 4: Does gender affect L2 vocabulary acquisition through reading?

As hypothesized, no significant main effect was obtained for the variable of gender in L2 vocabulary acquisition through reading across the three vocabulary gain measures. This finding aligns with Hummel (1985), who reported no significant effect of gender on L1 reading comprehension scores; it is also consistent with Brantmeier (2003b) and Young and Oxford (1997), who demonstrated no significant differences in L2

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reading comprehension due to participants' gender. The present finding expands these previous reading studies to the area of L2 incidental vocabulary learning research by providing empirical evidence that, in general, gender differences do not account for differences in lexical development when reading brief expository texts in a second language.

Research Question 5: Does gender moderate the effect of topic interest on L2 vocabulary acquisition through reading?

The hypothesis that gender would moderate the effect of topic interest on L2 incidental vocabulary learning was partially supported. While gender did not have an overall significant main effect across the three vocabulary gain measures, there was a significant interaction effect between gender and topic interest in word-form recognition. In this case, for the lower interest text, the female participants of the study recognized significantly more word forms than did the male participants. In contrast, for the higher interest text, the male participants recognized more word forms than the female participants, although the differences did not reach statistical significance. These results partially corroborate findings from the L1 reading comprehension literature, which have revealed that females are more persistent with low-interest texts and males are more facilitated by high topic interest (Ainley, Hillman, et al., 2002; Asher & Markel, 1974; Oakhill & Petrides, 2007).

One possible explanation for these results can be derived from Ainley, Hillman, et al. (2002) and Pulido (2004). Ainley, Hillman, et al.'s (2002) path analyses illustrated that girls are more likely to continue reading lower interest texts, while boys tend to discontinue reading and expend minimal effort to understand such passages. In another study by Ainley and colleagues (Graham, Tisher, Ainley, & Kennedy, 2008), this phenomenon is explained in connection with gender differences in achievement orientations. Based on the social learning theory (Bandura, 1977; Lott & Maluso, 1993), the researchers saw gender as a "system of values that encompasses attitudes, approaches, and behaviors" (Graham et al., 2008, p. 757) and provided findings on different achievement orientations from the gender development literature. For instance, when faced with a choice of activities, girls select reading because of the high value that they assign to reading, whereas boys choose physical activities involving displays of masculinity. According to their preferential selection of certain activities, boys and girls learn the skills related to those particular activities, which influences gender differences in text engagement. In short, these studies suggest that gender differences in achievement orientations differentially influence the development of reading attitudes, approaches, and behaviors.

These gender differences in reading attitudes lead to gender differences in vocabulary development through reading. Here, Pulido (2004) assists in accounting for the difference in word-form recognition between male and female participants. In a study examining the relationship between text comprehension and L2 incidental vocabulary

acquisition, Pulido (2004) explained the relationship between depth of text processing and word-form recognition. She demonstrated that recognition memory—i.e., the memory of "whether or not certain words were presented within the stories" (Pulido, 2004, p. 485)—could be used as a mark of the depth of text processing. In other words, the more deeply a text is processed, the more precise the memory of the new word form. Conversely, the more shallowly a text is processed, the less precise the memory of the new word form. Therefore, it can be assumed that the significant difference in word-form recognition might have resulted from gender differences in the participants' approach toward reading; females' more favorable attitude toward reading might have contributed to their persistence with reading and attention to new word form-meaning connections. Hence, female participants in the present study, in spite of their overall lower interest level, persistently processed the lower interest passages such that they were able to recognize significantly more lexical forms than the male participants. In contrast, males' ambivalent attitudes toward reading activities might have influenced their reading, particularly for unappealing texts. Thus, the male participants in the present study might have expended less effort when they were less interested in the topic and were subsequently unable to recognize as many word forms as the female participants.

