Thesis for the Degree of Doctor of Philosophy

Exploring Meaning-Discovery Strategy Use: Single-Word Items vs. Idioms

By

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Abstract

본 연구는 중급 영어 학습자가 단어와 숙어의 의미를 이해하는 전략들을 분석하였다. 본 연구는 문법적인 기능, 의미의 투명성 (transparency), 숙어를 구성하는 단어의 빈도수와 같은 어휘적 요인이 전략의 선택에 끼치는 영향과 학습자의 전략 선택의 효율성을 조사하여 단일어와 숙어에 있어서의 전략 사용의 차이를 분석함으로써 학습자가 사용하는 의미 발견 전략에 대한 통찰을 제시하고자 한다. 본 연구에서 사용된 데이터(자료)의 세 가지 출처는 다음과 같다: 전략의 사용과 효용성에 대한 설문지, 전략 사용에 대한 과업을 포함한 온라인 설문지, 그리고 사고 구술(think-aloud protocol)이다. 본 연구의 결과는 한국의 중급 수준의 영어 학습자가 구술 새로 접한 어휘의 의미를 발견하기 위해 문맥적인 요소와 사전을 이용함을 보여주었다. 또한, 단일어와 숙어에 대해 사용하는 전략 사이와, 서로 다른 어휘적인 요인을 가진 어휘들 사이에서 사용되는 전략의 차이는 거의 없는 것으로 밝혀 졌다. 문맥적인 단서를 사용하는 것이 숙어의 의미 이해에 대해 효과적인 반면, 사전을 사용하는 것이 유일하게 일관되게 효과적인 의미 발견 전략으로 보여진다. 이러한 결과에 대한 교육적 함의와 향후 연구에 대한 계획이 방향은 제시하였다.

I. Introduction

1.1 Purpose of the Study

Increasing vocabulary is one of the most important aspects of language acquisition. A learner lacking grammar may still be able to communicate in a limited fashion, but one lacking vocabulary will not be able to communicate at all (Wilkins, 1972). Beginning language learners should focus on acquiring the most frequent 3000 words in English (Nation & Waring, 1997). Once they have done that, it becomes harder to predict which less frequent words they will be exposed to and will need to know. “Learners themselves have consistently identified a dearth of vocabulary as the primary factor holding them back from attaining their larger linguistic goals at a satisfactory rate” (Nyikos & Fan, 2007). This leads to a paradox of vocabulary instruction as learners progress. As learners' need for infrequent vocabulary increases, explicit instruction of vocabulary decreases as it becomes a less efficient use of classroom time or textbook space.

While some vocabulary acquisition comes from explicit classroom instruction, much more is typically gained incidentally from exposure to the language (Krashen, 1982, 1993). Multiple exposures to the unknown vocabulary is necessary for incidental lasting gains in word meaning to occur (Waring & Takaki, 2003), although some types of word knowledge may be gained from a single encounter (Ellis, 1995). For learners in an EFL environment, exposure to the target language is limited compared to learners in ESL environments. If an EFL learner encounters an infrequent word in a text, there is no guarantee that they will encounter the word several more times. It would seem that the more developed learners' vocabularies become, the less likely they may be to make incidental gains because the vocabulary they don't know will not be encountered often enough.

One way learners can more effectively gain vocabulary from exposure is to use a repertoire of vocabulary learning strategies to discover the meaning of the new word and to consolidate the word into their mental lexicon (Schmitt, 1997). Vocabulary learning strategies allow learners to increase both the breadth and depth of their vocabulary knowledge in a self-directed fashion. Thus, learners can take more control of their own learning. In EFL contexts, vocabulary learning strategies play a vital role in increasing

vocabulary. Because exposure to English is limited, encounters with unknown infrequent vocabulary are rare, and repeat exposures may not happen often.

Not all unknown words are created equal, however. Among the various types of vocabulary items in English, idioms can be problematic for second language learners. Idioms present strings of the target language which contain words learners may be familiar with, but literal interpretations do not make sense within the context in which the words are found. It is possible that learners may not think to use the same vocabulary learning strategies used to comprehend unknown single-word items when faced with an unknown idiom. Native speakers use idioms often in speech and certain written genres (Johnson-Laird, 1993; Moon, 1997), so learners are likely to encounter idioms often when interacting with native speakers or consuming authentic media in the target language. Even in academic settings, learners are likely to be exposed to idioms (Simpson & Mendis, 2003). In order to avoid breakdowns in comprehension, and also for language production to become native-like, idioms are a necessary part of a learner's vocabulary.

Learners struggle to understand idioms they come across, and often avoid using them productively once they have come to understand them, choosing to instead use more literal language (Laufer, 1997). Often, the

researcher has been approached by learners who cannot make heads or tails of an idiom they have encountered in the course of their learning. Other students and non-native English teacher colleagues of the researcher have struggled to use idioms naturally in their speech or writing. These learners report extra difficulty with idioms compared to single words because they are "different." This raises some questions. Are idioms acquired differently than single-word vocabulary? Do learners actually approach idioms differently than other types of vocabulary? Are some idioms easier to learn than others? Are there any special strategies that learners can use to make idioms easier to learn?

Because idiom use is common overall in English but instances of individual idioms are rare (Johnson-Laird, 1993; Moon, 1997), teachers may not wish to spend much time explicitly teaching infrequently encountered vocabulary such as idioms to their students. They may focus instead on more frequent words which are likely to be encountered by a wide range of learners (Laufer, 2001). By instructing their students in effective vocabulary learning strategies, teachers empower their students with the tools learners need to discover the meanings of unknown vocabulary on their own and then to consolidate that information into their English vocabulary knowledge (Nyikos

& Fan, 2007; Schmitt, 1997). This study seeks to understand how learners use these strategies as well as how effectively the strategies are being employed. The goal is to help learners become more independent in their vocabulary acquisition.

The extant studies into vocabulary learning strategies primarily focus on the strategies used in general or only on single unknown words. English is rich in idioms, which are multi-word items which have specialized figurative meanings. Some research (Ellis, 1997; Glucksberg, 1993; Moon, 1997) suggests that idioms are processed during listening and reading, as well as stored in memory, in the same or a very similar manner to single words, by means of lexical chunking. Studies of idiom comprehension (Bobrow & Bell, 1973; Cacciari & Tabossi, 1988; Gibbs, 1980; Swinney & Cutler, 1979) have focused on differences in processing speed between idioms and single words, suggesting that they are different. While there are studies (Cooper, 1999; Lee, 2003) which catalog the strategies used by second language learners when faced with unknown idioms, none of these studies have compared the strategies used to comprehend idioms to the strategies used to comprehend single words. This study was designed to bridge this gap, by comparing the approaches learners take to both single-word items and idioms.

As there are many types of phrases which can be classified as idioms, many studies (Abel, 2003; Angel, 2007; Boers & Demecheleer, 2001; Cronk et al., 1993; Li & Sporleder, 2010; Liu, 2003; Titone & Connine, 1994, Titone & Connine, 1999) have looked into a variety of intra-lexical factors that can be used to define idioms, and attempted to sort idioms by these intrinsic factors, as well as investigating how different types of idioms are processed. Most of these studies focused on questions of comprehension, speed of comprehension, or classification. Few have examined how these intrinsic factors affect choice of vocabulary learning strategies. If these intra-lexical factors differentiate various types of idioms, then whether or not the differences affect ease of comprehension warrants investigation.

This study was designed to provide answers to these questions, and to help fill some gaps in previous research. A small number of previous studies (Angel, 2007; Cooper, 1999; Lee, 2003; Park, 2001; Schmitt, 1997; Wu, 2005) have examined the meaning-discovery strategies used by English language learners, but most of them have been limited to retrospective self-report methods to assess what strategies learners use when faced with unknown English words or phrases. Two of these studies (Cooper, 1999; Lee, 2003) touched upon the effectiveness of the strategies, but did so only in a

superficial manner. No studies, to the researcher's knowledge, have thus far documented patterns of meaning-discovery strategy use with both single-word items and idioms and compared the results. Many studies (Abel, 2003; Angel, 2007; Boers & Demecheleer, 2001; Li & Sporleder, 2010; Liu, 2003; Simpson & Mendis, 2003; Titone & Connine, 1994, Titone & Connine, 1999) have examined various intra-lexical factors that may distinguish various classes of idiom, but none have examined any effects related to these intra-lexical factors on how learners apply meaning-discovery strategies to comprehend the vocabulary.

Because previous studies have examined the use of meaning discovery strategies on single-word items or idioms in isolation, the present study seeks to examine both types of vocabulary together. Other studies have cataloged intra-lexical factors that may be used to distinguish idioms and looked at their effects on comprehension, but few have examined whether or not strategy choice is influenced by these intra-lexical factors. This study seeks to remedy these deficiencies. By doing so, similarities and differences in patterns of meaning-discovery strategy use can be examined. In addition, by examining the effectiveness of several meaning-discovery strategies, suggestions can be made to teachers and learners regarding how best to employ them.

1.2 Research Questions

In order to investigate the differences in meaning-discovery strategy use between single-word items and idioms, this study attempts to answer these questions:

Q1. What differences exist in meaning-discovery strategy use between English single-word items and idioms for intermediate level learners?

Q2. Is meaning-discovery strategy use dependent on intra-lexical factors of English single-word items and idioms?

Q3. Are meaning-discovery strategies equally effective for comprehending English single-word items and idioms?

The purpose of the first research question is to examine how learners approach different types of unknown vocabulary. The purpose of the second question is to examine how intra-lexical factors may or may not affect the ways in which learners approach unknown vocabulary. The purpose of the final research question is to examine how effectively learners employ meaning-discovery strategies when faced with unknown vocabulary. Whether

learners approach single-word items and idioms in the same way or differently, whether intra-lexical factors influence strategy choices, and how effectively meaning-discovery strategies are employed may influence how meaning-discovery strategies should be taught to learners.

1.3 Key Terminology

The following terms are used often in this study, so their definitions are provided here. Definitions of other terms can be found in Appendix D.

Idiom: Idioms are figurative multi-word units that have proven difficult to define. For this study, an idiom can be defined as "a multi-word item which is not the sum of its parts: with a holistic meaning which cannot be retrieved from the individual meanings of the component words" (Moon, 1997, p. 46). Because the figurative nature of idioms would appear to make them more difficult to comprehend, a comparison of meaning-discovery strategies used when faced with idioms and when faced with single-word items is warranted.

Single-word item: A word in the traditional sense, a single orthographic unit with a holistic meaning or meanings (Moon, 1997) can be considered a

single-word item. The majority of people, if asked to describe what a "word" is, would describe single-word items.

Meaning-discovery Strategy: A meaning-discovery strategy is a vocabulary learning strategy used to guess at the meaning of a newly encountered word in a first or second language. They are complemented by consolidation strategies, which learners use to acquire and reinforce vocabulary knowledge in memory (Schmitt, 1997). This study focuses on examining how learners apply meaning-discovery strategies to single-word items and idioms, as well as how effective these strategies are at arriving at the correct meaning of the unknown vocabulary.

II. Literature Review

2.1 Vocabulary and Vocabulary Knowledge

2.1.1 Vocabulary: Single-Word Items and Idioms

Any study of vocabulary must deal with the question of defining what exactly constitutes a "word" and what does not. At the most severe level of segregation, any difference in the written or spoken form would constitute a different word, such that *walk*, *walks* and *walked* would all be considered as separate units of lexis (Bauer & Nation, 1993). This level of segregation, however, is counter-intuitive, as most native speakers of a language would all consider them to be the same word, represented by the lemma [walk], with the examples given being three alternate forms of the lemma (Roelofs et al., 1997). A lemma is often represented by the conventional 'base word' upon which inflectional endings and affixes can be added or the headword for a dictionary entry. A lexeme is any form of the lemma created by inflection or affixation. "[A] lexical entry's lemma specifies its semantic-syntactic properties,

and the lexeme specifies its morphophonological properties" (Roelofs et al., 1997, p. 220). Rather than considering each lexeme as a separate word, as in the case of severest segregation presented above, all lexemes of a single lemma can be grouped together as a single unit of lexis, called a word family (Bauer & Nation, 1993).

Word families can be described as "a base word, its inflected forms and a small number of reasonably regular derived forms" (Nation & Waring, 1997, p. 8). Word families provide a convenient basis for examining vocabulary, because once a learner understands common inflections and affixes, they can understand other members of the word family when encountered. As more affixes are learned, each word family increases in size because the learner knows how to apply each new affix to base words. Learners can, without difficulty, reverse engineer base words from new derived forms that they encounter (Bauer & Nation, 1993). For example, if a learner were to encounter the simple past verb form *grumbled* for the first time, assuming they understood how regular English simple past tense forms are constructed, they could easily guess that *grumble* is the base form, even if they have never before encountered *grumble*. Word families provide a logical definition for considering a basic unit of vocabulary because once one form is

known, all derived forms can be understood once the learner understands the rules governing affixes (Nation & Webb, 2011). Frequency counts of the most common words in a language, such as that provided by the Compleat Web VP (Cobb, n.d.) used in this study, are based on word families rather than "tokens" or the various lexemes of a lemma.

Vocabulary can, at a macro scale, be divided into single-word items meaning words in the traditional sense and multi-word items meaning word compounds and short phrases with a unified meaning (Moon, 1997; Spratt et al., 2011). Multi-word items can be considered "extreme cases of fixed collocations" (Moon, 1997, p. 43). Both native speakers and language learners tend to conceptualize lexical "chunks" of language rather than conceptualizing every individual word (Lewis, 1993, cited in Schmitt & McCarthy, 1997) which allows for easier communication. Because lexical chunks are stored in the mental lexicon in the same manner as individual words, such extreme collocations are functionally no different than single-word items (Ellis, 1997). This has led to an interest in studies of collocations using computerized corpora to look for patterns of word usage. It has also made it apparent that multi-word items, such as compound words, phrasal verbs, idioms, fixed phrases, and prefabs (or prefabricated routines) have

psychological validity as words in and of themselves, even though the various component parts are also individual words (Moon, 1997). When a grouping of otherwise independent single-word items have a specialized or situation specific meaning, the grouping can be considered to be a long but singular and unified unit of vocabulary. Among the various types of multi-word units discussed above, idioms are strings of words in which the meaning of the entire phrase is holistic and often not easily discernible from the meanings of the constituent words which make up the phrase (Moon, 1997).

Because the current study looks into differences in language learners' strategies for discovering the meanings of traditionally understood single words and idioms, to avoid confusion the following terms are used. First, vocabulary units traditionally consisting of a single orthographic unit are termed *single-word items*. Groupings of several otherwise independent vocabulary units which gain a unified and specialized meaning, such as those described by Moon (1997) and listed above, are termed *multi-word items*. As this study only examines one type of multi-word item, idioms, the term *idiom* is also used when referring only to these multi-word items specifically. The term *vocabulary* is used in this study as a means to refer to both types of lexis in the study, single-word items and idioms.

