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**Vocabulary Learning Strategies among Adult Learners of Spanish as a
Foreign Language**

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**Vocabulary Learning Strategies among Adult Learners of Spanish as a
Foreign Language**

by

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Dedication

To my beautiful wife and children—for all their love and support.

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Vocabulary Learning Strategies among Adult Learners of Spanish as a Foreign Language

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The aim of this study was to contribute to the scarce amount of research on self-selected Spanish foreign language (FL) vocabulary learning strategies (VLS) by adult learners of Spanish in the United States and to investigate which type of learning strategies may result in higher vocabulary gains and why. This study investigated the relationships between the type of VLS university Spanish FL students at different levels of proficiency use, the amount of time they devote to the weekly study of Spanish outside the classroom, and their vocabulary size. In addition, the correlations between the VLS used by students with high and low vocabulary test scores and their vocabulary size were investigated. A total of 477 military cadets/students at the United States Air Force Academy enrolled in Spanish courses at the beginning, intermediate, and advanced language proficiency levels participated in this study. The data were analyzed through quantitative methods using two measuring instruments: a) a vocabulary learning questionnaire used to discover students' VLS preferences, and b) a Spanish vocabulary tests used to estimate the participants' Spanish vocabulary size. Analyses of the data

suggest that a significant relationship exists between learning strategy use and vocabulary size among advanced, more experienced Spanish learners but not among beginning- or intermediate-level students. Findings suggest that novice or inexperienced Spanish FL learners may be ineffective at the management of their own vocabulary learning. Different patterns in VLS use were also identified between advanced students with high and low vocabulary test scores. Those with higher vocabulary test scores use significantly more social and metacognitive learning strategies, while those with lower vocabulary test scores resort to memorization and other less-cognitively-demanding strategies for learning Spanish vocabulary. Pedagogical implications and limitations are addressed.

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Chapter 1: Introduction

INTRODUCTION TO THE PROBLEM

Learning a second or foreign language (L2/FL) is arguably one of the most cognitively challenging undertakings most people will go through in a lifetime, and many argue that learning the vocabulary of a L2 is perhaps the most challenging aspect of becoming proficient in the target language (Meara, 1980, 1995; Milton, 2009; Nation, 2001; Schmitt, 2000). Some characteristics that distinguish vocabulary learning from other language skills include the fact that “vocabulary learning is incremental, potentially limitless, and heavily constrained by the learners’ experience” (Swain & Carroll, 1987, p. 193). One area of L2 vocabulary acquisition research that has been gaining attention in recent years to help explain the difficulties some L2 learners encounter when learning vocabulary is the focus on learning strategies—vocabulary learning strategies (VLS) in particular. Scholars’ interest in L2 VLS stems from the movement to get away from a predominantly teacher-oriented pedagogical philosophy to a more learner-centered ideology that includes an interest in how learners themselves can manage their own language learning (Schmitt, 2000). Studies reveal that adult L2 learners are perfectly capable of actively engaging in the management of their own vocabulary learning; even more so than with other language skills such as reading, writing, speaking, listening, and grammar (Schmitt, 2000). Schmitt believes that this is the case because of the relatively discrete nature of vocabulary learning compared to more integrated language activities which makes it easier to apply learning strategies to vocabulary learning. Learning strategies are the tools that learners use for active, self-directed language learning, and research shows that the conscious, orchestrated and tailored use of such strategies is

strongly associated with language achievement and proficiency (O'Malley & Chamot, 1990). In fact, judging by the number of books on language and vocabulary learning strategies that have been recently published, many second language acquisition (SLA) scholars strongly support L2 students developing autonomous and effective learning strategies.

Research on L2 learning strategies and vocabulary acquisition over the past four decades has greatly advanced our knowledge and understanding of L2 vocabulary acquisition. However, most of this research has been done in studies using English as a second language (ESL) and, as numerous SLA research findings reveal, the context in which people learn the target language can have a major influence on the language acquisition process (N. Anderson, 2005; Kojic-Sabo & Lightbown, 1999; Riley & Harsch, 1999). ESL learners who live in English-speaking communities, for example, may have very different goals, expectations, resources, time and motivation to learn the language than students learning a FL not normally spoken in their communities. In fact, Riley and Harsch (1999) provide evidence to suggest that second language learners use more metacognitive learning strategies than FL learners, and FL learners use more cognitive and memorization strategies than second language learners. The reason, Riley and Harsch argue, may be the fact that second language learners have more opportunities to use the target language outside of the classroom and therefore have greater need and motivation to use language learning strategies.

In addition, most of the L2 VLS studies conducted to date have focused on specific learning strategies (for example the keyword method, dictionary use, and inferencing) under experimental conditions. However, as Hosenfeld (1976, as cited in Schmitt, 1997) once noted, “too often our focus has been on what students *should be doing*; we must begin by asking what students *are doing*” (p. 128). As a result, there is a

lack of research on learner-selected VLS, particularly in languages other-than-English. Therefore, this study will help fill this gap by focusing on Spanish as a FL in the United States since Spanish is by far the most common FL taught in the United States and the fourth most common L2 in the world (Rhodes & Pugahl, 2009). Irwin and Szurmuk (2009) argue that since the mid-1990s, university enrollments in Spanish FL courses in the U.S. have exceeded those of all other foreign languages combined and they continue to increase year after year. In fact, the Modern Language Association (MLA) has taken to separating Spanish from its aggregate figures, reporting on enrollments in Spanish and in “other modern languages” in order to make sense of enrollment data in language programs (Furman, Goldberg, & Lusin, 2007). Some even argue that this unprecedented growth in enrollment reflects the reality that Spanish is no longer just a ‘foreign’ language in the United States, but the second language (Irwin & Szurmuk, 2009). Whether this claim has merit or not is beyond the scope of the present study. The fact remains, nonetheless, that Spanish is the most popular FL taught in the U.S. as evidenced by the enrollment numbers which jump from 365,000 in 1968 to 534,000 in 1990, to just under a million students in 2006 (Irwin & Szurmuk, 2009). Yet, we know relatively little about the techniques or strategies that Spanish FL students in the U.S. use to expand their knowledge of Spanish vocabulary and which strategies or types of strategies result in better Spanish vocabulary learning and why. After an extensive review of research studies on L2 vocabulary learning in the last decade, relatively few studies have focused on Spanish as a FL (Barcroft, 2009; Hsien-jen, 2001; Pulido, 2004b, 2009; Sagarra & Alba, 2006; Scribner, 2000). However, these studies were limited to only a handful of learning strategies in experimental settings: rote memorization (Sagarra & Alba, 2006; Scribner, 2000), semantic mapping (Sagarra & Alba, 2006; Scribner, 2000), dictionary use (Hsien-jen, 2001), keyword mnemonics (Sagarra & Alba, 2006; Scribner, 2000), L2-

word-picture associations (Barcroft, 2009), and reading (Pulido, 2004b, 2009; Pulido & Hambrick, 2008). As a result, these studies reveal little about the self-selected vocabulary learning techniques and strategies that Spanish FL learners actually use in and out of the classroom. After completing the experimental tasks, most of these studies stopped short of asking the most crucial question: did the participants exclusively use the strategies under study, or did they also (or only) use other learning strategies familiar to them? No study in recent decades has investigated the wide range of learning strategies that students learning Spanish as a FL actually use to learn Spanish vocabulary and the amount of time they devote to study Spanish outside of the classroom leading language teachers to incorrectly assume that little differences exist between learning L2 vocabulary in an ESL environment and a FL environment (Kojic-Sabo & Lightbown, 1999; Riley & Harsch, 1999). As a result, several taxonomies for L2 vocabulary learning have been developed but none have focused exclusively on vocabulary learning in FL environments. In addition, no study has investigated the nature of the VLS Spanish FL learners resort to at different stages of language development and the effectiveness these types of strategies have on improving vocabulary development at different levels of proficiency.

PURPOSE OF THE PRESENT STUDY

Although research in L2 vocabulary acquisition and language learning strategies has advanced our knowledge and understanding of the use of L2 learning strategies and vocabulary learning, new research on learner-selected strategies and their effects on vocabulary proficiency, specifically in Spanish FL environments, can advance our knowledge by: a) determining the type of strategies adult Spanish FL learners in the United States actually use when attempting to learn a new Spanish word, b) determining

the range of VLS used by these learners and the consistency of their use, and c) assessing the effectiveness of these VLS in relation to their Spanish vocabulary proficiency. My aim in this study, therefore, is to contribute to the scarce amount of research on self-selected Spanish VLS by adult learners of Spanish in the U.S. and to investigate which strategies result in higher Spanish vocabulary gains and why. The principal objective of the present study will be to discover, analyze and compare the VLS used by university Spanish FL students and to assess the relationship between strategy use, time devoted to Spanish FL learning and vocabulary size. The present study also evaluates the learning strategies participants report using to determine whether they vary according to their proficiency level and their vocabulary size. In addition, it evaluates a taxonomy of L2 vocabulary learning proposed by Schmitt (1997) to determine whether the data from Spanish FL vocabulary learning fits this popular model.

SIGNIFICANCE OF THE PRESENT STUDY

Spanish FL students know that to learn the form and meaning of a large number of Spanish words, to be able to store them in their memory and recall them at will, and to learn how to use them appropriately in a variety of contexts and situations can be an enormous challenge. Regardless of teaching methodologies, though, Brown (2006) argues that some L2 learners can be more successful than others at learning different aspects of the target language. SLA studies show that, in addition to pedagogical techniques, strategically used learning activities can significantly enable learners to achieve a high level of success in learning an L2 (Brown, 2006). As Schmitt (2000) argues:

Good learners do things such as use a variety of strategies, structured their vocabulary learning, review and practice target words, and they are aware of the semantic relationships between new and previously learned L2 words; that is, they are conscious of their learning and take steps to regulate it. (p. 133).

After an extensive review of studies on language learning strategy interventions, Rubin, et al. (2007) concluded that explicit instruction of learning strategies leads to improvements in motivation and language performance. Discovering what type of learning strategies are associated with higher vocabulary gains at different stages of development, and educating Spanish FL teachers and students on the use of more context-appropriate and effective learning strategies may result in improved vocabulary proficiency and greater self-confidence, and therefore, should be a priority in Spanish FL pedagogy. Understanding the nuances of Spanish VLS in a FL environment may allow teachers to reflect on whether or not their teaching methodologies are compatible with the learner's use of learning strategies. Finally, mastering successful VLS can also enable FL learners to take charge of their own learning and become self-reliant and less dependent on the Spanish FL teacher.

ABBREVIATIONS AND TERMS DEFINED

The following is a list of abbreviations and terms will be use extensively throughout the study:

CFA (Confirmatory Factor Analysis): A CFA is a theory-testing model that uses statistical analyses to tests whether a specified set of constructs is influencing responses in a predicted way.

EFL (English as a Foreign Language): The term EFL is used in language research and pedagogy to refer to people or students learning English as a foreign language in a country where English is not generally spoken (e.g. Mexico, Germany, Japan, etc.).

ESL (English as a Second Language): The term ESL is used in language research and pedagogy to refer to people or students learning English as a second language in a country where English is the primary spoken language (e.g. United States, England, etc.).

FL (Foreign Language): In the field of second language acquisition research and pedagogy, a distinction between ‘second language’ and ‘foreign language’ is often made. The latter term refers to students learning a language in a country or community where the target language is not generally spoken. Second language, in turn, refers to language learners (usually foreigners) who are learning the language of the country in which they reside.

L1 (First or Native Language): L1 is used in the field of language acquisition and pedagogy to refer to the first language (or mother tongue) that children learn first.

L2 (Second Language): L2 is used in the field of language acquisition and pedagogy to refer to any language that is learned after the native language or mother tongue. The term L2 is also use when referring to language learners studying the language of the country or the community in which they live.

SLA (Second Language Acquisition): The term SLA is a “multidisciplinary field which goal is to understand the processes that underlie the learning of a non-native language. Second language acquisition draws from a variety of academic disciplines, among them linguistics, psychology, psycholinguistics, sociology, sociolinguistics, discourse analysis, conversation analysis, and education” (FLARE, 2010).

VLQ (Vocabulary Learning Questionnaire): A multiple choice questionnaire used in the present study as an instrument to determine the strategic vocabulary learning habits of participants.

VLS (Vocabulary Learning Strategies): The term VLS in the present study refers to “any set of techniques or learning behaviors, which language learners reported using in order to discover the meaning of a new word, to retain the knowledge of newly-learned words and to expand one’s knowledge of vocabulary” (Intaraprasert, 2004, p. 53).

Chapter 2: Review of the Literature

INTRODUCTION

A large body of research suggests that a language learner's vocabulary size is highly correlated with his or her entire language ability (Gu, 1994). Staehr (2008), for example, recently concluded that vocabulary size accounted for 72 percent of the variance in the ability to achieve an above-average score in reading comprehension tests. Despite its established importance, however, and due in no small part to the limited time FL students spend in the classroom, most FL teachers place the responsibility for explicit vocabulary practice and learning on the student as out-of-class assignments. Knowing a word, however, is not as straight forward as it may seem. In any language, vocabulary knowledge is a very complex issue. When someone talks about FL vocabulary learning, many of us immediately visualize long lists of words to be memorized. But how exactly do we define the terms *word* and *vocabulary*? How do we define *word knowledge* in general and when can we say that a person has fully and successfully *acquired* a new word? What strategies are FL learners using to successfully acquire this knowledge? In this chapter, I will provide a thorough review of the related literature and I will try to answer these questions by examining the arguments made by scholars in the field of L2 vocabulary acquisition and pedagogy.

WORDS AND VOCABULARY KNOWLEDGE

The American Heritage College Dictionary (Berube, 1993) defines *word* as “a sound or combination of sounds, or its representation in writing or print that symbolizes and communicates a meaning and may consist of a single morpheme or of a combination

of morphemes” (p. 1553). The term *vocabulary*, in turn, is defined as “all the words in a language...the sum of words used by, understood by, or at the command of a particular person or group” (p. 1511). Richards et al. (1992) add that words are the smallest semantically independent linguistic units which can occur in speech or writing. Vocabulary, in turn, is defined by Richards et al. as a set of lexemes which includes single and compound words as well as idioms. Read (2000, p. 1) gives a more simple and an often cited definition, stating that “words are the basic building blocks of language, the units of meaning from which larger structures such as sentences, paragraphs and whole texts are formed.” Read also describes two broad categories of words: function words and content words. In any language, function words have a grammatical role. These words work as links within sentences, modifiers, etc., and have little or no meaning in isolation. Examples of Spanish function words include *el, la, y, que, para, por, su*, etc. Content words, on the other hand, are semantically independent and usually form the bulk of most discrete vocabulary tests. Content words include nouns, adjectives, adverbs and verbs.

In addition to single-word units of meaning, also known as tokens, a number of researchers (Folse, 2004; Nattinger & DeCarrico, 1992; Read, 2000; Schmitt, 2000) have also identified clusters of tokens that work as a unit with specific meanings and functions. These word clusters are known as *lexical phrases* or *lexemes*. The term *set phrases* is another commonly used term to describe these word clusters (Folse, 2004). These lexemes, however, may still be treated as a lexical item that functions as a single unit of meaning, regardless of the number of words it contains (Schmitt, 2000).

Defining Word Knowledge

Despite decades of research on first and second language acquisition, the mechanics of vocabulary learning are still something of a mystery. One area of consensus among researchers, however, is the fact that words are not acquired instantaneously; rather, they are gradually learned over time and after numerous exposures to the word in a variety of contexts (Schmitt, 2000). Starting with Richards' (1976) work on vocabulary acquisition, applied linguists have attempted to identify general frameworks for understanding vocabulary knowledge. One general consensus is that there are many different aspects of word knowledge—syntactic, semantic, lexical, and stylistic, as well as declarative and procedural knowledge—that come into play when we are learning a new word (Laufer, 2006). The increasing amount of literature on vocabulary knowledge and lexical competence, however, has generated a great deal of terminological confusion and a lack of systematicity that prevents researchers and language teachers from making sense of the accumulated knowledge (Catalán, 2002).

Frameworks for Vocabulary Knowledge

Richards (1976), proposed eight assumptions of vocabulary knowledge which became one of the first and often-cited frameworks for lexical competence. Richards' first assumption is that, unlike grammar, vocabulary growth never stops; it continues to grow throughout our lifetime. Therefore, Richards argues, 2) knowing a word 'well' means knowing the degree of probability of encountering that word in speech or print (frequency); 3) knowing the limitations of a word's use; 4) knowing the syntactic behavior associated with a word; 5) knowing the underlying form of a word and the derivations that can be made from it; 6) knowing the networks of associations between that word and other words; 7) knowing the semantic value of a word; and 8) knowing the

different meanings associated with a word. What makes it challenging for L2 learners to acquire a large vocabulary, presumably, is the fact that it takes time and effort for these different types of lexical knowledge connections to develop.

The work of Richards in the mid seventies generated a great deal of research on vocabulary knowledge, most of which, according to Catalán (2002), fall into one of four categories: 1) those who seek to define, delineate, or simply enumerate the dimensions of vocabulary knowledge (Carter, 1987; Laufer, 1991; Nation, 1990; Robinson, 1989); 2) those who argue against defining vocabulary knowledge as a list of dimensions and who propose alternative ideas (Henriksen, 1999; Meara, 1996b); 3) those who's objective is to translate vocabulary knowledge theory into practical pedagogical objectives (Folse, 2004; Robinson, 1989; Schmitt & McCarthy, 1997); and 4) those who have focused on L1 and L2 vocabulary size (Nagy & Anderson, 1984; Nation, 1983, 1990, 2001; Paribakht & Wesche, 1997). Paribakht and Wesche (1993), for example, developed a Vocabulary Learning Scale with five levels of knowledge on a continuum from explicit to implicit knowledge: 1) the word is unfamiliar; 2) the word is familiar, but the meaning is not known; 3) a translation into the L1 can be given; 4) the word can be used appropriately in a sentence; and 5) the word is used accurately both semantically and grammatically.

In a study of Spanish vocabulary acquisition, Barcroft (2009) offered a three-phase model—form, meaning and mapping—that learners must be able to complete in order to successfully acquire a new word. According to this model, learners should be able to: a) encode the form of the new word in memory (form); b) activate an appropriate semantic representation for the meaning of the word (meaning); and c) map the appropriate form onto the appropriate mental representation for the word (mapping).

Another vocabulary knowledge construct distinction made by researchers (Nassaji, 2004; Paribakht & Wesche, 1997; Qian, 1999; Read, 2000) is one related to

quality versus quantity—the breadth and depth of vocabulary knowledge. Breadth of knowledge refers to learners having partial semantic knowledge of many words, while depth of knowledge refers to the quality of that knowledge; how well the learner knows all possible uses and meanings of the words he or she has acquired (Nassaji, 2004; Read, 2000). Many would agree, however, that lexical acquisition is not an all-or-nothing effort. Rather, it involves distinct degrees of knowledge, what Nagy and Scott (2000) labeled *incrementality*, meaning each time we encounter the target word and each time we use it in different contexts, our knowledge of the word becomes a little deeper and a little more precise. In vocabulary assessments, depending on the task, a test-taker could perform adequately with relatively vague knowledge of a word, but on other tasks, a much deeper knowledge of the word's meaning might be required (Mezynski, 1983).

Another theoretical framework for vocabulary learning that gain support in the late 1990s was the interaction hypothesis (Long, 1996). Long's hypothesis details the role of comprehensible input and output, along with cognition factors in L2 development such as attention and noticing. Within this framework, comprehensible input is crucial to L2 acquisition because it provides supportive models of target language use (Winke & Abbuhl, 2007). There is little argument among SLA researchers that input is one of the most important factors in L2 acquisition (Gass & Selinker, 2001, 2008). According to Gass and Selinker, L2 acquisition simply cannot take place without some sort of input; input that is comprehended by assimilation with the sum of one's previous knowledge and experience. L2 output is also an essential element for L2 development since it provides the learner with opportunities to develop automaticity, test hypotheses about the language, and to process language syntactically rather than just semantically, as is the case with input processing (Swain, 1985; 1995). Other important aspects of Long's interaction hypothesis include *attention* and *noticing*. Schmidt (2001) argues that since

many features of the L2 are likely to be infrequent, non-salient, and communicatively redundant, intentionally focused attention may be a practical—though not a theoretical—necessity for successful L2 acquisition. L2 learners who take a passive approach to learning, waiting patiently and depending on involuntarily attention processes to trigger automatic noticing, Schmidt argues, are likely to be unsuccessful L2 learners. Nation (2001) operationalizes the term *noticing* in L2 vocabulary acquisition as “seeing a word as an item to be learned” (p. 221). Learning strategies at the noticing stage of acquisition include highlighting unknown words, recording the word on a vocabulary list or word journal, making flashcards, etc. These strategies, according to Nation, are very useful first steps towards deeper processing of words.

Nation (2001) offered arguably the most comprehensive description of vocabulary knowledge. He proposed a set of 18 variables of word knowledge classified into three categories: form, meaning and use, each containing receptive and productive aspects. *Form* includes spoken and written form, and word parts; *meaning* includes form and meaning, concept and reference, and associations; and *use* includes grammatical functions, collocations, and constraints on use, such as register and frequency. Nation also makes the distinction between receptive or passive knowledge and productive or active knowledge for each of these categories. Studies show that L2 learner’s receptive or declarative knowledge, words that are recognized when heard or seen, is greater than their productive knowledge, the words that the learner knows and is able to use in speech or writing. Written from a practical perspective, Qian (2002) argues, Nation’s word knowledge framework is particularly useful for classroom teachers.

After a careful review of all the proposed frameworks for lexical knowledge, Catalán (2002), suggests that each model can fall in one of four lexical dimensions: first, the linguistic dimension (phonology, morphology, semantic and syntactic); second, the

sociolinguistic dimension (pragmatics and lexical phrases); third, the psycholinguistic dimension (cognitive processes); and finally, the pedagogical dimension (frequency, word difficulty, etc.). In addition, each of the many dimensions of vocabulary knowledge proposed over the past three decades have different levels of cognitive demands, and consequently, varying levels of learning difficulty. As such, Laufer and Goldstein (2004) proposed a word learning hierarchy with four degrees of strength: 1) passive recognition—the easiest, 2) active recognition, 3) passive recall, and 4) active recall—the most difficult to attain. As stated earlier, passive knowledge of a word (also known as receptive knowledge) implies that the learner is able to comprehend the meaning of a word in written or spoken form, while active knowledge of a word implies that the learner is able to utter or write (produce) the word when needed. Not only were Laufer and Goldstein able to provide strong empirical evidence in support of their learning hierarchy hypothesis, but in addition to validating the strength of the hierarchy, Laufer and Goldstein were also able to find a strong correlation (.63) between *passive recall*, the ability to supply the meaning of an L2 word, and overall performance in the foreign language classroom.

THE DIFFERENT LEVELS OF VOCABULARY

Nation and Gu (2007) make a distinction between four types of vocabularies, each requiring different levels of attention at different times: 1) high frequency vocabulary, 2) academic vocabulary, 3) low frequency vocabulary, and 4) technical vocabulary. High frequency vocabulary includes the most commonly used words in a language. There is substantial research on frequency-based vocabulary acquisition that has provided supporting evidence of the type of vocabulary learners would gain most benefit from

knowing (Nation & Macalister, 2010). It usually consists of the 1,000 to 3,000 most frequently used lemmas (also known as headwords or word families) in the target language. In Spanish, for example, the 3,000 most frequently used words make up roughly 90 percent of the vocabulary used in written Spanish and 94 percent of the vocabulary used in informal spoken Spanish (Davies & Face, 2006). In addition, almost all Spanish function words (i.e. articles, conjunctions, prepositions, and pronouns) are found within the first 1000 Spanish word frequency band (Davies, 2006). Low frequency vocabulary, in turn, includes words that do not occur often in speech or texts. Nation and Gu (2007) suggest that these words are not worth the teacher's teaching effort. Instead, Nation and Gu suggest L2 teachers should teach learning strategies to deal with low frequency words.

L1 VERSUS L2 VOCABULARY ACQUISITION

In any language, mastering the entire vocabulary is an ambitious goal and a daunting task to say the least. Even native speakers do not know all the vocabulary in their language. Estimates of L1 vocabulary size for college-educated native speakers range from 17,000 words to as high as two million words depending on how the studies account for word families, with 20,000 word families (approximately 32,000 lexical items) being the most widely recognized number (Goulden, Nation, & Read, 1990; Schmitt, 2000). In addition, unlike L1 vocabulary acquisition, L2 learners frequently (but not always) have preexisting semantic representations for L2 words, and do not encode new semantic representations for these words from scratch (Barcroft, 2003). According to Barcroft, much of the semantic information for words in the L1 and L2 may overlap and be transferred. For example, an English speaker learning Spanish as an L2 may

correctly infer that the word *manzana* in a Spanish text refers to the English word apple, even though the learner may not know that *manzana* also can refer to a street block in Spanish. It is not necessary, however, for L2 learners to attain a vocabulary size comparable to native speakers before achieving a good level of comprehension. Only between 3,000 and 10,000 word families, depending on the target language, are necessary to read and comprehend academic texts in a L2 (Grabe & Stoller, 2002; Nation, 2001). For example, Laufer and Shmueli (1997) argue that, for English, the receptive knowledge of 95 percent of the vocabulary in a text, the equivalent to recognizing 3,000 word families or 5,000 lexical items, is the threshold level for minimum reading comprehension. Similarly, Sutarsyah, Nation and Kennedy (1994) stated that students must have knowledge of between 4,000 and 5,000 English words in order to understand an undergraduate economics textbook. Hazenberg and Hulstun (1996), on the other hand, estimated that foreign students enrolled at a Dutch university must have practical knowledge of at least 10,000 Dutch base words in order to excel in university studies in the Netherlands. In Spanish, Davies and Face (2006) suggest that the 3000 most frequent words account for 88 to 90 percent of the vocabulary used in written Spanish (depending on whether fiction or non-fiction) and 94 percent of the vocabulary used in spoken Spanish.