Aiming to better understand the role of individual differences in L2 vocabulary learning through reading, the present study considered this variable of gender because its connection with vocabulary acquisition remained overlooked in previous research. This study is also noteworthy because it extends research reporting a significant interaction

between interest and gender on L1 reading to the area of L2 vocabulary research. Lending support to Chavez's (2000) proposition that gender tends to interact with other learner characteristics rather than act independently, this study provides empirical evidence of how gender interacts with learners' interest during text processing and lexical development.

In addition, the present study expands upon previous research in terms of methodology that involves the variable of gender. Prior research (e.g., Oakhill & Petrides, 2007) has not always effectively controlled for the different levels of L2 proficiency between males and females. Hence, it was not clear whether differences in reading performance between boys and girls resulted from their distinct interest levels or from their different proficiency levels. In the current study, L2 proficiency scores were used as a covariate to control for the effect of differing L2 proficiency levels between males and females. This approach enabled a more accurate description of the interaction between gender and topic interest compared to the previous research.

Research Question 6: Are the above effects observed over time?

With regard to the effects of topic interest, gender, and L2 proficiency over time (i.e., four weeks), the results revealed that topic interest exerted a significant effect over time—that is, learners retained significantly more vocabulary from texts that were more interesting to them compared to texts that were less interesting. This finding mirrors Sadoski and Quast's (1990) results in connection with the long-term recall of texts. It is

also similar to Elley's (1989) L1 incidental vocabulary learning study, which found that three months after reading learners remembered twice the number of new words from more appealing stories than from less appealing stories.

One possible explanation for this finding is that a learner's intrinsic interest may influence deeper text processing to construct meaning and build stronger links to long-term memory and word retention. A number of theoretical and empirical studies also lend support to this possibility. For instance, Schiefele (1996) found that learners' interest in a text predicts the quality of the reading process, including increased attention and concentration. Sadoski and Quast (1990) also discovered that learners' interest positively influenced their long-term recall of texts. The involvement load hypothesis (Laufer & Hulstijn, 2001) introduced in Chapter 1 also asserts that intrinsic motivation makes a stronger contribution to learners' involvement in a task (e.g., reading) and affects their retention of unfamiliar vocabulary. Therefore, in the current study, it seems reasonable to speculate that the students' intrinsic interest in "Psy's Gangnam Style" may have resulted in deeper processing of the text and better retention of words. This explanation is consistent with Elley's (1989) proposition that learners' interest in stories produces intrinsic motivation to sustain attention and enhances long-term vocabulary retention.

The results also showed that the positive impact of L2 proficiency across all dependent measures (word-form recognition, translation production, and translation recognition) remained four weeks after reading. These findings corroborate those by Pulido (2003; 2008), which demonstrated a strong correlation between L2 proficiency

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and word retention. Once again, the results of the present study provide empirical support for the Matthew Effect by illustrating the substantial and consistent impact of L2 proficiency on the long-term retention of words.

The significant interaction between topic interest and gender on word-form recognition was also observed four weeks later. Thus, the present finding contributes to the literature because previous research has shown a significant interaction between interest and gender immediately after reading but not in long-term retention. One possible explanation for this result can be drawn from Graham et al. (2008) and Laufer and Hulstijn (2001). Graham et al. (2008) proposed that the difference in boys' and girls' achievement orientations leads to systematic gender differences in reading attitudes and behaviors: specifically, females' more favorable attitudes toward reading and males' less favorable ones. Furthermore, Laufer and Hulstijn (2001), in their involvement load hypothesis, claimed that learners' involvement in a task affects their long-term retention of new words. Therefore, males' ambivalence about reading seems to have led to their minimum involvement with reading, especially the low-interest passage. In turn, this lower level of engagement led to less retention in word-form recognition compared to females' word retention. Conversely, females' more favorable attitude toward reading seems to have contributed to greater involvement with reading the low-interest passage, and in turn, more retention in word-form recognition than males. By demonstrating that gender can influence the degree of word retention resulting from level of involvement,

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these findings expand on the involvement load hypothesis. In particular, they point to another learner variable in SLA—namely, gender.