2.1.2 Types of Idioms

Moon (1997) describes idioms as "multi-word items which are not the sum of their parts: they have holistic meanings which cannot be retrieved from the individual meanings of the component words" (p. 46). In addition to consisting of more than one word in the traditional sense, Moon (1997) asserts that all multi-word items have varying degrees of three variables: institutionalization, fixedness, and non-compositionality. In addition to these three variables by which she describes all multi-word items, idioms also contain a metaphorical reference (Gibbs, 1993; Moon, 1997).

Institutionalization refers to both the frequency of appearance in the language and also the degree of cohesiveness that the multi-word item possesses. Phrasal verbs such as *get off* or *eat up*, for example, are frequently encountered and cohesive, so are highly institutionalized (Moon, 1997). The use of idioms in general is relatively common, especially in spoken language and in specific written genres, but the frequency of use of any particular idiom is quite rare (Johnson-Laird, 1993; Moon, 1997). However, most native speakers would likely consider idioms to be a cohesive string of language (Moon, 1997). Because idioms meet the cohesion qualification but not the frequency qualification, they are not highly institutionalized.

Fixedness refers to how syntactically frozen a multi-word item is. Idioms are traditionally considered highly fixed, yet there are some idioms which allow for a limited range of conjugations, transformations, or substitutions (Cacciari, 1993; Glucksberg, 1993; Moon, 1997). The encouragement idiom *break a leg* is usually only found in that form. It would seem odd to hear a spectator of a performance say, "She's really breaking her leg tonight!" when describing it to another. *Break a leg* is highly fixed. On the other hand, the idiom *spill the beans* could be encountered with syntactic morphology intact. It would not be odd to hear someone say, "He's always spilling the beans" or "The beans have already been spilled." *Spill the beans* is less fixed than *break a leg*.

Non-compositionality refers to the fact that the meaning of an idiom is holistic, rather than the sum of the meanings of the constituent words that make up the phrase (Glucksberg, 1993; Moon, 1997). All idioms are non-compositional, but some are more so than others. If the constituent words that make up the idiom do not contribute in any meaningful way to the meaning of the idiom, then the meaning is truly holistic and the idiom is opaque. However, if the constituent words have some figurative sense that makes up part of the overall figurative meaning, then the idiom is more

transparent. Two commonly cited examples are *kick the bucket* and *break the ice*. In the case of *kick the bucket*, meaning *to die*, neither *kick* nor *bucket* have any symbolic relationship to the meaning of the idiom. On the other hand, in *break the ice*, *break* corresponds to overcoming while *ice* symbolizes social tension upon first meeting someone. *Kick the bucket* is opaque, while *break the ice* is transparent.

Finally, the meanings of idioms are metaphoric in nature, rather than arbitrary (Gibbs, 1993; Moon, 1997). Idioms may have originally been novel metaphors or else refer to some sort of archetypal specific event that has come to represent all events of that type (Gibbs, 1993). *Bury the hatchet*, for example, now has a widely applicable meaning of *making peace*, but originally it referred to a specific peace-making ceremony used by Native Americans. *Let off steam* may have once been a novel metaphor comparing a stressed-out person to a steam engine, but is now in general usage (Gibbs, 1993).

Nation and Webb (2011) define idioms differently. When discussing multi-word units, they divide them into three groups by their transparency, based on the work of Grant and Bauer (2004): core idioms, figuratives, and literals. In this classification system, the meaning of core idioms have no

relationship to the meaning of the parts that make them up, for example *by and large* or *touch and go*. Core idioms are always metaphorical. The meaning of figuratives can be either literal or figurative, depending on context, such as *play second fiddle* or *get them on the ropes*. When used in a metaphorical sense, the figurative can be considered an idiom, but not when used literally. The meaning of literals are compositional, so literals always bear some relationship to the meanings of the constituent words of the multi-word item and lack a metaphorical reference, for example *once in a while* or *everyone for themselves* (all examples of core idioms, figuratives and literals above taken from Nation & Webb, 2011, p. 176).

In the study presented here, Moon's (1997) definition, given at the beginning of this section above, is preferred as the Grant and Bauer (2004) system only distinguishes idioms by their level of compositionality, with no mention of their level of institutionalization (frequency and cohesiveness) or fixedness. Both core idioms and literals, as described by Nation and Webb (2011), would seem to be considered as fixed phrases using Moon's (1997) classification system, which she admits is a sort of catch-all category for multi-word items that do not fit into her other categories of phrasal verbs, idioms, or prefabs.

Following the classification system provided by Grant and Bauer (2004) above, all or most of the multi-word items used in the current study are figuratives. For example, the phrasal idioms *below the belt* and *take you to the cleaners* are both non-compositional, but could be used in either a figurative or literal manner. They are figuratives by the Grant and Bauer classification. *Sweeten the kitty* comes closest to being a core idiom, as it is non-compositional and literal uses of the phrase are likely to be extremely rare, although technically possible. On the other end of the spectrum, the idiom *nurse a grudge* comes close to being a literal, as *grudge* is used in its common meaning, and *nurse* can be argued to have a connotation of DEVELOPING in addition to its more common connotation of HEALING.

Much early work specifically into idiom comprehension was psycholinguistic research attempting to build a model of how the brain processes idioms (Bobrow & Bell, 1973; Cacciari & Tabossi, 1988; Gibbs, 1980; Swinney & Cutler, 1979). There is empirical evidence to support each of these proposed idiom comprehension processes. It seems most likely, based on the strength of the evidence provided in these above mentioned studies and more recent work (Abel, 2003; Flores d'Arcais, 1993; Glucksberg, 1993), that idioms, at least those which can be classified as figuratives (Grant

& Bauer, 2004), are analyzed both as literal and as figurative strings when first encountered. This happens until either the string is recognized as a familiar idiom, or until a point is reached where either only the literal or figurative meaning would make sense. In other words, an idiom may not be noticed as a unit at first and may be processed as a string of individual single-word items. Once the idiom has been acquired by the learner, however, it will be detected as a unit and interpreted as such (Abel, 2003; Flores d'Arcais, 1993).

Many studies have examined the different types of idioms, attempting to classify them. Studies have examined effects of institutionalization (Cronk et al. 1993; Simpson & Mendis, 2003; Titone & Connine, 1994), fixedness (Glucksberg, 1993; Li & Sporleder, 2010; Liu, 2003), non-compositionality, also known as transparency/opacity, (Angel, 2007; Flores d'Arcais, 1993; Glucksberg, 1993; Simpson & Mendis, 2003, Titone & Connine, 1999), and the metaphorical nature of idioms, often contrasted with possible literal usages of a phrase (Cronk et al. 1993; Gibbs, 1993; Glucksberg, 1993; Li & Sporleder, 2010; Liu, 2003) on comprehension by either native speakers or language learners. Results have been mixed, but seem to support the various factors of idiom classification.

Boers and Demecheleer (2001) investigated one different aspect of idioms related to their metaphorical nature but still somewhat distinct from it, which is an idiom's imageability, or how easy it may be to picture the image literally and arrive at the figurative meaning. Boers and Demecheleer (2001) selected idioms which had metaphorical images that are used in both French and English (FOOD and SLEEVES), as well as idioms with metaphorical images used in English but not in French (HATS and SHIPS), and had a group of native French-speaking students to try and guess the meanings without any context. While the experiment was small-scale, it did indicate that similar metaphoric images between the L1 and L2 may aid in idiom comprehension.

In a study of the decomposability of English idioms, Abel (2003) had L1 German students rate the idioms found in Titone and Connine (1994) as decomposable or nondecomposable. Titone and Connine had asked native speakers to rate the idioms in the same manner, finding that native speakers tended to rate more idioms as nondecomposable. However, Abel's study found the opposite, with the non-native speakers rating more idioms as decomposable. Based on the two studies performed, Abel suggests that for an L2, decomposable (compositional/transparent) idioms may or may not have

separate idiom entries in the mental lexicon depending on their frequency of exposure, but nondecomposable (non-compositional/opaque) idioms "require an idiom entry" (Abel, 2003: 343). The implication drawn is that familiarity or necessity leads to the development of a separate idiom entry in L2 learners, and once a specific entry has formed, there is no longer any need for learners to try to decompose or analyze that idiom. The question of how idioms are decomposed and analyzed in order to form an idiom entry in the mental lexicon is not answered.

Studies examining effects related to the frequency of idioms within the language and the frequency of the constituent vocabulary that comprises idioms are rare. Cronk, Lima, and Schweigert (1993) examined frequency effects along with literalness and familiarity among English native speakers. They found that subjectively unfamiliar (infrequent) idioms were read more slowly than subjectively familiar (frequent) idioms in general, but that infrequent constituent vocabulary hindered reading times of familiar idioms while frequent constituent vocabulary aided reading times of unfamiliar idioms. The frequency of constituent vocabulary of the idioms appeared to have no effect when the target phrases were used literally. No previous studies

that the researcher is aware of have looked into effects of idiom constituent vocabulary frequency in English language learners.

While all of these studies into idiom comprehension and classification lay a foundation for future studies, many of these studies fail to bridge the gap between research and practical classroom application. Knowing that idioms are processed the same or differently than other vocabulary items has little practical application for teachers or learners, as it happens within the brain's linguistic processor with no conscious effort. Studies of the various internal factors that make idioms distinct from other vocabulary items have some practical classroom applications, but the studies mentioned above do not, for the most part, elaborate on them. In order for educators to be more effective at teaching idioms and for learners to comprehend and eventually acquire idioms in an effective manner, the meaning discovery strategies learners use must first be understood (Schmitt, 1997). Once the strategies learners use in actual learning tasks are observed, and the strategies that have a better chance of success are identified, recommendations for more effective vocabulary instruction can be offered.

2.1.3 Lexical Knowledge

To the layman, which would include most language learners, "knowing" a word equates to "knowing the meaning" of a word, and for the student of a second language, "knowing" the word typically means "knowing the L1 equivalent of that word." Also, the typical learner may focus on how many words are known when asked to consider the size of their vocabulary, known as breadth of lexical knowledge. Many studies have focused on breadth of lexical knowledge as the metric by which learners should be assessed (Nation & Waring, 1997). Lexical knowledge, however, is more complex than that. There are a variety of factors that combine to govern how well various aspects of any particular word are known, which is known as depth of lexical knowledge (Schoonen & Verhallen, 2008). Some of these factors will be known explicitly by the learner, while others may only be known implicitly, depending on the stage of mastery that the learner has achieved. The explicit semantic knowledge of unknown words which can be gained through application of meaning-discovery strategies is functionally equivalent to the layman's definition provided above: knowing the meaning of the word or an L1 equivalent of the word. As this study only focuses on initial

encounters with a word, depth of vocabulary knowledge and implicit vocabulary knowledge are not considered further.

Word frequency plays a major role in determining lexical knowledge. Native speakers gain on average around 1000 word families a year up to the 20,000 word family level (Nation & Waring, 1997). If language learners wish to make equivalent gains to their L2 vocabularies, it makes sense for them to start with the 3000 most common words in the target language, which allows them to begin to understand common texts and gain more new words through exposure and application of vocabulary learning strategies (Hunt & Beglar, 2002; Laufer & Ravenhorst-Kalovski, 2010; Nation & Waring, 1997; Nation & Webb, 2011). Learners should have deeper lexical knowledge of most frequently encountered words, while they are likely to possess only partial knowledge of many infrequently encountered words. This is because depth of lexical knowledge is a factor relative to each word known, rather than to the mental lexicon as a whole (Schoonen & Verhallen, 2008).

Other differences in lexical knowledge include the difference between receptive and productive lexical knowledge and the difference between declarative and procedural knowledge. A learner may understand a word when it is read or heard (receptive knowledge) but still not be able to produce

the word when writing or speaking (productive knowledge). Measuring the relative sizes of receptive and productive vocabularies has been problematic (Melka, 1997), but as this study focuses only on receptive comprehension through meaning-discovery, the distinction is less important here. Productive knowledge is unlikely to be larger than receptive knowledge, and receptive knowledge is assumed to be much larger than productive knowledge for most people (Melka, 1997). Procedural knowledge is that which a person knows how to do, while declarative knowledge is that which a person can explain (Alexander et al., 1991). Procedural knowledge of vocabulary, such as how or when to use a word or how to pronounce it, may be implicit or explicit, but declarative knowledge must always be explicit.

Meaning-discovery strategies are consciously activated methods used to guess at the meaning of newly encountered vocabulary. If strategy use becomes automatic or subconsciously rather than consciously activated, then the process is referred to by Anderson (2003) as a skill. Because strategies are consciously activated, most learners should have some ability to state or at least describe the strategies the learners are employing, if asked to do so, while those that have advanced to the automated level of a skill, in Anderson's terms, may not be available for report. Meaning-discovery

strategies are explicit, procedural methods (Anderson, 2003) of linguistic problem solving (Grenfell & Macaro, 2007) used to gain declarative, receptive lexical knowledge, and are one way in which learners can increase their lexical knowledge without the need to be explicitly instructed in vocabulary.

2.2 Vocabulary Acquisition

2.2.1 Processes of Vocabulary Acquisition

Cognitivist models of language acquisition vary in how the process of vocabulary acquisition is modeled, but all share as a common element the belief that the brain processes external input in some form, and through analysis of that input, learning occurs. Language learning or acquisition is viewed as no different from any other form of learning. The three main models of cognitivist language acquisition are the information processing model, the connectionist model, and the competition model.

The information processing model (Craik & Lockhart, 1972; LaBerge & Samuels, 1974) posits that the human brain has a limited amount of cognitive processing capacity, and only a limited amount of input which is attended to can be processed. Language learners can only attend to basic

meanings when first developing language ability. Over time, with repeated exposures and multiple chances for practice, initial declarative knowledge is developed into automated procedural knowledge or skills. Once a process has become automated, it does not utilize attentional resources, allowing attention to be placed on new areas of language (Lightbown & Spada, 2006).

The connectionist model is somewhat similar to the information processing model, in that it suggests that vocabulary is acquired through multiple repeated exposures through input (Christiansen & Chater, 2001). However, rather than viewing acquisition as a build-up of automatized skills, the connectionist model suggests that each new exposure to particular vocabulary builds new connections to previous knowledge. As this network of cumulative connections develops within memory, learning is enhanced and reinforced (Lightbown & Spada, 2006). Many of these connections are assumed to be chunks of language which are frequently encountered together, or collocations, rather than single-word items (Ellis, 1997).

The competition model (MacWhinney, 2001) argues that multiple exposures to language result in the development of cues which signify relationships or functions of language. Attention to language is not necessary to develop these cues, as learners discover them through analysis of input and

can then apply the cues to put meaning to language. For example, in English, word order serves as a cue to meaning, while in Romance languages, grammatical markers are stronger cues to signify meaning (Lightbown & Spada, 2006).