Vocabulary acquisition is especially important for FL learners in K-12 grades who are trying to catch up with native speakers who enter the first grade with an L1 vocabulary size of 4000 to 5000 word families and whose vocabulary continues to grow at a rate of 3,000 to 5,000 words per year (Grabe & Stoller, 2002; Nagy & Anderson, 1984). Nation (2001) offers a more conservative estimate, however, stating that, as a rule of thumb, native speakers acquire an average of 1,000 word families per year to their vocabulary, the greatest amount of which is learned during childhood.

These studies on L1-L2 vocabulary size highlight the importance that L2 vocabulary instruction and acquisition have on L2 comprehension and proficiency. It would be a mistake, though, for language teachers to expect their L2 students to acquire a vocabulary size comparable to native speakers of the target language since only a fraction of the target language vocabulary is likely to be acquired through formal study. The pedagogical implication, therefore, is to help L2 students develop strategies for acquiring vocabulary implicitly through simple exposure to the target language. This highlights the importance of non teaching activities that can bolster exposure to the target language, especially for FL learners who do not have much contact with the target language outside of the classroom (Schmitt, 2000).

Vygotsky (1962) once stated that vocabulary knowledge is a dynamic process in which reconstruction of knowledge is taking place continuously as we learn new words or new word meanings. This new knowledge does not happen in a vacuum, but rather it is anchored on previous knowledge of related words; as we learn new words and new meanings, our knowledge of other words and meanings is also reconstructed. As evidenced by the numerous theories proposed by researchers who aim at providing a working framework for vocabulary knowledge, the multidimensional and multifaceted nature of the lexicon impedes a simple definition of *word knowledge*.

In conclusion, there are many internal and external factors that can directly influence vocabulary acquisition and language learning in general, all of which make the task of formulating language acquisition theories that account for all factors a daunting, if not an impossible task. As a result of the complex nature of lexicon knowledge, some scholars (Meara, 1996b; Read, 2007) have brought up the unfeasibility of a pedagogical model that includes all possible dimensions of word knowledge. It is generally acknowledged that it is impractical to elicit all that L2 learners may know about a

particular set of words. Doing so, would require a battery of several dozen tests just to describe the knowledge of a single word (Milton, 2009; Read, 2007). There are so many aspects of word knowledge that could potentially be assessed, but no consensus among scholars as to which ones are more important. Instead, at the expense of a deeper understanding of the global features of lexicon competence, Meara (1996b) suggests a focus on the most practical and significant dimensions of word knowledge: vocabulary size and automaticity (or word access). The pedagogical learning strategies that can aide learners in acquiring these dimensions of vocabulary knowledge are discussed in the following section.

LANGUAGE LEARNING STRATEGIES IN L2 EDUCATION

A common belief within L2 pedagogy is the notion that some L2 learners are more successful than others. One reason may be the fact that successful learners tend to approach the task of language learning with different, sometimes more effective strategies (N. Anderson, 2005; Nunan, 1999). The term normally used in SLA literature to refer to these differences in learning styles is *language learning strategies*. Results from language learning strategy research first appeared in the literature in the mid-70s with Rubin's (1975) and Stern's (1975) research on techniques and approaches used by successful language learners. Since then, language learning strategy has been broadly defined by numerous SLA researchers (see Table 1). In its most narrow sense, the term *strategy*, as used in the SLA literature, simply refers to study habits and skills; but in its broadest sense, it includes more sophisticated cognitive or metacognitive skills such as planning, inferencing, and self-testing (Grenfell & Macaro, 2007).

Rubin (1987)	“any set of operations, plans, or routines, used by learners to facilitate the obtaining, retrieval, storage and use of information” (p.19)
O’Malley & Chamot (1990)	“the special thoughts or behaviors that individuals use to help them comprehend, learn, or retain new information” (p. 1).
Oxford (1990)	“specific actions, behaviors, steps, or techniques students use—often consciously—to improve their progress in apprehending, internalizing, and using the L2” (p. 1).
McDonough (1995)	“articulated plans for meeting particular types of problems not a piece of problem-solving itself” (p. 3).
Cohen (1998)	“learning processes which are consciously selected by the learners and which may result in action taken to enhance the learning of a second or foreign language, through the storage retention, recall, and application of information about that language” (p. 4).
Macaro (2001)	“an interesting practice-related avenue to pursue is whether what we mean by effort when doing a language task simply means the effective development of a range of strategies in a task” (p. 264).
Chamot (2004)	“The conscious thoughts and actions that learners take in order to achieve a learning goal” (p. 14).

Note. Adapted from: “Language Learning Strategies of English as a Foreign Language University Students in Korea” by Yang, M (2010). Copyright 2010 by Mihwa Yang.

Table 1: Scholars’ Definitions of Language Learning Strategies

Language learning strategy has been defined as a mental process by many scholars with a cognitive perspective. However, defining mental processes is a difficult proposition since it involves abstract concepts of human mindset (Yang, 2010). Macaro (2004), however, argues that “strategies are not simply knowledge but contain a mental action that can be described. It is almost self-evident that the action component of a strategy ought to be describable by someone, especially a teacher or researcher” (p. 4).

Anderson (2005) lists five important developments that have contributed to the success of L2 learning strategy research: 1) the identification, classification, and measurement of language learning strategies, 2) the distinction between language use and

language learning strategies, 3) the relationship between strategy use and L2 proficiency, 4) the transferability of strategies from L1 tasks to L2 tasks, and 5) the explicit instruction of language learning strategies.

Information processing theories have had a strong influence in the development of language learning taxonomies (N. Anderson, 1995; Cohen, 1998; O'Malley & Chamot, 1990). The depth of processing theory (Craik & Lockhart, 1972), for example, states that activities requiring *deeper* more complex cognitive processing are superior to *shallow* processing, and thus, promote better learning. Craik and Lockhart argued that the extent to which new information is successfully stored in our long-term memory depends in large part on the shallowness or the depth with which it is initially processed, rather than with the amount of time the information remains in the short-term memory. In other words, richer levels of encoding result in better learning. In light of the information-processing model, Anderson and Freebody (1983) addressed the differences between what we know *about*—declarative knowledge—and what we know *how* to do—procedural knowledge. In other words, declarative knowledge equates to the factual information stored in the learner's memory, while procedural knowledge implies that the learner knows what to do with this factual information. Procedural knowledge, therefore, can transform declarative knowledge so that it is “reorganized, summarized, or represented and linked to new information in memory” (O'Malley & Chamot, 1990, p. 216). Cohen (1998), argues that language learning strategies include procedural strategies for identifying the material to be learned, distinguishing it from other materials, grouping elements for easier learning, planning for repeated contact with the material, and memorization when acquisition does not happen naturally. These strategies are the tools that learners use for active, self-directed language learning, and as research shows,

the conscious, orchestrated and tailored use of such strategies is highly related to language achievement and proficiency (O'Malley & Chamot, 1990).

After an extensive review of studies on language learning strategy interventions, Rubin et al. (2007) concluded that explicit instruction of learning strategies leads to improvements in motivation and language performance. Oxford (1990) also argued that the use language learning strategies can have a significant influence on L2 learning by: 1) contributing to the main goal, communicative competence, 2) allowing learners to become more self-directed, 3) expanding the role of teachers, 4) being problem-oriented, 5) having specific actions taken by the learners, 6) involving many aspects of the learner, not just the cognitive, 7) supporting learning both directly and indirectly, 8) not always being observable, 9) often being conscious, 10) being able to be taught, 11) being flexible, and 12) being influenced by a variety of factors” (p. 9). In addition, Oxford added, these characteristics of strategy instruction help facilitate a learner-centered learning environment rather than a teacher-centered one.

CLASSIFICATION OF LANGUAGE LEARNING STRATEGIES

Research findings by Hsiao and Oxford (2002) provide strong empirical evidence that L2 strategies can be classified in a systematic manner. These classifications include seven major categories: cognitive strategies, metacognitive strategies, memory or mnemonic strategies, compensatory strategies, affective strategies, social strategies, and self-motivating strategies. The first six categories (see Table 2) became the basis for the development of the commonly-used *Strategy Inventory for Language Learning*, or SILL survey (Oxford, 1986, 1990).

Strategy Type	Use	Example
Cognitive Strategies	Enable the learner to manipulate the language material in direct ways	through reasoning, analysis, note-taking, and synthesizing
Metacognitive Strategies	Are used to manage the learning process overall	identifying one's own preferences and needs, planning, monitoring mistakes, and evaluating task success
Memory Strategies	Help learners link one L2 item or concept with another but do not necessarily involve deep understanding	acronyms, sound similarities, images, key words
Compensatory Strategies	Help make up for missing knowledge	guessing from the context; circumlocution; and gestures and pause words
Affective Strategies	Help learners manage their emotions and motivation level	identifying one's mood and anxiety level, talking about feelings, rewarding oneself, and using deep breathing or positive self-talk
Social Strategies	Enable the learner to learn via interaction with others and understand the target culture	asking questions, asking for clarification, asking for help, talking with a native-speaking conversation partner, and exploring cultural and social norms

Note. Adapted from “A brief overview of individual differences in second language learning,” by M. E. Ehrman, B. L. Leaver, & R. L. Oxford, 2003, *System*, 31(3), pp. 316-317. Copyright 2003 by Elsevier Ltd.

Table 2: Oxford (1990) Classification of Language Learning Strategies

Oxford's often cited classification of language learning strategies is a well-known taxonomy, and some argue that it is the most comprehensive language learning

classification to date (Schmitt, 1997). Other researchers have used fewer categorizations. O'Malley and Chamot (1990), for example, proposed three types of learning strategies that have been used extensively in L2 learning research over the past 20 years: cognitive, metacognitive, and social learning strategies. Cognitive learning strategies refer to the actual processing of the L2 input in the brain. Metacognitive learning strategies deal with the planning, monitoring, and evaluation of those cognitive processes. Finally, social learning strategies deal with affective and social aspects in language learning situations. Following is an in-depth description of each of the three major types of learning strategies commonly found in most language learning strategy taxonomies: cognitive, metacognitive and social learning strategies.

Cognitive Learning Strategies. O'Malley and Chamot (1990) describe cognitive learning strategies as those which “operate directly with incoming information” (p. 44) and the manipulation of this input to enhance learning. Cognitive learning strategies enable the L2 learner to “manipulate the language material in direct ways, e.g., through reasoning, analysis, note-taking, summarizing, synthesizing, outlining, reorganizing information to develop stronger schemas (knowledge structures), practicing in naturalistic settings, and practicing structures and sounds formally” (Oxford, 2003, p. 12).

Anderson and Freebody (1983) first offered a theoretical analysis of learning cognition that included processes such as imagery, organization, inferencing, elaboration, deduction and transfer. Some of these cognitive processes are associated with popular VLS including written and verbal repetition, wordlists, the keyword method, the Loci method and other similar mechanical means of learning vocabulary (Schmitt, 1997). Studies show that these strategies are very common and popular among L2 learners and students often resist giving them up for other, more complex, and perhaps more effective

strategies (O'Malley & Chamot, 1990; Schmitt, 1997). Even though these *mechanical* strategies are often regarded as less than ideal for language acquisition, there is no denying that many L2 learners have achieved high levels of L2 vocabulary proficiency by using this type of strategies. In fact, Meara (1995) argues that mechanical learning strategies are an unnatural and unauthentic way of learning a L2, but so are most other L2 teaching activities; authenticity is not a requisite for effectiveness.

Metacognitive Learning Strategies. Schmitt (1997) describes metacognitive learning strategies as those “used by students to control and evaluate their own learning, by having an overview of the learning process in general” (p. 216). In other words, knowledge about learning; the techniques that L2 learners use to identify their own learning style preferences and needs, for planning L2 tasks, for gathering and organizing materials, for arranging a study space and a schedule, for monitoring mistakes and evaluating task success, and for evaluating the success of their own learning strategies (Oxford, 2003). Together, these learning processes amount to self-regulation in cognitive psychology and self-direction in L2/FL learning and learner autonomy literature (Wenden, 1998). In fact, Purpura (1999) found that metacognitive strategies have "a significant, positive, direct effect on cognitive strategy use, providing clear evidence that metacognitive strategy use has an executive function over cognitive strategy use in task completion" (p. 61).

There are four main processes that constitute metacognitive learning: the organization of information, the management of information, the monitoring learning, and the evaluation of learning (Chamot, Keatley, Meloni, Gonglewski, & Bartoszesky, 2010). Chamot, et al. (2010) argue that these metacognitive processes follow the sequential order of activities L2 learners generally go through in accomplishing any task.

Planning and monitoring are generally considered two the main processes found in most metacognitive L2 learning strategies. Monitoring processes are key to metacognitive learning since they help learners become aware of what they are doing and to bring their mental processes under conscious scrutiny and thus more effectively under control (O'Malley & Chamot, 1990). Metacognitive learning strategies are not an automatic process, but rather the result of long-term development of cognitive processes. In the end, cognitive and metacognitive learning strategies are often used together, supporting each other (O'Malley & Chamot, 1990).

Social Learning Strategies. The social dimension of language learning was first introduced to SLA research by Fillmore (1979) who was among several researchers who argued that social discourse is an important source for the comprehensible input necessary for L2 learning. According to O'Malley and Chamot (1990), social or affective learning strategies involve cooperative peer learning to create an environment where learners can ask questions and clarify information through student interaction. These social interactions create opportunities for comprehensible input (Krashen, 1982, 1985), comprehensible output (Swain, 1985; Swain & Lapkin, 1995), and negotiation of meaning (Long, 1983, 1996) in order to achieve common goals. Learning strategies through social interactions can also help L2 learners understand not just the language, but also the target culture (Oxford, 2003).

In conclusion, the SLA literature points to a number of different L2 learning strategy taxonomies proposed over the past four decades. Not surprisingly, there is a certain level of overlap and a lack of clear demarcations between taxonomies. There seems to be little agreement among L2 acquisition researchers on the precise differentiation between memory, cognitive and metacognitive learning strategies (Nyikos

& Fan, 2007; O'Malley & Chamot, 1990; Schmitt, 1997; Takač, 2008). Notably, Schmitt (1997, 2000) admits to an overlap of processes and functions between cognitive, metacognitive, and social learning strategies that makes it difficult to differentiate between each in any given taxonomy. Oxford (1990), O'Malley and Chamot (1990), for example, argue that what is a metacognitive strategy to one researcher may be a cognitive one to another, and since L2 learning strategy research is in its infancy, the categorization of strategies is still fluid and open to debate. As Oxford (1990) pointed out,

There is no complete agreement on exactly what strategies are; how many strategies exist; how they should be defined, demarcated, and categorized; and whether it is possible to create a real, scientifically validated hierarchy of strategies... Classification conflicts are inevitable (p. 17).

Despite scholars' disagreements on how to properly classify specific language learning strategies, the L2 learning strategy taxonomies that have been proposed over the past 20 years have contributed greatly to our knowledge of the L2 acquisition process. In addition, O'Malley and Chamot (1990) noted that most of the learning strategies used in the research to develop L2 learning strategy taxonomies dealt almost exclusively with vocabulary learning strategies, which highlights the importance of vocabulary learning in SLA. The Following section focuses on the use of learning strategies in the development of L2/FL vocabulary.

VOCABULARY LEARNING STRATEGIES (VLS)

FL students know that to learn the form and meaning of a large number of FL words, to be able to store them in their memory and recall them at will, and to learn how to use them appropriately in a variety of contexts and situations, they will have to rely on

wide range of learning strategies. These strategies normally vary depending on the target language and the learners' learning objective; whether passive or productive knowledge. VLS are a part of language learning strategies which in turn are a part of general learning strategies (Nation, 2001). Cameron (2001) defines VLS as "the actions that learners take to help themselves understand and remember vocabulary items" (p. 92). Catalán (2003), in her study of gender differences in VLS, adopts a similar definition as Oxford's (1990) and Schmitt's (1997), stating that VLS correspond to:

Knowledge about the mechanisms (processes, strategies) used in order to learn vocabulary as well as steps or actions taken by students (a) to find out the meaning of unknown words, (b) to retain them in long-term memory, (c) to recall them at will, and (d) to use them in oral or written mode. (p. 56).

The last three decades were marked by an explosion in L2 vocabulary learning research, most of it in studies targeting ESL or EFL. Most of this research, according to Cohen and Macaro (2007), can be divided into two periods: pre- and post-1990. Prior to 1990, Cohen and Macaro argued, SLA research was centered on syntactic issues and productive skills related to communicative competence and proficiency and away from discrete-point vocabulary learning. Traditional language pedagogy in this timeframe emphasized grammar and communicative proficiency and fluency. Vocabulary, however, was left at the students' discretion. Since 1990, though, scholars in the field of SLA have increasingly recognized the critical role vocabulary size and knowledge plays in L2 acquisition (Cohen & Macaro, 2007). In fact, during the early 1990s, researchers (O'Malley & Chamot, 1990; Oxford, 1990) finally realized that most L2 learning strategies being studied were in fact related to vocabulary learning. The following review of the literature considers the lexical dimension of language learning, evaluating the arguments and the findings from post-1990 studies which describe strategies through

which L2 learners discover the meaning of unknown L2 words and integrate and consolidate newly acquired vocabulary.

An approach to facilitate vocabulary acquisition that has been gaining attention in L2 research and pedagogy is *vocabulary learning strategies* (VLS). The term *vocabulary learning strategies* in the present study refers to “any set of techniques or learning behaviors, which language learners reported using in order to discover the meaning of a new word, to retain the knowledge of newly-learned words and to expand one’s knowledge of vocabulary” (Intaraprasert, 2004, p. 53). According to Schmitt (2000), scholars’ interest in L2 VLS stems from the movement to get away from a predominantly teacher-oriented pedagogical philosophy to a more learner-centered ideology that includes an interest in how learners themselves can manage their own language learning. Studies reveal that adults are perfectly capable of actively engaging in the management of their own vocabulary learning; even more so than with other language skills such as reading, writing, speaking, listening, and grammar (Schmitt, 2000). Schmitt believes that this is the case because of the relatively discrete nature of vocabulary learning compared to more integrated language activities, which makes it easier to apply learning strategies to vocabulary learning. In fact, judging by the number of books on language and vocabulary learning strategies that have been recently published (for examples see: Beck, McKeown, & Kucan, 2002; McCarthy, 1990; Milton, 2009; Nation, 1990, 2001; Oxford, 1990; Schmitt, 1997, 2000; Schmitt & McCarthy, 1997; Takač, 2008), many SLA scholars now endorse the importance of L2 students developing autonomous L2 learning strategies.

Based on results from three landmark studies on L2 vocabulary acquisition conducted in the 1980s by Cohen and Aphek (1981), O’Malley et al. (1985) and Ahmed (1989), researchers developed some hypotheses on the VLS most commonly used by L2

learners. These authors argued that memorization, dictionary use, note-taking, and visual and oral repetition are the most common learning strategies among L2 learners. The results of these studies also support the idea that many beginning-level L2 learners prefer mechanical, less cognitively-demanding VLS over more complex metacognitive ones (Schmitt, 1997). These studies also led to more systematic research into VLS, although questions still remain today over which type of VLS, or combination of such strategies, are more effective in acquiring a large L2 vocabulary (Takač, 2008).

A number of recent studies (Barcroft, 2009; Borer, 2007; Catalán, 2003; Fan, 2003; Gu, 2002; Gu & Johnson, 1996; Schmitt, 1997; Tseng & Schmitt, 2008) have concluded that more proficient L2 learners successfully use a variety of VLS significantly more often than less proficient students, and use learning strategies that require more cognitive effort. In fact, it has been suggested that L2 learners can be categorized on the basis of their learning strategies (Ahmed, 1989; Lawson & Hogben, 1996). Successful L2 learners, according to Ahmed, are able to use a wider variety of metacognitive demanding strategies, while less successful learners generally use fewer strategies and tend to use them inadequately. This is an important factor to consider since research in cognitive psychology has shown that the more cognitive effort is invested in learning a word, the easier it becomes to recall that word at a later time (Baumann, Kame'enui, & Ash, 2003; Borer, 2007; Ellis, 1995; Grace, 1998; Hulstijn, 1992; Schmitt & McCarthy, 1997). Unfortunately, most research studies on VLS have mainly focused on a single or a small number of learning strategies—keyword mnemonics, context inferencing and memorization—and therefore, they reveal relatively little about the many learning techniques that most L2 students actually use outside the classroom. Relatively few studies (Catalán, 2003; Fan, 2003; Gu, 2002; Gu & Johnson, 1996; Sanaoui, 1995; Schmitt, 1997; Stoffer, 1995) have looked at an all-inclusive and more exhaustive group

of strategies used as a whole by L2 learners and the effects of these strategies on vocabulary acquisition. As Gu and Johnson (1996), Lawson and Hogben (1996) and Sanaoui (1995) all point out, most L2 learners use a variety of different strategies, and the combinations of strategies used may be far more important and predictive of vocabulary acquisition than the effect of one single learning strategy.

TAXONOMIES OF VOCABULARY LEARNING STRATEGIES

Over the past thirty years, scholars have developed numerous classifications for VLS. These classification systems have contributed substantially to the field L2 vocabulary acquisition. The following section provides a brief description of some of the best known and often cited VLS taxonomies that have been proposed in the past two decades by different scholars such as Cohen (1990), Rubin and Thompson (1994), Sanaoui (1995), Stoffer (1995), Gu and Johnson (1996), Lawson and Hogben (1996) , Schmitt (1997), Nation (2001), Intaraprasert (2004), and Winke and Abbuhl (2007).

Cohen (1990) VLS Taxonomy

Cohen (1990) developed a taxonomy for VLS divided into three broad categories: strategies for remembering words, semantic strategies, and vocabulary learning and practicing strategies.

Category 1: Strategies for Remembering Words

- Using Rote-repetition by repeating the word and its meaning until it seems to have stuck
- Using Mnemonic Associations:
 1. By linking the word to the sound of a word in the native language to the sound of a word in the language being learned, or to the sound of a word in another language

2. By attending to the meaning of a part or several parts of the word;
3. By noting the structure of part or all of the word;
4. By placing the word in the topic group to which it belongs
5. By visualizing the word in isolation or in a written context
6. By linking the word to the situation in which it appeared
7. By creating a mental image of the word
8. By associating some physical sensation to the word
9. By associating the word to a keyword
10. By using of mnemonic device in order to create a cognitive link between an unfamiliar foreign language word or its translation by means of a cognitive mediator

Category 2: Semantic Strategies:

- Thinking of synonyms so as to build a network of interlinking concepts
- Clustering words by topic group or type of word
- Linking the word to the sentence in which it was found or to another sentence

Category 3: Vocabulary Learning and Practicing Strategies

- Word and Structure Analysis (analyze the word according to its roots, affixes, and inflections as a way to understand its meaning)
- The Learning of Cognates (words in two languages which are from the same source)
- Using a Dictionary
- The Use of Flash Cards
- Grouping
- Cumulative Vocabulary Study

Rubin and Thompson (1994) VLS Taxonomy

Rubin and Thompson (1994) proposed three broad VLS categories: the direct approach, the use mnemonics, and the indirect approach.

Category 1: Direct Approach

- Put the words and their definitions on individual cards
- Say the words aloud or write them over and over again as they study
- Compose sentences with the words they are studying
- Tape record the words and their definition, if they prefer to learn through the ear
- Color-code words by parts of speech, if they prefer to learn through the eye

Category 2: Use Mnemonics

- Use rhyming
- Use alliteration
- Associate words with the physical world
- Associate words with their functions
- Use natural word associations, such as opposites
- Learn classes of words
- Learn related words
- Group words by grammatical class
- Associate words with context.

Category 3: Indirect Approach

- Read a series of texts on a related topic
- Guess the meaning of words from context
- Break up the word into components

In a direct approach, L2 learners learn words in lists or by completing various vocabulary exercises. With the use of mnemonics, learners memorize words by organizing individual words into patterns and linking them together. In an indirect approach, vocabulary is learned mostly implicitly through exposure to comprehensible input in the form of reading and listening.

Sanaoui (1995) VLS Taxonomy

Sanaoui (1995) conducted a study with ESL and French FL students to determine what mnemonic procedures they used to learn new lexical items. After analyzing journal entries of English and French L2 learners, Sanaoui concluded that adult L2 learners fall into one of two categories based on their approach to vocabulary learning: structured and unstructured L2 learners. According to Sanaoui, these two approaches differed in several criteria: learning independence, the range of self-initiated learning activities, the extent to which learners record the words they are learning, the extent to which learners review the words, and the extent to which learners use the words outside of the classroom. These

two approaches to vocabulary learning can be conceptualized as the two ends of a continuum of vocabulary learning organization. Sanaoui argued that the more ‘structured’ vocabulary learners have a more organized and independent approach to learning, whereas vocabulary learners in the unstructured end of the continuum are less systematic in their learning approaches and more reliant on the course or the teacher for instruction. Sanaoui’s study highlights the importance of independent and organized approaches to vocabulary learning.