5.2. Pedagogical Implications

The findings of the present study have implications for language teachers and material developers in terms of facilitating L2 vocabulary learning through reading. First, the significant positive impact of topic interest on L2 vocabulary acquisition suggests that teachers and material developers should consider topics of interest in the selection of reading materials. Furthermore, the finding that the effect of topic interest was consistent across learners at all levels of L2 proficiency (i.e., learners of all proficiency levels acquired more new words when reading more interesting stories) suggests that interesting materials could maximize both higher and lower proficiency students' vocabulary acquisition by maintaining their engagement in reading. In order to find areas of high topic interest, teachers can use simple in-class surveys to obtain direct feedback from students on their reading preferences. They could also encourage students to select reading materials according to their interest by providing extensive reading programs along with a variety of follow-up activities. For instance, students could participate in small-group discussions in which they share with their peers the new words they discovered through reading (Bamford & Day, 2004).

Second, as demonstrated in this study, the interaction of gender and topic interest in L2 text processing provides a better understanding of how male and female

adolescents differentially approach the task of reading depending on their interest level. Furthermore, it offers pedagogical insights on how gender difference affects learning outcomes such as reading comprehension and lexical development. Given the adverse influence of low-interest topic texts on males' literacy development, language educators should address the scarcity of topics typically preferred by male readers (e.g., science and sports) compared to topics generally favored by female readers (e.g., humanities-oriented topics); the balance between these topics should be taken into account in language curriculum design. The current findings encourage instructors to consider the role of gender and its connection with topic selection in order to facilitate individual learner's successful L2 reading and vocabulary acquisition.

Finally, given the strong and consistent impact of L2 proficiency on vocabulary acquisition, language teachers should focus more specifically on how to foster lower proficiency students' reading ability. For instance, teachers could employ the instruction of high-frequency words to promote students' automatic word recognition or syntactic parsing lessons to improve their automatic text processing (e.g., Blevins, 2001; Rasinski, 2010). By applying these instructional practices to support lower proficiency students, "the vicious circle" (Nuttall, 1982, p. 167) where "the poor get poorer" in lexical development could be broken and transformed into "the virtuous circle" (Nuttall, 1982, p. 168).

5.3. Limitations and Suggestions for Further Research

No research is without its limitations. Despite the care taken in conducting this research, the present study is no exception. Future researchers might consider the following limitations and suggestions in order to improve our understanding of the roles of topic interest, proficiency, and gender in L2 incidental vocabulary acquisition.

First, the findings of the study may not be generalizable to learners of different ages, first languages or L2 proficiency because only students from a Korean middle school participated in the study. The replication of this study with other populations would allow us to apply the results to a broader range of learners.

Second, the texts used in the study were confined to two expository passages, one higher interest text and one lower interest text. The use of multiple passages for each level of interest would increase the generalizability of the results. In addition, a broader selection of texts in different genres could show various relationships between topic interest and L2 vocabulary acquisition across genres. These methodological constraints in terms of material selection might be improved in future studies.

Third, the results from the translation production should be interpreted with caution. This variable was transformed into a binary variable due to a non-normal distribution (Pulido, 2003), thus resulting in a restricted explanation regarding the effect of topic interest and its interaction with other factors. To provide a fuller picture of the relationships, future research might use different combinations of measurements from those employed in this study.

Finally, the small sample size of males (i.e., 101 females and 34 males) in this study is undesirable for statistical analyses. Including more males was impossible due to the ratio of females and males in the school (three to one); however, future research might increase the sample size of males so as to increase the probability of finding significant effects due to gender.