The current study makes some assumptions that fall into the information processing model of language development. Meaning-discovery strategies are a form of procedural knowledge which are not yet automatized, but allow the language learner to gain initial declarative knowledge of newly encountered vocabulary. At the same time, this study also makes some assumptions based on the connectionist model of language development. Meaning-discovery strategies represent active attempts to forge connections between newly encountered vocabulary and prior knowledge. If chunking occurs, as the connectionist model suggests, then there may be no difference between how learners apply meaning-discovery strategies to single-word items and multi-word items. The competition model does not easily explain comprehension of figurative language such as idioms, so no assumptions are drawn from that model of language acquisition.

2.2.2 Factors Affecting Acquisition

Vocabulary acquisition is a complex process, involving parsing input into meaning-carrying units, auditory and orthographic recognition of these units, vocal and kinestetic patterns to produce the unit, plus learning its semantic, syntactic, and relational characteristics (Ellis, 1997; Laufer, 1997). Before any of this can happen, the input needs to be comprehensible to the learner (Krashen, 1982), which requires context. One further requirement is that the unknown vocabulary be noticed by the learner (Schmidt, 1990). Noticing requires that some conscious attention be paid to the unknown vocabulary. The amount of attention which is paid to the unknown vocabulary, the amount of mental effort expended upon it, and the level of motivation and need to comprehend the unknown vocabulary, affect how much word knowledge is gained (Craik & Lockhart, 1972; Laufer & Hulstijn, 2001). Swain (1985) argues that output is also a necessary component of the language acquisition process, as output allows learners to notice gaps in their knowledge, test hypotheses they have formed about new vocabulary, and to reflect upon their learning metalinguistically.

Implicit and explicit knowledge of vocabulary are not gained in the same ways. Ellis (1995) proposes that implicit knowledge of a word, which

includes recognition of the word form and how to produce it, can be gained automatically by the learner from exposure with attention, as Krashen (1982) suggests. Explicit knowledge, which includes semantics, conceptual information, and relational information, must be gained through a more active learning process, whether taught by another or through self-directed learning strategies (Ellis, 1995). If Ellis is correct, then idioms, in particular, can only be acquired explicitly. Any implicit information gained about the constituent vocabulary of an unknown idiom is unlikely to alert the learner to the cohesive nature of the string of language. In other words, if learners wish to acquire idioms, they must do so explicitly, through explicit instruction or the application of vocabulary learning strategies. Nation and Webb (2011) point out that intentional vocabulary learning provides the learner with both implicit and explicit knowledge of the vocabulary studied.

Context, whether linguistic or visual, allows unknown vocabulary to be comprehensible (Krashen, 1982). Context provides evidence for learners to test their guesses about the meanings of new vocabulary that the learners encounter (Nagy, 1997; Titone & Connine, 1994). Laufer and Ravenhorst-Kalovski (2010) suggest that at least 95% text coverage, knowing nineteen of every twenty words in a text, is necessary to provide comprehensible input,

although 98% text coverage, knowing forty-nine out of every fifty words, is optimal. In addition to the input itself being comprehensible, the learner must notice the unknown item by focusing attention on it while reading or listening to the target language (Schmidt, 2010). Multiple exposures in context are needed before acquisition can occur incidentally through extensive reading, but explicit instruction can speed the process (Ellis, 1997; Hudson, 2007). Studies also show that applying vocabulary learning strategies to unknown words encountered in context can assist in comprehension and acquisition of unknown words (Gass, 2013), and effective strategy application allows learners to gain greater depth of vocabulary knowledge from context in any particular encounter with unknown vocabulary (Ellis, 1995).

Laufer (1997) discusses various intra-lexical factors of words that may affect how easily they are acquired. Some of the factors she mentions play a role in the current study. First of all, word length may be one limiting factor, but the evidence for the effect is mixed. While some studies have shown that learners pick up shorter words more easily, other studies show no difference. "If the components of the longer word are familiar, there is no plausible reason why such a word should present a comprehension or memorization difficulty" (Laufer, 1997, p. 145). If the constituent words that make up

idioms are familiar to the learners already, the extra length of the idioms compared to single-word items may not be a factor.

Morphology may also cause difficulties for learners. The more cases in which a base word can be inflected, the more difficult it may be. On the other hand, familiarity with common affixes may assist learners in discovering the meanings of vocabulary. One other problem learners may face is what Laufer (1997) refers to as "deceptive transparency" (p. 146), where vocabulary may appear to be a combination of familiar words or morphemes when in fact they are unrelated to the familiar words known. A related difficulty is synformity, in which vocabulary may appear on the surface similar to other known words phonetically or orthographically, when there is no relation in meaning (Laufer, 1997). The holistic, figurative nature of idioms may make them deceptively transparent to language learners, if the constituent vocabulary that makes up the idiom is already familiar to the learners, making idioms more difficult to acquire.

Grammar and part of speech may potentially play a role in the difficulty of comprehending and acquiring new vocabulary. Studies such as Rodgers (1969) seemed to show that part of speech affected ease of learning, with nouns being easiest, adjectives next, verbs third, and adverbs the most

difficult type of word. Laufer (1997) points out that verbs may be more difficult compared to other classes of word due to their morphological complexity compared to the nouns and adjectives used in Rodgers' study mentioned above. This study includes part of speech as one of the intra-lexical factors under investigation. If Rodgers (1969) is correct, then learners may need to apply more, or at least different, meaning-discovery strategies to verbs and verbal function idioms than they apply to adjectives and adjectival function idioms and are more likely to arrive at the correct meaning of adjectives/adjectival function idioms than verbs/verbal function idioms. If Laufer (1997) is correct, and the difficulty of verbs reported by Rodgers (1969) comes more from morphological complexity than word class, then the strategies used and effectiveness should be similar for both.

Semantic features of vocabulary, including abstractness, specificity, idiomaticity, and multiple meanings can also serve to make words easier or harder to learn. Abstractness makes learning L1 words more difficult, but since older L2 learners will already possess many abstract concepts in the L1, abstractness may not adversely affect their vocabulary comprehension and acquisition. Laufer (1997) cites research showing that L2 learners tend to stick to more general or neutral terms rather than specific ones, either due to the

generalized words being more useful in a variety of contexts, or because the learners lack the knowledge of register or genre in which the more specific forms are more commonly used. Idiomatic vocabulary is generally considered more difficult for language learners to learn than non-idiomatic vocabulary, and this is often reflected in their language production. Homonyms and polysemes can also cause problems for language learners. The sense that learners first acquire appears to color their encounters with the homonym or polyseme, and can lead to misunderstandings (Laufer, 1997). This suggests that idioms may be more difficult for learners to comprehend than single-word items. If this is so, learners may need to apply more meaning-discovery strategies to guess the meanings of unknown idioms, and the learners may be more successful at guessing the meaning of unknown single-word items.

While very little research has looked into acquisition of idioms specifically, there is a strong case to be made that the factors related to the acquisition of idioms in a second language are the same, or mostly the same, as those relating to single-word items or any other vocabulary type. Ellis (1997) compares idioms and other multi-word items to a form of collocation and says:

> such collocations can simply be viewed as big words – the role of chunking in phonological memory in learning such structures is the same as for words. It is a somewhat more difficult task to the degree that these utterances are longer than words and so involve more phonological units to be sequenced. It is a somewhat less difficult task to the degree that the component parts cluster into larger chunks of frequently-encountered (at least for learners with more language experience) sequences comprising morphemes, words, or shorter collocations themselves. (p. 130)

If idioms are acquired as chunks of language rather than as a collection of individual single-word items with a specific, holistic meaning in context, then they should be no harder to acquire than any other chunk of language, and the meaning-discovery strategies used to comprehend unknown idioms and unknown single-word items should be the same or similar and of roughly equal effect, which stands in contrast to the assumptions that can be made from Laufer's (1997) discussion of intra-lexical factors discussed above.

Unlike some other multi-word items, the meaning of an idiom, whether a single word can serve as a synonym or a phrase is needed to

convey the figurative meaning, is dependent on the entire string being noticed (Schmidt, 1990) as a cohesive whole, or in other words, as a single lexical unit (Flores d'Arcais, 1993; Moon, 1997). In the current study, textual enhancement of the target single-word items and idioms are used to ensure that the subjects notice each item. Especially in the case of idioms, it is necessary to ensure that the participants view each idiom as a unit. In non-experimental conditions, idioms are not marked out as such, as a rule, which may lead to more difficulty for the learners to identify the string and interpret it correctly.

2.3 Vocabulary Learning Strategies

2.3.1 Defining and Classifying Vocabulary Learning Strategies

Language learning strategies in general have been defined in various ways, but a succinct definition would be "[s]pecific actions, behaviors, steps, or techniques that students use to improve their own progress in developing skills in a second language" (Oxford, 1999, cited in Gass, 2013, p. 467). Vocabulary learning strategies, as a subset of language learning strategies, refer to the means by which students come to comprehend and acquire

vocabulary in a second language (Nyikos & Fan, 2007). As with Oxford's definition above, this definition of vocabulary learning strategies implies that they are consciously activated actions which students apply to unknown words to comprehend them or apply to words they have learned or partially learned in order to retain and deepen knowledge of those words. It should be noted that strategies refer only to consciously or semi-consciously activated actions that learners choose to use and not automatic processes (Anderson, 2006; Gass, 2013). If learning new vocabulary is the learner's goal, strategies are the steps a learner goes through to achieve that goal (Gass, 2013).

Several taxonomies have been proposed as a means to identify and classify various vocabulary learning strategies. Oxford (1990, cited in Schmitt, 1997) developed a classification system for vocabulary learning strategies which divides them into four groups: social, memory, cognitive and metacognitive strategies. Social strategies involve interaction with others as a means to acquire vocabulary. Memory strategies are attempts to integrate the new vocabulary into the learner's existing knowledge base. Cognitive strategies are ways the learner can analyze and manipulate the new vocabulary. Metacognitive strategies are methods for deciding how best to plan, monitor, or evaluate the learning process. One category that is missing

from this taxonomy is that of determination strategies or ways in which the learner may attempt to find the meaning of unknown vocabulary without recourse to social interaction (Schmitt, 1997).

Gu and Johnson (1996) surveyed Chinese university students about how they learn vocabulary and used the results to organize language learning strategies into eight categories: beliefs, metacognitive regulation, guessing strategies, dictionary strategies, note-taking strategies, rehearsal strategies, encoding strategies, and activation strategies. The beliefs category did not actually cover language learner strategies, but rather beliefs about how vocabulary should be learned. Metacognitive regulation strategies were ways to decide what vocabulary was required for comprehension and ways to decide how to approach these words. The other categories covered various ways learners may comprehend a new word, integrate it into their mental lexicon, and/or begin putting it to use in language production. None of the strategies listed in this taxonomy involve social interaction with teachers or peers; they are all individual actions taken by the learners.

Schmitt (1997) discusses vocabulary comprehension strategies and provides a detailed, yet in his own words incomplete, taxonomy of strategies observed among Japanese learners of English. Schmitt divides the

comprehension strategies into two types. The first are discovery strategies which learners use to understand the meaning when encountering a new word. Within the group of discovery strategies, Schmitt notes which fall under Oxford's social strategies sub-group, and which fall under his own determination strategies sub-group. The second group are consolidation strategies which learners use to retain the new words in their mental lexicon. These strategies are divided into sub-groups among all four of Oxford's categories: social, memory, cognitive, and metacognitive strategies. The study described here adopts Schmitt's (1997) taxonomy for classifying strategies, as it is the only one of the three discussed which separates strategies into those appropriate for initial encounters (discovery strategies) and those appropriate for retaining and reinforcing vocabulary knowledge (consolidation strategies). As the current study limits itself to examining meaning-discovery strategies, Schmitt's (1997) taxonomy is the most appropriate.

2.3.2 The Role of Vocabulary Learning Strategies

Canale and Swain (1980) describe strategic competence, one of the four aspects of communicative competence they discuss, as the ability to maintain discourse and to repair problems in comprehension or production.

Many early studies of language learning strategies focused on examining "good" and "bad" students, to see what the "good" students were doing differently. It was thought that these "good" students must be using strategies when the "bad" students are not, or using them more often, or more effectively. More recently, the focus has been on individual learning styles and situational use of strategies by learners (Grenfell & Macaro, 2007). Studies have shown that high performing and low performing learners tend to use the same strategies, but only the former apply them effectively (Porte, 1988). The role of vocabulary learning strategies is to assist learners to overcome specific problems with vocabulary acquisition or production in instances where they have a language breakdown (Gu, 2003).

If more effective students are more effective strategy users, or if language learning is more effective when correct strategies are applied to a problem, then the focus shifts to one of effectiveness of strategy instruction. In general, the research shows a positive link between strategy training and improvements in language ability (Oxford, 2002). Observations of teacher practices have shown that, in the past, teachers may have encouraged students to apply language learning strategies but rarely gave them explicit instruction in them (Blachowicz, 1987; Pressley et al., 1998). More recent

studies suggest that even now not much classroom time is spent on strategy instruction (Connor et al., 2014). Many experts advise teachers to provide formal instruction in vocabulary learning strategy use to their students, at least in the form of guessing from context clues and proper use of a dictionary (Hunt & Beglar, 2002). However, there is some criticism of strategy instruction, which suggests that self-regulation training may be a more important factor in improving language learning than training students in the use of discreet language learning strategies (Tseng et al., 2006). The preponderance of the evidence seems to suggest that it is better to provide learners explicit strategy training than not to do so, whether this is an end into and of itself or part of a larger program of self-regulatory training.

2.4 Studies of Vocabulary Learning Strategies

2.4.1 Vocabulary Learning Strategy Use in General

After establishing the taxonomy of vocabulary learning strategies described in Section 2.3.1 above, Schmitt (1997) describes a survey of Japanese students in which the listed strategies are rated for use and also for their perceived usefulness. Schmitt found that the learners surveyed used

bilingual dictionaries far more often than other strategies, with guessing from context clues and asking classmates or friends for help being the next most common discovery strategies. The participants reported bilingual dictionaries, asking teachers to paraphrase, and analyzing pictures or gestures to be the most helpful. This taxonomy survey has influenced several other studies of vocabulary learning among EFL students.

Park (2001) modified Schmitt's (1997) taxonomy of strategies for Korean students, translated the survey into Korean, and then compared the results of Korean EFL students in elementary, middle school, high school, and university with the Japanese EFL learners' results presented in Schmitt (1997). Park's modifications consisted of removing some of the strategies listed by Schmitt with the justification that such strategies would not be used by Korean students as the students were not instructed in their use in public school. Oddly, one discovery strategy Park excised was "Check for L1 cognate" because, as he argues, "Korean cognates are almost nonexistent given the orthographic divergence of Korean and English" (Park, 2001, p. 7). While it is certainly true that Korean and English do not share a language pedigree, there are, however, numerous borrowings in Korean from English of a recent vintage. While the perception among Koreans may well be that

these borrowed words are not part of the Korean language, their common usage and the divergence in usage compared to English native speakers for some of the borrowed words and phrases constitute an argument that these borrowed words are in fact now part of the Korean language. In any case, Park found that the five most used strategies among Korean learners were looking up words in bilingual dictionaries, guessing meaning from context, asking classmates or friends, using word lists, and asking a teacher. In the survey of helpfulness, using bilingual dictionaries and guessing from context were rated the most helpful.