Stoffer (1995) VLS Taxonomy

Stoffer (1995) conducted a large-scale vocabulary-learning study using Russian, Japanese, German, and Spanish FL students at a large university in the United States. Stoffer designed a questionnaire—the Vocabulary Learning Strategy Inventory (VOLSI)—to determine the most commonly used VLS among the participants. The VOLSI consisted of 53 strategies grouped into nine categories: 1) strategies involving authentic language use, 2) strategies involving creative activities, 3) strategies used for self-motivation, 4) strategies used to create mental linkages, 5) memory strategies, 6) visual and auditory strategies, 7) strategies involving physical action, 8) strategies used to overcome anxiety, and 9) strategies used to organize words. Among the findings in Stoffer’s study was the fact that strategies used to create mental linkages were the most frequently used type of strategies. Students who score high in this factor were the ones who used strategies such as linking L2 words to their native language (either by sound or by spelling), learning words group in related topics, linking new words to already known concepts, or using natural associations (opposites). Another interesting finding was the fact that experienced language learners, those who had previously studied a FL, used

significantly more strategies than novice FL learners, those learning a FL for the first time. Stoffer also found that students learning a language more lexically distant from English (such as Russian and Japanese) use VLS more frequently than those who were learning a language less distant such as Spanish.

Gu and Johnson (1996) VLS Taxonomy

Gu and Johnson (1996) developed a VLS questionnaire using a comprehensive list of 91 different learning strategies to investigate VLS use by advanced Chinese learners of English FL. Gu and Johnson's taxonomy includes 91 VLS divided into eight dimensions of vocabulary learning: Beliefs about vocabulary learning, metacognitive regulation, guessing strategies, dictionary strategies, note-taking strategies, memory strategies (rehearsal), memory strategies (encoding), and activation strategies. This categorization reflects the results from previous quantitative and qualitative research on learning strategies (Ahmed, 1989; Gu, 1994; Oxford, 1990; Politzer & McGroarty, 1985).

One of Gu and Johnson's findings was the fact that selective attention, self-initiation, contextual guessing and note-taking were all significantly correlated with proficiency and vocabulary size, while memorization and visual repetition were the worst predictors of proficiency and vocabulary size. In addition, students who acquire vocabulary through extensive reading had above average scores in vocabulary size tests and proficiency. Overall, Gu and Johnson concluded that using a wide range of more cognitively-demanding learning strategies and using them consistently leads to better vocabulary acquisition.

Lawson and Hogben (1996) VLS Taxonomy

Lawson and Hogben (1996) conducted a qualitative study on VLS using think-aloud procedure with 15 advanced English-speaking learners of Italian FL. Lawson and Hogben were interested in discovering the type and number of strategies used by their participants to learn new Italian words. After coding and analyzing all the data from their interviews, Lawson and Hogben developed a 15 item taxonomy grouped into four higher-level categories. The first category represents VLS based on *repetitions* (i.e. reading of related word, simple rehearsal, writing words and meanings, cumulative rehearsal, and testing). The second category represents VLS that involve some form of *word feature analysis* (i.e. spelling, word classifications, and suffixes). The last two groups represent VLS associated with more significant transformations of the features of the word and/or meaning: *simple elaboration* (i.e. sentence translation, simple use of context, appearance similarity, and sound link) and *complex elaboration* (i.e. complex use of context, paraphrase, and mnemonics).

The results from this study support the argument that the more strategies learners use to learn new words, the better the recall and retention of the words will be. This conclusion is in line with Ahmed (1989), Gu and Johnson (1996), Schmitt (1997), and Catalán (2003). The strongest correlations observed in this study were between the various elaborative strategies and word recall, supporting once more the argument that more complex strategies using deeper cognitive processing result in higher rates of retention than the more mechanical strategies with shallower processing. Moreover, Lawson and Hogben found that successful learners not only use more strategies on average but also use a wider variety of techniques and used them more consistently than less successful peers. Finally, the finding from this study also support the argument that L2 students usually prefer shallower, less cognitive-demanding learning strategies even

though such strategies have lower correlations with successful word recall and retention than deeper, more complex elaboration strategies.

Nation (2001) VLS Taxonomy

Nation (2001) proposed a taxonomy of the different kinds of VLS which attempts to separate aspects of vocabulary knowledge from sources of vocabulary knowledge and learning processes. Nation's taxonomy is broken down into three broad categories: planning, sources, and processes. Planning strategies involve deciding where to focus the learner's attention, how to focus attention, and how often to give attention to the word. This category includes four types of VLS: choosing words, choosing the aspect of word knowledge, choosing strategies, and planning repetition. Source strategies refer to the sources of information about the new word: Analyzing word parts, using context, consulting a dictionary, and using parallels in L1 and L2. Process strategies refer to strategies learners use to remember vocabulary and making it available for use: Noticing, retrieving, and generating (or use).

Schmitt (1997) VLS Taxonomy

Schmitt (1997) developed an comprehensive and often cited taxonomy of VLS (Figure 1) by integrating several classification systems into a taxonomy organized around Oxford's (1990) metacognitive, cognitive, memory, and social classifications of L2 learning. The first classification, metacognitive, involves reflecting on the learning processes such as planning and self-evaluation. Cognitive strategies, on the other hand, involve manipulating or transforming learning materials; examples include note-taking, analysis and translation. Memory strategies are those which are used to commit

information to memory, such as flashcards, word lists, etc. Finally, social strategies are those which require interaction with other learners or teachers, such as asking a peer the meaning of an unknown word. Schmitt's taxonomy was developed on the basis of an extensive literature review, language learners' retrospective descriptions of their learning strategies, and teacher surveys (Schmitt, 1997). This taxonomy incorporates 59 different strategies divided into two domains: strategies used to infer the meaning of the unknown words (discovery strategies), and strategies used to consolidate the meaning of the new word (consolidation strategies). Schmitt's taxonomy includes commonly used VLS which fall in one of the following six categories: 1) *Discovery-determination* (e.g. analyzing parts of speech, checking for L1 cognates, guessing from context, and use of bilingual or monolingual dictionary), 2) *Discovery-social* (e.g. asking the L2 teacher for an L1 translation, asking classmates for meaning, and discovering meaning through a group work activity), 3) *Consolidation-social* (e.g. study and practice word meaning in a group and interaction with native speakers), 4) *Consolidation-memory* (e.g. study word with a pictorial representation of its meaning, using semantic maps, imaging word form, using keyword mnemonics, and connecting words to a personal experience), (5) *Consolidation-cognitive* (e.g. note-taking, verbal repetition, written repetition, word lists, flash cards, and keeping a vocabulary journal or notebook), and 6) *Consolidation-metacognitive* (e.g. testing oneself with word tests, use of target language media, using spaced word practice and continuing to study a word over time). Using this VLS taxonomy, Schmitt found that the most commonly-used discovery strategies among the participants in his study were using a bilingual dictionary, guessing from context, and asking classmates for help, while verbal repetition, written repetition, and studying the spelling of a word were the most frequently-used consolidation strategies. Schmitt's VLS taxonomy was used successfully in vocabulary learning studies by Kudo (1999) and

Catalán (2003). Catalán (2003), for example, used Schmitt's taxonomy to study gender differences in VLS used by native Spanish speakers learning Basque and English L2. Based on her results, Catalán concluded that students use more discovery strategies than consolidation strategies, leading her to hypothesize that L2 students tend to focus more on discovering the meaning of unknown words at the expense of spending the time and effort to consolidate the knowledge of those words.

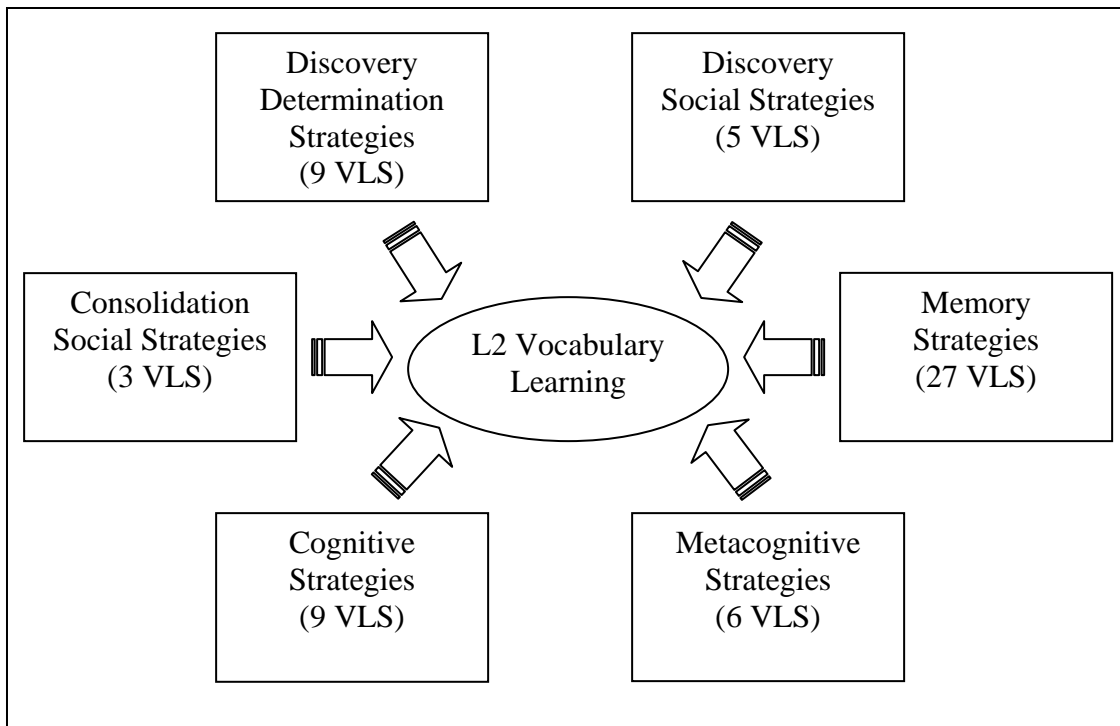


Figure 1: Schmitt (1997) Taxonomy of L2 Vocabulary Learning Strategies

Intaraprasert (2004) VLS Taxonomy

Intaraprasert's (2004) English L2 VLS inventory was developed after collecting self-reports from 133 ESL students. This taxonomy includes 31 individual VLS classified according to the purpose students try to achieve: Discovery of meaning of new

vocabulary items, retention of meaning of newly-learned words, and expansion of vocabulary knowledge.

The discovery category consists of ten individual strategies:

1. DMV 1: Use a Thai-English dictionary;
2. DMV 2: Use an English-Thai dictionary;
3. DMV 3: Use an English-English dictionary;
4. DMV 4: Guess the meaning from the context;
5. DMV 5: Ask one's classmate or friend;
6. DMV 6: Ask one's teacher;
7. DMV 7: Ask someone other than one's teacher, classmate or friend;
8. DMV 8: Look at the word roots, prefixes or suffixes;
9. DMV 9: Use an on-line dictionary;
10. DMV 10: Use an electronic dictionary.

The retention category comprises eleven strategies:

1. RKV 1: Memorize with or without a word list;
2. RKV 2: Keep a vocabulary notebook;
3. RKV 3: Group words based on the synonymity or antonymity;
4. RKV 4: Associate new words with the already-learned ones;
5. RKV 5: Use new words in writing;
6. RKV 6: Use new words to converse with peers;
7. RKV 7: Speak Thai with English loan-words;
8. RKV 8: Keep words as the computer background;
9. RKV 9: Keep word cards or word charts in one's bedroom;
10. RKV 10: Keep words as rhymes or songs;
11. RKV 11: Use pictures

The expansion category comprises ten individual strategies:

1. EKV 1: Listen to a radio program in English especially the one for language learning
2. EKV 2: Watch a television program in English especially the one for language learning
3. EKV 3: Surf the Internet especially the websites for language learning
4. EKV 4: Read different types of different English printed materials, e.g. leaflets, brochures, textbooks or newspapers
5. EKV 5: Play games in English, e.g. crossword, or hangman
6. EKV 6: Practice translating from Thai into English and vice versa
7. EKV 7: Watch an English-speaking film with Thai-narrated scripts
8. EKV 8: Attend classes of every module regularly
9. EKV 9: Listen to English songs
10. EKV 10: Do extra vocabulary exercises from different sources, e.g. book, or newspapers

Winke and Abbuhl (2007) VLS Taxonomy

After a thorough review of Long's (1996) interaction hypothesis, Winke and Abbuhl (2007) proposed a tripartite taxonomy for VLS that offers a new way of positioning the often-criticized construct of language learning strategies into a relatively established theory of SLA. This tripartite taxonomy is divided into three broad categories of strategies: Input-based strategies, output-based strategies, and cognition-based strategies. Input-based VLS, under this taxonomy, includes such strategies as listening to native speakers of the target language, extensive reading in the L2, asking for a translation of the L2 word into the L1, and consulting reference books among others. These strategies, according to Winke and Abbuhl, all have a core characteristic; the learner is seeking input in the target language. Output-based strategies, on the other hand, include such strategies as taking notes, practicing pronunciation, speaking with native speakers, engaging in oral and written rehearsal or repetition, and creating and maintaining vocabulary journals. Output-based strategies, Winke and Abbuhl argue, all share the characteristic that the L2 learner is producing the L2 in either written or oral form. Finally, cognition-based strategies include such actions as using associations to remember word meanings (mnemonics), contextual guessing, planning one's course of study, monitoring one's progress, and self-testing among others. Again, Winke and Abbuhl argue, cognition-based strategies all share the same characteristic; they all involve learner-internal cognitive activities.

VLS AND THE DEPTH OF PROCESSING THEORY

Studies on language learning strategies began in the mid 1970s with a focus on memorization strategies, commonly known as mnemonics. These early studies of mnemonic strategies, commonly associated with explicit learning, were heavily

influenced by the depth-of-processing theory originally proposed by Craik and Lockhart (1972) which states that activities requiring deeper level of semantic processing are superior to shallow processing, and thus, promote richer levels of encoding for better learning. Schmitt (2000) argues that L2 learners often favor relatively shallow, less cognitively-demanding VLS such as wordlist memorization and rote repetition, even though these strategies may be less effective than deeper, more cognitively-demanding strategies such as imagery association, elaborative rehearsal and contextual inferencing. As stated earlier in this section, many researchers in the field of SLA (Cohen & Aphek, 1981; Fitzpatrick, Al-Qarni, & Meara, 2008; Lawson & Hogben, 1996; Meara, 1995; Pulido, 2009; Schmitt, 2000) believe that at lower proficiency levels, mechanical strategies such as wordlists, flashcards, L2-L1 translation, and picture-word associations will have better results for inexperienced L2 learners, whereas more advanced learners may benefit more from the context found in more cognitively-demanding activities. In a study comparing Spanish L2 VLS with different levels of processing depth, Sagarra and Alba (2006) found a that participants who used a mnemonic technique—the deeper processing strategy—improved significantly more than those who relied on rote repetition (the shallow processing strategy). These results suggest that teaching Spanish L2 learners the use of vocabulary learning strategies requiring deeper processing may result in better short-term memory retention, which overtime and exposure, help increase long-term memory retention rates.

SELF-INITIATIVE AND STUDY TIME

There is a general consensus among SLA researchers that highly motivated L2 students tend to use a wider range of L2 learning strategies and use them more frequently

(Cohen & Macaro, 2007). For example, in a study using a cluster analysis to determine which factors contribute most to vocabulary learning, Kojic-Sabo and Lightbown (1999) concluded that the two factors with the strongest correlations with high vocabulary proficiency are time on task (study time) and learner independence; described as self-initiated, proactive learners. In addition, Sanaoui (1992, 1995) also argued that motivated, structured L2 learners spend an average of three or more hours per week studying the target language outside of the classroom. Thus, there is strong empirical evidence to suggest that the amount of effort and the time L2 learners spend on studying the language is strongly correlated with success in L2 vocabulary acquisition.

SUCCESSFUL VERSUS LESS-SUCCESSFUL L2 VOCABULARY LEARNERS

Schmitt (2000) argues that “active learning management is important. Good language learners do many things such as use a variety of strategies, structure their vocabulary learning, review and practice target words...poor learners generally lack this awareness and control” (p. 133). Ahmed (1989) also argued that successful L2 learners are able to use a wider variety of metacognitive demanding strategies, while less successful learners generally use fewer strategies and tend to use them inadequately. Lawson and Hogben (1996) also argued that successful L2 learners, those with higher language proficiency scores, recorded more than twice the number of word-by-strategy instances and use these strategies more consistently than their less successful peers. Sanaoui (1992, 1995) explored the issue of successful versus less-successful L2 vocabulary learners from a more qualitative approach. Sanaoui theorized that most L2 learners conformed to one of two sides of the structured versus unstructured vocabulary study continuum. Participants in her study were asked to monitor and document

everything they did to learn and recall new French words. Sanaoui (1992) concluded that L2 vocabulary learners fall into one of two groups: those with a 'structured' approach who organize and plan their tasks for vocabulary learning, and those with an 'unstructured' approach who did not have an organized plan for dealing with new words; they do little or no work other than what they are required to do by their L2 teachers, and spend little to no time reviewing new words outside of the classroom. Based on her findings, Sanaoui concluded that successful, structured L2 vocabulary learners a) independently create more opportunities for vocabulary learning, b) engage in independent study of vocabulary, c) engage in an extensive range of learning activities, d) are systematic in recording new lexical items as they encounter them, e) continually review vocabulary, and f) seek opportunities to use their vocabulary in and out of the classroom. Structured L2 learners in Sanaoui's study received higher scores on vocabulary proficiency tests than those with unstructured approaches to learning new words. On the basis of these findings, Sanaoui concluded that a structured approach to vocabulary learning leads to enhanced L2 lexical acquisition.

Gu (1994) and Gu and Johnson (1996) characterized successful L2 learners as being flexible and metacognitively aware in evaluating their own strategy use. They also argued that successful language learners tend to monitor and manage their learning strategies better than other language students. This self-managing involves choosing the most appropriate strategy from a range of known options and deciding how to pursue the strategy and when to switch to another strategy. Kojic-Sabo and Lightbown (1999), however, argued that simple dichotomies such as structured and unstructured approaches to learning vocabulary fail to capture a range of differences among learners. Instead, Kojic-Sabo and Lightbown used a cluster analysis to find relatively homogeneous subgroups among the L2 learners in their study. Their researchers identified eight

subgroups with distinct approaches to vocabulary learning. Some clusters did fall into one of the two extremes, meaning they used all or none of the structured learning strategies in a questionnaire. Most of the participants, however, fell into the more “saw-toothed profile clusters” (p. 176), showing preferences for certain strategies over others. Kojic-Sabo and Lightbown also compared the results of strategy use with performance on a Yes-No vocabulary test to assess vocabulary proficiency. They concluded that learners who frequently use more elaborate learning strategies (see discussion above on depth of processing), receive higher scores on vocabulary proficiency tests.

VLS DEVELOPMENT AND PROFICIENCY

The main reason to investigate language learning strategies has been to determine the relationship between strategy use and L2 proficiency (N. Anderson, 2005). However, few studies have considered how learning strategy preferences evolve over time and with increasing proficiency (Nyikos & Fan, 2007). It is believed that L2 learners with varying levels of L2 learning experience and proficiency have acquired some degree of knowledge about language learning which influences their approach to language learning and the expectations they hold about learning strategies and the outcome of their efforts (Wenden, 1998). Schmitt (1997), for example, compared three different age groups of Japanese L2 learners (junior high school students, high school students, university students and adult learners) and concluded that less experienced L2 learners rely more in mechanical learning strategies such as oral and written repetition, word lists, and flashcards than learners with higher L2 proficiency. In turn, Schmitt argues, L2 learners with higher L2 proficiency prefer more complex metacognitive strategies such as the use of dictionaries, guessing from context, imaging word meanings, asking teachers for

paraphrases or synonyms, word part analysis, and connecting words with personal experiences. Harley and Hart (2000) also noted a VLS developmental trend from beginning to advanced L2 learners. Harley and Hart compared 9th-grade beginning-level French L2 students with more advanced 11th-grade French L2 immersion students and found that the 9th graders preferred rote memorization of word lists significantly more than the 11th graders did. 11th graders, on the other hand, were able to successfully adopt more diverse and complex strategies. Nassaji (2003) also found that the intermediate-level adult ESL learners in her study preferred oral and written repetition more often (63 percent) than other more complex (deeper) learning strategies such as analogy (8.5 percent), verifying (9.7 percent), monitoring (7.2 percent), self-inquiry (7.2 percent), and analysis (5.5 percent). Regardless of L2 developmental stage, Nyikos & Fan (2007) concluded, results from study after study indicate that successful L2 learners, for the most part, show a pattern of selecting more complex, appropriate, and task-compatible strategies for learning new L2 words and achieve results comparable to more proficient L2 learners. In fact, Anderson (2005) argues that language proficiency level can explain between .30 and .78 of the variance in learning strategy use.

As evidenced by this review of proposed VLS taxonomies, VLS classification has achieved limited consensus to date. Different researchers have different ways of categorizing language learning strategies, depending on their own definitions of vocabulary knowledge and based on their own beliefs about L2 vocabulary learning. While these VLS studies provide valuable information on the VLS used by different populations of L2 learners there is no consensus in the language learning literature on how strategies should be defined or classified (Oxford, 1990; Winke & Abbuhl, 2007). But even though taxonomies differ in many ways, some common elements among them do exist. It is evident that there is a core number of VLS that appear in most taxonomies

under different names and under different categories. The most common of these tend to fall largely in the memory category, followed by metacognitive, cognitive, social and determination categories (Winke & Abbuhl, 2007). Given that VLS normally vary depending on the target language, the learning environment (L2 versus FL) and the learners' learning objectives (Gu & Johnson, 1996; Kojic-Sabo & Lightbown, 1999; Riley & Harsch, 1999; Winke & Abbuhl, 2007), the study of VLS in languages other than ESL or EFL may shed some light into the different strategies, if any, that FL learners in the United States use to acquire a language other than their native English.

SPANISH FL VLS RESEARCH

Only a handful of studies in the past decade (Barcroft, 2009; Hsien-jen, 2001; Pulido, 2004b, 2009; Sagarra & Alba, 2006; Scribner, 2000) have investigated the VLS used by Spanish FL learners in the United States. The following section offers a brief summary of the findings from these studies.

Scribner (2000)

Scribner (2000) conducted a research study using beginning, intermediate, and advanced Spanish L2 students to investigate the effects of three VLS: rote memorization, the keyword method, and what Scribner dubbed as network of conceptual relations or semantic mapping. After a series of pre- and post-tests, Scribner concluded that: a) rote memorization was the least effective method for all three groups of Spanish students; b) the keyword method was the most successful method for beginner-level Spanish students; and c) the semantic mapping method was the most effective method for intermediate and advanced students.

Hsien-jen (2001)

Hsien-jen (2001) conducted a study with 44 native English-speaking students learning Spanish FL in the United States to investigate the use of monolingual and bilingual dictionaries and their effects in Spanish vocabulary learning. Participants were divided into three groups: the no dictionary group, the English-Spanish bilingual dictionary group and the monolingual (Spanish) dictionary group. Participants were also given a questionnaire to determine the VLS they used as they encountered new words in a given text. Hsien-jen found that when a dictionary was available, students tend to consult this source rather than guessing unknown word meanings from context. Moreover, the group with bilingual dictionaries used this resource more often than participants with monolingual dictionaries. Further more, Hsien-jen concluded, students with bilingual dictionaries tend not to use other VLS other than consulting the dictionary, while learners who do not have access to any dictionary or only have access to a monolingual dictionary use a larger variety of VLS. Hsien-jen also concluded that the use of monolingual dictionaries is preferable to bilingual dictionaries since it forces learners to use a wider variety of strategies and resources to learn the meaning of unknown words.

Barcroft (2009)

Barcroft (2009) recently conducted a study using 93 first-year English-speaking learners of Spanish FL to identify the VLS they use during intentional Spanish FL vocabulary learning and to assess the relationship between strategy use and vocabulary learning performance. Upon completion of a pretest and the intervention, Barcroft asked participants to respond to two questions about the strategies they used to learn 24 unknown Spanish nouns presented to them during the intervention. Participants were

asked to list and describe the strategies they used when attempting to learn the 24 Spanish words and to select which strategies they used most frequently and why. Their responses were then coded to identify each participant's most frequently used strategy. The following are the 12 VLS, in order of frequency, the Spanish FL learners in Barcroft's study reported using in this study: 1) L2 word–picture association, 2) L2–L1 association, 3) L2–L1 translation, 4) repetition, 5) mnemonic technique, 6) target certain target words, 7) say words silently, 8) visualize target word and picture, 9) self-generate target words, 10) L2 word–referent or use association, 11) focus on presentation order, and 12) focus on beginning of words.

Barcroft concluded that significantly better vocabulary proficiency scores were attained by participants who used a mnemonic technique (5 out of 93) and L2–picture association (19 out of 93) to learn the new Spanish words. The lowest proficiency scores were attained by those who used L2-L1 translation (15 out of 93) and repetition techniques (13 out of 93). Interestingly, 31 percent of the participants in this study relied on mechanical (or shallow) VLS that resulted in the lowest vocabulary proficiency scores, confirming what Schmitt and McCarthy (1997) and Krashen (1989) argued about ESL learners; when L2 learners are faced with a choice between high-effort metacognitive strategies (deep processing) and low-effort shortcuts (shallow processing) such as memorization and repetition, they will tend to chose the latter one.