5.4. Conclusion

The present study investigated the impact of topic interest, which has been neglected within the existing research on L2 incidental vocabulary acquisition. The study also examined how topic interest interacts with L2 proficiency and gender in order to further understand the role of topic interest in lexical development. Based on the results and discussion, several conclusions can be drawn in terms of the study's contribution to the literature. First, the study provides compelling evidence for the facilitative role of topic interest in L2 word gain and retention. By including the neglected factor of interest, this study offers a more comprehensive explanation of L2 lexical development through reading. It also expands upon the involvement load hypothesis (Laufer & Hulstijn, 2001) in considering both motivational and cognitive factors in incidental vocabulary learning. Moreover, the study confirms the interaction between topic interest and gender, which has not been investigated in L2 vocabulary research. In so doing, this study also highlights the role of gender, which has received inadequate attention within the literature on L2 vocabulary development. Finally, by demonstrating the strong impact of L2

proficiency on word gain and retention, this study adds empirical evidence for the Matthew Effect, evidence that is still lacking in L2 incidental vocabulary research. Furthermore, the nonsignificant interaction between L2 proficiency and topic interest underscores the significance of topic interest by illustrating that learners of all proficiency levels learn more new words when reading more interesting stories.

Based on these conclusions, the present study supports the pedagogical potential of topic interest in L2 vocabulary acquisition through reading, which has been intuitively appealing but empirically unproven. Schmitt (2010) emphasized the importance of engagement in vocabulary learning such that "anything that leads to more and better engagement should improve vocabulary learning…thus promoting engagement is the most fundamental task for teachers and material writers" (p. 29). Given that maximizing engagement underlies all effective vocabulary teaching and learning, topic interest is worth considering in both the academy and the classroom. Such engagement leads to students' enjoyment of and immersion in reading-based vocabulary building, which is an essential process in second/foreign language development.

Appendix A

Background Questionnaire

1. Gender: (1) Boy   (2) Girl

3. How long have you studied English?

(1) 2-3 years   (2) 4-5 years   (3) 6-7 years   (4) 8-9 years   (5) More than 10 years

4. Have you ever attended private or extra-curricular English courses?

(1) No   (2) Less than 1 year   (3) 1-2 years   (4) 3-4 years   (5) More than 5 years

5. Have you ever stayed in an English-speaking country for studying or traveling?

(1) No (2) Less than 6 months (3) 6 months -1 year (4) 1-2 years (5) More than 3 years

6. How many hours a week do you spend practicing listening skills?

(1) Less than 1 hour (2) 1-2 hours (3) 3-4 hours (4) 5-6 hours (5) More than 7 hours

7. How many hours a week do you spend practicing speaking skills?

(1) Less than 1 hour (2) 1-2 hours (3) 3-4 hours (4) 5-6 hours (5) More than 7 hours

8. How many hours a week do you spend reading in English?

(1) Less than 1 hour (2) 1-2 hours (3) 3-4 hours (4) 5-6 hours (5) More than 7 hours

9. How many hours a week do you spend writing in English?

(1) Less than 1 hour (2) 1-2 hours (3) 3-4 hours (4) 5-6 hours (5) More than 7 hours

10. How many hours a week do you spend studying grammar?

(1) Less than 1 hour (2) 1-2 hours (3) 3-4 hours (4) 5-6 hours (5) More than 7 hours

11. How many hours a week do you spend studying vocabulary?

(1) Less than 1 hour (2) 1-2 hours (3) 3-4 hours (4) 5-6 hours (5) More than 7 hours

12. In general, do you like learning English?

(1) Not at all   (2) Not much   (3) Somewhat   (4) A lot   (5) Very much

Appendix B

Reading Passages

Psy's Gangnam Style

The eccentric Korean singer, Psy, is an internationally known star. His music video "Gangnam Style" is enjoying phenomenal success. He released the song "Gangnam Style" in July 2012. It is a dance song with whimsical lyrics and a contagious beat. In the accompanying video, Psy does a hilarious horse-riding dance. Everyone around the world is learning it.

Psy's song "Gangnam Style" has created a fever all throughout the world. The electronic beat and repetitive chorus make the song very addictive. The video has gone viral with over 1 billion hits on YouTube. It has made it into the *Guinness Book of World Records*. On August 21, 2012, Psy became the first Korean artist to top the iTunes music video chart. His video was also a hot topic in August's foreign news media.

Experts attribute the global popularity of "Gangnam Style" to Psy's record label, YG Entertainment. YG Entertainment has used social media networks YouTube and Twitter to showcase their artists since 2008. This approach has made it possible to obtain an international audience for Psy.