In Wu (2005), Schmitt's (1997) taxonomy was again modified, translated, and given to Taiwanese students in middle school, high school and university. Wu added some strategies to the taxonomy in order to better fit the cultural situation in Taiwan. Wu's subjects rated using electronic dictionaries, using bilingual dictionaries, asking a classmate for the meaning, guessing from context, and using word lists as the most commonly used strategies. The most helpful strategies were using a bilingual dictionary, using an electronic dictionary, guessing from context, asking a classmate for help, and analyzing affixes and roots.

Based on the three studies discussed above, within the educational contexts of East Asian nations, bilingual dictionaries are the preferred method to discover the meaning of new words, and guessing from context clues and asking a peer or a teacher for assistance are also popular methods. None of these studies specified whether the participants were to consider multi-word items when rating each strategy, so it may be safe to assume that all of the participants were only considering single-word items when completing each survey. If the above is the baseline for single-word item meaning-discovery strategies, the question then turns to meaning-discovery strategy use for idioms. Current research has yet to investigate whether the meaning-discovery strategies used for single-word items and multi-word items are the same or different, or whether some meaning-discovery strategies may be more or less effective relative to the two types of vocabulary items.

2.4.2 Vocabulary Learning Strategy Use on Idioms

In an early study of idiom comprehension strategy use among ESL students in the United States, Cooper (1999) analyzed think-aloud protocols of subjects to investigate what strategies the subjects relied on when encountering idioms. Rather than the systematic method he was expecting,

Cooper found that his subjects approached each idiom in a trial-and-error fashion. Among the comprehension strategies that he observed, guessing from context clues was the most common approach, followed by analysis and discussion of the idiom, and by using the literal meaning of the idiom. These three strategies were not only the most commonly used, the strategies were all also the most successful strategies employed by the subjects of the study. Cooper suggests that ESL learners may use a heuristic approach to idioms rather than the methodical approach that the subjects might use with single-word items.

Lee (2003) built upon Cooper's (1999) study, but in the Korean EFL context utilizing a survey rather than think-aloud protocols. Lee had his subjects give the meanings and list strategies used to arrive at those meanings to two sets of idioms. Lower proficiency learners were given a set of idioms with mostly decomposable [compositional using Moon's (1997) terminology] idioms. Higher proficiency learners were presented with a list with mostly non-decomposable (non-compositional) idioms. Lee then had the subjects rate the strategies used in terms of usefulness. Both subject groups relied on analyzing literal meanings of the words, and the higher proficiency group was more likely to use context clues to guess at meanings than the lower

proficiency group. Lee also notes that many subjects used a heuristic, trial-and-error approach when presented with idioms to comprehend.

Angel (2007) studied the factors affecting both comprehension and retention of English idioms among Mexican EFL students. Rather than present the subjects with the idioms and allow them to list the strategies the subjects used, Angel instead rated each idiom on how easily different strategies might be employed to comprehend and retain each idiom. The factors she used to rate the idioms were: contextual guessability, familiarity with constituent vocabulary, similarity to L1 idioms, and the transparency of the idiom [compositionality in Moon's (1997) terms]. Of these factors, Angel (2007) reports that only familiarity with the constituent vocabulary played a significant role in comprehension and retention of idioms.

From the above studies, it would seem that there are some similarities and some differences in the preferred meaning-discovery strategies used when ESL/EFL students encounter unknown single-word items and unknown idioms. However, the differing methodologies of the studies make direct comparison difficult. Evidence is needed that can either support or refute the claim that vocabulary meaning-discovery strategies which work for discovering the meanings of single-word items are just as helpful to English

language learners when encountering unknown English idioms. It is also necessary to investigate the claims (Cooper, 1999; Lee, 2003) that English language learners use a heuristic, trial-and-error approach to their use of meaning-discovery strategies when confronted with idioms. Results from a preliminary study reported below (Laffey, 2016) would seem to dispute that learners approach unknown vocabulary heuristically and instead appear to be more methodical and consistent in their choices of strategy.

2.4.3 Questions Not Answered by Previous Research

If, as some research suggests (Abel, 2003; Ellis, 1997; Flores d'Arcais, 1993; Glucksberg, 1993; Moon, 1997), idioms are simply very long lexical units and are recognized as such by learners, then the way learners employ meaning-discovery strategies to guess at the meaning of a previously unknown idiom would likely be the same as the meaning-discovery strategies used when encountering an unknown single-word item. If, however, the idiom string is not noticed as a cohesive unit, then it may lead to confusion in the part of the learner, as the literal meanings of the constituent words will make no sense in the context. In such cases, learners may not employ the same meaning-discovery strategies that would be employed when

encountering an unknown single-word item. It is also possible that the meaning-discovery strategies employed when faced with an unknown idiom are different because there are differences in the ways idioms are processed within the mind. The first research question of this study was developed in order to examine the differences in meaning-discovery strategy use between single-word items and idioms.

Many studies investigate or report on the various ways that idioms can be classified with idiom type variables (Abel, 2003; Angel, 2007; Boers & Demecheleer, 2001; Flores d'Arcais, 1993; Gibbs, 1993; Glucksberg, 1993; Li & Sporleder, 2010; Liu, 2003; Moon, 1997; Simpson & Mendis, 2003). Do these distinctions matter in any real way to learners? Are certain meaning-discovery strategies more useful for certain types of idioms? Are certain types of idioms easier or harder to decode because of these distinctions? Again, these are questions that have not been well covered by previous research but have implications that may affect classroom practice and learner behaviors if answers can be found. The second research question of this study aims to shed light upon this issue.

While the above questions of which strategies learners apply to various types of unknown vocabulary is of interest to the researcher and hopefully

others, a more important question that until now has not been well addressed in the literature is that of the effectiveness of meaning-discovery strategy use when idioms are encountered. Cooper (1999) does provide some descriptive data on effectiveness in the form of percentages of strategies used to achieve a correct answer in the think-aloud protocols, but this is not elaborated upon. Lee (2003) reports mean correctness scores on an idiom comprehension task, but fails to perform any analysis connecting correctness with strategies used.

While investigating what strategies learners use is important from a psycholinguistic perspective, it may be of limited use from a pedagogical perspective if the question of effectiveness is not addressed. Because vocabulary learning strategies are a learned behavior (Grenfell & Macaro, 2007), it makes more sense to teach learners how and when certain strategies are shown to be effective and when they have been shown to be less effective. The third research question of this study intends to provide an initial step towards discovering the answers to these questions about the effectiveness of meaning-discovery strategy use.

III. Methodology

3.1 Preliminary Study

3.1.1 Methodology of the Preliminary Study

A preliminary study was undertaken in order to investigate meaning-discovery strategy use among intermediate level university students when presented with unknown English idioms, as reported in Laffey (2016). The research questions for the study were the following:

1. What strategies do students use to understand idioms?
2. Does strategy use differ depending on the decomposability of idioms?
3. Does strategy use differ depending on the difficulty of constituent vocabulary of idioms?
4. Does strategy use differ depending on students' grade year?

The subjects (n=79) were undergraduate students, mostly English or other liberal arts majors, divided into two groups by grade year. There were forty-six sophomores and thirty-three seniors who participated in the study.

Most of the subjects were Korean, although a small number were Chinese and one Peruvian.

In order to find out what strategies the participants use when they encounter unknown English idioms, two survey instruments were created. The first is the Idiom Comprehension Strategy Survey (ICSS), which presents sixteen idioms in context, along with six proposed strategies and an option to use other strategies the participants might think of on their own. The second instrument is the Strategy Usefulness Questionnaire (SUQ) which asks the subjects to rate the utility of the six proposed strategies, plus any other strategies they may have used when completing the ICSS.

The six proposed strategies on both instruments were the following:

1. analyzing the constituent vocabulary that make up the idiom (ACV)
2. using context clues to guess the meaning (CC)
3. comparing the idiom to a similar idiom in the L1 or L2 (CSI)
4. using outside resources such as a dictionary or asking friends (UOR)
5. reading the idiom aloud (RA)
6. imagining the literal meaning of the idiom (ILM)

The first four strategies were based on Schmitt's (1997) taxonomy of discovery strategies, while the final two were suggested by a group of Korean

graduate students who were asked to rate the idioms for familiarity and to pilot test the ICSS.

The idioms selected for inclusion on the ICSS were first compiled from lists of idioms used in three previous studies (Liu, 2003; Simpson and Mendis, 2003; Titone and Connine, 1994). After removing items in the previous studies that did not match the definition arrived at for both the preliminary study and the study being proposed here, two hundred idioms were presented to a panel of ten native English speaking volunteers, who rated them using a 5-point Likert-type scale from 1 Opaque (non-compositional) to 5 Transparent (compositional) in an online survey created using Google Forms software (https://www.google.com/forms/about/). The terms "transparent" and "opaque" were used under the assumption that the native speaker panel would better understand the concepts if presented in this way. Mean scores for all idioms were calculated, and only idioms with a mean score of 2 or less (Opaque) or 4 or higher (Transparent) were retained.

These idioms were then analyzed for the word frequency bands of their constituent words using the online Compleat Web VP (Cobb, n.d.). Any idioms containing a constituent word which was in Band 4 (the 4000 most common English words) or lower were put into lists of uncommon constituent

word idioms, while the remainder were put into lists of common constituent word idioms. These idioms were then presented to a panel of six native Korean speaking graduate students, who rated them for familiarity. Items in which two or more raters marked as familiar were discarded. At this point, there were not enough uncommon constituent word idioms, so more were collected from an online idiom dictionary (Idioms and Phrases, n.d.) and subjected to compositionality ratings by six native English speakers and familiarity judgment by the six native Korean speaking graduate students.

Finally, a list of sixteen idioms were selected for inclusion in the ICSS. There were four idioms in each of these categories: Common/Transparent, Common/Opaque, Uncommon/Transparent, and Uncommon/Opaque. Contexts consisting of one or two sentences for the idioms were written by the researcher, with input from a colleague on the appropriateness of each context. Having completed a final idiom list, the ICSS and SUQ instruments' instructions were translated into Korean with the help of another colleague.

The instruments were presented to the subjects in December of 2015. Because the subjects were all attending classes taught by the researcher, the instruments were presented during regular class hours, and the participants were compensated with snacks, drinks, and extra credit points for the class.

The students were given the option not to participate if they wished, but all agreed to do so. In order to check for possible differences in proficiency level, only the results provided by students in their second year and those in their fourth year were analyzed. A native Korean speaker assisted with scoring each answer given on the ICSS, with answers being marked as 0 Incorrect, 1 Partially Correct, or 2 Correct. Analysis was conducted using SPSS v21.0 software.

3.1.2 Results of the Preliminary Study

The number of times each participant used each strategy was tabulated, and the mean frequency of use was calculated as the strategy use score. Using context clues was the most frequently used strategy (mean 12.89, SD 3.77), followed by analysis of constituent vocabulary (mean 10.06, SD 4.96), imagining the literal meaning of the idiom (mean 8.16, SD 5.19), using outside resources such as a dictionary (mean 3.51, SD 4.43), reading the idiom aloud (mean 3.28, SD 4.94), and finally comparing the idiom to similar idioms in either Korean or English (mean 1.70, SD 2.51).

The SUQ asked students to rate each strategy on a Likert-type scale from 1 “Did not use” to 4 “Very Useful.” The subjects rated CC as the most

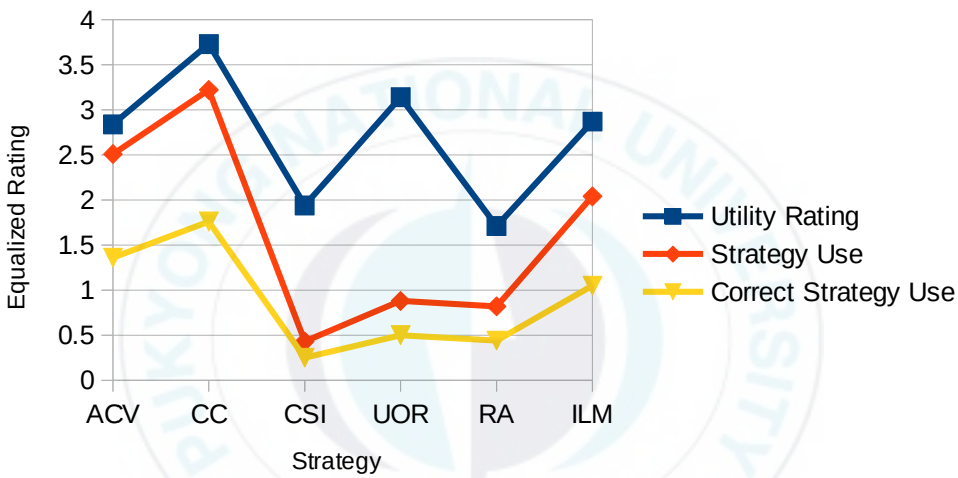
useful strategy (mean 3.73, SD 0.52), followed by UOR (mean 3.14, SD 0.89), ILM (mean 2.87, SD 0.71), ACV (mean 2.84, SD 0.74), CSI (mean 1.94, SD 0.81), and RA (mean 1.71, SD 0.89). The findings of the SUQ are presented in Figure 1 below, along with equalized overall strategy use scores for purposes of comparison.

Of interest is the differences in perception of utility and actual use for comparing similar idioms and using outside resources. The subjects rarely compared other idioms to the target idioms, but found the strategy to be somewhat useful. Using outside resources like dictionaries or asking a peer was used somewhat more often, but was considered a much more helpful strategy. CSI may not have been used often because the participants did not know many idioms with which to compare the targets. The relatively low frequency of use of the UOR strategy seems to be due to it being saved as a final move or last resort by many of the subjects.