Barcroft also found a significant positive correlation between the number of strategies used and vocabulary scores which support results from similar studies by Gu and Johnson (1996) and Catalán (2003). Barcroft's findings were also consistent with previous findings on mnemonic methods, showing a strong correlation between the use of mnemonic techniques and target word recall.

Sagarra & Alba (2006)

Sagarra and Alba (2006) conducted a research study using 778 third-semester L2 learners of Spanish at a large United States university to investigate what role rote memorization, the keyword method, and semantic mapping play in L2 vocabulary learning at early stages of Spanish FL acquisition. They found that 92 percent of their participants preferred the mnemonic keyword technique while the rest (eight percent) chose to use a rote memorization method. When asked which method they found least effective, 88 percent of participants chose the semantic mapping technique, eleven percent chose rote memorization techniques and only one percent thought the keyword technique was an ineffective method for learning vocabulary.

The main conclusions reached by Sagarra and Alba included the argument that beginning-level Spanish FL learners in the United States prefer to use the keyword method for vocabulary learning using simple links with English keywords that resemble the sound of the Spanish word. In addition, Sagarra and Alba found that semantic associations were far less effective than the keyword method and memorization strategies on beginner level learners; a finding that was supported by Scribner's (2000) finding.

Pulido (2004, 2007, 2008, 2009)

Pulido (2004a, 2007, 2009; Pulido & Hambrick, 2008) has done extensive research on lexical input processing during reading among Spanish FL learners while considering reader-based factors of L2 reading proficiency and background knowledge. Less proficient Spanish L2 readers who are less able to make sense of the written context, Pulido (2004b) argues, are more likely to have difficulty using the surrounding context to assign meaning to unknown words they encounter. Less proficient L2 readers use their available cognitive resources for lower level linguistic processes and have less available

cognitive resources needed to deal with the more advanced processes such as comprehension, text evaluation, background knowledge and lexical inference. In addition, Pulido argues, inexperienced L2 readers have less cognitive resources available to simultaneously retain the form-meaning associations while reading. Pulido's (2009) findings also suggest that there are weak correlations between inferencing and lexical retention even when the context of the text is familiar to the reader.

LIMITATIONS AND GAPS OF PREVIOUS SPANISH VLS RESEARCH

The relatively few studies on Spanish FL VLS over the past decade have sought to explore what happens when Spanish FL learners are trained on the use of specific learning strategies under experimental conditions. However, these studies reveal little about the self-selected vocabulary learning techniques and strategies that Spanish FL learners use outside of the FL classroom. After completing the experimental tasks, all the Spanish VLS studies reviewed so far stopped short of asking the most crucial question: did the participants exclusively use the strategies under study, or did they also (or only) use learning strategies familiar to them? In addition, as results from studies by Ahmed (1989), Gu and Johnson (1996), Sanaoui (1995), and Kojic-Sabo and Lightbown (1999) all suggest, a major factor that may determine L2 vocabulary proficiency is the amount of time L2 learners spend studying and practicing the L2 outside of the classroom, or as Gu and Johnson labeled it; 'self-initiative.' Yet, no study could be found on the relationship between study time and Spanish FL vocabulary proficiency. Thus, new research on learner-selected strategies, time on task, and their effects on vocabulary proficiency, specifically in Spanish FL environments, can advance our knowledge by: a) determining what strategies Spanish FL learners in the U.S. actually use when attempting to learn a

new Spanish word, b) determine the range of VLS used by these learners and the consistency of their use, c) assessing the effectiveness of these VLS in relation to vocabulary proficiency scores, and d) assessing the effect Spanish FL study time has on Spanish vocabulary proficiency.

In addition, Schmitt's (1997) taxonomy of L2 vocabulary learning has been used to study the strategic vocabulary learning habits of L2 learners by a number of researchers (Catalán, 2003; Kudo, 1999; Schmitt, 1997). This taxonomy is popular because it offers a number of advantages not found in other taxonomies, including the fact that is comprehensive, it incorporates key elements from other commonly used taxonomies (Nation, 1990; Oxford, 1990; Stoffer, 1995), and is rooted on language learning theory as well as on theories of cognition and memory (Catalán, 2003; Takač, 2008). However, this taxonomy was developed based on studies conducted mostly with ESL learners and has yet to be used with other-than-ESL or EFL learners, and thus, it is unclear whether this L2 VLS taxonomy is a good model to use with adult Spanish FL students. No research to date has explored the validity of this model for language learners in a FL environment; specifically, Spanish FL learners in the United States.

In designing this study, it is not my intention to cover all vocabulary-learning situations, nor do I wish to enter a debate about the type of vocabulary knowledge that is achieved through the use of specific VLS. Instead, this study will focus on the wide range of self-selected learning strategies that Spanish FL learners are using to learn Spanish vocabulary, how these strategies relate to their vocabulary proficiency, and the differences in learning strategies between learners with differing levels of vocabulary proficiency.

PROPOSED RESEARCH QUESTIONS

In exploring the VLS used by university Spanish FL students in the United States, the broad issue that will be addressed in this study is how do Spanish FL students at a U.S. military academic institution approach the complex task of Spanish vocabulary learning and what type of strategies result in better vocabulary gains? The specific questions this study will address are the following:

1. Among beginning level Spanish FL learners, what is the relationship between the types of vocabulary learning strategies students report using, the time they report to spend on independent study time, and their vocabulary proficiency?
2. Among intermediate level Spanish FL learners, what is the relationship between the types of vocabulary learning strategies students report using, the time they report to spend on independent study time, and their vocabulary proficiency?
3. Among advanced level Spanish FL learners, what is the relationship between the types of vocabulary learning strategies students report using, the time they report to spend on independent study time, and their vocabulary proficiency?
4. Do beginner, intermediate and advanced Spanish FL learners differ significantly in the types of vocabulary learning strategies they report using? If so, what are the main patterns of variation?
5. Is Schmitt's (1997) proposed taxonomy of L2 VLS a good-fitting model to evaluate the strategic vocabulary learning habits of adult Spanish FL students?

HYPOTHESES

Based on the review of the related literature, it is hypothesized that:

1. There will be a significant relationship between the use of memorization strategies, study time, and vocabulary size test scores among less-experienced beginning-level Spanish FL learners.
2. There will be a significant relationship between the use of cognitive and memory strategies, study time, and vocabulary size test scores among intermediate-level Spanish FL learners.
3. There will be a significant relationship between the use of social and metacognitive learning strategies, study time, and vocabulary size test scores among advanced, more experienced Spanish FL learners.
4. There will be significant differences in the patterns of VLS used between each of the three proficiency groups, with less-experienced learners having smaller vocabulary sizes and relying more on memorization strategies, while more experience learners having a significantly larger sight vocabulary and relying more on sophisticated social and metacognitive learning strategies for vocabulary learning.
5. Schmitt's (1997) proposed taxonomy of L2 VLS is a good-fitting model to use with VLS data from adult Spanish FL learners in the United States.

Chapter 3: Methodology

INTRODUCTION

This chapter offers a detailed description of how the present study was designed to effectively address the research questions presented in the previous chapter. A discussion of the research setting, population, and instruments used follows. Finally the data collection procedures and how the data was analyzed are presented.

RESEARCH DESIGN

The present study is an empirical quantitative research study using a comprehensive Spanish FL vocabulary learning questionnaire (VLQ) and a Spanish vocabulary size test to examine the strategic vocabulary learning habits of adult Spanish FL students at a U.S. military academic institution. The Statistical Package for the Social Sciences (SPSS, version 17.0) was used for statistical analysis.

Setting

The present study took place at a U.S. military undergraduate academic institution during the Fall semester of 2010. This institution of higher learning is a fully accredited undergraduate military academic institution with an approximate enrollment of 4,400 students. It is a highly selective public institution of higher learning with a 17 percent admissions rate (NCES, 2010). Admissions are competitive and based on academic, athletic, and leadership potential. Students are drawn from each congressional district in the United States by a highly competitive process, ensuring geographic diversity. According to figures from the National Center for Education Statistics (NCES, 2010) the ethnic make up of the Fall 2009 incoming freshmen class included 73 percent

White/Caucasians, 8 percent Hispanic/Latino, 8 percent Asian, Native Hawaiian or Pacific Islander, 5 percent African American, 1 percent Native American, 1 percent non resident aliens, and 2 percent with unknown ethnicity. In addition 100 percent of the incoming students in 2009 were under the age of 24, 91 percent were from out-of-state, 7 percent were from the state of Colorado and 2 percent from foreign countries. Finally, the gender ratio of the student population is 80-20 males to females.

This institution offers 32 academic majors within four major disciplines: humanities, social sciences, basic sciences, and engineering. All students admitted receive a 100 percent scholarship to cover tuition, room, and board. Additionally, each student receives a monthly stipend to cover other academic and living expenses. All students are required to graduate within four years and serve a five-year commitment as commissioned military officers upon graduation. Students are also required to take four semesters of FL courses in residence. Those students enrolled in Technical degrees with heavier academic loads are only required to take two semesters of FL in residence. The Department of Foreign Languages offers FL courses and minors in eight languages: Arabic, Chinese, French, German, Japanese, Russian, Portuguese and Spanish. Historically, Spanish has been the largest division within the department with an annual enrollment between 600 and 800 students.

FL courses at this institution are divided into three levels: 100-level courses designed for beginner-level basic FL skill development, 200-level courses designed for intermediate-level basic FL skill development, and 300-level courses which focus primarily on FL conversational skills for advanced level FL students. In addition, 400-level FL credit is earned through summer language immersion and semester abroad programs. Students enrolled in 100- and 200-level Spanish courses are required to use

the textbook *Anda* (Heining-Boynton, LeLoup, & Cowell, 2009), along with other supplementary materials that come with the *Anda* series.

The Spanish instructors and professors at this institution are a mix of civilians and active duty military instructors; some native Spanish speakers but all fluent in Spanish. FL teaching experience among the staff varies from novice FL teachers going through on-the-job training to highly experienced tenured professors as well as distinguished visiting professors.

In addition, students at this institution are high achievers with average math and verbal Scholastic Aptitude Test (SAT) scores at the 88th and 85th percentiles of the nationwide SAT distribution (Carrell & West, 2010). Therefore, an assumption of this study is that most of the participants are considered to be above average in both academic achievement and learning aptitude. An advantage of using these participants in the present study is that I was able to maximize the number of participants with ‘successful’ learning strategies.

Participants

The participants in this research study originally included 509 Spanish FL students, but due to incomplete data, the results from 31 participants had to be discarded. In the end, the data from 477 students enrolled in Spanish FL courses at the 100-level (n = 184), 200-level (n = 188), and 300-level (n = 105) were included in the results of this study.

Students in the 100-level courses typically receive five hours per week of formal introductory-level Spanish FL instruction—roughly 80 hours of formal instruction per academic semester, including classroom and language laboratory time. Students in the

200- and 300-level course receive roughly three hours of formal intermediate and advanced-level Spanish FL instruction per week—roughly 50 hours of formal instruction per academic semester, including classroom and language laboratory time. The curriculum in the Spanish 100- and 200-level courses emphasizes basic language skill development such as grammar, vocabulary, reading comprehension and writing. Advanced 300-level courses emphasize primarily FL communicative skills such as listening, speaking, writing and reading.

Each student at this military academic institution is placed in the appropriate FL course level based on prior experience with the FL and the results from a placement test they are given prior to the start of their freshman year. In addition, during the first four weeks of instruction, FL instructors and professors are tasked with reevaluating the proficiency level of each student and, if necessary, transferring the student to the appropriate proficiency level course.

Instruments

Two instruments were used in this Spanish FL VLS study: a Spanish L2 vocabulary learning questionnaire (VLQ) with a demographics survey, and a Spanish Yes-No Vocabulary Checklist Test. The participants were also given two Scantron sheets to record their answers—one for the demographic survey and VLQ, and another for the vocabulary test. The two Scantron sheets that each participant received were pre-marked with a three-digit number in order to match the two forms and merge the answers each student gave in each of the two assessment instruments.

Spanish Vocabulary Learning Questionnaire (VLQ). The Spanish VLQ (Appendix A) that was used for this study was adapted from Catalán's (2003) study

which used Schmitt's (1997) taxonomy of L2 vocabulary learning (Appendix B).

Schmitt's taxonomy of vocabulary learning strategies was developed on the basis of an extensive literature review, language learners' retrospective descriptions of their learning strategies, and teacher surveys. Schmitt also extracted items from Oxford's (1990), Stoffer's (1995), and Nation's (1990) language and vocabulary learning taxonomies. The final list of strategies was organized based on Oxford's classification of learning strategies (Social, Memory, Cognitive and Metacognitive strategies) and Nation's (1990) Discovery and Consolidation distinction (Figure 2).

Discovery Strategies	Determination Strategies
	Social Strategies
Consolidation Strategies	Social Strategies
	Memory Strategies
	Cognitive Strategies
	Metacognitive Strategies

Figure 2: Schmitt (1997) Taxonomy of L2 Vocabulary Learning

The result is a comprehensive list of frequently use VLS which has been used successfully in vocabulary acquisition studies by Schmitt (1997), Kudo (1999), and Catalán (2003). According to Catalán (2003), the use of Schmitt's 1997 VLS taxonomy offers several advantages: a) it can be standardized as a test; b) it can be easily used to collect the desired data from students; c) it is based on the theory of learning strategies as well as on theories of memory; d) it is simple and practical which allows for ease of

coding, classification and managing of the data; e) it can be used with learners of different ages, educational backgrounds and target languages; f) it is comprehensive and sensitive to the variety of learning strategies; and g) it allows for comparison with other studies, among them Schmitt's own survey. Schmitt (1997), however, warns against viewing this taxonomy as exhaustive; rather, it is a "dynamic working inventory" (p. 204) of commonly used strategies.

As previously mentioned, Schmitt's VLS taxonomy (Appendix B) is divided into two domains based on Nation's (1990) suggestions: discovery strategies (items 1 through 14), which are strategies used to discover the meaning of an unknown word, and consolidation strategies (items 15 through 60), which are strategies used to consolidate (or learn) the meaning of a previously unknown word. Discovery strategies are further subdivided into determination strategies (items 1 through 9) and social strategies (items 10 through 14). Consolidation strategies, on the other hand, are subdivided into social (items 15 through 17), memory (items 18 through 44), cognitive (items 45 through 53), and metacognitive strategies (items 54 through 60). In addition, after a pilot study in which 14 L2 students at the University of Texas were asked to add any additional vocabulary learning strategies they used and that were not listed in Schmitt's taxonomy, it was decided to add two to the questionnaire: 1) an item on computer-based VLS (item No. 59), which were not common when this taxonomy was created in the mid-90s but is extensively used at this institution and most other schools today, and 2) extensive FL reading (item No. 60), which was a common strategy among the participants in the pilot study, and as the literature shows (Ellis, 1995; Horst, 2005; Nation, 1997; Nation & Gu, 2007), it is an effective and commonly used strategy for vocabulary learning. Using Schmitt's definition of metacognitive learning strategies, both of these items were added to the metacognitive section of the taxonomy. In addition, an item to determine the

amount of time students spend studying Spanish outside of the classroom was added in Section I.

VLQ Instructions and Procedures. Participants were asked to answer the VLQ anonymously. No personal identifiable information was asked of any participant in order to counteract the tendency for respondents to answer what they perceive to be the right answer in the researcher's mind. Section I of the VLQ was developed in order to ascertain general demographic information of each participant as well as to determine the amount of time each student dedicates each week to the study of Spanish outside of the classroom. Participants were asked to fill out the multiple choice demographic survey using a scantron sheet. They were also asked to write in the comments section of the scantron the average number of hours they spend each week studying Spanish outside of the classroom. This item was asked as an open-ended question to be able to include a wide range of answers and not limit the students' responses to predetermined ranges.

VLQ Scoring. Section II includes the 60-item questionnaire using a Likert scale with five possible options: A (never), B (infrequently), C (sometimes), D (often) and E (very often). Option A was worth 1 point; option B was worth 2 points, and so forth. In order to answer research question four, strategies that received an average score of 3.0 or above—strategies used sometimes (3), often (4) or very often (5)—were considered as the strategies normally used by each group. In their studies on VLS, Schmitt (1997) and Catalán (2003) did not use a Likert scale for their questionnaires. Instead, they asked their participants to mark whether or not they use each of the strategies on the

questionnaire; whether they use them sometimes, often or very often. Therefore, I selected 3.0 and above as the average threshold of use for each strategy.

Spanish Yes-No Vocabulary Checklist Test. The Yes-No Vocabulary Checklist Test (Appendix A, Part II) was used to obtain an estimate of each participant's Spanish vocabulary size. This test was designed to measure students' passive recognition of Spanish words in a list of relatively high frequency Spanish words (Davies, 2006). As stated in the previous chapter, the multidimensional and multifaceted nature of the lexicon makes the task of measuring vocabulary knowledge a challenging one (Meara, 1996a; Nation, 2001; Read, 2007; Schmitt, 2000). Thus, the vocabulary proficiency score that was used in the present study as the dependent variable represents students' most basic knowledge of a word—the passive recognition (Laufer & Goldstein, 2004) of a Spanish word. In a recent study of vocabulary knowledge hierarchies, Laufer and Goldstein (2004) were able to find a significant Pearson correlation of .49 ($p < .001$) between scores on a passive recognition vocabulary test and the participants L2 class grade point average.

The Yes-No Vocabulary Size Test was originally developed in the mid-eighties by Meara and Buxton (1987) with a simple checklist format in which test-takers are required to indicate whether they know a target word by checking a yes or no box next to each word. The checklist format allows for a large number of vocabulary items to be tested and scored in a limited amount of time. It offers an effective tool to measure the size of passive vocabulary knowledge of L2 learners (Alderson, 2005; Meara, Huibregtse, & Admiraal, 2002; Mochida & Harrington, 2006) and has been used extensively as a language placement test due to its reported merits. The Yes-No test was also used effectively by Kojic-Sabo and Lightbown (1999) in a similar VLS study to estimate their

participants' vocabulary size. In order to show construct validity, L2 vocabulary acquisition researchers (Alderson, 2005; Meara, 1996a; Meara & Buxton, 1987; Mochida & Harrington, 2006) report moderately strong correlations ranging from .72 to .88 between performance on the Yes-No test and the more traditional multiple-choice vocabulary tests, including a correlation of .88 with Nation's (1990) popular Vocabulary Levels Test (Mochida & Harrington, 2006).

The Yes-No test consists of two different types of words: real words and pseudo or fake words. Pseudowords are words that fulfill the phonological and orthographical constraints of the target language but do not bear any meaning (Alderson, 2005; Mochida & Harrington, 2006). These pseudowords provide a basis for adjusting the scores of those students who tend to overestimate their vocabulary knowledge. A 'yes' response to a real word is labeled as a hit, while a 'no' response is labeled a miss. On the other hand, a 'yes' response to a pseudoword is labeled a false alarm, while a 'no' response to a pseudoword is labeled as a correct rejection. Test-takers know that the test contains pseudowords but they do not know how many nor their location on the test, which gives them little choice but to be honest with their responses. It should be noted, however, that these responses represent a categorical, self-reported judgment that reveals nothing about the extent of the students' underlying word knowledge (Mochida & Harrington, 2006). According to Mochida and Harrington, the results of a Yes-No vocabulary test may reflect knowledge of a word that falls somewhere between being able to recognize the form of a word to being able to use it fluently and effectively within different contexts. Despite its limitations, however, the Yes-No Vocabulary Checklist Test has established itself as a reliable measure of students' overall vocabulary size with test-retest and internal reliability coefficients ranging between .82 and .93 (Alderson, 2005; Meara & Buxton, 1987; Mochida & Harrington, 2006; Read, 2007). In fact, according to results

from the DIALANG (Diagnostic Language) Test Project funded by the European Union (Alderson, 2005), the Yes-No vocabulary test was found to be a highly reliable and valid tool to measure L2 vocabulary size, with correlations coefficients between the Yes-No test and other L2 proficiency tests ranging between .61 (with DIALANG's listening test) and .72 (with DIALANG's vocabulary proficiency test). Therefore, due to its moderate to strong correlations with other vocabulary and language proficiency tests, it "yields a reasonably valid measure of vocabulary size" (Read, 2007, p. 111).

The Spanish Yes-No vocabulary test used in the present study included 100 Spanish content words (all verbs) and 50 pseudowords in randomized order (Appendix C). DIALANG project test developers, according to Alderson (2005), decided to use only verbs since in most languages there are relatively fewer verbs than other lexical forms; nouns are a large category and adjectives are often derived from nouns. The 100 Spanish verb sample was selected from the 1074 verbs found in the 5000 most-frequently-used Spanish words list (Davies, 2006). According to Davies and Face (2006), the 5000 most-frequently-used Spanish words cover 99 percent of the words found in authentic texts and represent the core of vocabulary knowledge that Spanish native speakers acquire early in life. Therefore, a representative sample of the 1074 Spanish verbs in the 5000 word list should yield a reasonable estimate of overall Spanish vocabulary size. To ensure the 100 word sample is representative of the 5000 Spanish word list, every tenth verb on the list was selected until a list of 100 verbs was complete (Appendix C). The 50 Spanish pseudowords used in the vocabulary test were developed by the DIALANG test developers.

Vocabulary Test Instructions and Procedures. The Spanish vocabulary test followed the VLQ. Participants were given a separate scantron sheet to respond to the

multiple choice vocabulary test. Participants were instructed to select “A” on their scantron sheets if they knew the word’s most basic meaning or “B” if they did not.

Vocabulary Test Scoring. There are several different procedures that have been proposed for scoring the Yes-No vocabulary checklist test and some disagreements prevail as to which scoring system results in the most valid and reliable scores (Beeckmans, Eyckmans, Janssens, Dufranne, & Van de Velde, 2001; Huibregtse, Admiraal, & Meara, 2002; Mochida & Harrington, 2006; Read, 2007). However, according to a study by Mochida and Harrington (2006), as well as the DIALANG test developers (Alderson, 2005), the most accurate and reliable scoring method is the simple total (also known as raw hits), which represents the total number of categorical hits and correct rejections—that is, ‘yes’ responses to real words and ‘no’ responses to pseudowords. Therefore, for the present study, I used the simple total scoring method to estimate each participant’s Spanish vocabulary size. The scores test-takers earned in the Yes-No vocabulary test, therefore, range from zero points (lowest vocabulary size) to 150 points (highest vocabulary size) according to the number of hits and correct rejections each test-taker achieved on the vocabulary test.

Data Analysis

The two Scantron sheets that each participant used were scanned by a Scantron reader at the University of Texas and downloaded into Excel spreadsheets. Two Excel spreadsheets were created by the scanning office—one with all the participants’ answers to the demographic questions and the VLQ, and another with the participants’ answers to the vocabulary test. Once the scores to the vocabulary test were obtained for each

participant they were manually inserted in the VLQ spreadsheet as an additional column ensuring that each score was attributed to the right participant by means of identification numbers. Once all the answers and scores for each participant were recorded, they were divided into three separate spreadsheets—one each for beginning, intermediate, and advanced groups.

The next step was to obtain an average score for each of Schmitt's six categories of VLS: determination strategies (items 1 through 9), discovery social strategies (items 10 through 14), consolidation social strategies (items 15 through 17), consolidation memory strategies (items 18 through 44), consolidation cognitive strategies (items 45 through 53) and consolidation metacognitive strategies (items 54 through 60). The *AutoSum—Average* feature in Excel was used to calculate average scores per rows (strategies) and per columns (participants). The average VLS scores for each participant within each proficiency level, plus their corresponding vocabulary test scores were then recorded in each spreadsheet by adding additional columns.

The next step was to determine the average number of hours that each participant dedicates to the study of Spanish outside of their classroom (Appendix A, Section I, item A). Since participants were instructed to write their answers in the comments section of their scantron sheet, each of the scantron sheets were manually checked to determine the number of study hours per week that each student claimed to use on average. It should be noted that many of the participants gave a range of hours (e.g. 2 to 4 hours, or 5-6 hours) rather than a single number. In these cases, the average of the two numbers was calculated to obtain a single number of study hours per week. Then, an additional column was added to each spreadsheet to record 'study hours' for each participant—again, using the identification numbers to match participants' answers on each spreadsheet.

All the previous steps resulted in three spreadsheets: one each for beginning, intermediate, and advanced groups with students' identification numbers in the first column, vocabulary test scores in the second, average number of study hours per week in the third, average *determination strategies* score in the fourth, average *discovery social strategies* score in the fifth, average *consolidation social strategies* score in the sixth, average *consolidation memory strategies* score in the seventh, average *consolidation cognitive strategies* score in the eighth, and average *consolidation metacognitive strategies* score in the ninth.

In addition, a one-way analysis of variance (ANOVA) was performed on the vocabulary test scores to determine how much of the total variability among scores can be attributed to the participants' language proficiency group. Then, multiple linear regression analyses were conducted on the results from each proficiency group in order to obtain answers to research questions one, two and three; the vocabulary test scores represent the dependent variable in the regression analysis, while the number of study hours per week and the average score for each of the six learning strategy categories represent the independent variables.

In order to answer research question four, it was necessary to determine first which learning strategies in the VLQ received an overall average score of 3.0 and above (strategies used *sometimes*, *often*, and *very often*) within each proficiency group in order to make comparisons between each group. An ANOVA test was also performed to determine whether any significant differences exist in the study habits between the three groups in this study.