Psy's popularity also extends to Korea. His concert there on August 11, 2012 reeled in a throng of more than 80,000. Thousands of people swarmed his performance at

Seoul's Gangnam Subway Station on August 14, 2012. Everyone was a fanatic and danced along with his every song.

Psy, whose real name is Park Jae-sang, is actually from Gangnam. This neighborhood is one of the central business hubs of Korea. Denizens of Gangnam are mostly thought to be sophisticated and cultured. However, Psy's dance routines are absurd, just like his stage name, which is short for "psycho." His video contradicts what Koreans normally perceive as "Gangnam style." In fact, the "Gangnam" component in his songs is an act of rebellion against Koreans' image of Gangnam. The video does not portray luxury and privilege. Instead, it shows a chubby, funny-looking singer with a gangster image.

Medieval Life

The term "medieval" derives from the Latin medium aevum, which means "the middle ages." They occurred between the Classical Age of ancient Greece and Rome and the Renaissance. The Middle Ages covered the period of time from the 5th century to the end of the 15th.

In many ways, medieval times seem remote and mysterious. They are peopled by obsolete figures such as knights, ladies, and pilgrims. Yet European cities, states, parliaments, banking systems, and universities all have their roots there. In addition, the period's majestic castles and cathedrals still dominate parts of the landscape.

Society in much of medieval Europe was organized into a "feudal" system. This system was based on the allocation of land in return for services. The king granted plots of land to his most important noblemen. In return, each noble promised to supply the king with soldiers in times of war. A noble pledged himself to be the king's servant at a special ceremony. He kneeled before the king and swore his fealty with the words, "Sire, I become your man."

The great nobles often divided their lands among lower lords, or knights. In turn, the knights became their servants. In this way, feudalism stretched from the top to the bottom of society. At the very bottom were the peasants, who worked the land itself. They had few rights and meager property.

According to the law, most medieval peasants had nothing. Everything belonged to the lord of the manor. In exchange for their arduous work, the lord allowed them to farm their own piece of land. Their lives comprised almost constant toil. Most struggled to produce adequate food to feed their families and to fulfill their obligations to the lord. The lord prohibited the peasants from leaving the manor without permission. A peasant could emancipate himself by saving enough money to buy a plot of land, or by marrying a free person.

Appendix C

Target Words

	"Psy's Gangnam Style"	"Medieval Life"
Nouns	hub	toil
	throng	fealty
	fanatic	cathedral
	denizen	allocation
	component	obligation
Verbs	reel	grant
	portray	pledge
	perceive	derive
	contradict	comprise
	attribute	emancipate
Adjectives	viral	meager
	absurd	arduous
	eccentric	majestic
	whimsical	obsolete
	contagious	adequate

Appendix D

Topic Interest Inventory

Please rate your interest in the topic on the following scale. Please check the number that corresponds with your interest level in the topic.

	Title	Not interesting						Very interesting
		1	2	3	4	5	6	7
1	Animal Migration							
2	The Story of the Mummy							
3	Medieval Life							
4	The Story of Pizza							
5	Psy's Gangnam Style							

Appendix E

Interest Rating Scale

Please rate the text you have read on the following scale. Please circle the number that corresponds with your interest level in the text.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Not
interesting

Very
interesting

Appendix F

Prior Topic Knowledge Test

Psy's Gangnam Style

Please read the following sentences. For each one, check "T" if it is true, and "F" if it is false.

	Sentence	T	F
1	Psy's "Gangnam Style" music video has gone viral with over 1 billion hits on YouTube.		
2	"Gangnam Style" is well known for the horse-riding dance.		
3	The strategy to use YouTube and Twitter to feature the music video led to its global popularity.		
4	YG Entertainment has managed Psy.		
5	Psy attended Berklee College of Music in Boston.		
6	Psy's "Gangnam Style" has been a hot topic on global media, such as CNN and *Time* magazine.		
7	Psy made an appearance on various television shows in the U.S.		
8	Psy signed a contract with the U.S. music label Island Def Jam, which manages international superstar Justin Bieber.		