In an effort to see which of the strategies were most successful, the strategy use frequencies were tabulated only for items which were rated correct or partially correct. The frequency means were slightly different from the overall results, but the ranking of frequencies was the same. From this, it was surmised that many of the subjects used the same strategies over and

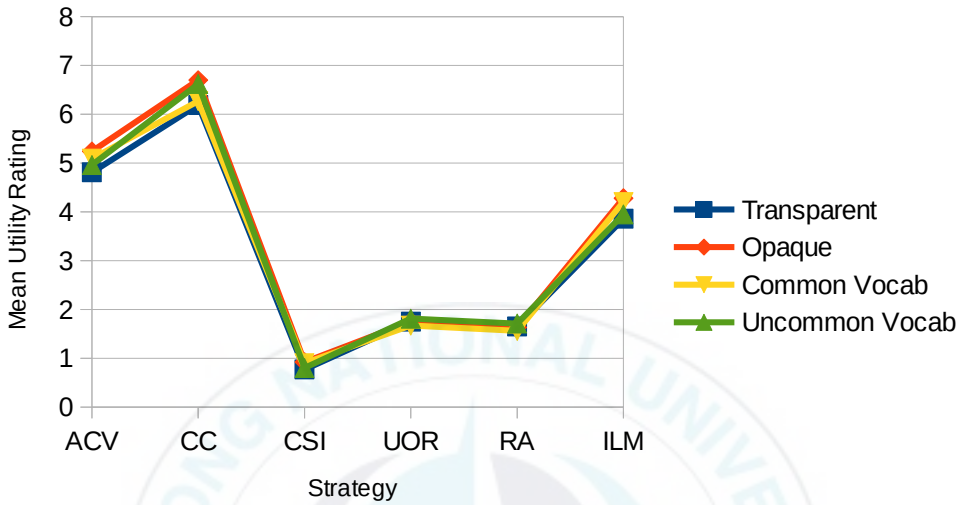
over, whether they seemed to be useful or not. Looking at the raw data, this does seem to be the case. Some subjects seemed to try a variety of strategies, but many used a pattern, or slight variations to a pattern, for most items.

Figure 1: Strategy Use and Utility Ratings



The mean uses of each strategy were calculated for each group of idioms as strategy use scores. Analysis was done comparing the frequencies of transparent and opaque idioms, the common constituent word idioms and uncommon constituent word idioms, and finally comparing the results of second-year and fourth-year students. The mean use scores for the four idiom variables are shown in Figure 2.

Figure 2: Strategy Use by Idiom Variables



As can be seen, the mean uses for each variable cluster, and nearly identical proportions of each strategy were used. Each pair of variables was compared for both overall strategy use, and also for strategy use on correct or partially correct responses using one-way MANOVA analysis, but none of the results indicated any significant differences between the groups. This suggests that learners tend to be more consistent with their strategy use, regardless of any intra-lexical factors of the idioms.

While the study resulted in some interesting findings related to which strategies learners use, it was not without its limitations. As with any study that

deals with self-report data from subjects, there is a risk of unreliability. Some subjects may not be properly motivated to provide accurate data, even though they volunteered to take part. Others may not have developed their metacognitive ability to the degree necessary to reflect on their own strategy use accurately. Another limitation that became apparent in the study was that the assumption of proficiency level by grade year may have been flawed. Some students may have entered university late due to military service or other reasons, or may have had additional years of English study compared to their peers in the same academic year. Others may have had experience overseas which raised their proficiency level higher than expected. A final limitation was with idiom selection. Two of the idioms selected for the study were too familiar to the subjects. In order to address these issues, the current study seeks to take each into account, and attempt to resolve or mitigate the effects of each limitation.

The preliminary study investigated meaning-discovery strategies on idioms only. While it provided useful data about idioms, it viewed them in isolation from other types of vocabulary. In order to forge a link between idioms and other vocabulary types, a new study is needed which investigates meaning-discovery strategy use on both single-word items and idioms

simultaneously. If, as Ellis (1995, 1997) suggests, idioms are acquired in the same way as any other chunk of language, then an investigation of how similarly or differently learners approach both single-word items and idioms provides a useful point of comparison. Because idioms are a low priority for language teachers and learners, but necessary for native-like competence (Simpson & Mendis, 2003), such an investigation could shed light on how learners can better approach idioms. The first research question of the current study was developed to try and answer these questions.

The preliminary study examined two intra-lexical factors of idioms, transparency and the frequency of constituent words. The results suggested that there may be some differences in how learners approach comprehending unknown idioms, but the statistical analysis showed no significant differences. While these two intra-lexical factors were retained for analysis of idioms in the current study, they do not apply to single-word items. For this reason, a third factor, that of word class, was added to the study as a means of further comparing the similarities and differences in the ways learners approach both types of vocabulary.

The final research question of the preliminary study, which looked at two different grade years for differences in meaning-discovery strategy use,

did not provide any valuable insights. It was decided that the proficiency levels of the second year and fourth year university students was too similar to show any differences. For practicality concerns, this question was dropped from the current study. While it may have been possible to compare university students to high school students, for example, the appropriateness of the contexts would need to be heavily scrutinized. Whether or not high school students had developed the metacognitive awareness to consider their meaning-discovery strategy use while performing a task in English was also a concern. For these reasons, it was decided that questions of variation in meaning-discovery strategy use dependent on proficiency level or experience should be dropped from the current study.

The preliminary study examined meaning-discovery strategy use overall, and also only on items in which the participants had successfully discovered the meanings of the idioms. This was an attempt to gauge the effectiveness of the participants' application of meaning-discovery strategies. In an attempt to better understand which meaning-discovery strategies are effective, and in which cases, the third research question for the current study was formalized. The current study will examine the effectiveness of meaning-

discovery strategies in depth, rather than touching on it tangentially to the investigation of general strategy use.

Both the preliminary study and the present study utilize a task-based survey instrument to gather quantitative data. The advantage of this method is that it simulates the conditions experienced when encountering unknown vocabulary while reading. One disadvantage of the instrument is that the participants must divide their attention between focusing on the comprehension task and monitoring and recording their meaning-discovery strategy use simultaneously. To triangulate the data in the present study, a think-aloud protocol instrument is added, utilizing an identical task in which the participants can focus their full attention on the comprehension task.

3.2 Research Questions

The research questions of this study are explained in Section 1.2. They are repeated here for ease of reference.

Q1. What differences exist in meaning-discovery strategy use between English single-word items and idioms for intermediate level learners?

Q2. Is meaning-discovery strategy use dependent on intra-lexical factors of English single-word items and idioms?

Q3. Are meaning-discovery strategies equally effective for comprehending English single-word items and idioms?

3.3 Participants

A total of eighty Korean undergraduate students at a national university took part in this study. Sixty-seven students attending Intermediate English Conversation I courses taught by the researcher in the spring of 2016 volunteered to take part in the study in return for extra credit points in their course. The average final grade for these participants, not counting any extra credit points, was an A (93.8%), showing that most were able to perform competently at an intermediate level of conversation. However, twenty-three students failed to complete either the first or second instrument correctly, and these results were removed from further analysis. An additional thirteen participants in a colleague's course were also asked to complete the survey in order to partially compensate for this.

After incorrect surveys were removed, there were a total of fifty-seven surveys left to be analyzed. Among these, there were twenty males and thirty-seven females. The survey results of two freshmen, thirty-seven sophomores, eleven juniors and seven seniors were analyzed. While the majority of participants were English Language and Literature majors (n=42), the major of the remainder were Other Humanities (n=1), Sciences (n=8), Engineering (n=2) and Other (n=4). Among these participants, seventeen had spent time living abroad for at least one month.

Table 1 Demographic Data

	1st Year		2nd Year		3rd Year		4th Year	
	Male	Female	Male	Female	Male	Female	Male	Female
English Major	0	1	11	24	2	2	0	2
Other Humanities Major	0	0	0	0	0	0	0	1
Sciences Major	0	0	0	2	4	0	2	0
Engineering Major	0	0	0	0	0	2	0	0
Other Majors	0	1	0	0	0	1	1	1
Experience Living Abroad	0	1	3	5	3	2	1	2

At the time the surveys were originally administered in the researcher's Intermediate English Conversation I courses, volunteers for the think-aloud protocols were requested. Thirteen students volunteered to take part in this

second round of research, and six were selected semi-randomly for inclusion in the think-aloud protocols. The subjects were first divided sex, male (n=7) and female (n=6), then sorted by relative level of ability compared to the class average, as judged by the researcher based on their grades and participation in the course, into higher, average, and lower levels. One male and one female participant from each ability level was then selected randomly from each group. As there was only one female volunteer judged to be below the class average, she was selected by default.

The two subjects selected as above average, HW and YY, both had experience living in English speaking countries, and participated in over 90% of all classes that semester, and tended to speak fluently and accurately. The class-average level students had no overseas experience, but participation in class activities was high, over 75%. The two subjects rated as below the class average had no overseas experience, and participated in class activities less often, at around 60% of all classes. The researcher also judged the utterances of the below-average participants to be less grammatical in general than the other four participants, but in terms of receptive ability all six seemed similar.

3.4 Quantitative Instruments

The Meaning Discovery Process Survey (MDPS) modified the Idiom Comprehension Strategy Survey of the preliminary study (Laffey, 2016) to include both single word vocabulary items and idiom vocabulary items. This instrument is designed to gather task-based self-report data about strategy use when encountering unknown English words and idioms. Data from the MDPS was used to find answers to all three research questions in the present study.

The basic format of the MDPS was identical to that of the ICSS of the preliminary study (Laffey, 2016). The survey instructed participants to read each item. If the highlighted word or phrase was known to them, they were to check the box stating so, and provide the meaning or a synonym in either English or Korean. If the highlighted vocabulary was unknown, they were instructed to decipher the meaning of the item. As they did, they were to consider what steps they were taking to solve this puzzle and record those steps. At the end, if the participants believed they had arrived at the meaning, they were to write it down. If they could not, the participants were instructed to write a question mark in the space. Six suggested strategies were provided on the MDPS, with a seventh option available for participants to add other strategies used. The researcher prepared two versions of the MDPS. Version

A had the single word items first and idioms second, while Version B reversed the order of the items. This was done to help control against ordering effects. In total, there were sixteen items on the MDPS. Of them, eight were English single word vocabulary items in context, and the remaining eight were English idioms in context.

To select the eight single word items used for the MDPS and the eight for the think-aloud protocols, first a list of fifty words was compiled from the online Wiktionary Project Gutenberg frequency list's 10,001 to 20,000 most frequent words (Wiktionary: Frequency Lists, 2006), a frequency-by-token count taken from the online public domain archive website (www.gutenberg.org). The researcher scanned through the list, noting down words at various frequency levels that seemed likely to be unfamiliar to the participants. Because most of the public domain works on Project Gutenberg are older works, and because the Wiktionary frequency list is based on tokens rather than word families, all of the words selected were also checked using the Compleat Web VP (Cobb, n.d.) to guarantee that they were likely to be unfamiliar to the participants. Only words which were in Band 8 or lower were retained. These words were then presented to a group of upper class (junior and senior) English majors at the same university, as well as two

graduate students at that university, to check them for familiarity. The majority of words were unfamiliar to all of these students.

Because part of speech has been shown to have some effect on the difficulty of comprehension of new words encountered in context (Rodgers, 1969), only adjectives and verbs were taken from the list. Rodgers (1969) found adjectives to be easier to guess than verbs. Eight two-syllable adjectives and eight two-syllable verbs were selected, with half used for the MDPS and the other half for use with the think-aloud protocols. Contexts were taken from concordances found in the COCA corpus (Davies, 2008), and simplified to include only words of Band 1 or 2 (Cobb, n.d.) aside from the target words. While there is no way to guarantee that the target words are equally difficult or that the contexts are equally easy to understand, the fact that all words in the contexts should be known to the participants and all or most of the target words should be unknown may mitigate this limitation of the study.

Table 2 MDPS Single Word Item Frequencies

Word	Part of Speech	Gutenberg Rank	VP Band	COCA Frequency
agape	adjective	19193	K-13	370
canter	verb	14241	K-11	320
buxom	adjective	15769	K-14	221
evince	verb	13748	K-11	151
jocose	adjective	18169	K-23	8

patter	verb	14024	K-10	503
randy	adjective	17218	K-12	203
quibble	verb	18362	K-10	455

To select the eight idioms to use on the MDPS and the eight idioms to use in the think-aloud protocols, first the list of sixteen idioms used in the preliminary study (Laffey, 2016) was consulted. In the preliminary study, two of the idioms had been too easily guessed. One, “stole the show” was too similar to the Korean borrowing 씬 스틸러 (scene stealer). The other, “takes it as gospel” may have been too familiar due to a large number of students being Christian, or at least familiar with Christianity. For these reasons, these two idioms were discarded. Next, because of the decision to use only adjectives or verbs as single word items, it was necessary to use an equal number of idioms that performed an adjectival function and a verbal function. As there were more verbal function idioms in the preliminary study and to replace the two discarded idioms, new idioms were included.

The process of selecting the new idioms to use was identical to that reported on in Laffey (2016). First, unselected idioms from the preliminary study preparation were examined for fitness. Additional idioms were found through an online dictionary search function (Idioms and Phrases, n.d.), and

likely candidates were put into a list. A panel of thirteen native speakers then rated each idiom as more transparent (the meaning of the idiom could be broken down into metaphorical meanings for the constituent words of the idiom, 5 points) or opaque (the meaning of the idiom was holistic, 1 point) on a five point Likert-type scale by means of a Google Forms document (https://docs.google.com/forms/u/0/). Idioms with an average rating of 4 or higher were considered transparent, while those with a score of 2 or lower were considered opaque.

Each idiom's constituent vocabulary words were analyzed using the online Compleat Web VP vocabulary profiler (Cobb, n.d.). The frequency band of each word making up each idiom was noted. Idioms with at least one constituent word of Band 5 or lower were considered to have unfamiliar constituent vocabulary, while those with only words of Band 2 or higher were considered to have familiar constituent vocabulary.

After selecting the idioms, contexts were selected. For idioms taken from the preliminary study, the contexts were unchanged (Laffey, 2016). For the idioms which were added for this study, contexts were taken from the source online dictionary (Idioms and Phrases, n.d.) and modified to simplify

all vocabulary besides the target idioms to be from vocabulary Band 1 or 2, as referenced using the Compleat Web VP vocabulary profiler (Cobb, n.d.).

Table 3 MDPS Idioms by Type

Idiom	Function	Transparency Mean Score*	Constituent Vocabulary	Constituent Vocabulary Word Band				
call the shots	verbal	T 4.11	common	1	1	1		
below the belt	adjectival	O 1.78	common	1	1	2		
went off on a tangent	verbal	T 4.83	uncommon	1	1	1	1	9
is the cat's whiskers	adjectival	O 1.00	uncommon	1	1	1	8	
on the flip side	adjectival	T 4.22	common	1	1	2	1	
throw the book at	verbal	O 1.78	common	1	1	1	1	
stuck in a rut	adjectival	T 4.30	uncommon	1	1	1	8	
sweeten the kitty	verbal	O 1.67	uncommon	1	1	11		

Notes: T = transparent, O = opaque

The MDPS includes six numbered meaning-discovery strategies, with a seventh option of listing other strategies the participants may think to use on their own. The six strategies are:

1. Analyze the constituent parts of the vocabulary. (AOV)
2. Use context clues to guess the meaning. (CC)
3. Compare the target to a similar known vocabulary item. (CSV)
4. Find the vocabulary in a dictionary. (UD)
5. Ask a peer for help. (HFP)

6. Imagine the literal meaning of the expression. (ILM)
7. Other strategies (please write it down).

The first five strategies were selected from Schmitt's (1997) taxonomy of meaning-discovery strategies, although some of Schmitt's strategies have been consolidated. In the preliminary study, the fourth and fifth strategies had been combined into one, "Using outside resources such as a dictionary or other person." It was separated into its individual components for this study in order to better understand the strategy use of the participants. The sixth suggested strategy was taken from the preliminary study (Laffey, 2016). It had been suggested by Korean graduate students while preparing that study and was the third most used strategy by the participants of the preliminary study. The fifth strategy in the preliminary study, also suggested by the same Korean graduate students, "Read the idiom aloud" was dropped as a suggestion due to its very low levels of both use and perceived helpfulness (Laffey, 2016).