Finally, in order to answer Research Question 5, a Confirmatory Factor Analysis (CFA) was conducted to determine whether the results of the VLQ in the present study

aligned with the six learning strategies model in Schmitt's (1997) taxonomy of vocabulary learning.

Chapter 4: Results

INTRODUCTION

This chapter presents the results of the study's quantitative data analysis. First, I present a breakdown of the participants' demographic information, followed by the results from the Spanish Yes-No Vocabulary Size Test and the Vocabulary Learning Questionnaire (VLQ). Then, I present the results from a Confirmatory Factor Analysis performed on Schmitt's (1997) taxonomy of L2 vocabulary learning (Appendix B). Finally, I present the results from the multiple linear regression and Pearson correlation analyses performed to answer the research questions presented in the previous chapter.

DATA ANALYSIS

Demographic Information

According to the responses to the demographic survey presented to the participants during the data collection phase, males in this study accounted for 80.3 percent of the 477 participants. This percentage accurately reflects the gender ratio of the student population at the U.S. military academic institution where the study took place. The age of the participants ranged from 18 to 24 (all students are between 18 and 24 years of age). In addition, 19 of the 477 students (four percent) stated that Spanish was their first language; 16 of which were enrolled in 300-level Spanish. Four students (0.83 percent) reported having had "zero" experience with the Spanish language, while 84 students (17.6 percent) reported having had less than two years of Spanish L2; 193 students (40.46 percent) reported having had between two and four years of Spanish L2 experience; 123 students (25.78 percent) reported having had between four and six years

of Spanish L2 experience; and 73 students (15.3 percent) reported having had more than six years of Spanish L2 experience. Additionally, 132 students (27.6 percent) reported having studied a L2 other than Spanish (54 beginners, 46 intermediate, and 32 advanced), and eight students (1.67 percent) reported being fluent in more than two languages.

Spanish Yes-No Vocabulary Size Test Results

The average vocabulary test score for all participants was 84.17 out of 150 possible points, with a range of 51 to 143. The beginning group had an average score of 72.66 (out of 150), the intermediate group averaged 83.32, and the advanced group averaged 105.75 points (see Table 3). In addition, the vocabulary test's Cronbach's Alpha internal reliability coefficient was .967 which suggests highly reliable results. Finally, the score distribution histogram (Figure 3) shows a slight positive skewness.

Proficiency	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Beginners	183	72.66	12.52	.92	51.00	117.00
Intermediates	187	83.32	13.34	.97	54.00	116.00
Advanced	105	105.75	15.40	1.50	57.00	143.00
Total	475	84.17	18.34	.84	51.00	143.00

Table 3: Vocabulary Test Results Descriptive Statistics

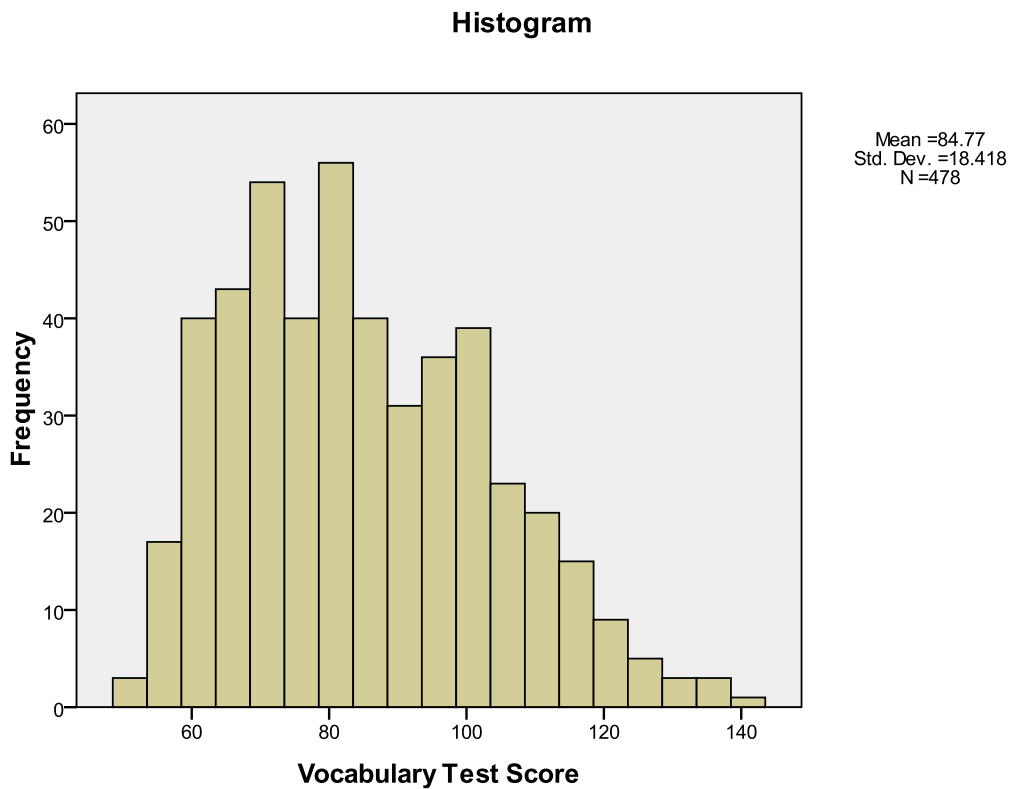


Figure 3: Vocabulary Test Scores Histogram

The One-way ANOVA (Table 4) shows that there is at least one significant difference in the vocabulary test score means between the three Spanish proficiency groups: $F(2, 478) = 186.07, p < .001$. In addition, the R-Squared value of .439 reveals that 43.9 percent of the variance in the vocabulary test scores can be attributed to the participants' language proficiency group placement.

Dependent Variable: Vocabulary Test Score

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	71084.558 ^a	2	35542.279	186.076	.000	.439
	3424479.705	1	3424479.705	17928.307	.000	.974
Group	71084.558	2	35542.279	186.076	.000	.439
Error	90729.587	475	191.010			
Total	3596859.000	478				
Corrected Total	161814.144	477				

a. R Squared = .439 (Adjusted R Squared = .437)

Table 4: Vocabulary Test Scores ANOVA

These ANOVA test results (Table 4) allow for the rejection of the null hypothesis and the confirmation that there is at least one significant difference among proficiency groups' mean vocabulary test scores. In order to determine where the between groups difference(s) lie, a Multiple Comparisons Scheffe Post Hoc test was conducted (Table 5).

Vocabulary Test Score
Scheffe

(I) Course Level	(J) Course Level	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Beginning	Intermediate	-11.28*	1.431	.000	-14.79	-7.76
	Advanced	-32.60*	1.690	.000	-36.75	-28.45
Intermediate	Beginning	11.28*	1.431	.000	7.76	14.79
	Advanced	-21.32*	1.682	.000	-25.45	-17.19
Advanced	Beginning	32.60*	1.690	.000	28.45	36.75
	Intermediate	21.32*	1.682	.000	17.19	25.45

Based on observed means.

The error term is Mean Square (Error) = 191.010.

* The mean difference is significant at the .05 level

Table 5: Multiple Comparisons ANOVA Test

The multiple comparisons Scheffe Post Hoc test results in Table 5 show that all the p-values are significant at $p < .001$. Therefore, it can be inferred that the vocabulary size test score means from all three Spanish FL proficiency groups differ significantly from each other. The vocabulary test means for the three proficiency groups of Spanish FL students shows a clear and predictable pattern of vocabulary knowledge increase from beginning level through intermediate and advanced levels (see Table 6 and Figure 4). Furthermore, the top 22 vocabulary test scores (top 5 percent) were attained by participants in the advanced proficiency group, which again, confirms a logical trend for vocabulary knowledge by proficiency level.

Estimated Marginal Means of Vocabulary Test Score

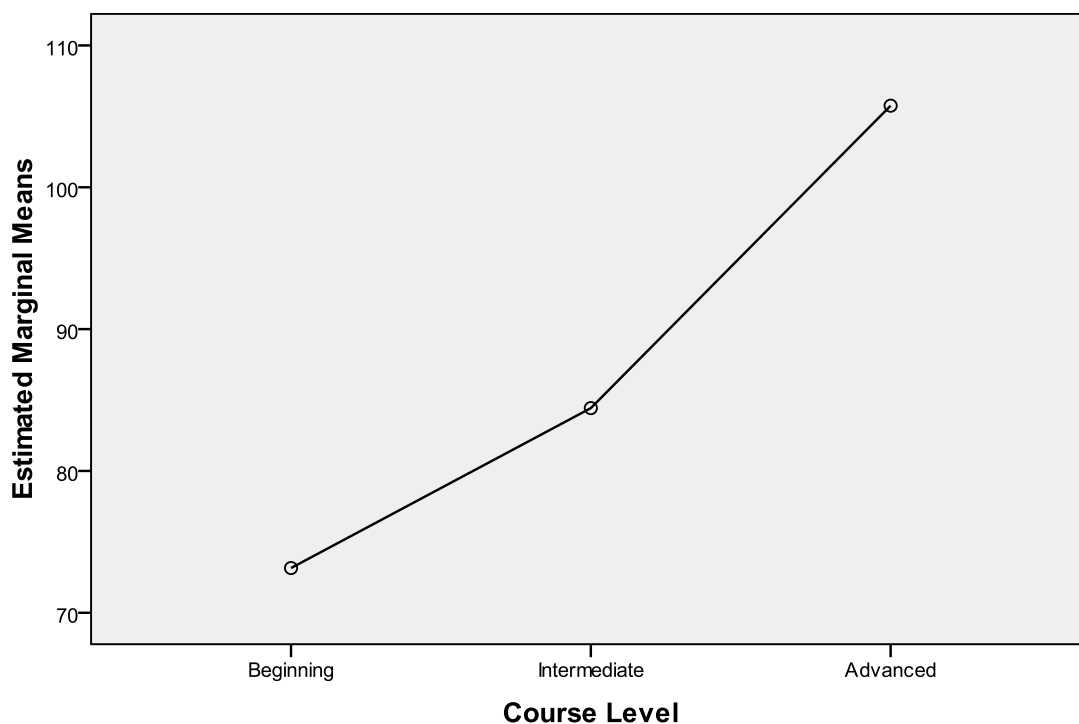


Figure 4: Vocabulary Test Scores Marginal Means by Proficiency Score

As described in the previous chapter, the Yes-No Spanish Vocabulary Size Test included words from five Spanish word frequency band levels (1000-, 2000-, 3000-, 4000-, and 5000-level words) and 50 pseudowords. Table 6 below presents the breakdown of the vocabulary test scores by language proficiency and word frequency levels.

Word Frequency Level	Percentage of Hits and Correct Rejections by Proficiency Group		
	Beginning (%)	Intermediate (%)	Advanced (%)
1000-Level	44.96	61.61	84.36
2000-Level	24.57	37.83	69.17
3000-Level	29.74	35.42	54.42
4000-Level	19.05	27.55	43.25
5000-Level	8.6	9.6	29.0
Pseudowords	87.06	86.96	87.94

Table 6: Hits and Correct Rejections by Proficiency Group and Word Frequency Levels

Participants from all three proficiency groups achieved almost the same mean of correct rejections for pseudowords (see Table 6), suggesting that performance on pseudowords in the Yes-No vocabulary checklist test does not distinguish between proficiency levels. In addition, according to the results from an ANOVA test (Table 7), the vocabulary size test scores from each word frequency level differ significantly from each other ($p < .001$) except for pseudowords; ANOVA results for pseudowords were not significant.

		Sum of Squares	df	Mean Square	F	Sig.
1000-Level Words	Between Groups	97164.43	2	48582.2	178.60	.000
	Within Groups	128391.74	472	272.01		
	Total	225556.17	474			
2000-Level Words	Between Groups	133966.83	2	66983.4	154.95	.000
	Within Groups	204033.97	472	432.27		
	Total	338000.81	474			
3000-Level Words	Between Groups	41753.81	2	20876.9	85.13	.000
	Within Groups	115746.46	472	245.22		
	Total	157500.27	474			
4000-Level Words	Between Groups	38743.42	2	19371.7	47.33	.000
	Within Groups	193171.10	472	409.26		
	Total	231914.52	474			
5000-Level Words	Between Groups	29018.78	2	14509.3	51.80	.000
	Within Groups	132207.74	472	280.10		
	Total	161226.52	474			
Pseudowords	Between Groups	176.54	2	88.27	.89	.409
	Within Groups	46518.83	472	98.55		
	Total	46695.3	474			

Table 7: ANOVA Test of Between-Levels Effects

Vocabulary Learning Questionnaire (VLQ) Results. The VLQ used in this study consisted of 60 learning strategies (Table 8). Using a scantron sheet to record their answers, students had to respond to whether they use each strategy A (never), B

(infrequently), C (sometimes), D (often) and E (very often) using a 5-point Likert scale. Each answer was worth between one point (A) and five points (E) and averages were computed for each strategy in each proficiency group. In order to determine the reliability of the responses to the 60-item VLQ, I conducted an internal reliability test. The result was a Cronbach's Alpha internal reliability of .901.

1. I analyze the part of the speech (i.e. whether it's a noun, verb, subject, etc)
2. I analyze parts of the word (affixes, roots, etc.)
3. I see if there's an English cognate (e.g. Historia – History)
4. I analyze any available pictures or gestures accompanying the word
5. I guess the word meaning from context
6. I use a bilingual English/Spanish dictionary (hardcopy or on-line)
7. I use a monolingual Spanish dictionary (hardcopy or on-line)
8. I look it up in a word list
9. I look it up in existing flash cards
10. I ask the teacher for an English translation of the word
11. I ask the teacher for a Spanish paraphrase or a synonym of the word
12. I ask the teacher for a Spanish sentence that includes the word
13. I ask my classmates for the meaning or translation of the word
14. I discover the meaning of the word through group work activities
15. I study and practice word meanings with other students; we quiz each other
16. I ask the teacher to check my Spanish words for accuracy
17. I try using the word in interactions with native Spanish speakers
18. I study the word with a pictorial representation of its meaning (images, photos, drawings)
19. I create my own image of word's meaning
20. I connect the word's meaning to a personal experience
21. I associate the word with its coordinates (e.g. apple with pear, peach, orange, etc)
22. I connect the word to its synonyms (similar meaning) and antonyms (opposites)
23. I use semantic maps (word trees)
24. I use 'scales' for gradable adjectives (e.g. cold, colder, coldest)
25. I use the peg method—linking the word to one that rhymes with it (e.g. two is a shoe, three is a tree, four is a door...)
26. I use the loci method—associating new words to objects in a familiar place
27. I group words together to study them
28. I group words together spatially on a page by forming geometrical patterns, columns, triangles, squares, circles, etc.
29. I use the word in Spanish sentences
30. I group words together within a storyline

31. I study the spelling of a word carefully
32. I study the sound of a word carefully
33. I say the word aloud when studying
34. I imagine the word's form—its length, syllables, shape, etc.
35. I underline the initial letter of the word
36. I configure the word (i.e. I arrange the word in parts, letters, etc. for easier learning)
37. I use the keyword method—connect Spanish words with English words that sound or look similar
38. I remember the word's affixes and roots
39. I try to relate the word to its part of speech (subject, noun, verb, adjective, etc.)
40. I paraphrase the word's meaning
41. I use cognates (e.g. history—historia; tomato—tomate)
42. I learn the words in idioms together (e.g. “mi casa es su casa” or “hasta la vista”)
43. I use physical actions when learning a word
44. I use semantic feature grids (e.g. man, woman = human beings; cat, dog = domestic animals)
45. I use verbal repetition
46. I use written repetition
47. I create and use wordlists with translations
48. I create and use flashcards
49. I take notes in class when learning new Spanish words
50. I study the vocabulary section of my textbooks
51. I listen to recorded wordlists
52. I put Spanish word labels on physical objects to remember them
53. I keep a vocabulary notebook or journal
54. I listen and/or watch Spanish media (songs, videos, TV, movies, etc.)
55. I test myself periodically on word knowledge
56. I use spaced word practice to revisit vocabulary
57. I skip or pass over new words (I ignore them, move on)
58. I continue to study the new Spanish word overtime
59. I use technology/computer-based programs to study and practice vocabulary
60. I read books or other Spanish texts

Table 8: List of Vocabulary Learning Strategies

The participants' responses to the VLQ suggest a slight increase in the number of VLS used by students as they progress from beginning-level (19 VLS) through intermediate (24 VLS) and advanced-level (25 VLS) Spanish FL courses (Table 9). Almost half of the 31 strategies that participants claimed to use (14 out of 31) were used

by participants in all three groups, which suggests that many of these VLS are popular among Spanish FL students regardless of proficiency level. The advanced group, however, had a larger number of unique learning strategies not used by neither beginning nor intermediate groups.

Spanish Proficiency Group	total VLS	Strategies Used*
Beginners	19	1, 2, 3, 4, 5, 6, 8, 10, 13, 27, 32, 33, 37, 41, 42, 45, 46, 50, 59.
Intermediate	24	1, 2, 3, 4, 5, 6, 8, 10, 13, 18, 27, 29, 31, 32, 33, 37, 40, 41, 45, 46, 47, 50, 58, 59.
Advanced	25	1, 2, 3, 4, 5, 6, 13, 22, 27, 29, 31, 32, 33, 37, 38, 39, 40, 41, 45, 46, 47, 49, 50, 54, 60.

**Note.* These strategies include those that received a mean score of 3.0 (sometimes used) and above on a 5-point Likert scale.

Table 9: Breakdown of VLS Used by Proficiency Level

In order to answer the research questions previously stated, multiple linear regression analyses were conducted within each group of Spanish FL learners to examine the linear correlations between the independent variables (six types of VLS and study time) and the dependent variable (vocabulary size score). The results are summarized in the following sections.

RESEARCH QUESTION 1

Among beginning level Spanish FL learners, what is the relationship between the types of vocabulary learning strategies students report using, the time they report to spend on independent study time, and their vocabulary proficiency?

Table 10 below presents the descriptive statistics for the beginning-level group. On average, beginning-level students achieved a mean score of 73.1 on the dependent variable—the vocabulary size test. Among the seven independent variables under assessment, determination strategies received the highest mean score (3.15) and consolidation social strategies received the lowest (2.2). The average number of hours spent on independent study time for this group was 2.49 hours.

	Mean	Std. Deviation	N
Vocabulary Score	73.1033	12.80604	184
Determination Strategies	3.1537	.45837	184
Discovery Social Strategies	2.6348	.57951	184
Consolidation Social Strategies	2.2081	.72490	184
Memory Strategies	2.6059	.54172	184
Cognitive Strategies	2.7028	.61067	184
Metacognitive Strategies	2.5213	.53816	184
Average Study Hours per Week	2.4955	1.41411	184

Note. Strategy mean is the average use per group on a 5-point scale: 1 = never used, 2 = infrequently used, 3 = sometimes used, 4 = often used, and 5 = very often used.

Table 10: Beginning Group VLS Descriptive Statistics

According to the ANOVA results (Table 11), however, the relationship between the predictive variables and the dependant variable in the beginning-level group was found to be not significant ($F = .883, p < .52$).

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1018.180	7	145.454	.883	.521 ^a
	Residual	28992.858	176	164.732		
	Total	30011.038	183			

a. Predictors: Study Hrs, Determination Strategies, Consolidation Social Strategies, Discovery Social Strategies, Cognitive Strategies, Memory Strategies, and Metacognitive Strategies

b. Dependent Variable: Vocabulary Score

Table 11: Beginning Group Analysis of Variance

The answer to Research Question 1, thus, is that there is no significant relationship between the type of VLS participants in the beginning group report using, as proposed by Schmitt (1997), the amount of time they devote to weekly independent study of the language and their vocabulary size test scores.

RESEARCH QUESTION 2

Among intermediate level Spanish FL learners, what is the relationship between the types of vocabulary learning strategies students report using, the time they report to spend on independent study time, and their vocabulary proficiency?

Table 12 presents the descriptive statistics for the intermediate-level group. On average, intermediate-level students achieved a mean score of 84.43 on the dependent variable—the vocabulary size test. Among the seven independent variables under assessment, again determination strategies received the highest mean score (3.18) and again consolidation social strategies received the lowest (2.27). The average number of hours spent on independent study time for this group was 2.23 hours, slightly lower than the 2.49 hours per week beginning-level students report having.

	Mean	Std. Deviation	N
Vocabulary Test Score	84.4309	13.89843	188
Determination Strategies	3.1868	.50483	188
Discovery Social Strategies	2.7072	.59392	188
Consolidation Social Strategies	2.2778	.74144	188
Memory Strategies	2.6334	.53169	188
Cognitive Strategies	2.8562	.66641	188
Metacognitive Strategies	2.6352	.60060	188
Average Study Hours per Week	2.2377	1.64552	188

Note. Strategy mean is the average use per group on a 5-point scale: 1 = never used, 2 = infrequently used, 3 = sometimes used, 4 = often used, and 5 = very often used.

Table 12: Intermediate Group Descriptive Statistics

According to the ANOVA results (Table 13), however, the relationship between the predictive variables and the dependant variable in the intermediate-level group was also found to be not significant ($F = .959, p < .463$).

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1298.192	7	185.456	.959	.463 ^a
	Residual	34823.909	180	193.466		
	Total	36122.101	187			

a. Predictors: Study Hrs, Memory Strategies , Discovery Social Strategies, Cognitive Strategies , Consolidation Social Strategies, Metacognitive Strategies , Determination Strategies

b. Dependent Variable: Vocabulary Test Score

Table 13: Intermediate Group Analysis of Variance

The answer to Research Question 2, thus, is that there is no significant relationship between the type of VLS participants in the intermediate group report using, as proposed by Schmitt (1997), the amount of time they devote to weekly independent study of the language and their vocabulary size test scores.

RESEARCH QUESTION 3

Among advanced level Spanish FL learners, what is the relationship between the types of vocabulary learning strategies students report using, the time they report to spend on independent study time, and their vocabulary proficiency?

Table 14 below presents the descriptive statistics for the advanced-level group. On average, advanced-level students achieved a mean score of 105.75 on the dependent variable—the vocabulary size test. Among the seven independent variables under assessment, again determination strategies received the highest mean score (3.07) and, as with the two other groups, consolidation social strategies received the lowest (2.15). The average number of hours spent on independent study time for this group was 2.76 hours, slightly higher than both the beginning (2.49) and intermediate (2.23) groups.

	Mean	Std. Deviation	N
Vocabulary Test Score	105.7524	15.40466	105
Determination Strategies	3.0773	.39879	105
Discovery Social Strategies	2.4229	.63749	105
Consolidation Social Strategies	2.1526	.67467	105
Memory Strategies	2.6060	.45475	105
Cognitive Strategies	2.6716	.64613	105
Metacognitive Strategies	2.5684	.53673	105
Study Hours	2.7638	1.56342	105

Note. Strategy mean is the average use per group on a 5-point scale: 1 = never used, 2 = infrequently used, 3 = sometimes used, 4 = often used, and 5 = very often used.

Table 14: Advanced Group Descriptive Statistics

Unlike the previous two groups, however, the ANOVA results for the participants in the advanced group (Table 15) reveal that there is a significant relationship between at least one independent variable and the dependent variable ($F = 4.1, p < .001$).

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5643.526	7	806.218	4.108	.001 ^a
	Residual	19036.036	97	196.248		
	Total	24679.562	104			

a. Predictors: Study Hrs, Memory Strategies , Discovery Social Strategies, Cognitive Strategies , Consolidation Social Strategies, Metacognitive Strategies , Determination Strategies

b. Dependent Variable: Vocabulary Test Score

Table 15: Advanced Group Analysis of Variance

To determine which of the seven independent variables under assessment can significantly predict the outcome on the dependent variable, Table 16 presents the variance breakdown for each of the seven independent variables. According to these results, only three independent variables can significantly predict the outcome on the dependent variable within the advanced group: the use of Consolidation Social ($p < .004$), Cognitive ($p < .002$) and Metacognitive ($p < .02$) learning strategies.

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
1 (Constant)	105.965	12.015		8.820	.000
Determination Strategies	-1.445	4.215	-.037	-.343	.732
Discovery Social Strategies	-3.143	2.814	-.130	-1.117	.267
Consolidation Social Strategies	7.389	2.509	.324	2.945	.004
Memory Strategies	-1.802	4.347	-.053	-.414	.679
Cognitive Strategies	-7.570	2.434	-.318	-3.111	.002
Metacognitive Strategies	7.315	3.271	.255	2.236	.028
Study Hours	.751	.908	.076	.827	.410

a. Dependent Variable: Vocabulary Score

Table 16: Advanced Group Breakdown of Variance for each Independent Variable

In order to determine the strength of this relationship, the model's R-Square value was calculated. The model summary (Table 17) reveal that 23 percent of the variance (R-Square .229) in the dependent variable (vocabulary test scores) can be attributed to the use (or lack of use) of Consolidation Social, Cognitive and Metacognitive learning strategies.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.478 ^a	.229	.173	14.0

a. Predictors: Study Hrs, Determination Strategies, Consolidation Social Strategies , Cognitive Strategies , Metacognitive Strategies , Discovery Social Strategies , Memory Strategies

b. Dependent Variable: Vocabulary Test Scores

Table 17: Advanced Group Model Summary

Thus, the answer to Research Question 3 is as follows: the use of Consolidation Social, Cognitive and Metacognitive learning strategies as proposed by Schmitt (1997) can significantly predict up to 23 percent of the variance in the scores on the vocabulary size test among the participants in the advanced-level group ($F = 4.1, p < .001$). A more detailed breakdown of these results is offered in the following section.