Medieval Life

Please read the following sentences on European society in the Middle Ages. For each sentence, check "T" if it is true, and "F" if it is false.

	Sentence	T	F
1	Medieval European society was organized into a feudal system.		
2	The king gave land to his noblemen, and the noblemen supplied the king with soldiers in times of war.		
3	The noblemen gave their lands to knights, and the knights became the noblemen's servants.		
4	The peasants did not have freedom to move to another manor.		
5	A manor consisted of a village, the lord's castle, a church, and the surrounding farmland.		
6	The lord of the manor governed the community.		
7	Since manors were often isolated, the villagers had to produce everything they needed themselves.		
8	The Christian church was at the center of medieval life.		

Appendix G

Vocabulary Pretest

If you answer "Yes," please provide the meaning of the words. If you answer "No," go on to the next question.

Number	Word	Yes	No	Meaning
1	denizen			
2	component			
3	hub			
4	throng			
5	fanatic			
6	reel			
7	portray			
8	attribute			
9	contradict			
10	perceive			
11	whimsical			
12	viral			
13	absurd			
14	contagious			
15	eccentric			
16	fealty			
17	toil			
18	obligation			
19	allocation			
20	cathedral			
21	comprise			
22	pledge			
23	derive			
24	emancipate			
25	grant			
26	arduous			
27	majestic			
28	meager			
29	adequate			
30	obsolete			

Appendix H

Word-Form Recognition Test

In the following task, please respond "yes" if you remember having seen the word in the texts you read, or "no" if you don't remember having seen the word in the texts you read.

Number	Word	Yes	No
1	denizen		
2	comprise		
3	alabaster		
4	obsolete		
5	rasp		
6	throng		
7	squirm		
8	arduous		
9	reel		
10	emancipate		
11	lien		
12	attribute		
13	stint		
14	brocade		
15	derive		
16	absurd		
17	meager		
18	banter		
19	viral		
20	cringe		
21	obligation		
22	contagious		
23	vicar		
24	toil		
25	alcove		
26	fealty		
27	eccentric		
28	flaunt		
29	allocation		
30	vindictive		
31	perceive		

32	keg		
33	cathedral		
34	maggot		
35	component		
36	pledge		
37	hub		
38	swagger		
39	whimsical		
40	torrid		
41	grant		
42	portray		
43	convoy		
44	majestic		
45	stupor		
46	fanatic		
47	salve		
48	adequate		
49	contradict		
50	viscount		

Appendix I

Translation Recognition Test

Check the word with the closest meaning.

1. hub 1) 중심지 2) 지역 3) 약초 4) 상업 5) I do not know	6. contradict 1) 인식하다 2) 대조하다 3) 묘사하다 4) 반박하다 5) I do not know	11. obsolete 1) 절대적인 2) 구식의 3) 신비로운 4) 외진 5) I do not know
2. emancipate 1) 예상하다 2) 얻다 3) 해방시키다 4) 지키다 5) I do not know	7. whimsical 1) 엉뚱한 2) 바람부는 3) 멋진 4) 다른 5) I do not know	12. absurd 1) 일상적인 2) 교양있는 3) 두려운 4) 우스꽝스러운 5) I do not know
3. contagious 1) 세계적인 2) 포함하는 3) 전염성의 4) 터무니없는 5) I do not know	8. majestic 1) 오래된 2) 장엄한 3) 외진 4) 마술의 5) I do not know	13. fealty 1) 충성 2) 맹세 3) 느낌 4) 노동 5) I do not know
4. meager 1) 부족한 2) 양적인 3) 식사의 4) 부유한 5) I do not know	9. component 1) 능력 2) 요소 3) 개념 4) 타협 5)I do not know	14. perceive 1) 반박하다 2) 보여하다 3) 인식하다 4) 인내하다 5) I do not know
5. portray 1) 묘사하다 2) 반항하다 3) 나르다 4) 비판하다 5) I do not know	10. arduous 1) 많은 2) 예술적인 3) 힘든 4) 교환의 5) I do not know	15. denizen 1) 주민 2) 중심지 3) 거절 4) 사치 5) I do not know