Schmitt (1997) lists several other meaning-discovery strategies: "Check for L1 cognates," "Analyze any available pictures or gestures," "Word lists," "Flash cards," and "Discover new meaning through group work activity" (p. 207). The first was modified into the third suggested strategy, as there are no, or very few, Korean-English cognates, although there are many English

loanwords in Korean that may be familiar to the participants. The target vocabulary could also seem similar to other English words known by the participants. The other four strategies were not feasible for the task at hand, so were left off of the list.

The MDPS was prepared in English first and then translated into Korean. The ICSS of the preliminary study (Laffey, 2016) was used as a guide, although some changes had to be made due to the inclusion of single-word items in the MDPS. The researcher translated the instructions and items into Korean. Two native Korean speaking colleagues then checked the translations for accuracy and clarity. A full copy of the MDPS (version A) in Korean can be found in Appendix A.

SPSS v21.0 was used to test for reliability of the MDPS. Cronbach's alpha for the correctness of responses to the 16 items on the MDPS was .89. Split-half reliability analysis on the correctness of responses to the 16 items resulted in a Spearman-Brown coefficient of .87 and a Guttman split-half coefficient of .86. This appears to be a reasonable level of reliability among the items on the survey.

Considering the construct validity of the instrument, the purpose of the MDPS is to record strategies used by the participants in order to discover the

meaning of a previously unknown English word or idiom. Assuming Anderson's (2003) distinction of a strategy as a consciously activated learning action versus a skill which is an unconsciously activated learning action, the MDPS can only record strategy use, as by default a skill is used unconsciously and the learner would not be aware of having utilized that learning action. While the MDPS cannot be expected to accurately record every instance of strategy use by the learners due to the speed at which thought occurs, the major actions consciously taken by the participants are likely to be recorded. Because the MDPS requires the participants to consider their strategy use while performing the task, the assumption that participants are more likely to respond with their actual strategy use than a *post hoc* assessment of strategy use [such as Schmitt's (1997) taxonomy use survey] seems reasonable.

3.5 Qualitative Instruments

The task used in the think-aloud protocol was developed in a similar manner to the MDPS task. While collecting idioms and single word items for the MDPS, an equivalent list was prepared for use with the think-aloud protocols. As with the items on the MDPS, contexts for items used in the

preliminary study were retained, while contexts for all new idioms and all single word items were taken from the COCA corpus (Davies, 2008) and simplified if necessary so that all non-target words were of Band 1 or 2 as rated by the Compleat Web VP (Cobb, n.d.). All of the think-aloud items in context can be found in Appendix B. Each idiom used in the think-aloud protocol was rated by its function, transparency, and commonness of its constituent vocabulary, as shown in Table 4.

Table 4 Think-Aloud Idioms by Type

Idiom	Function	Transparency Mean Score*	Constituent Vocabulary	Constituent Vocabulary Word Band				
lose my grip	verbal	T 4.00	common	1	1	3		
with flying colors	adjectival	O 1.78	common	1	1	1		
nurse a grudge	verbal	T 4.50	uncommon	1	1	6		
cut the mustard	adjectival	O 1.11	uncommon	1	1	6		
behind the times	adjectival	T 4.33	common	1	1	1		
take you to the cleaners	verbal	O 1.56	common	1	1	1	1	1
at her fingertips	adjectival	T 4.22	uncommon	1	1	OL*		
rake him over the coals	verbal	O 1.50	uncommon	5	1	1	1	2

Note: T = transparent, O = opaque, OL = off list, not in the database

The single word items used were also tagged by their part of speech, and three ratings of their commonness are taken from the Wiktionary.org Project Gutenberg Word Frequency List (Wiktionary: Frequency lists, 2006), the

frequency band of The Compleat Web VP (Cobb, n.d.), and the frequency within the COCA corpus (Davies, 2008), as shown in Table 5, below.

Table 5 Think-Aloud Single Word Item Frequencies

Word	Part of Speech	Gutenberg Rank	VP Band	COCA Frequency
burly	adjective	11820	K-9	1148
cudgel	verb	13990	K-15	110
heinous	adjective	14212	K-11	881
imbibe	verb	18327	K-13	96
nascent	adjective	17803	K-10	1241
presage	verb	15502	K-11	146
titter	verb	18150	K-12	78
torpid	adjective	14639	K-16	105

3.6 Procedures for Gathering and Analyzing Data

3.6.1 Procedures for Gathering Quantitative Data

The MDPS was administered to undergraduate students attending five Intermediate English Conversation I courses at a local university in Busan, South Korea. This took place in the final class period of the 2016 Spring semester for each course. The participants came on a voluntary basis and were awarded extra credit for the course in compensation for participating. Students registered for the course who chose not to participate were allowed

not to attend the class without it affecting their attendance scores. A total of sixty-seven students volunteered to serve as participants in this study.

A large number of improperly completed surveys needed to be discarded so additional volunteers taking a summer course taught by a colleague were asked to participate in the study. Thirteen out of fourteen class members took part in the study. The procedures described below were identical in all six sessions in which the surveys were administered.

Instructions were provided in Korean on the MDPS and were explained in English by the researcher prior to distributing the survey packets. Participants were asked to read each item. If the highlighted vocabulary was familiar to them, they were to mark the box stating this and provide the meaning in English or Korean. If the vocabulary was unfamiliar, they were asked to try to guess the meaning, and record the steps they took to arrive at that guess, using the list of strategies provided, or other strategies they may have thought to use. Finally, they were asked to write the meaning of the vocabulary if they guessed the meaning, or a question mark if they could not. Two example sentences were written on the white board, and the researcher explained how to complete the MDPS using these two examples. The sentences were:

- Henry was a **wallflower**. He never seemed to have fun at parties.
- They managed to survive in the desert **by dint of** their determination and hard work.

The researcher administered the surveys, walking through answering both example questions and demonstrating several examples of meaning-discovery strategy use. The instructions for the MDPS were repeated one more time after that.

The survey packets were then distributed, with half of each group getting Packet A and half getting Packet B (see Appendix A for the MDPS Packet A). The ordering of items on the MDPS was reversed in Packet B, with the idiom items appearing first followed by the single-word items. After requesting the participants to answer the demographic questions on the MDPS, they were instructed to start the survey. Participants were allowed to leave when they had completed the survey. Some participants finished in under ten minutes, and no participant took longer than thirty-five minutes to complete the survey.

3.6.2 Procedures for Gathering Qualitative Data

Six participants took part in the think-aloud protocol, which was carried out over two days, one in late June and the other in early July, 2016. The selection process for the participants is described above in Section 3.3 above. Three sessions were conducted on the first day, and three on the last day. Each session took approximately thirty minutes, with about ten minutes for the preliminary interview and practice, and twenty minutes for the main activity and follow-up interview. A native Korean speaking colleague assisted with the process, conducting the final interviews for five of the six participants in Korean and helping to explain the procedure if the participant did not understand what to do. The participants were encouraged to speak primarily in Korean or to mix English and Korean if their thoughts included some English (White et al., 2007). One participant used primarily English during the think-aloud session, so the researcher conducted the follow-up interview in English with that participant. Each item in context was then placed on a separate card which could be handed to the participants one-by-one during the think-aloud protocol session.

As suggested by Fonteyn, Kuipers, and Grobe (1993), the think-aloud session plan was devised to consist of three parts. In the first part, the purpose of the session was explained, along with how to proceed during the session.

Several questions were then asked to confirm some demographic data about each subject, including their age, grade year, major, and experience living abroad. Next, two logic puzzles were presented as examples of how to proceed and vocalize thoughts. The researcher read the first puzzle and then vocalized thoughts to solve the puzzle. Next, the participant was given the second puzzle to read and practice vocalizing their thoughts. It was stressed to the participants that they did not need to find the solution to the puzzle, only to practice speaking aloud their inner monologue.

Once the participant felt comfortable with the procedure, the second part of the session began. Both audio and video recordings were made. One by one, the researcher handed the cards containing the items to the participant. The participant then read each card and said aloud as much of their thinking as they could for each item until they believed they had found the meaning, or else decided that they could not decipher the meaning of the target vocabulary. Then the next card would be handed to them, and they would repeat the procedure until they had attempted to answer all sixteen items.

The recording was continued during the third section of the session, where the participants were asked several questions about the items they had

tried to comprehend and their thought processes and strategies used. This was done immediately after the main session activities in order to keep the retrospective reports as close to the event as possible (Charters, 2003). The questions were:

1. How successful do you think you were at finding the meanings of the words and phrases?
2. Were there any words/phrases that were very easy for you to guess? Which ones?
3. Were there any words/phrases that were very hard for you to guess? Which ones?
4. Can you remember anything you did to guess the answers that worked well?
5. Can you remember anything you did to guess the answers that didn't work well?
6. You seem to have had trouble with (this one). What was so hard about it?

The final question was only asked in instances where the participant had obviously struggled with an item, but did not mention the difficulty when responding to the previous questions.

After the sessions were completed, the recordings were transcribed with the help of a native Korean speaking assistant. After each audio file was transcribed, the video recording of each session was viewed, and notes on body language and facial expressions were added to each transcript (Charters, 2003; White et al., 2007), although this proved less helpful than expected. The participants made few gestures while performing the think-aloud task and their verbal cues were sufficient to interpret their strategy use.

3.6.3 Procedures for Analyzing the Data

A native Korean speaker assisted in evaluating the correctness of answers on the MDPS. Answers were rated as Correct (2 points), Partially Correct (1 point) and Incorrect (0 points). An answer that missed some nuance of the meaning of the target vocabulary but was still considered close enough in meaning to allow a reasonable, if incomplete, understanding of the passage was considered partially correct. Two examples of items that were marked as partially correct are given here. First, for the idiom "is the cat's whiskers," one participant answered "매력적이다" (attractive). Second, for the single word item "quibble," one participant answered "fight." In both instances, the answer provided lacks the nuance of the correct answer

("great/wonderful" and "argue about details," respectively) but is close in meaning. Substituting the answer provided for each would still allow a reader to get the gist of the sentence, if not the complete picture. In every case where a partially correct score was awarded, both the researcher and the Korean rater were in agreement about the scoring.

Once all of the MDPS items had been rated as described above, all of the data were entered into computer spreadsheets for analysis. Data entry of the MDPS survey included all demographic data for each participant, whether an item was previously known or not, the item correctness score, and each meaning-discovery strategy move taken on each item. From this, additional files listing strategy use scores by each subject across all items and strategy use scores on each item across all subjects were created.

The think-aloud transcripts were tagged for instances of meaning-discovery based on the MDPS strategy list, as well as whether the meaning was successfully discovered or not. Instances of coping and avoidance strategies were detected in the data, and were coded. A native Korean speaking colleague was also asked to tag the data. Comparing the level of inter-coder agreement, 74.24% of all sections were tagged identically. Discrepancies in tagging were resolved through discussion with the colleague.

The six think-aloud protocol participants were then asked to look over the tagged transcripts and make notes in places where they believed the tagging may be incorrect (Charters, 2003). Taking this participant feedback into consideration, a final tagged version was then prepared and analyzed.

The number of times each meaning discovery, coping or avoidance strategy was detected for each participant was tallied, and means calculated. Excerpts which could be used to illustrate strategy use were also selected. The post-session interviews were also flagged for passages that might help illustrate how the participants approached unknown vocabulary, and the effectiveness of various strategies.

The six participants have been assigned letter codes for identification purposes: DH, DY, HW, HY, JS, and YY. Among the participants, DH, HW, and JS are male, while DY, HY, and YY are female. HY and JS were considered by the researcher to perform below the class average, DH and DY at the class average, and HW and YY above the class average. YY did the think-aloud protocol nearly entirely in English, while the others mostly spoke in Korean. The transcripts were analyzed as they were, with no translation into English, in order to better represent the thought processes of the

participants. Excerpts presented below have been translated into English for convenience to readers.

Two methods were used to answer the first research question in this study, that of what meaning-discovery strategies learners use to comprehend single-word items and idioms. The first way was to tabulate strategy use scores, or the mean number of times each strategy was used by participants on the MDPS. An overall strategy use score was determined, along with strategy use scores specifically for single-word items and idiom items. Strategy use scores were used to rank the level of use of each strategy. The single-word item and idiom strategy use scores were also compared by one-way MANOVA analysis.

Next, data from the think-aloud protocols were analyzed to help answer the first research question. Each instance of a meaning-discovery strategy code was tabulated to find a strategy use score, which was used to rank the strategies by use. Specific examples of each strategy being used were then selected in order to better illustrate the process of meaning-discovery strategy use. Examples of consistent meaning-discovery strategy use were also provided based on the raw MDPS data.

To answer the second research question, that of the effect of intra-lexical factors upon meaning-discovery strategy use, strategy use scores were calculated from the MDPS data for each intra-lexical factor: word class/grammatical function, transparency of idioms, and commonality of constituent words within idioms. The strategy use scores (means) of each strategy for each pair were then analyzed by one-way MANOVA analysis.

The data were then reanalyzed in a different way. The number of times each strategy was used on any particular item on the MDPS was tabulated as an Item Strategy Count. These item strategy counts were then analyzed by chi square tests for single-word items and idioms overall, as well as for the various intra-lexical factors.

In order to answer the third research question, that of the effectiveness of meaning-discovery strategies, it was first necessary to calculate the percentage of correct answers each participant provided overall, for single-word items only, and for idioms only. The mean percentages were taken as percent correct scores, which were then correlated with strategy use scores. As there were several strategy use scores that correlated with the percent correct scores, multiple regression analysis was used to examine the overall results, and those for single-word items and idioms specifically. In order to

examine the effectiveness of consistent meaning-discovery strategy use, the Percent Correct scores for mostly consistent, somewhat consistent, and inconsistent strategy users were compared with a one-way ANOVA. All statistical analysis was performed using SPSS v.21.0 software with a preset *p* level of 0.05.