RESEARCH QUESTION 4

Do beginning, intermediate and advanced Spanish FL learners differ significantly in the types of vocabulary learning strategies they report using? If so, what are the main patterns of variation?

An ANOVA test on the questionnaire results (Table 18) reveal that there were significant between-group differences in nine of the 60 VLS.

VLS Item No.	Strategy Group	Significance	Strategy Average Use per Group
1	Discovery – Determination	$F = 5.8, p < .003$	Beginning group: 2.99 Intermediate group: 3.19 Advanced group: 3.5
8	Discovery – Determination	$F = 7.91, p < .001$	Beginning group: 3.09 Intermediate group: 3.07 Advanced group: 2.03
9	Discovery – Determination	$F = 5.073, p < .007$	Beginning group: 2.14 Intermediate group: 2.13 Advanced group: 1.37
17	Consolidation – Social	$F = 4.42, p < .01$	Beginning group: 2.11 Intermediate group: 2.42 Advanced group: 2.65
29	Memory	$F = 7.596, p < .001$	Beginning group: 2.74 Intermediate group: 3.2 Advanced group: 3.34
45	Cognitive	$F = 4.761, p < .009$	Beginning group: 3.41 Intermediate group: 3.71 Advanced group: 3.79
54	Metacognitive	$F = 6.295, p < .002$	Beginning group: 2.4 Intermediate group: 2.8 Advanced group: 3.29
59	Metacognitive	$F = 17.15, p < .001$	Beginning group: 3.46 Intermediate group: 3.44 Advanced group: 2.41
60	Metacognitive	$F = 6.525, p < .002$	Beginning group: 2.03 Intermediate group: 2.19 Advanced group: 2.95

Significant at $p < .01$ level

Note. Strategy Average Use per Group is a 5-point scale: 1 = never used, 2 = infrequently used, 3 = sometimes used, 4 = often used, and 5 = very often used.

Table 18: VLS with Significant Differences between Groups

Discovery – Determination Strategies

Participants in the advanced group claimed to use strategy number 1 (I analyze the part of the speech) significantly more than both the beginning group ($p < .004$). Participants in both the beginning and intermediate groups, on the other hand, claimed to use strategies 8 (I look it up in a word list) and 9 (I look it up in existing flash cards) significantly more ($p < .009$ and $p < .001$ respectively) than participants in the advanced group.

Consolidation – Social Strategies

Participants in the advanced group claimed to use strategy 17 (I try using the word in interactions with Spanish speakers) significantly more ($p < .01$) than those in the intermediate students.

Memory Strategies

Participants in the advanced group claimed to use strategy 29 (I use the word in Spanish sentences) significantly more than the beginning group ($p < .001$).

Cognitive Strategies

Participants in the advanced group claimed to use strategy 45 (I use verbal repetition) significantly more than both beginning ($p < .02$) and intermediate ($p < .02$) students.

Metacognitive Strategies

Participants in the advanced group claimed to use strategy 54 (I listen and/or watch Spanish media—songs, videos, TV, movies, etc.) significantly more ($p < .002$) than intermediate students, and used strategy 60 (I read books or other Spanish texts) significantly more than students in both the beginning ($p < .003$) and intermediate ($p < .01$) groups. Participants in the advanced group, on the other hand, claimed to use strategy 59 (I use technology/computer-based programs to study and practice vocabulary) significantly less than students from both the beginning ($p < .001$) and intermediate ($p < .001$) groups.

As previously mentioned, the results from the VLQ also suggest that a number of VLS from Schmitt's taxonomy are generally used by most students from all three proficiency level groups. Table 19 below lists the strategies that received a mean score of 3.0 (VLS used *sometimes*) and above in the 5-point Likert scale within all three groups.

Item	Strategy	Category Type
1	I analyze the part of the speech	Determination
2	I analyze parts of the word	Determination
3	I see if there's an English cognate	Determination
4	I analyze available pictures or gestures accompanying the word	Determination
5	I guess the word meaning from context	Determination
6	I use a bilingual English/Spanish dictionary (hardcopy or on-line)	Determination
13	I ask classmates for the meaning or translation of the word	Discovery Social
27	I group words together to study them	Memory
32	I study the sound of a word carefully	Memory
33	I say the word aloud when studying	Memory
37	I use the keyword method—connecting the Spanish word with an English word that sounds or looks similar	Memory
41	I use cognates	Memory
45	I use verbal repetition	Cognitive
46	I use written repetition	Cognitive
50	I study the vocabulary section of my textbooks	Cognitive

Table 19: VLS Used by all Three Proficiency Groups

In addition, there are six VLS that are frequently used only by advanced level students (Table 20); one VLS used only by students in the beginning group (item 42), and one VLS used only by intermediate students (item 58). These results may suggest that advanced students have a larger repertoire of unique VLS than beginning and intermediate Spanish FL students.

Item #	Strategy	Strategy Type
22	I connect the word to its synonyms (similar meaning) and antonyms (opposites)	Memory
38	I remember the word's affixes and roots	Memory
39	I try to relate the word to its part of speech (subject, noun, verb, adjective, etc.)	Memory
49	I take notes in class when learning new Spanish words	Cognitive
54	I listen and/or watch Spanish media (songs, videos, TV, movies, etc.)	Metacognitive
60	I read books or other Spanish texts	Metacognitive

Table 20: VLS Unique to Advanced Spanish FL Group

To determine which VLS in particular may result in higher vocabulary gains, I compared the VLS used by students with high vocabulary size scores—the top one third of all scores within each group—with those who had the lowest scores—the bottom one third. There were no discernable differences in VLS use between high and low-scoring participants in the beginning group. Among participants in the intermediate group, however, there was a higher number of VLS (25) used by the low-scoring group compared to the high-scoring group who claimed to use 20 VLS. This unexpected result may suggest that it is not the quantity of VLS used that result in higher vocabulary gains, but the effectiveness of the strategies used. Among the participants in the advanced group, no differences were found in the number of VLS used (21) by students in the low and high-scoring groups. However, 6 of the 21 VLS used by advanced students were unique to the high-scoring group (Table 21) and five were unique to the low-scoring group (Table 22). These results called for further investigation.

VLS #	Strategy	Strategy Group	Pearson Correlation with Vocabulary Test Scores
17	I try using the word in interactions with native Spanish speakers	Consolidation Social	.353* ($p < .001$)
20	I connect the word's meaning to a personal experience	Memory	.175
31	I study the spelling of a word carefully	Memory	.130
49	I take notes in class when learning new Spanish words	Cognitive	.052
54	I listen and/or watch Spanish media (songs, videos, TV, movies)	Metacognitive	.416* ($p < .001$)
60	I read books or other Spanish texts	Metacognitive	.297* ($p < .01$)

**Note.* Correlation is significant at the 0.01 level (2-tailed).

Table 21: VLS Unique to Advanced Group Participants with High Vocabulary Scores

According to the results from a Pearson correlation analysis, the advanced group participants with the top vocabulary test scores report using six unique VLS, three of which are significantly correlated with their vocabulary test score: social strategy 17 and metacognitive strategies 54 and 60 (Table 21). The advanced group participants with the lowest vocabulary scores, on the other hand, claimed five unique VLS, four of which had significant negative correlations with vocabulary scores: memory strategies 27 and 37 and cognitive strategies 47 and 50 (Table 22).

VLS #	Strategy	Strategy Group	Pearson Correlation with Vocabulary Test Scores
27	I group words together to study them	Memory	-.228* ($p < .01$)
37	I use the Keyword Method—connecting the Spanish word with an English word that sounds or looks similar	Memory	-.253* ($p < .01$)
38	I remember the word's affixes and roots	Memory	-.084
47	I create and use wordlists with translations	Cognitive	-.306* ($p < .001$)
50	I study the vocabulary section of my textbooks	Cognitive	-.211 ($p < .03$)

**Note.* Correlation is significant at the 0.01 level (2-tailed).

Table 22: VLS Unique to Advanced Group Participants with Low Vocabulary Scores

These results may suggest that, among advanced-level Spanish FL learners, certain learning strategies may be more effective in improving vocabulary gains while others may be ineffective or perhaps even counterproductive to Spanish FL vocabulary acquisition. However, one must be cautious not to infer a cause and effect relationship based on these results. This study does not provide empirical evidence to imply that the use of these strategies significantly improves vocabulary size. Merely it points to the fact that there are significant positive correlations between the use of these strategies and vocabulary size test scores among advance group participants.

Finally, another unexpected result was the fact that the number of independent weekly study hours did not correlate significantly with vocabulary size scores in any of the three proficiency groups. The average number of hours spent on independent study

time for the advanced group, however, was 2.76 hours, slightly higher than both the beginning (2.49) and intermediate (2.23) groups. The ANOVA results suggest that the between groups difference in study time was significant ($F = 3.13, p < .05$) between participants in the advanced and intermediate groups.

RESEARCH QUESTION 5

Is Schmitt's (1997) proposed taxonomy of L2 VLS a good-fitting model to evaluate the strategic vocabulary learning habits of adult Spanish FL students?

In order to answer this research question, a confirmatory factor analysis (CFA) was conducted on Schmitt's VLS model using the data from the 477 Spanish FL students in the present study. As previously discussed, Schmitt's taxonomy of L2 vocabulary learning strategies (Appendix B) was developed on the basis of an extensive literature review, language learners' retrospective descriptions of their learning strategies and teacher surveys (Schmitt, 1997). The result was a comprehensive list of frequently use VLS which has been published and successfully used in vocabulary acquisition studies by Schmitt (1997), Kudo (1999), and Catalán (2003). However, no researcher has ever conducted a CFA to determine the validity of Schmitt's learning taxonomy model (Figure 5). Thus, a CFA was conducted to determine whether the data from the VLQ in the present study fits the six-variable model proposed by Schmitt. The following section addresses the results from the CFA.

Confirmatory Factor Analysis Results. Retaining the null hypothesis in this case would imply that the observed correlations among strategies are well modeled by

Schmitt's (1997) taxonomy of L2 vocabulary learning. Conversely, rejection of the null hypothesis implies a poor model fit.

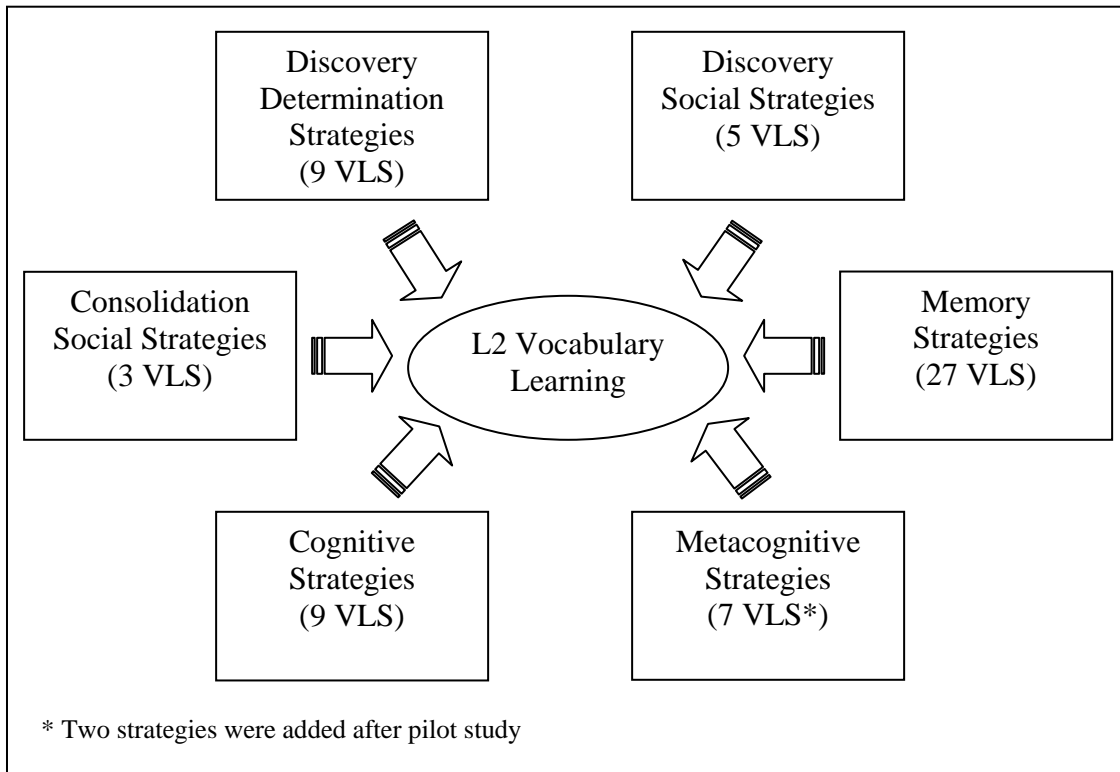


Figure 5: Schmitt's Taxonomy of L2 Vocabulary Learning Strategies

Table 23 provides a summary of the chi-square test of model fit scores observed when Schmitt's model (Figure 5) is applied to the VLQ data in the present study. In general, small chi-square values are indicative of good-fitting models. However, since chi-square statistics are sensitive to large sample sizes and models with large numbers of indicators (Bollen, 1989), the relatively large chi-square values obtained in this CFA (Table 24) were expected due to large sample size in this study (N = 477). Thus, the chi-square results from the model fit test must be interpreted with caution.

Chi-Square Test of Model Fit	
Value	5609.388
Degrees of Freedom	1695
P-Value	0.0000

Chi-Square Test of Model Fit for the Baseline Model	
Value	10172.191
Degrees of Freedom	1770
P-Value	0.0000

Table 23: Test of Model Fit

Other indices of model fit used to evaluate models include the goodness-of-fit index (GFI) and standardize root mean square residual (SRMR) (Doll, Xia, & Torkzadeh, 1994). Many researchers argue that GFI scores in the .80 to .89 range represent a reasonable fit, while scores of .90 or higher are considered evidence of good fit (Doll, et al., 1994). In addition, smaller values of the SRMR are associated with better fitting models with scores below .05 considered as evidence of good fit (Byrne, 1989, as cited in Doll, et al., 1994). The goodness-of-fit test (Table 24) conducted on Schmitt’s model using the VLQ data resulted in a GFI score of .514 and a SRMR of .088, both of which suggest that Schmitt’s taxonomy is a poor model for the VLQ data and therefore we can reject the null hypothesis.

Model	CFI	GFI	SRMR
Schmitt’s Model	.534	.514	.088

Table 24: Goodness-of-fit Indices

According to these test results, Schmitt's taxonomy of L2 vocabulary learning proved to be a poor model for the VLQ data in this study.

Chapter 5: Discussion and Conclusions

INTRODUCTION

This study investigated the relationships between the type of vocabulary learning strategies, as proposed by Schmitt's (1997) taxonomy, that university students of Spanish FL report using, the amount of time they devote to the weekly study of Spanish as a FL, and their vocabulary size, operationalized by their scores on the Yes-No Spanish vocabulary size test. This study also investigated the relationships between the VLS used by proficient and less-proficient Spanish vocabulary learners and their vocabulary test scores. Finally, this study also investigated the model fit of Schmitt's L2 VLS taxonomy with university-level Spanish FL students. This chapter summarizes the results of this study and provides a discussion of the findings followed by the pedagogical implications, limitations of the study, recommendations for future research and conclusions.

FINDINGS AND DISCUSSIONS

Spanish Yes-No Vocabulary Checklist Test Results

The first finding in this study relates to the effectiveness and reliability of the Spanish Yes-No Vocabulary Checklist Test as a measuring tool to estimate Spanish vocabulary size. The test's Cronbach's Alpha internal reliability coefficient was .967 which suggests highly reliable results. The vocabulary test means for the three proficiency groups of Spanish FL students show a clear and predictable pattern of vocabulary growth from beginning (48.44 percent) through intermediate (55.5 percent) and advanced (70.5 percent) proficiency groups. The top five percent of scores in the vocabulary test were achieved by participants in the advanced group.

The Yes-No vocabulary test was made up of words from five Spanish word frequency bands (1,000 through 5,000) and 50 pseudowords. The ANOVA test of between frequency levels effects showed significant differences in the mean scores between each frequency band by each of the three groups. The only exception was pseudowords; all three groups achieve similar mean scores on the 50 pseudowords. In addition, the R-Squared value of .439 reveals that 43.9 percent of the variance in the vocabulary test scores can be attributed to the participants' language proficiency group placement. Finally, the multiple comparisons Scheffe post hoc test results reveals that the mean scores from all three Spanish FL proficiency groups differ significantly from each other. These results may suggest that the Spanish Yes-No Vocabulary Checklist Test used in this study can reliably estimate students' Spanish vocabulary size by frequency bands. In addition, responses to the pseudowords did not predict vocabulary size among any group. However, as some participants commented, these 'fake' words help keep test-takers honest on their test answers. Thus, it can be inferred that the scores from this vocabulary test are strong predictors of vocabulary size and Spanish FL proficiency course placement among the students in the present study, and thus, it is a reliable and effective tool for estimating Spanish vocabulary size. Furthermore, since language proficiency is strongly correlated with vocabulary proficiency in the target language (Nation, 2001; Schmitt, 2000), the Spanish Yes-No Vocabulary Size test may be a reliable tool to estimate Spanish FL proficiency in general. In fact, the DIALANG test used in Europe as a language diagnostic and placement test (Alderson, 2005) uses the Yes-No vocabulary test to estimate test-taker's overall language proficiency.

Vocabulary Learning Questionnaire (VLQ) Results

The 60-item VLQ proved to be a reliable tool for estimating participants' strategic vocabulary learning habits with a Cronbach's Alpha internal reliability coefficient of .901. The following section addresses the findings from the study's research questions.

RESEARCH QUESTIONS 1 & 2

Among beginning [question 1] and intermediate level [question 2] Spanish FL learners, what is the relationship between the types of vocabulary learning strategies students report using, the time they report to spend on independent study time, and their vocabulary proficiency?

The findings from research questions 1 and 2—the relationship between learning strategy types, study time, and vocabulary size among beginning and intermediate Spanish FL learners—although somewhat unexpected, are not surprising. Based on these results, it could be inferred that the VLS that beginning and intermediate Spanish FL students report using have little to no influence on their vocabulary size. There are several plausible explanations for this finding. One likely cause for the lack of significant correlations between the independent variables and the vocabulary test results in these two groups could be the fact that the standard deviations for each independent variable (Table 11 and 13) were very small, in other words, the means were very close together causing a restriction of range problem which prevents any significant differences in variance. Future research should use a larger sample size of beginning- and intermediate-level Spanish FL students to reduce the restriction of range effects. Another possibility, the literature suggests, is the theory that language learning strategies are higher-order cognitive and metacognitive processes that require additional cognitive skills or resources that less-proficient or less-experienced L2 learners may not have at

their disposal (Ellis, 1995; Laufer, 1997; O'Malley & Chamot, 1990; Pulido, 2004b, 2009; Rubin, 1981; Schoonen, Hulstijn, & Bossers, 1998; Vann & Abraham, 1990). Research findings suggest that using language learning strategies may not ensure success in language learning (Skehan, 1989), especially if learners do not have the knowledge and experience to be able to metacognitively connect their learning strategies and their language use (Vann & Abraham, 1990). The demographic survey in this study revealed that, on average, participants in the beginning group had studied Spanish for less than two years and had never studied a language other than Spanish or their L1. Similarly, intermediate group participants had studied Spanish for less than two years and only three percent had studied a language other than Spanish or their L1. This information reveals the participants in these two groups are in fact inexperienced FL learners who may have yet to develop the advanced metacognitive learning skills to manage their FL vocabulary learning more effectively. According to some researchers (Ellis, 2002; Pulido, 2009), less-proficient language learners use their available cognitive resources and skills for lower-level linguistic processes and have fewer resources available to effectively monitor and evaluate their learning through the use of more sophisticated metacognitive language learning strategies. Research on L2 learning strategies consistently shows that inexperienced and less successful L2 learners use the same learning strategies repeatedly even if they make no significant progress in their tasks (N. Anderson, 2005). In addition, research findings (Nassaji, 2003, 2004; Nation, 1997, 2001; Prince, 1996; Qian, 2002) also reveal that novice L2 learners lack the basic L2 vocabulary foundation necessary to take advantage of more sophisticated language learning strategies such as inferencing from context, extensive L2 reading, social interaction with target language speakers, and other 'deeper-processing' (Craik & Lockhart, 1972; Craik & Tulving, 1975; Ellis, 2002) learning strategies used by more proficient L2 learners. According to the vocabulary size

test, the beginning group in the present study had receptive (or higher) knowledge of only 34 percent of the 2000 most-frequently-used Spanish words (45 percent of 1000-level words and 24.5 percent of 2000-level words) while the intermediate group had receptive (or higher) knowledge of just under half (49 percent) of the 2000 most-frequently-used Spanish words (61.6 percent of 1000-level words and 37.8 percent of 2000-level words) (see Table 6). Thus, the evidence suggests that inexperienced L2 learners usually resort to popular memorization strategies in order to build that basic vocabulary foundation necessary to engage in more effective learning strategies (Meara, 1995, 1996a).

Another plausible explanation is related to other learner-dependent and external factors influencing their learning. The SLA literature informs us that there are many factors that can influence L2 learning other than target language proficiency and learning strategies, particularly at the beginning stages of L2 acquisition and development (Gass & Selinker, 2008). These factors may include the learning environment—FL versus L2 (Kojic-Sabo & Lightbown, 1999; Riley & Harsch, 1999), gender (Bacon, 1992; Catalán, 2003; Ehrman & Oxford, 1995; Green & Oxford, 1995; Oxford & Nyikos, 1989), motivation (Cohen & Dörnyei, 2002; Ehrman, 1994; Gardner, 1985; Oxford & Nyikos, 1989; Schmidt & Watanabe, 2001), anxiety (Gardner, 1985; Horwitz, 1988, 2000), beliefs about L2 learning (Abraham & Vann, 1987; Bernat, 2008; Horwitz, 1988, 2000; Su, 2005; Victori & Lockhart, 1995; Wenden, 1991; Yang, 1999), the learning tasks (Grabe & Stoller, 2002; Oxford, Cho, Leung, & Kim, 2004), and learners' cultural background (Ito, 2002; Littlewood, 1999, 2001; Ok, 2003; Oxford, 1990; Peacock & Ho, 2003; Rao, 2006). These factors are relatively stable and can determine to an extent how a language learner approaches vocabulary learning (Gu, 2003). Thus, since most FL students at schools around the U.S. do not receive explicit instruction on language and vocabulary learning strategies (Beck, et al., 2002; Folse, 2004; Schmitt, 2000; Takač,

2008), it may be possible that the less-experienced Spanish FL learners in this study have never been taught or have not fully developed effective language learning strategies and techniques that may enhance their learning efficiency and vocabulary gains. Instead, other learner-dependent and external factors (such as the ones mentioned above) may be playing a more significant role in their vocabulary development than the learning strategies they use. Again, these findings highlight the positive influence that explicit training on effective cognitive and metacognitive learning strategies can have on inexperienced language learners.

Yet another possibility for the lack of correlations between types of learning strategies, study time, and vocabulary size among participants in the beginning and intermediate groups could be that, as the CFA verified, Schmitt's (1997) taxonomy of L2 vocabulary learning used in this study was a poor model fit for the data from the Spanish FL learners in this study. As stated earlier, there is little agreement among L2 acquisition researchers on the precise differentiation in functions and processes between memory, cognitive, metacognitive and social learning strategies (Nyikos & Fan, 2007; O'Malley & Chamot, 1990; Schmitt, 1997, 2000; Takač, 2008). What is a cognitive learning strategy to one researcher is a memorization strategy to another. This lack of consistency in terminology has made it difficult to compare even the most rigorous research findings across SLA studies (Nyikos & Fan, 2007; Takač, 2008). Perhaps future research will result in more valid and standardized taxonomies of L2 and FL learning. As Nyikos and Fan (2007) suggest, "an exhaustive and mutually exclusive typology of VLS coupled with standardized valid measures of proficiency and vocabulary learning would permit more exact analysis and comparison of future research findings." (p. 255).

Finally, to determine whether differences in VLS preferences exist between participants with high and low vocabulary size test scores, the VLS used by students in

the top one third of vocabulary test scores in each group with those in the bottom one third were compared. The results, however, show no significant differences in the patterns of VLS used between high- and low-scoring participants in the beginning or intermediate groups. Again, this finding may suggest that less-experienced Spanish FL learners lack the metacognitive knowledge to manage their Spanish vocabulary development more effectively.

RESEARCH QUESTION 3

Among advanced level Spanish FL learners, what is the relationship between the types of vocabulary learning strategies students report using, the time they report to spend on independent study time, and their vocabulary proficiency?

Perhaps the most interesting and significant findings in this study were among the participants in the advanced proficiency group. Results from this group suggest that advanced-level Spanish FL students have a larger repertoire of more effective VLS than beginning- and intermediate-level Spanish FL students. Pearson correlation analyses also showed that significant differences in VLS use exist within participants in the advanced group—those with high vocabulary scores differed in the VLS they claimed to use from those with low vocabulary test scores.

Multiple linear regression analyses results from the advanced group suggest a significant relationship between three of the independent variables—the use of consolidation social, cognitive and metacognitive learning strategies—and the dependent variable—vocabulary size. Results also reveal that these three independent variables account for 23 percent of the total variance in the vocabulary size test scores among advanced students.