16. allocation	21. comprise	26. derive
1) 봉사	1) 계속되다	1) 상징하다
2) 보답	2) 계산하다	2) 도착하다
3) 할당	3) 구성되다	3) 의미하다
4) 허락	4) 제공하다	4) 유래하다
5) I do not know	5) I do not know	5) I do not know
17. eccentric	22. throng	27. fanatic
1) 유명한	1) 공연	1) 공적인 사람
2) 괴짜인	2) 장소	2) 활기찬 사람
3) 중심의	3) 군중	3) 광적인 사람
4) 멋있는	4) 목구멍	4) 유명한 사람
5) I do not know	5) I do not know	5) I do not know
18. grant	23. adequate	28. pledge
1) 구획하다	1) 저축의	1) 애원하다
2) 당연하다	2) 양적인	2) 맹세하다
3) 보호하다	3) 동등한	3) 제공하다
4) 수여하다	4) 충분한	4) 봉사하다
5) I do not know	5) I do not know	5) I do not know
19. viral	24. reel	29. attribute
1) 성공적인	1) 확장하다	1) −에 속하다
2) 매력적인	2) 끌어당기다	2) −의 덕분으로돌리다
3) 입소문이 난	3) 흐르다	3) −에서 유래하다
4) 재미있는	4) 모여들다	4) −으로 구성되다
5) I do not know	5) I do not know	5) I do not know
20. obligation	25. toil	30. cathedral
1) 의무	1) 소유	1) 대성당
2) 망각	2) 힘든일	2) 궁전
3) 달성	3) 땅	3) 풍경
4) 할당	4) 교환	4) 성벽
5) I do not know	5) I do not know	5) I do not know

Appendix J

Translation Production Test

Please write down the meaning of the words either in Korean or in English.

Number	Word	Meaning
1	whimsical	
2	comprise	
3	denizen	
4	pledge	
5	fanatic	
6	emancipate	
7	contagious	
8	cathedral	
9	reel	
10	meager	
11	eccentric	
12	derive	
13	absurd	
14	toil	
15	obsolete	
16	portray	
17	allocation	
18	attribute	
19	obligation	
20	viral	
21	adequate	
22	hub	
23	fealty	
24	grant	
25	contradict	
26	component	
27	arduous	
28	perceive	
29	majestic	
30	throng	

Appendix K

Parental Permission for Children Participants in Research

The purpose of this form is to provide you with information that may affect your decision as to whether or not to let your child participate in this research study. The person performing the research will describe the study to you and answer all of your questions. Read the information below and ask any questions you might have before deciding whether or not to give permission for your child to take part. If you decide to let your child be involved in this study, this form will be used to record your permission.

If you agree, your child will be asked to participate in a research study about English literacy development. The purpose of this study is to examine the relationships between various topics and reading comprehension.

If you allow your child to participate in this study, you will be asked to

- allow the researcher to collect your child's responses to a background questionnaire, topic interest inventory, and prior knowledge test. Each will take 3-5 minutes to complete.

- allow the researcher to collect your child's responses to reading comprehension questions on two passages. This task will take 30 minutes to complete.

There are no foreseeable risks to participating in this study. Your child will receive no direct benefit from participating in this study; however, your child's participation in this study may contribute to promoting English literacy development at the secondary-school level.

Your child's participation in this study is voluntary. Your child may decline to participate or to withdraw from participation at any time. Withdrawal or refusal to participate will not affect your child's relationship with the school or the teacher. You can agree to allow your child to be in the study now and change your mind later without any penalty.

This research study will take place during regular classroom activities; however, if you do not want your child to participate, an alternate activity will be available.

In addition to your permission, your child must agree to participate in the study. If your child does not want to participate, they will not be included in the study, and there will be

no penalty. If your child initially agrees to be in the study, they can change their mind later without any penalty.