The think-aloud protocol data were examined for effectiveness of meaning-discovery strategy use. First, the percent of correct responses for each participant was calculated and compared to the overall percent correct scores. Then, examples taken from the post-session interviews were analyzed to illustrate which strategies the participants found helpful and which they found did not help them to discover the meanings of the unknown vocabulary.

IV. Results

4.1 Differences in Meaning-Discovery Strategy Use Between Single-Word Items and Idioms

The first research question of this study asks if there are any differences between the approach learners take to comprehending an unknown single-word item and an unknown idiom. In order to answer this question, quantitative data from the MDPS are examined together with qualitative data from the think-aloud protocols.

4.1.1 Data from the Meaning Discovery Process Survey

In order to examine differences in meaning-discovery strategy use between single-word items and idioms from the MDPS data, the number of times each participant in the study used each strategy, regardless of the order in which it was used, was totaled, and the mean value of uses across subjects was taken as a strategy use score, as shown in Table 6. Using context clues

(CC mean 13.58) was the most used strategy overall, followed by using dictionaries (UD mean 8.70), analysis of the vocabulary (AOV mean 5.54), imagining the literal meaning (ILM mean 3.93), comparing similar vocabulary (CSV mean 2.81), and help from peers (HFP mean 1.25), not counting the miniscule number of other strategies employed (Other mean 0.07). Comparison of the confidence intervals for the means show that the levels of use for CC, UD and HFP were all statistically distinct from other strategies, while AOV and ILM overlap, as well as ILM and CSV, as shown in Figure 3 below.

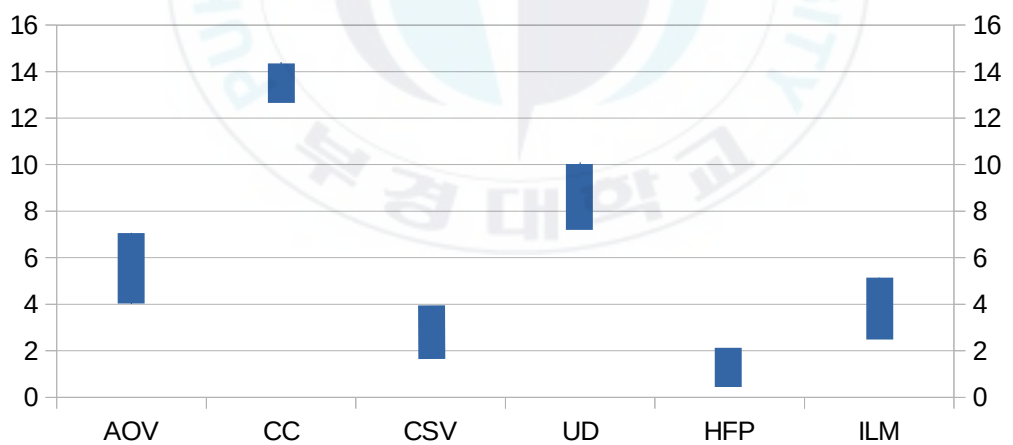
Table 6 Overall Strategy Use Scores

Strategy n=57	Mean	SE	SD	95% Confidence Intervals of Means	
Using context clues (CC)	13.58	.41	3.12	12.75	14.41
Using a dictionary (UD)	8.70	.70	5.29	7.30	10.10
Analysis of the vocabulary (AOV)	5.54	.76	5.76	4.01	7.07
Imagining the literal meaning (ILM)	3.93	.60	4.56	2.72	5.14
Comparing similar vocabulary (CSV)	2.81	.56	4.22	1.69	3.93
Help from peers (HFP)	1.25	.39	2.96	0.47	2.03
Other	.07	.05	.37	-0.03	0.17

These results are slightly different from those found in the preliminary study (Laffey, 2016). In particular, UD ranks much higher in this study. In

Laffey (2016), using outside resources such as a dictionary or peer ranked fourth overall for use, as this strategy seems to have been reserved as a final "last resort" option to discovering the meaning of an unknown idiom. In this study, dictionary use ranks much higher than in the preliminary study, while asking others ranks at the bottom. Other than this difference, the results align with the rankings reported in the preliminary study (Laffey, 2016). These overall results form a baseline for comparing the strategy use scores of single-word items and idioms.

Figure 3: Overall Strategy Use Confidence Intervals



Before moving on to the comparison, it should be noted that meaning-discovery strategy choice 7, Other, was used only four times, twice each by

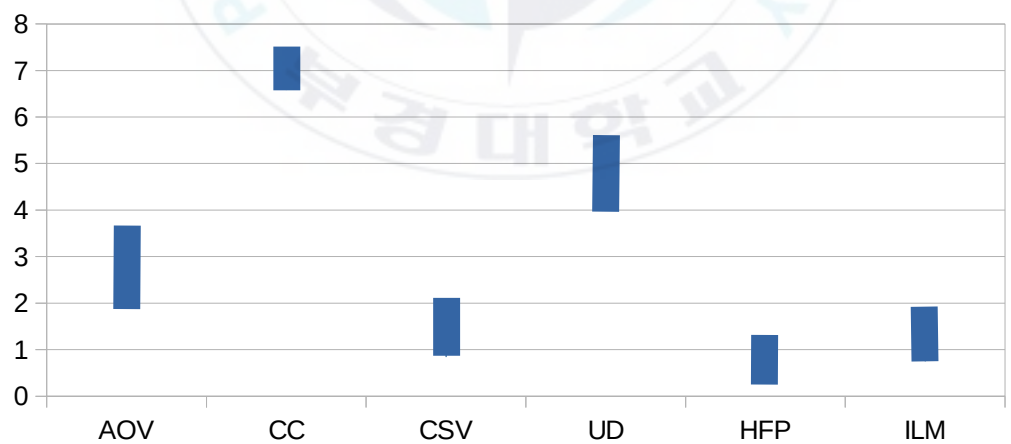
two participants. Participant #17 used Other on the idioms "stuck in a rut" and "sweeten the kitty." In both instances, the other meaning-discovery strategy was listed as "Guess." Participant #40 used Other on the single-word items "jocose" and "evince." Both times, the other meaning-discovery strategy was listed as "Read out loud to see if it sounds familiar." This strategy was one of the six used in the preliminary study (Laffey, 2016) but was dropped for the current study because of its low level of use in that study. Because only two participants used other options besides those given and only twice each, the Other option will be retained for all statistical analysis from this point forward, but only mentioned if it becomes relevant for some reason.

Table 7 Strategy Use Scores for Single-Word Items

Strategy n=57	Mean	SE	SD	95% Confidence Intervals of Means	
Using context clues (CC)	7.04	.23	1.72	6.58	7.50
Using a dictionary (UD)	4.82	.38	2.85	4.06	5.58
Analysis of the vocabulary (AOV)	2.79	.43	3.22	1.94	3.64
Comparing similar vocabulary (CSV)	1.47	.32	2.38	0.84	2.10
Imagining the literal meaning (ILM)	1.32	.29	2.16	0.75	1.89
Help from peers (HFP)	.79	.24	1.84	0.30	1.28
Other	.04	.04	.27	-0.03	0.11

Isolating strategy use scores for only single-word items shows a slightly different ranking of strategy use (see Table 7 above) compared to the total results. CSV (mean 1.47) ranks fourth and ILM (mean 1.32) ranks fifth. Other than the transposition of these two strategies, the rankings remain the same. Examining the confidence intervals of the means, CC (mean 7.04) and UD (mean 4.82) do not overlap with any other strategies. AOV (mean 2.79) overlaps with CSV. The confidence intervals of CSV, ILM and HFP (mean 0.79) all overlap. For single-word items, context clues and dictionaries are obviously preferred to other strategies.

Figure 4 SWI Strategy Use Confidence Intervals



The results for idioms, seen in Table 8, show identical ranking to the overall results. Examining the confidence intervals of the means, only CC (mean 6.56) remains distinct from all other strategies. UD (mean 3.91) overlaps confidence intervals with AOV (mean 2.75) and ILM (mean 2.65). AOV overlaps with UD, ILM and CSV (mean 1.32). ILM overlaps with UD, AOV, and CSV. CSV overlaps with AOV, ILM, and HFP. HFP (mean 0.46) overlaps with CSV. For idioms, using context clues is clearly preferred, while use of dictionaries is often used, but not necessarily more than analysis of the vocabulary or imagining the literal meaning of the idiom.

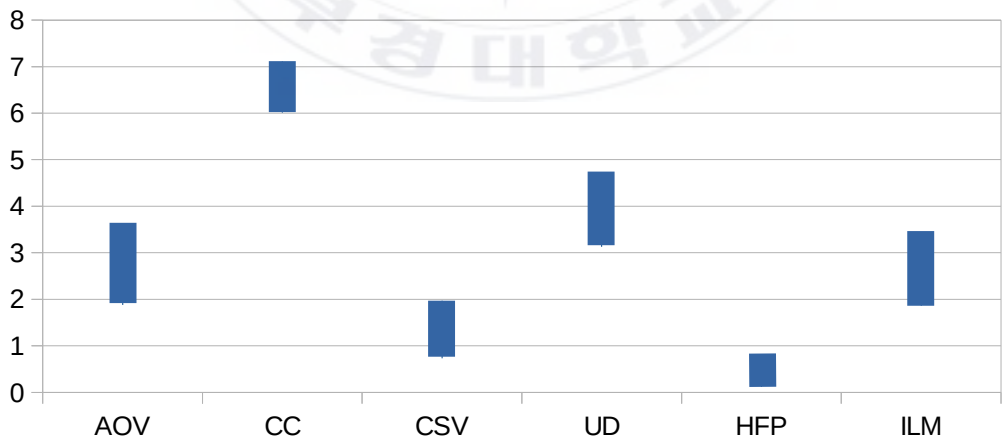
Table 8 Strategy Use Scores for Idioms

Strategy n=57	Mean	SE	SD	95% Confidence Intervals of Means	
Using context clues (CC)	6.56	.27	2.06	6.01	7.11
Using a dictionary (UD)	3.91	.39	2.95	3.13	4.69
Analysis of the vocabulary (AOV)	2.75	.43	3.28	1.88	3.62
Imagining the literal meaning (ILM)	2.65	.40	3.00	1.86	3.44
Comparing similar vocabulary (CSV)	1.35	.32	2.36	0.73	1.97
Help from peers (HFP)	.46	.17	1.30	0.12	0.80
Other	.04	.04	.27	-0.03	0.11

A one-way MANOVA was conducted comparing the mean values of single-word items and idioms for each of the six strategies, with vocabulary

type (single-word item or idiom) as the independent variable and strategy use scores as the dependent variables. The analysis shows no significant differences in the strategy use scores (mean values) between single-word items and idioms, F (7, 106) = 1.677, p=0.123; Wilks' lambda = 0.900. This would seem to indicate that meaning-discovery strategy use is not changed depending on whether the unknown vocabulary is a single-word item or an idiom, at least for intermediate level EFL learners. The overall choice of strategy and the relative use of each type of strategy is much the same regardless of the type of vocabulary the participants were attempting to comprehend.

Figure 5 Idiom Strategy Use Confidence Intervals



4.1.2 Data from the Think-Aloud Protocols

The researcher tagged the six think-aloud transcripts, initially looking for four of the six suggested strategies used in the MDPS: analysis of the vocabulary, using context clues, comparing to similar vocabulary, and imagining the literal meaning. While dictionary look ups and asking peers for help were not explicitly forbidden during the think-aloud protocol sessions, it also was not explicitly stated that their use was allowed. None of the participants attempted to look up the target words or idioms in dictionaries during the session, so this strategy was omitted from the tagging. As the think-aloud sessions were done in private, asking peers for help was not a viable option except via phone or text message. Again, no participants in the think-aloud sessions attempted this, so this strategy also was not tagged.

While tagging strategy use, several coping strategies were also detected and were coded in addition to the meaning-discovery strategies. These were actions the participants used to complete the task but are not directly vocabulary meaning-discovery strategies (Ellis & Barkhuizen, 2005). The coping strategies observed included: reading the English sentences aloud, translating the sentences aloud while reading, translating the sentences after a complete reading of the sentences, re-reading or repeating sections of the

sentences, and avoidance. The translation moves and repeating appear to be related to using context clues. When the subjects translated the passage or portions of it, it appears to have been done to confirm comprehension of the context. In this way, it is more of an establishing move than a direct attempt to comprehend the unknown word or idiom in the passage. Re-reading or repeating may also have served a similar function, establishing or reinforcing the participant's understanding of the context so that it could be used to analyze the context clues, the part of speech, etc.

The strategy use totals for single-word items are presented in Table 17 below, along with a mean strategy use score for each strategy. The small number of participants and the descriptive function of the think-aloud data does not require statistical means for analysis, but they are presented as strategy use scores for comparison purposes. The total number of uses is sometimes more than 8 (the number of test items of each type) because repeated attempts to use various strategies were observed.

As can be seen, the use of context clues was by far the most common strategy. An interesting pattern can be seen in the data. The two participants ranked as relatively lower proficiency than the others, HY and JS, relied heavily on context clues, with JS using context clues exclusively. Similarly, the

two participants rated higher level than their peers, HW and YY, also relied nearly exclusively on the use of context clues. It is only the two participants rated as at the class average, DH and DY that used more of a variety of strategies.

Table 9 Think-Aloud Strategy Use for Single-Word Items

Strategy	Subject						Strategy
	HY	JS	DH	DY	HW	YY*	Use Score
Using Context Clues	13	13	17	16	16	13	14.67
Analysis of the Vocabulary	0	0	5	7	2	1	2.50
Comparing Similar Vocabulary	2	0	3	0	0	3	1.33
Imagining the Literal Meaning	1	0	0	4	0	1	1.00
Translation While Reading	0	2	8	0	1	0	1.67
Translation After Reading	8	4	0	9	5	0	4.33
Re-Reading/Repeating	6	4	8	5	13	7	7.16
Avoidance	4	0	3	0	2	1	N.A.

*used primarily English in the think-aloud session

Table 10 presents the strategy use totals for idiom items on the think-aloud protocols. Again, using context clues was by far the preferred method of discovering the meanings of the unknown idioms. Overall, fewer moves were needed to find the meanings of unknown idioms compared to single-word items and most of the participants used a greater variety of strategies. The lower total number of moves needed for idioms suggests they were easier

to comprehend than the single-word items. This may be due to differences in the two vocabulary types, but could also be due to differences in the contexts in which the items were presented or the greater familiarity of the constituent words of the idioms.

Table 10 Think-Aloud Strategy Use for Idioms

Strategy	Subject						Strategy
	HY	JS	DH	DY	HW	YY*	Use Score
Using Context Clues	12	6	16	9	13	13	11.50
Analysis of the Vocabulary	0	0	2	1	3	5	1.83
Imagining the Literal Meaning	4	3	0	2	1	1	1.83
Comparing Similar Vocabulary	2	1	4	0	0	2	1.50
Translation While Reading	0	0	7	0	1	0	1.33
Translation After Reading	7	5	1	8	2	0	3.83
Re-Reading/Repeating	10	5	10	5	11	7	8.00
Avoidance	2	0	2	2	1	1	N.A.