The demographic survey reveals that the participants in the advanced group had studied Spanish for an average of four to six years prior to this study. This may suggest that the strategic learning habits of more experienced Spanish FL learners are more effective in overcoming the negative effects that other external and learner-dependent factors may have on FL vocabulary acquisition. In addition, to determine whether differences in VLS preferences exist between participants with high and low vocabulary size test scores, the strategies used by advanced students with the top one third vocabulary test scores were compared with those with the bottom one third. The findings revealed an interesting trend. Both sets of participants within the advanced group, those with the highest and the lowest vocabulary test scores, report using the same number of VLS (21). However, six of the 21 VLS used by advanced students were unique to the high-scoring group while five were unique to the low-scoring group. Those with low vocabulary scores relied more on memorization and cognitive strategies while those with higher vocabulary test scores relied more on social and metacognitive strategies. This finding confirms Ellis' (1995) conclusion that experienced and successful language learners "use sophisticated metacognitive knowledge to choose suitable cognitive learning strategies appropriate to the task of vocabulary acquisition" (p. 117). Among the low-scoring group, four of their five unique VLS had significant negative correlations with their vocabulary test scores: grouping words together (-.228), using the keyword method (-.253), creating wordlists with L1 translations (-.306), and memorizing the vocabulary section of their textbooks (-.211). In contrast, three of the six VLS unique to the high-scoring group had significant positive correlations with their vocabulary test scores: using the word in interactions with Spanish speakers (.353), listening/watching Spanish media—music, videos, TV, film (.416), and reading Spanish texts (.297). These results suggest that, among advanced-level Spanish FL students, certain learning

strategies may be more effective in improving vocabulary gains while others may be ineffective or perhaps even detrimental to Spanish FL vocabulary acquisition. Again, one must be cautious not to infer a cause and effect relationship based on these correlations. This study does not provide empirical evidence to imply that the use of these strategies significantly improves or deteriorates vocabulary knowledge. Merely, it points to the fact that there are significant positive and negative correlations between the use of certain learning strategies and vocabulary size test scores among advance Spanish learners. The literature, however, does support these findings.

VLS Associated with Lower Vocabulary Scores

The four VLS by participants in the advanced group that correlated with lower vocabulary scores (grouping words together, using the keyword method, creating wordlists with L1 translations, and memorizing the vocabulary section of their textbooks) were classified by Schmitt (1997) as either cognitive or memory learning strategies, although the argument can be made that all four are memorization techniques; Schmitt (1997) admittedly struggled with the categorization of some strategies as either cognitive or memory. Research, however, suggests that these memorization strategies are common and popular among L2 learners (Fitzpatrick, et al., 2008; Folse, 2004; Milton, 2009; Read, 2000). In fact, previous research with Spanish FL learners has shown that the use of L1-L2 wordlists and repetition techniques are in fact ineffective learning strategies among Spanish vocabulary learners (Barcroft, 2009; Scribner, 2000). Grouping words together as a learning strategy has also been found to be an ineffective learning strategy due to issues with semantic interference (Baddeley, 1990; Caramazza & Costa, 2000; Nation & Gu, 2007; Tinkham, 1993; Waring, 1997) even among Spanish FL learners

(Sagarra & Alba, 2006). Mnemonic techniques such as the keyword method, on the other hand, have been found to be an effective strategy among novice Spanish FL learners (Barcroft, 2009; Sagarra & Alba, 2006; Scribner, 2000).

There are two basic types of memory: short term memory (also known as working memory), and long-term memory (Ellis, 1996; Schmitt, 2000). Short-term memory is used to hold information temporarily while it is being processed; usually for a matter of just seconds, and is one of the strongest predictors of successful L2 acquisition (Ellis, 1996). Long-term memory, on the other hand, has almost unlimited storage capacity but is relatively slow to develop (Schmitt, 2000). In a study involving word memorization, Schmitt (1998) found that advanced L2 university students tend to memorize two-and-a-half times more words than they forget. The fact that some words were forgotten suggests that there is some backsliding before the word is mastered and fixed in the long-term memory (Schmitt, 1998, 2000). The words that were forgotten the most in Schmitt's study, however, were those known mostly receptively; those students who had productive knowledge of words were less prone to forgetting them. Based on Schmitt's findings, it is possible that the advanced participants in the present study with low vocabulary scores who depend on memorization techniques are using strategies that promote receptive knowledge of new words rather than those that promote long-term productive knowledge. Many researchers in the field of SLA (Cohen & Aphek, 1981; Fitzpatrick, et al., 2008; Lawson & Hogben, 1996; Meara, 1995; Pulido, 2009; Schmitt, 2000) believe that at lower proficiency levels, memorization techniques will have better results with less-proficient L2 learners, whereas more advanced learners will benefit more from the context found in more cognitively-demanding tasks. Furthermore, research findings also suggest that novice L2 learners do not have the basic L2 vocabulary foundation necessary to take advantage of more sophisticated language

learning strategies used by more proficient L2 learners (Nassaji, 2003, 2004; Nation, 1997, 2001; Prince, 1996; Qian, 2002). Thus, beginning-level students usually resort to rote repetition and other mnemonic techniques in order to build that basic foundation of receptive vocabulary knowledge. However, findings from previous research with Spanish FL learners as well as the present study suggest that memorization strategies are not as effective among Spanish FL students. Sagarra and Alba (2006), for example, found that the Spanish FL students in their study who used more involved metacognitive learning strategies improved significantly more than those who relied on rote repetition and other memorization techniques. Scribner (2000) also concluded that rote memorization was the least effective learning method for all three Spanish FL proficiency groups in her study. Most recently, Barcroft (2009) also found that the lowest proficiency scores in his study were attained by Spanish FL learners who used L2-L1 translation and repetition techniques. Thus, the negative results from the use of memorization strategies among advanced learners in the present study may suggest that memorization strategies might be effective for beginning-level learners who are in the initial receptive knowledge-building stage of vocabulary growth. However, the vocabulary knowledge of more experienced and proficient Spanish FL learners will benefit less from memorization strategies and more from cognitively-demanding strategies and metacognitive knowledge that promote long-term productive knowledge of vocabulary.

VLS Associated with Higher Vocabulary Scores

The three VLS with significant positive correlations with vocabulary scores were social and metacognitive learning strategies; in particular: using the word in interactions

with Spanish speakers (.353), listening/watching Spanish media—music, videos, TV, film (.416), and reading Spanish texts (.297).

Interaction with Spanish Speakers. The fact that this strategy had the strongest positive correlation with vocabulary size should be no surprise. The effectiveness of this social strategy is well supported by a number of researchers who endorse the importance of social discourse as a source of comprehensible input necessary for L2 learning (Fillmore, 1979; Gass & Selinker, 2008; Long, 1983, 1996; O'Malley & Chamot, 1990). Social learning involves cooperative peer learning which creates an environment where learners can exchange ideas, ask questions, and clarify information through social interaction (Dörnyei & Malderez, 1997). These social interactions create opportunities for comprehensible input (Krashen, 1982, 1985; Long, 1983), output (Swain, 1985; Swain & Lapkin, 1995), and negotiation of meaning (Long, 1983, 1996) which can facilitate L2 acquisition by promoting productive knowledge of vocabulary (Winke & Abbuhl, 2007). The results from this particular strategy, thus, support literature findings on the positive effects of social interaction in SLA.

Exposure to Authentic Spanish Language Use. The benefits of exposure to authentic target language use in L2 pedagogy is well documented in the SLA literature (Blake, 2008; Chapple, 1999, 2000; Failoni, 1993; Froehlich, 1988; Herron, 1994; Lonergan, 1984; Moore, 1999 among many others). Music, film, television, video, and the internet are all mainstays in the FL classroom (Blake, 2008). They provide FL students with authentic, meaningful and entertaining sources of language input and

models of language use within a context that students may relate to. Each encounter with the word in different contexts gradually enriches and strengthens the knowledge of the word by providing the learner with opportunities to determine relevant semantic and syntactic information (Nation, 2001). In addition, experienced, more proficient L2/FL learners have the background knowledge and cognitive skills necessary to utilize the context found in this medium to make inferences and test hypotheses about form-meaning relationships (Nation & Gu, 2007; Nation & Macalister, 2010; Pulido, 2004a, 2004b, 2007, 2009). Less proficient learners, on the other hand, may be overwhelmed by the amount of authentic L2 input found in television, video, film, radio and other sources of authentic L2 input, which may explain why beginning-level students in this study did not select this strategy as a frequently used one.

Reading Spanish Texts. Again, the significant positive correlation between reading Spanish texts and Spanish vocabulary size among advanced learners should be no surprise to SLA researchers and FL educators. L2 teachers and researchers are increasingly aware of the importance of reading and reading comprehension in the development of L2 proficiency and the role reading plays in expanding vocabulary knowledge (Horst, 2005; Pulido, 2007, 2009; Pulido & Hambrick, 2008). With extensive reading, Ellis (1995) argues, “there is opportunity for the reader to study the context, to form hypotheses at leisure and cross-validate them, to have time to infer meanings. The word is frozen in time on the page, whereas in speech it passes ephemeraly” (p. 106). However, there is a proficiency factor involved when investigating the effectiveness of contextual inferencing as a vocabulary learning strategy. As stated earlier, there is agreement among a number of SLA researchers (Grabe & Stoller, 2002; Henning, 1991;

Hulstijn, 1992; Koda, 2005; Mondria & Wit-de Boer, 1991; Nassaji, 2003; Nation, 2001; Nation & Gu, 2007; Pulido, 2004b, 2009; Schmitt, 2000) that less-proficient L2 learners are not successful at inferencing word meaning from context. Because of deficiencies in linguistic knowledge (including vocabulary size) and processing skills, beginning-level L2 readers have less available context in which to search for meaning than more experienced L2 readers. Research findings from a recent vocabulary acquisition study by Pulido and Hambrick (2008) using 99 university-level Spanish FL students in the U.S. reveal that a) experienced Spanish learners have a significant larger sight vocabulary, b) Spanish FL sight vocabulary positively influences reading comprehension, and c) Spanish FL reading comprehension positively influences vocabulary growth. Pulido (2004b) argues that even though there are shared cognitive processes between L2 reading comprehension and vocabulary acquisition, understanding the written text does not necessarily entail that the reader will engage in the same cognitive processes and levels of lexical analysis required for vocabulary learning. Pulido (2009) also concluded that less proficient L2 readers who are less able to make sense of the written context are more likely to have difficulty using the surrounding context to assign meaning to unknown words they encounter. Less proficient L2 Spanish readers use their available cognitive resources for lower level linguistic processes. Thus, they have less available cognitive resources needed to deal with the more advanced processes such as comprehension, text evaluation, background knowledge, lexical inference, and monitoring (Pulido, 2004b, 2007, 2009; Pulido & Hambrick, 2008). As Nation and Gu (2007) recently stated, “this strategy [guessing from context] seems to be more effective for native speakers and intermediate to advanced second language learners who already have at least a basic grasp of the receptive language skills such as reading and listening” (p. 86).

It is important for L2 teachers to understand that learning new vocabulary through extensive reading assumes that, a) readers are familiar with 95 to 98 percent of the words in the text (Nassaji, 2003; Nation, 2001), b) readers will be able to notice the unknown word and recognize it as an item to be learned (Nation, 2001; Schmidt, 1990), c) readers will be able to correctly infer its meaning from context (Nation, 2001; Prince, 1996), and d) readers will be able to retain the word's meaning (Schmitt, 1998). Experienced L2 readers who can easily process large amounts of written text, Horst (2005) argues, are able to successfully infer the meanings of some unfamiliar words, retain this knowledge, and use it to build an ever larger mental lexicon, much as native speakers do over a lifetime of reading in their native language.

Based on the literature and the results from the present study, therefore, it could be inferred that advanced, more experienced Spanish FL learners' vocabulary development can benefit greatly from Spanish FL curriculums that include extensive reading; more so than less-experienced, beginning-level Spanish learners who lack the basic vocabulary foundation and processing skills necessary to effectively engage in extensive L2 reading and input-processing tasks and operations. Advanced learners who already have a basic foundation of high-frequency vocabulary may benefit substantially from a FL curriculum that includes extensive reading (Nation, 1997; Nation & Macalister, 2010). In fact, due to its proven track record, many L2 courses now offer access to simplified reading materials graded at various levels of proficiency so that learners can read at length in the target language. Beginning-level learners, however, may benefit more from a curriculum that highlights explicit instruction of high frequency vocabulary plus training on learning strategies to deal with less frequent words encountered in texts (Nation, 2005; Nation & Macalister, 2010).

RESEARCH QUESTION 4

Do beginner, intermediate and advanced Spanish FL learners differ significantly in the types of vocabulary learning strategies they report using? If so, what are the main patterns of variation?

The results from the VLQ suggest a slight increase in the number of VLS used by students as they progress from beginning (19 VLS) through intermediate (24 VLS) and advanced (25 VLS) Spanish FL proficiency levels. The literature on L2 VLS suggest that more proficient L2 learners successfully use a variety of VLS significantly more often and with more efficiency than inexperienced, less proficient L2 learners (Barcroft, 2009; Borer, 2007; Catalán, 2003; Ehrman & Oxford, 1995; Fan, 2003; Green & Oxford, 1995; Gu, 2002; Gu & Johnson, 1996; Lawson & Hogben, 1996; Schmitt, 1997; Stoffer, 1995; Tseng & Schmitt, 2008). Furthermore, there is a strong relationship between strategy use and L2 proficiency. According to research, proficiency level can explain between .30 and .78 of the variance in strategy use (N. Anderson, 2005). Stoffer (1995), for example, after conducting a large-scale vocabulary-learning study using Russian, Japanese, German, and Spanish FL students at a large university in the United States concluded that experienced language learners used significantly more strategies than novice learners. Ahmed's (1989), Lawson's and Hogben's (1996) research findings also support their argument that proficient L2 learners are able to use a wider variety of metacognitive demanding strategies, while less proficient learners generally use fewer strategies and tend to use them inadequately. Thus, the findings from the present study suggest that it is no different among adult Spanish FL learners; experienced Spanish FL students tend to use more strategies for learning vocabulary, as determined by the VLQ, and use them more effectively, as determined by their vocabulary test scores, than novice Spanish learners.

Another finding from the VLQ suggests that many of the VLS in Schmitt's (1997) taxonomy are popular among Spanish FL learners regardless of proficiency level. Half of the 31 VLS participants claimed to use on average at least "sometimes" were used by the participants in all three groups (see Table 19). These strategies include VLS 1) analyzing parts of the speech for clues, 2) analyzing part of the word, 3) finding English-Spanish cognates, 4) analyzing available pictures or gestures accompanying the word, 5) guessing from context, 6) using bilingual English/Spanish dictionaries, 13) asking classmates for the meaning or translation of the word, 27) grouping words together, 32) studying the word's sound, 33) saying the word aloud when studying, 37) using the keyword method, 45) using verbal repetition, 46) using written repetition, and 50) studying the vocabulary section in textbooks. All of these learning strategies Schmitt labeled as either determination, memory or cognitive learning strategies. The popularity of this type of learning strategies across all levels of proficiency is not unexpected. Early research into VLS (Ahmed, 1989; Cohen & Aphek, 1981; Gu & Johnson, 1996; O'Malley, et al., 1985) revealed that many of these strategies, such as memorization strategies, dictionary use, note-taking, and visual and oral repetition are among the most commonly used strategies employed by most L2 learners regardless of language proficiency. These results also confirm other research findings (Barcroft, 2009; Kudo, 1999; Lawson & Hogben, 1996) which suggest that L2 learners prefer the less cognitively-demanding, mechanical learning strategies regardless of their effectiveness. As Krashen (1989) once stated, most L2 learners are not linguists, and when faced with a choice between a high-effort metacognitive strategy such as trying to infer the meaning of a word from context and a low-effort shortcut such as learning the L1 translation, they will tend to chose the latter one.

Another finding from this study is the fact that determination strategies, those used to discover the meaning of unknown words (Nation, 1990; Schmitt, 1997), received the highest mean score in all three proficiency groups, while consolidation social strategies, those involving social interaction as a means to learn new words, received the lowest among participants in all three groups. This finding supports Catalán's (2003) conclusion that FL students tend to focus more on discovering the meaning of unknown words at the expense of spending the time and effort to consolidate the knowledge of those words, especially in a cooperative social environment. Again, this may be the result of learners' inexperience in using effective and context-appropriate learning strategies for establishing long-term lexical form-meaning relationships. Learners may want to find out what a FL word means, but they may lack the experience and/or cognitive skills to commit that word to long-term memory. If this is the case, then it makes a compelling argument for a FL pedagogical curriculum that emphasizes explicit training on effective, context-appropriate VLS at the beginning stages of FL education. In addition, the ANOVA results presented in Table 18 suggest that there are significant differences in the VLS used by participants in the beginning, intermediate, and advanced proficiency groups. The following section breaks down these differences by VLS type.

Discovery – Determination Strategies

Among the discovery-determination strategies, participants in the advanced group claimed to use strategy 1 (I analyze the part of the speech) significantly more than both the beginning and intermediate groups. While participants in both the beginning and intermediate groups claimed to use strategy 8 (I look it up in a word list) and strategy 9 (I look it up in flash cards) significantly more than participants in the advanced group.

Again, these results support the previously made argument that less proficient or inexperienced Spanish FL learners lack the higher-order cognitive skills necessary to effectively use more efficient and cognitively-demanding learning strategies that promote better learning. Participants in the advanced, more experienced Spanish FL learning group have the cognitive skills and experience to be able to effectively breakdown and analyze parts of the speech or text in order to make inferences about word meaning, while inexperienced Spanish FL learners instead resort to the use of less cognitively-demanding strategies such as wordlists and flashcards.

Consolidation – Social Strategies

Among consolidation social strategies, participants in the advanced group claimed to use strategy 17 (I try using the word in interactions with Spanish speakers) significantly more than the other two groups. As discussed earlier, the use of this social strategy also had a significant correlation with higher vocabulary test scores among participants in the advanced group. Participants in the beginning and intermediate group did not chose this as a frequently-used learning strategy, perhaps due to their small vocabulary size or the lack of experience in social and metacognitive learning strategies.

Memory Strategies

Participants in the advanced group claimed to use strategy 29 (I use the word in Spanish sentences) significantly more than both beginning and intermediate students. Even though this strategy could be categorized as either memory, metacognitive or social in nature (Schmitt, 1997; Takač, 2008; Winke & Abbuhl, 2007), it reveals the cognitive skills that advanced, more experienced Spanish FL learners possess to be able to take

advantage of more sophisticated strategies such as using newly learned words in context. Participants in the beginning-level group may not have the cognitive skills and/or sufficient sight vocabulary to engage in this learning strategy effectively.

Cognitive Strategies

Participants in the advanced group claimed to use strategy 45 (I use verbal repetition) significantly more than both beginning and intermediate students. This finding was unexpected since usually it is the beginner language learners who rely more on rote repetition as a VLS than the advanced learners. It does confirm, however, that even advanced Spanish FL learners still rely on memorization strategies to acquire vocabulary, even though memorization strategies among advanced learners in the present study had negative correlations with vocabulary size scores. It is also possible that advanced Spanish learners rely on oral repetition to learn and practice the pronunciation of the words they are learning; a strategy used more often by intermediate and advanced learners than beginning learners who are more concerned with just memorizing the form-meaning relationship.

Metacognitive Strategies

Among the metacognitive learning strategies, the advanced group participants claimed to use strategy 54 (I listen and/or watch Spanish media—songs, videos, TV, movies, etc.) significantly more than intermediate students. As previously stated, this strategy also had a significant correlation with higher vocabulary test scores among participants in the advanced group. Reading Spanish texts (VLS No. 60) was another metacognitive learning strategy used by advanced learners significantly more than

beginning and intermediate students and which had a significant positive correlation with higher vocabulary test scores among advanced students. This particular finding, the positive results of extensive Spanish reading, should be of no surprise to most SLA scholars and language teachers. However, the positive relationship between extensive Spanish reading and vocabulary size was only significant among participants in the advanced group and not the beginning or intermediate groups. The literature suggests that this may be the case because of the sight vocabulary size of novice language learners; specifically their high frequency vocabulary size. There is substantial research on frequency-based vocabulary acquisition that has provided supporting evidence of the type of vocabulary learners would gain most benefit from knowing (Nation & Macalister, 2010). It usually consists of the 1,000 to 3,000 most frequently used lemmas (also known as headwords or word families) in the target language. In Spanish, the 2,000 most-frequently-used lemmas make up roughly 90 percent of the vocabulary found in Spanish texts (Davies, 2006) and most of the words in everyday spoken Spanish (Molina, 2000). Research also shows that readers must be familiar with roughly 95 to 98 percent of the running words in a text before they can begin to successfully infer the meaning of the unknown words from context (Nassaji, 2003; Nation, 1997, 2001). Similar estimates have also been given for Spanish L2 reading (Davies, 2006). This would explain why *reading Spanish texts* (VLS No. 60) was not a strategy frequently used by participants in the beginning or intermediate groups. According to the vocabulary size test, the beginning group in the present study had receptive (or higher) knowledge of only 34 percent of the 2000 most-frequently-used Spanish words (45 percent of 1000-level words and 24.5 percent of 2000-level words) while the intermediate group had receptive (or higher) knowledge of just under half (49 percent) of the 2000 most-frequently-used Spanish words (61.6 percent of 1000-level words and 37.8 percent of 2000-level words)

(see Table 6). In contrast, participants in the advanced group had some degree of knowledge of 77 percent of the 2000 most-frequently-used Spanish words (84.3 percent of 1000-level words and 69.1 percent of 2000-level words). Thus, having some degree of knowledge of more than three quarters of the words most likely to be found in Spanish texts may motivate these students to read more often and may allow them to make better use of contextual inferencing from reading (Nation, 1997; Nation & Macalister, 2010; Schmitt, 2000) as an effective VLS. As Sokmen (1997) argues, it is crucial for L2 learners to build a large sight vocabulary as an antidote to the rather undifferentiated top-down approaches advocated in the past. In fact, the Common European Framework of Reference for L2 learning (CEFR, 1996) proposes that beginning-level L2 learners should first focus on learning the most frequently used words in a target language, while more proficient learners should focus on implicit learning through more complex cognitive strategies such as exposure to authentic target language use and social interaction (Molina, 2000).

Finally, participants in the advanced group claimed to use strategy 59 (I use technology/computer-based programs to study and practice vocabulary) significantly less than students from both the beginning and intermediate groups. The results from this strategy, the use of computer-based programs for vocabulary learning, could be explained by the fact that advanced Spanish FL students in the present study do not use computer-based programs designed for explicit vocabulary instruction. Instead, they use technology for exposure to authentic Spanish language use through videos, film, music, etc. Beginning- and intermediate-level students, on the other hand, do use computer-based applications designed exclusively for explicit vocabulary instruction and learning.

Study Time

Another unexpected result was the fact that the number of independent weekly study hours did not correlate significantly with vocabulary size scores in any of the three proficiency groups. The average number of hours spent on weekly study time for the advanced group was 2.76 hours however, slightly higher than both the beginning (2.49) and intermediate (2.23) groups. The ANOVA results suggest that the between groups difference in study time was significant between participants in the advanced and intermediate groups. This trend, however, may be explained in part by the fact that upperclassmen at the U.S. military institution where this study took place have more personal time to engage in other personal activities, including extra study time, than underclassmen. First and second year students have significantly more time-consuming duties and responsibilities than juniors and seniors do. Thus, it may be possible that upperclassmen Spanish FL students are able to dedicate the extra 30 minutes per week to the study of Spanish. Future research should continue to address the study time factor using samples from more traditional universities to determine how much influence FL study time really has on FL vocabulary acquisition.

RESEARCH QUESTION 5

Is Schmitt's (1997) proposed taxonomy of L2 VLS a good-fitting model to evaluate the strategic vocabulary learning habits of adult Spanish FL students?

According to the results from the CFA, Schmitt's taxonomy of L2 vocabulary learning proved to be a poor model fit for the VLQ data in this study. However, as Oxford (1990), and Winke and Abbuhl (2007) have argued, there is no consensus in the language learning literature on how strategies should be defined or classified, and no single L2 learning taxonomy offers an empirically valid, all-inclusive, and reliable model

for language learning strategies (Takač, 2008; Winke & Abbuhl, 2007). Schmitt (1997) even warns that this taxonomy is not exhaustive, but rather it is a “dynamic working inventory” (p. 204) of commonly used strategies, and thus, it was still possible to evaluate and find correlations between the type of learning strategies learners report using, as proposed by Schmitt (1997), the amount of time they devote to study the target language and vocabulary gains. Based on the results from the CFA, it may be possible to improve Schmitt’s L2 VLS model by eliminating items with low factor loadings. However, eliminating items with low factor loading will result on many commonly-used VLS being deleted from this taxonomy. Instead, researchers should continue to work on developing a more standardized, reliable and valid model for FL VLS that will stand the rigors of future CFA modeling.