Your child's privacy and the confidentiality of his/her data will be protected by containing no identifying information that could associate it with your child. Your child's research records will not be released without your consent, and the data resulting from your child's participation will be used for research purposes only.

Prior, during, or after your participation, you can contact the researcher Sunjung Lee by email at sunjunglee@utexas.edu with any questions. For questions about your rights or any dissatisfaction with any part of this study, you can contact, anonymously if you wish, the Office of Research Support by email at orsc@uts.cc.utexas.edu.

_____

You are making a decision about allowing your child to participate in this study. Your signature below indicates that you have read the information provided above and have decided to allow them to participate in the study. If you later decide that you wish to withdraw your permission for your child to participate in the study, you may discontinue his or her participation at any time. You will be given a copy of this document for your records.

_____
Printed Name of Child

_____   _____
Signature of Parent(s) or Legal Guardian   Date

_____   _____
Signature of Investigator   Date

Appendix L

Assent for Participation in Research

You have been asked to participate in a research study about English literacy development. This study was explained to your parents, and they said that you could be involved in it if you want to. We are doing this study to find out the relationships between various topics and reading comprehension.

If you agree to be in this study, you will be asked to

- complete a background questionnaire, topic interest inventory, and prior topic knowledge test. Each will take 3-5 minutes to complete.

- read two passages and answer reading comprehension questions. This task will take 30 minutes to complete.

There are no foreseeable risks to participating in this study. You will receive no direct benefit from participating in this study; however, your participation in this study may contribute to promoting English literacy development at the secondary-school level.

Your participation in this study is voluntary. You should only be involved in the study if you want to. You can even decide you want to be a part of the study now, and change your mind later. No one will be upset.

If you would like to participate, sign this assent form and bring it back to your teacher. If you do not want to participate, an alternate activity will be available.

The records of this study will be kept private. Your responses will only be used for research purposes.

Writing your name on this page means that the page was read by or to you and that you agree to participate in the study. If you have any questions before, after, or during the study, ask the person in charge. If you decide to quit the study, all you have to do is tell the person in charge.

_____   _____
          Signature of Participant   Date

Appendix M

Reading Comprehension Questions

Psy's Gangnam Style

Please answer the following questions based on the text you have read.

1. Choose which of the following features is not related to Psy's popularity.

(1) repetitive chorus

(2) electronic beat

(3) hilarious horse-riding dancing

(4) Psy's sophisticated style

2. Which of the following statements is not related to Psy's records?

(1) More than 80,000 people flocked to Psy's concert.

(2) "Gangnam Style" was recorded as the most popular music video in the Guinness Book of World Records.

(3) Psy became the first Korean artist to top the iTunes music video chart.

(4) The number of views of his music video on YouTube exceeded 4 million.

3. Which of the following statements is not consistent with the explanation of Psy's "Gangnam Style"?

(1) Psy is from Gangnam.

(2) Psy is short for psycho.

(3) Gangnam signifies the sophisticated culture of the Korean upper class.

(4) Psy shows Gangnam's luxurious culture through his lyrics and dance.

Medieval Life

Please answer the following questions based on the text you have read.

1. Choose the period that corresponds to the Middle Ages.

(1) Before ancient Greece

(2) Between ancient Greece and ancient Rome

(3) Between the Classical Age and the Renaissance

(4) After the Renaissance

2. Choose the statement that is not relevant to Medieval Life.

(1) Medieval European society was organized into a feudal system.

(2) The king gave land to his noblemen, and each noble became the king's servant.

(3) The king supplied the noblemen with soldiers in times of war.

(4) The noblemen gave their lands to knights, and the knights became the noblemen's servants.

3. Choose the statement that is not consistent with the explanation on medieval peasants.

(1) The peasants were at the bottom of the medieval society.

(2) The peasants worked the lord's land.

(3) The peasants did not have freedom to move to another manor.

(4) The peasants did not have the opportunity to become a free person.

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