SUMMARY OF MAJOR FINDINGS

To summarize, the findings from this research study point to one main conclusion: novice Spanish FL students seem to lack the experience, training, cognitive skills, and metacognitive learning knowledge necessary to manage their own vocabulary learning more effectively. Beginning-level learners rely mostly on determination strategies to discover the meaning of unknown words at the expense of spending the time and effort to gain productive, long-term knowledge of those words. Less-proficient Spanish vocabulary learners also rely heavily on commonly-used memorization strategies that promote mostly receptive knowledge of Spanish words. Over time, however, as language learners become more proficient and more experienced in the language-learning process, they implicitly develop the cognitive skills, sight vocabulary size, and metacognitive learning strategies necessary to manage their vocabulary learning more

effectively. As Eslinger (2000) suggests, there is a natural tendency to grow in strategy use implicitly over time, without explicit instruction. This study also confirms the benefits of social and metacognitive learning strategies on Spanish vocabulary growth. Strategies such as interacting with Spanish speakers, extensive Spanish reading, and exposure to authentic Spanish language use can have a significant impact on the vocabulary growth of more-proficient Spanish FL learners. Novice learners, on the other hand, are not able to use these strategies to manage their vocabulary growth effectively. Many researchers (Meara, 1980, 1995, 1996b; Nation, 1990, 2001; Nation & Gu, 2007; Nation & Macalister, 2010; Pulido & Hambrick, 2008) argue that this may be due to the fact that beginning-level L2 learners lack a basic foundation of high-frequency L2 vocabulary to be able to engage in more complex learning strategies, and thus, have to resort to word memorization using popular strategies such as rote repetition, mnemonic techniques, wordlists, flashcards, and other cognitive and memory learning strategies to establish this basic foundation of vocabulary knowledge.

PEDAGOGICAL IMPLICATIONS

Wenden (1998) argues that metacognitive knowledge about L2/FL learning is a prerequisite for the self-regulation and the effective management of language learning. Thus, Spanish FL teachers may want to consider looking into their students' acquired knowledge about vocabulary learning and help students develop more self-directed, autonomous approaches to vocabulary learning. Rubin, et al. (2007) propose including explicit instruction in language learning strategies in the L2 classroom through a model known as strategy-based instruction (SBI). Rubin, et al. argue that a fundamental goal of SBI is to "promote the development of learner's self-management since research has

shown that, unless learners select strategies in the service of some task, skill, and goal, they will not easily find the most appropriate strategies and be successful” (p. 141). Perhaps this strategy-based approach, when focused on vocabulary learning, can help learners develop the cognitive skills and metacognitive strategies necessary for more efficient vocabulary learning. The consensus among many L2/FL vocabulary acquisition researchers (Beck, et al., 2002; Folse, 2004; Nation & Gu, 2007; Nation & Macalister, 2010; Schmitt, 2000), however, is that both explicit and incidental vocabulary learning should be complementary in L2 pedagogy. In fact, there is empirical evidence (Paribakht & Wesche, 1997; Zimmerman, 1994) to suggest that a combined approach is much better than incidental vocabulary learning alone. Results from the present study reveal that novice Spanish learners lack the basic vocabulary foundation to effectively engage in the more sophisticated VLS used by proficient and more experienced learners. Spanish FL educators may want to consider explicit instruction on high-frequency vocabulary for beginning-level students while modeling more effective strategies for dealing with less frequent words. This strategy may allow novice Spanish learners to more rapidly develop the vocabulary size and metacognitive skills necessary to engage in a variety of more effective and more cognitively-demanding strategies (Nation, 2005; Nation & Gu, 2007; Nation & Macalister, 2010).

Spanish FL teachers, however, should not expect their students to acquire a vocabulary size comparable to native Spanish speakers since only a small fraction of this vocabulary is likely to be acquired through explicit instruction (Nation, 2001). Thus, teachers should consider helping Spanish FL students develop strategies for learning vocabulary through simple exposure to Spanish language use. An ever-growing number of researchers (Carter & McCarthy, 1988; Graves, 1987; Gu, 2003; Milton, 2009; Nation, 2005; Nation & Gu, 2007; Nation & Macalister, 2010; Schmitt, 1997; Schmitt &

McCarthy, 1997; Sternberg, 1987) argue that regardless of how much L2 instruction students receive in the classroom, they will do most of their language learning independently. Therefore, it makes sense to encourage Spanish learners to adopt personal strategies to expand their vocabularies over time. In addition, FL learners may benefit from strategies that promote self-evaluation of the VLS they are using. Kato (2000), for example, successfully implemented a self-evaluation technique for VLS use with her Japanese FL students. Kato task her students to set weekly goals for how many words they wanted to learn each day, precisely what strategies they would use to learn the words, and to determine how successful they were in learning the words. If they failed, they were tasked with reconsidering the number of words they would have to learn the following week and with determining the overall effectiveness of the learning strategies they chose.

Nation (2001) states that learning strategies, at a minimum, must included the following five elements: 1) they should involve choice, that is, there should be several strategies to choose from; 2) they should be complex—there should be several steps to learn; 3) strategies need to require knowledge and benefit from training; 4) strategies should increase the efficiency of vocabulary learning and vocabulary use; and 5) students should have skill in using the strategies. Based on the findings from the present study, these strategies should include constant exposure to Spanish language use through activities such as extensive Spanish reading, using newly learned words in interactions with other Spanish speakers, and regular exposure to authentic Spanish or Latin American language use and culture through television, videos, film, music, magazines, websites, and other forms of media. In addition, the use of word memorization strategies should be discouraged among advanced, more proficient Spanish FL learners. Memorization strategies are not necessarily ineffective; in fact, research shows that many

L2 learners can develop a large sight vocabulary using wordlists, flashcards, rote repetition and other memorization strategies (Meara, 1995; Nation & Gu, 2007). Anderson (2005) and Cohen (1998) also caution against categorizing learning strategies as effective or ineffective. There is no good or bad learning strategy, rather there is good and bad applications of strategies. The difference, according to Anderson, is how the strategies are executed and orchestrated. The results from this study, along with the results from other studies on Spanish FL VLS (Barcroft, 2009; Sagarra & Alba, 2006; Scribner, 2000), however, suggest that memorization strategies may not be as effective among advanced and experienced Spanish vocabulary learners, and perhaps should be avoided.

Researchers (Ehrman & Oxford, 1989; Oxford, 1996) suggest that without proper instruction on the use of effective VLS students will resort to learning strategies that reflect their own basic learning styles, whether effective or ineffective. Through proper learning strategy training, however, language teachers can help students improve their learning styles by encouraging the use of learning strategies that are outside of their primary learning style preferences (Oxford, 2003). As Oxford (1990) and Stoffer (1995) argue, learning strategies are considered to be conscious activities that can be taught explicitly. With time and practice, vocabulary learning strategies, like most other language skills, can become automatic, unconscious processes that are no longer viewed as *strategies*. Engaging language students in a variety of vocabulary learning exercises in the classroom will expose them to new learning strategies that may work well with their individual cognitive styles. FL teachers, Oxford (2003) argues, should consider helping their students develop an awareness of proficiency- and context-appropriate VLS that relate well to the L2 task at hand and that fit the particular student's learning style preferences to one degree or another. Learning new and context-appropriate VLS can

make Spanish vocabulary learning easier, more efficient, more enjoyable, and more transferable to new situations.

LIMITATIONS

The results of this research study should be interpreted with caution and should be viewed within the context under which it was conducted. The participants in this study were 477 cadets at a U.S. military academic institution. This government institution is highly selective and admissions are based not just on academic performance, but also on athletic and leadership potential. The participants in this study are considered to be above average in both academic achievement and learning aptitude and may not be truly representative of the average adult Spanish FL learners in the United States. Also, the ratio of male and female students at this military institution (80 – 20) is not comparable to a more typical civilian university where women usually outnumber males in FL courses. Also, the fact that these cadets have many additional duties, responsibilities, and time restrictions as compared to average civilian university students may have contributed to the lack of correlations found between weekly study time outside the classroom and vocabulary size. Thus, any generalizations to university Spanish FL students across the United States should be made with caution.

In addition, the Spanish vocabulary size test used in this study to estimate participants' vocabulary size has its limitations. Participants' responses represent a categorical, self-reported judgment that reveals nothing about the extent of the students' underlying word knowledge (Mochida & Harrington, 2006). This test provides an estimate of test-takers' lowest level of word knowledge—passive recognition, and does not address depth-of-knowledge of words. Researchers should consider using more

complex measures of vocabulary knowledge to determine whether any of the different categories of VLS correlate with productive knowledge of vocabulary.

Finally, the Vocabulary Learning Questionnaire (VLQ) used in the present study consisted of 60 commonly-used VLS. It was developed by Schmitt (1997) in the mid-nineties on the basis of an extensive literature review, Japanese EFL learners' retrospective descriptions of their learning strategies, and teacher surveys, and thus, it may or may not be representative of the strategies used by today's Spanish FL learners in the U.S. Perhaps future studies should focus on developing a more representative and up-to-date list of learning strategies used by Spanish FL learners in the U.S.

RECOMMENDATIONS FOR FUTURE RESEARCH

The existing literature on Spanish FL VLS would benefit greatly from research on explicit VLS training among Spanish FL learners. Findings from the present study support the argument that novice Spanish learners in the U.S. lack the metacognitive knowledge, skills and experience to better manage their vocabulary learning. Future research should continue to evaluate the effectiveness of explicit instruction on the use of learning strategies and its effect on FL vocabulary acquisition.

In addition, based on the recommendations from Catalán (2003), Schmitt's (1997) taxonomy of L2 vocabulary learning was used in the present study to investigate the participants' strategic FL vocabulary learning habits. The results from a CFA, however, show that this taxonomy was not a good-fitting model for the data collected in this study. Perhaps this was the case because the participants in this study were Spanish FL learners and not ESL/EFL learners. Schmitt's taxonomy was developed using mostly data from ESL/EFL studies, and as research shows (Kojic-Sabo & Lightbown, 1999; Littlewood,

1984; Sparks & Ganschow, 1991) there are distinct differences between L2 and FL learning environments. These differences, therefore, may have significant effects on the learning strategies learners chose. Thus, it may be necessary to develop a new taxonomy that focuses on how FL learners' VLS differ from those of L2 learners such as ESL students in the U.S. Future research should also consider revising and updating Schmitt's model or simply developing a new and improved VLS model for FL learners.

Finally, there were limitations in the present study that hindered the investigation of the effects that weekly study time has on learning strategies and Spanish vocabulary learning. Future research should focus more on study time as a factor on Spanish FL vocabulary acquisition.

CONCLUSIONS

The results from this research study add to the body of literature related to the use of VLS among adult Spanish FL learners in the United States. It is clear that for most Spanish FL students, learning vocabulary is the most common activity in the language learning process and perhaps the most frustrating one as well. There is little doubt that Spanish FL learners want to have greater control over their own vocabulary development. Unfortunately, inexperienced language learners are not always aware of the benefits of conscious and continuous use of effective learning strategies for making learning quicker and more effective (Nyikos & Oxford, 1993), and many Spanish FL teachers are not savvy on language and vocabulary learning strategy instruction techniques at different levels of proficiency. However, FL VLS research is still in its infancy, and the categorization of learning strategies is still fluid and open to debate. Perhaps future research will result in a more standardized and valid model for FL VLS which takes into

account language proficiency, experience and metacognitive knowledge of language learning.

Appendix A: VLQ and Vocabulary Test

PART I

Spanish Vocabulary Learning Questionnaire

Section I – Demographics

- A. Please write the answer to the following question on the Comments section on the back of your blue Scantron: On average, how many **hours per week** do you spend studying and/or practicing Spanish **outside** of your Spanish classroom (including time spent on homework assignments)?
- B. Please turn your blue Scantron over. Beginning with item 1, respond to the following questions:
1. What would you say, in your best estimation, is your current level of Spanish language proficiency?
 - A) Beginner (100-level)
 - B) Intermediate (200/300-level)
 - C) Advanced (300/400-level)
 2. What is your gender? A – Male B – Female
 3. Is Spanish your native language? A – Yes B – No
 4. Is English your native language? A – Yes B – No
 5. Approximately how many years have you studied Spanish (before this semester)?
 - A) Zero
 - B) Less than 2 years
 - C) More than 2 years, less than 4
 - D) More than 4 years, less than 6
 - E) More than 6 years
 6. Have you ever studied a *foreign language* other than Spanish? A – Yes B – No
 7. Are you fluent in more than 2 languages? A – Yes B – No

Section II – Learning Questionnaire

Instructions: For each of the 60 vocabulary learning strategies listed below (items 8 to 67 on your blue Scantron), please state whether you use each strategy: (A) *never*, (B) *infrequently*, (C) *sometimes*, (D) *often*, or (E) *very often* by selecting the appropriate letter on your Scantron sheet for each item. Approximate completion time: 10 min.

A. Never B. Infrequently C. Sometimes D. Often E. Very often

A. In order to discover the meaning of a Spanish word I do not know or recognize...

8. I analyze the part of the speech (i.e. whether it's a noun, verb, subject, etc)
9. I analyze parts of the word (affixes, roots, etc.)
10. I see if there's an English cognate (e.g. *Historia – History*)
11. I analyze any available pictures or gestures accompanying the word
12. I guess the word meaning from context
13. I use a bilingual English/Spanish dictionary (hardcopy or on-line)
14. I use a monolingual Spanish dictionary (hardcopy or on-line)
15. I look it up in a word list
16. I look it up in existing flash cards
17. I ask the teacher for an English translation of the word
18. I ask the teacher for a Spanish paraphrase or a synonym of the word
19. I ask the teacher for a Spanish sentence that includes the word
20. I ask my classmates for the meaning or translation of the word
21. I discover the meaning of the word through group work activities

B. In order to learn the meaning of a Spanish word (after I find out what it means)...

22. I study and practice word meanings with other students; we quiz each other
23. I ask the teacher to check my Spanish words for accuracy
24. I try using the word in interactions with native Spanish speakers
25. I study the word with a pictorial representation of its meaning (images, photos, drawings)
26. I create my own image of word's meaning
27. I connect the word's meaning to a personal experience
28. I associate the word with its coordinates (e.g. apple with pear, peach, orange, etc)
29. I connect the word to its synonyms (similar meaning) and antonyms (opposites)
30. I use semantic maps (word trees)

A. Never B. Infrequently C. Sometimes D. Often E. Very often

31. I use 'scales' for gradable adjectives (e.g. cold, colder, coldest)
32. I use the peg method—linking the word to one that rhymes with it (e.g. *two is a shoe, three is a tree, four is a door...*)
33. I use the loci method—associating new words to objects in a familiar place
34. I group words together to study them
35. I group words together spatially on a page by forming geometrical patterns, columns, triangles, squares, circles, etc.
36. I use the word in Spanish sentences
37. I group words together within a storyline
38. I study the spelling of a word carefully
39. I study the sound of a word carefully
40. I say the word aloud when studying
41. I imagine the word's form—its length, syllables, shape, etc.
42. I underline the initial letter of the word
43. I configure the word (i.e. I arrange the word in parts, letters, etc. for easier learning)
44. I use the *keyword method*—connecting the Spanish word with an English word that sounds or looks similar
45. I remember the word's affixes and roots
46. I try to relate the word to its part of speech (subject, noun, verb, adjective, etc.)
47. I paraphrase the word's meaning
48. I use cognates (e.g. *history–historia; tomato–tomate*)
49. I learn the words in idioms together (e.g. “*mi casa es su casa*” or “*hasta la vista*”)
50. I use physical actions when learning a word
51. I use semantic feature grids (e.g. *man, woman = human beings; cat, dog = domestic animals*)
52. I use verbal repetition
53. I use written repetition
54. I create and use wordlists with translations
55. I create and use flashcards
56. I take notes in class when learning new Spanish words
57. I study the vocabulary section of my textbooks

A. Never B. Infrequently C. Sometimes D. Often E. Very often

58. I listen to recorded wordlists
59. I put Spanish word labels on physical objects to remember them
60. I keep a vocabulary notebook or journal
61. I listen and/or watch Spanish media (songs, videos, TV, movies, etc.)
62. I test myself periodically on word knowledge
63. I use spaced word practice to revisit vocabulary
64. I skip or pass over new words (I ignore them, move on)
65. I continue to study the new Spanish word overtime
66. I use technology/computer-based programs to study and practice vocabulary
67. I read books or other Spanish texts

THANK YOU

PLEASE USE THE ORANGE SCANTRON TO COMPLETE THE VOCABULARY TEST BELOW.

PART II

Spanish Vocabulary Test

Purpose: This vocabulary test measures your passive knowledge (recognition) of Spanish words.

Instructions: The 150-word list below consists of real Spanish verbs and some fake Spanish words. Your task is to select **A** on your orange Scantron if you know the basic meaning of the given word or **B** if you do not know its basic meaning. Do not guess—select YES (A) for only those words that you know the meaning since guessing can easily be detected. Approximate completion time: 12 minutes.

Know it? **A. Yes** **B. No**

- | | |
|-------------|----------------|
| 1. dar | 10. brindar |
| 2. regalar | 11. aspirar |
| 3. ofender | 12. hablar |
| 4. ardalar | 13. expegar |
| 5. despojar | 14. abandejar |
| 6. firagar | 15. presechar |
| 7. lograr | 16. tomar |
| 8. corsar | 17. reprochar |
| 9. resultar | 18. distribuir |

19. atrever
20. alternar
21. enredadar
22. reparar
23. quemeler
24. cuiregar
25. existir
26. prometer
27. enterojar
28. inclustrar
29. deslizar
30. mudar
31. carolgar
32. intentar
33. trompitar
34. arrojar
35. perfeccionar
36. anajuar
37. encaparar
38. arreprender
39. trepar
40. filtrar
41. pecar
42. abandonar
43. evolucionar
44. serder
45. botonadar
46. discutir
47. asaltar
48. plantear
49. filerar
50. volcar
51. conservar
52. extinguir
53. apicar
54. encabezar
55. protestar
56. recordar
57. utilizar
58. prever
59. escarlar
60. exalajar
61. propiciar
62. desatar
63. lunazar
64. contribuir
65. disolver
66. oponer
67. acarestar
68. soñar
69. arrasar
70. escarivar
71. retroceder
72. convertir
73. desenvolver
74. heromar
75. odiar
76. travelar
77. joder
78. lanzar
79. sorprender
80. detectar
81. carambozar
82. ingresar
83. portar
84. revelar
85. faltar
86. albedrar
87. continuar
88. insistir
89. diacontar
90. suprimir
91. fortalecer
92. cultivar

- | | |
|------------------|-------------------|
| 93. sucedir | 122. convenir |
| 94. interesar | 123. organizar |
| 95. fundar | 124. suficiionar |
| 96. acondonar | 125. oscurecer |
| 97. bailar | 126. ampallar |
| 98. ostentar | 127. liberar |
| 99. imparciar | 128. privar |
| 100. ampolar | 129. manubrar |
| 101. morder | 130. polochar |
| 102. tricodir | 131. manifestar |
| 103. reiterar | 132. entrenecer |
| 104. calcular | 133. soler |
| 105. acapoyar | 134. preferir |
| 106. investigar | 135. acidiar |
| 107. copiar | 136. aguantar |
| 108. atemerar | 137. violar |
| 109. progemir | 138. divertir |
| 110. jerarcar | 139. caracterizar |
| 111. tejer | 140. bajar |
| 112. efectuar | 141. capturar |
| 113. cargar | 142. agradazar |
| 114. equivoccar | 143. desplegar |
| 115. devorar | 144. conmoler |
| 116. implacallar | 145. inventar |
| 117. perendar | 146. disminuir |
| 118. destacar | 147. exponer |
| 119. anotar | 148. solidiar |
| 120. interrumpir | 149. doler |
| 121. localizar | 150. montar |

Appendix B: Schmitt's Taxonomy of L2 Vocabulary Learning

<i>Strategies for the discovery of a new word's meaning</i>		
<i>Strategy No.</i>	<i>Strategy Group</i>	<i>Strategy</i>
1	DETERMINATION	Analyze part of speech
2	DETERMINATION	Analyze affixes and roots
3	DETERMINATION	Check for L1 cognate
4	DETERMINATION	Analyze available pictures of gestures
5	DETERMINATION	Guess from textual context
6	DETERMINATION	Bilingual dictionary
7	DETERMINATION	Monolingual dictionary
8	DETERMINATION	Word lists
9	DETERMINATION	Flash cards
10	SOCIAL	Ask teacher for L1 translation
11	SOCIAL	Ask teacher for paraphrase or synonym of new word
12	SOCIAL	Ask teacher for a sentence including the new word
13	SOCIAL	Ask classmates for meaning
14	SOCIAL	Discover word meaning through group work activities
<i>Strategies for consolidating a new word's form and meaning once it has been discovered</i>		
15	SOCIAL	Study and practice word meaning with a group of peers
16	SOCIAL	Teacher checks students' flash cards or wordlists for accuracy
17	SOCIAL	Interaction with native speakers
18	MEMORY	Study word with a pictorial representation of its meaning
19	MEMORY	An image of word's meaning
20	MEMORY	Connect word to a personal experience
21	MEMORY	Associate the word with its coordinates
22	MEMORY	Connect the word to its synonyms and antonyms
23	MEMORY	Use semantic maps
24	MEMORY	Use 'scales' for gradable adjectives
25	MEMORY	Peg method
26	MEMORY	Loci method
27	MEMORY	Group words together to study them

28	MEMORY	Group words together spatially on a page
29	MEMORY	Use new words in sentences
30	MEMORY	Group words together within a storyline
31	MEMORY	Study the spelling of a word
32	MEMORY	Study the sound of a word
33	MEMORY	Say new word aloud when studying
34	MEMORY	Imagine word form
35	MEMORY	Underline initial letter of the word
36	MEMORY	Configuration
37	MEMORY	Use keyword method
38	MEMORY	Remembering affixes and roots
39	MEMORY	Remembering parts of speech
40	MEMORY	Paraphrase the word's meaning
41	MEMORY	Use cognates
42	MEMORY	Learn the words in idioms together
43	MEMORY	Use physical action when learning a word
44	MEMORY	Use semantic feature grids
45	COGNITIVE	Verbal repetition
46	COGNITIVE	Written repetition
47	COGNITIVE	Wordlists
48	COGNITIVE	Flashcards
49	COGNITIVE	Take notes in class
50	COGNITIVE	Use the vocabulary section of textbooks
51	COGNITIVE	Listen to recorded wordlists
52	COGNITIVE	Put word labels on physical objects
53	COGNITIVE	Keep a vocabulary notebook
54	METACOGNITIVE	Use target language media (songs, videos, TV, movies, websites, etc)
55	METACOGNITIVE	Test oneself with word tests
56	METACOGNITIVE	Use spaced word practice
57	METACOGNITIVE	Skip or pass new word (ignore it, move on)
58	METACOGNITIVE	Continue to study word overtime
59	METACOGNITIVE	Other strategies not on this list

Appendix C: Vocabulary Test Word Sample

Spanish word sample:

- | | |
|-----------------|------------------|
| 1. dar | 41. regalar |
| 2. hablar | 42. aspirar |
| 3. tomar | 43. soñar |
| 4. existir | 44. prometer |
| 5. recordar | 45. revelar |
| 6. resultar | 46. investigar |
| 7. convertir | 47. ingresar |
| 8. lograr | 48. arrojar |
| 9. utilizar | 49. aguantar |
| 10. intentar | 50. cultivar |
| 11. continuar | 51. disminuir |
| 12. interesar | 52. doler |
| 13. soler | 53. bailar |
| 14. faltar | 54. prever |
| 15. preferir | 55. brindar |
| 16. bajar | 56. portar |
| 17. lanzar | 57. protestar |
| 18. abandonar | 58. divertir |
| 19. conservar | 59. copiar |
| 20. insistir | 60. caracterizar |
| 21. cargar | 61. efectuar |
| 22. exponer | 62. anotar |
| 23. organizar | 63. violar |
| 24. discutir | 64. retroceder |
| 25. plantear | 65. reparar |
| 26. destacar | 66. detectar |
| 27. convenir | 67. privar |
| 28. montar | 68. reiterar |
| 29. inventar | 69. tejer |
| 30. manifestar | 70. suprimir |
| 31. fundar | 71. evolucionar |
| 32. calcular | 72. desplegar |
| 33. contribuir | 73. localizar |
| 34. oponer | 74. volcar |
| 35. atrever | 75. desatar |
| 36. sorprender | 76. disolver |
| 37. liberar | 77. alternar |
| 38. interrumpir | 78. perfeccionar |
| 39. equivocar | 79. odiar |
| 40. distribuir | 80. asaltar |

81. morder
82. extinguir
83. deslizar
84. mudar
85. desenvolver
86. filtrar
87. pecar
88. propiciar
89. ofender
90. reprochar
91. despojar
92. trepar
93. arrasar
94. oscurecer
95. ostentar
96. capturar
97. devorar
98. fortalecer
99. encabezar
100. joder

Pseudowords:

1. expegar
2. corsar
3. escarivar
4. inclustrar
5. encarapar
6. arreprender
7. acarestar
8. escarlar
9. ardalar
10. firagar
11. presechar
12. abandejar
13. lunazar
14. quemeler
15. enterojar
16. anajuar
17. exalajar
18. ciregar
19. trompitar
20. travelar
21. heromar

22. carolgar
23. enredadar
24. manubrar
25. serder
26. entrenecer
27. botonadar
28. albedrar
29. ampallar
30. polochar
31. ampolar
32. apicar
33. filerar
34. acidiar
35. imparciar
36. carambozar
37. diacontar
38. tricodir
39. agradazar
40. conmoler
41. acapoyar
42. suficionar
43. solidiar
44. perendar
45. implacallar
46. jerarcar
47. progemir
48. atemerar
49. acondonar
50. sudecir

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