Note: YY used primarily English in the think-aloud session

While context clues were used most often for both vocabulary types, the participants had some differences in how they applied other strategies. JS, in particular, only used CC to guess the meanings of single-word items, but had to supplement CC with CSV and ILM for some of the idioms. In contrast, DY relied primarily on CC for idioms, while she used more variety with single-word items. DH and DY, the two average level participants, both tended to

supplement CC with AOV when examining single-word items, but not with idioms. HW and YY, the above-average participants, had the opposite tendency, using AOV with idioms more often than with single-word items. DY was the only participant to often use ILM with single-word items, but HY and JS both used it more with idioms.

Several coping strategies were detected in the transcripts. Most of the participants began by reading the contexts and then translating them into English after. DH primarily translated section by section while reading. It was also common for the participants to go back and repeat either the target vocabulary or sections of the context. The translation steps show that the participants needed to be able to think about the meaning in Korean in order to guess at the meanings of the unknown vocabulary. Re-reading and repetition of the target vocabulary or other sections of the passages may have been used to double check comprehension of context, to sound out the unfamiliar vocabulary, or simply as filler while trying to decide what to do next. Finally, instances of avoidance, which are listed in Tables 17 and 18 above, were instances where the participant could not come up with a meaning for the unknown vocabulary and passed on to the next item.

Examples of the use of each meaning-discovery strategy are given below. Underlined portions have been translated from Korean.

this most heinous act *um.. now I know* heinous is an adjective modifying act so most heinous... (DY Transcript, strategy: AOV, item: heinous)

well, I think unhappiness, since uh, when, when people think, [clears throat] excuse me. When people think, uh, something unhappiness, and kind of predict something, then there are gonna be always troubles to come. (YY Transcript, strategy: CC, item: presage)

therefore go to go to imbeeb alcohol oh, no imbibe... does it mean exotic? (DH Transcript, strategy: CSV, item: imbibe)

So, those people don't take your car to that shop to get it fixed I need to make it clean. Really!... (HY Transcript, strategy: ILM, item: take you to the cleaners)

Examples of the use of each coping strategy are given below.

Politicians of all types all the politicians all types joined to…cudgel the Mexican president for his friendly relationship oh, the Mexican president [unclear] ah, friendly relationship a good relationship with United States America and Mexico are close (DH Transcript, strategy: translate while reading, item: cudgel)

Steve has been nursing a grudge…a grudge against Tony since Tony refused to help two years ago. Because two years ago Tony refused to help, oh…Steve didn't complain about it. (JS Transcript, strategy: translate after reading, item: nursing a grudge)

Steve made Tony nursing a grudge… ah, nurse. grudge grudge grudge, grudge, grudge grudge grudge grudge? grudge? has been nursing a grudge against Tony. (HW Transcript, strategy: re-reading or repeating, item: nursing a grudge)

job interview in relation to with flying colors and was hired on the spot I don't understand this word...on the spot... pass! (HY Transcript, strategy: avoidance, item: with flying colors)

The think aloud results provide insight into the approaches learners use when faced with unknown vocabulary items, but also point out to limitations inherent in the MDPS. As the MDPS only provides three spaces for the participants to record strategies, most of them limited themselves to marking three or fewer. Only a handful posted a fourth strategy used. The think-aloud data also show that strategy use is recursive. Learners don't use one strategy in isolation, then the next, and so on. Their thought processes are not so formal. Learners may try one strategy first, then a second, and then retry the first strategy. Especially in the case of context clues, they would often perform the strategy several times analyzing different sections of the passage. This might be done in sequence, or after having tried another meaning-discovery strategy or a coping strategy in between.

An example of repetition of strategy use taken from DY's think-aloud shows the move from looking at context, a coping move, and then back to

looking at context: "they started eating at the fast food shop, how is eating there a loss? Could that be the answer? torpid nation oh..torpid modifies nation so now this seems to give a negative meaning to what it modifies" First, she examines the context of the second sentence in the passage: *The family dinner has lost out to the fast food restaurant.* Then she repeats the target word (a coping strategy) and then examines the context of the initial passage of the sentence: *We have sunk into a torpid nation of lazy people.* On the MDPS, this would have been listed as a single use of the CC strategy, but it is actually two different moves using the same strategy.

While the think-aloud protocols show that the MDPS is not a sensitive enough instrument to accurately capture the thought processes of learners as they seek to discover the meanings of unknown English words and phrases, at the same time, it shows that the MDPS data may still be sound. The ranking of levels of use of the various meaning-discovery strategies in the think-aloud protocols mirrors that of the MDPS.

The think-aloud data collected in this study show a difference with previous studies (Cooper, 1999; Lee, 2003) which claim that learners approach idioms in a heuristic, trial-and-error manner. The MDPS data suggest that most learners are more methodical in their approach, and the

think-aloud data appears to confirm that. In the think-aloud protocols collected in this study, most subjects seem to follow patterns, only deviating from them when they do not work. The typical pattern seems to be: read the passage, translate it into the L1 (or translate it section by section while reading), and look for context clues. If this is not enough, then other strategies are employed. An example of this working well can be found in HW's think-aloud:

> Don't take your car to that stop...ah, to that shop to get it fixed. Oh, don't take the car to that shop to fix it. They will take you to the cleaners, telling you that they need to fix parts they are perfectly fine. Ah, it's just cheating um... kind of cheating? (HW Transcript)

In this case, HW was easily able to guess the correct meaning of the idiom 'take you to the cleaners' using only context clues. Less successfully, HY attempted to discover the meaning of the idiom 'rake him over the coals.' HY translates the passage, uses context clues, analyzes the vocabulary,

repeats the phrase as a coping method, interprets the vocabulary literally, finally followed by another attempt to use context clues in this example:

> Your son was cheating on the test. Don't just talk to him about it, rake him over the coals so he will never do that again. Your son did a bad thing cheating on the test. Don't talk to him about it rake him over the coals then you can keep him from doing it again um...don't tell him directly don't just take to him about it instead talk to him indirectly? rake...rake what is this? rake is this..coals? coal? over the coals...rake him over the coals put him on top of the coals? rake him over the coals... Is it saying to speak indirectly? um...indirectly? Don't talk to him directly about that. In order to keep him from doing that, um, tell him in a roundabout way? (HY Transcript)

While the six subjects each appear to have their own individualized methods for meaning-discovery, each appears relatively consistent in approach. The approaches also do not seem to vary much depending on

whether the unknown vocabulary was a single-word item or an idiom. How helpful each learner found the context to be and the learners' background knowledge appear to have been more important factors.

> OK [laughs] April completed this job interview.. OH! with flying colors and was hired at the spot. So since she was hired at the.. on the spot, uh, maybe with flying colors would be like, uh, really successful. Yeah. (YY Transcript)

As this example shows, if the context is obvious, the meaning can be easily guessed. The context seemed familiar to YY, who easily arrived at the correct meaning. HY, on the other hand (as shown in the example of the avoidance coping strategy above), did not grasp the meaning of the context in this same item and failed to find any answer at all. This may signify an unexpected limitation in this study, which may require further research to confirm or deny.

In order to check the assumption made from the think-aloud protocols that the participants systematically approached the unknown vocabulary on the MDPS, the strategies used by each participant on each item was converted into a string of code numbers, from zero (knew the vocabulary

already) to four (the most steps taken to reach a conclusion) digits long, using the strategy numbering from the MDPS. Looking at this data [see Appendix D: Strategy Use Strings], some participants can be seen to take a more trial-and-error approach, using different strategy combinations on different items, without any detectable patterns in their strategy use. A few favor one or two certain strategies, but mix in other strategies seemingly at random, or in a different order of application. Most of the participants, however, seem to follow patterns most of the time, with a few variations.

Six participants were completely consistent on the MDPS. They had a pattern of use that they reported using for all unknown items. Subject 18, for example, used the pattern *help from peers → using a dictionary → using context clues*. Subject 48 took only one step on each item, *using context clues* and then guessing the answer. Subject 55 used a pattern that was occasionally used often by other participants: *using context clues → analysis of the vocabulary → using a dictionary*.

Many other participants had a general pattern that they followed on most of the items, with occasional digressions, or two different patterns that they alternated between. Subject 4, for example, used pattern *compare similar vocabulary → using a dictionary* on the first item, and after that used

either *using context clues* (eight times) or *using context clues → using a dictionary* (six times).

Subject 19 used different strategies on single-word items and idioms. For single-word items, subject 19 used the pattern *using context clues → using a dictionary* on all but one item, the exception being to only use strategy 2 *using context clues*. For the items with idioms, subject 19 used the above two strategies plus strategy 6: *imagining the literal meaning → using context clues → using a dictionary* (three times), *using context clues → imagining the literal meaning → using a dictionary* (two times), and both *using context clues → using a dictionary* and *imagining the literal meaning → using a dictionary* once each. For subject 19, unknown single words required a systematic approach, while idioms necessitated a bit more variety, adding ILM to the other two consistently used strategies in slightly different orders.

A few subjects were not consistent in their strategy use, but this seems to have been the exception rather than the rule. Subject 27, for example, used ten different combinations or orderings of strategies out of thirteen items that were not previously known, and used all six suggested strategies on the MDPS at one time or another.

Thirty two participants had a strong tendency towards consistency in their strategy application, and thirteen had a weaker tendency towards consistency, using a pattern or limited set of strategies often but not always. Twelve participants showed a lot of variation in their strategy use. It should be noted that the reliability of the self-report data gathered on the MDPS is debatable, but even so, it seems to call into question the transferability of Cooper's (1999) findings and generalizability of Lee's (2003) findings.

4.1.3 Summary

The quantitative data from the MDPS did not show any statistically significant differences in the levels of use of each of the six strategies under investigation. The qualitative data taken from the think-aloud protocols appears to support these findings in general, although a tendency for the participants to require fewer moves with idioms than with single-word items was detected. The think-aloud data also suggests that learners are also likely to approach any unknown vocabulary methodically.

4.2 Meaning-Discovery Strategy Use Dependent on Intra-lexical Factors

Intra-lexical factors of idioms have played a large part in previous idiom research (Angel, 2007; Boers and Demecheleer, 2001; Flores d'Arcais, 1993; Gibbs, 1993; Glucksberg, 1993; Li & Sporleder, 2010; Liu, 2003; Moon, 1997; Simpson & Mendis, 2003; Titone & Connine, 1994, Titone & Connine, 1999). The question remains open whether learner actions change or not dependent on the types of idioms they encounter. To investigate this, strategy use scores were tabulated for the two classes of single-word items (verbs and adjectives) and three ways of classifying the idioms (function, transparency, and commonness of constituent vocabulary).

4.2.1 Data from the Meaning-Discovery Process Survey

Among the eight single-word items on the MDPS, four were adjectives and four were verbs. As can be seen in Table 11 below, for adjectives the most used meaning-discovery strategy was using context clues (CC, mean 3.49), followed by using a dictionary (UD, mean 2.39), analysis of the vocabulary (AOV, mean 1.42), imagining the literal meaning (ILM, mean

0.72), comparing similar vocabulary (CSV, mean 0.65), and finally help from peers (HFP, mean 0.40). There was one instance of an "Other" strategy being used. This mirrors the overall strategy use rankings, rather than that for all single-word items. The strategy use scores for the bottom three strategies are very close and the confidence intervals of the means of each strategy overlap. The confidence intervals for CC and UD do not overlap with any other strategies, and the confidence interval for AOV only overlaps with that of ILM.

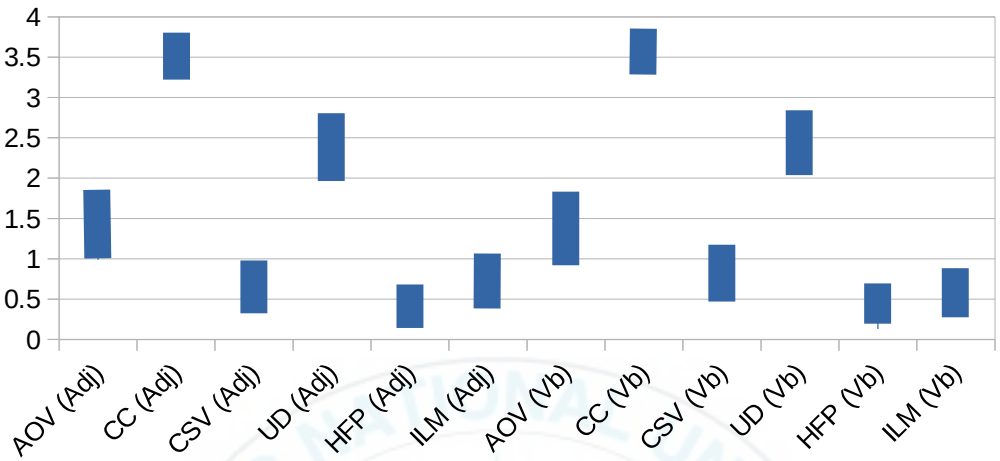
For single-word item verbs, the use ranking mirrors that of all single-word items. As can be seen in Table 11 below, the first three strategy rankings are the same: CC (mean 3.54), UD (mean 2.44), AOV (mean 1.37). Then comes CSV (mean 0.82), followed by ILM (mean 0.60) and HFP (mean 0.39). As with adjectives, there was one instance of an Other strategy being used with single-word item verbs, so it will not be considered further. Comparison of the confidence intervals on the means shows a similar pattern to those for single-word item adjectives. Both CC and UD are distinct from the other strategies. The third and fourth most used strategies, AOV and CSV, overlap. The bottom three strategies all overlap. The ranking discrepancy with the overall results may be due to the small number of items being compared.

Table 11 Strategy Use Scores for SWI Adjectives and Verbs

Strategy n=57	Mean	SE	SD	95% Confidence Intervals of Means	
Adjectives					
Using context clues (CC)	3.49	.13	.95	3.24	3.74
Using a dictionary (UD)	2.39	.20	1.52	1.99	2.79
Analysis of the vocabulary (AOV)	1.42	.22	1.64	0.99	1.85
Imagining the literal meaning (ILM)	.72	.16	1.24	0.39	1.05
Comparing Similar Vocabulary (CSV)	.65	.16	1.20	0.33	0.97
Help from peers (HFP)	.40	.13	.94	0.15	0.65
Other	.02	.02	.13	-0.02	0.06
Verbs					
Using context clues (CC)	3.54	.13	.95	3.29	3.79
Using a dictionary (UD)	2.44	.20	1.49	2.05	2.83
Analysis of the vocabulary (AOV)	1.37	.22	1.65	0.93	1.81
Imagining the literal meaning (ILM)	.82	.17	1.28	0.48	1.16
Comparing Similar Vocabulary (CSV)	.60	.14	1.05	0.32	0.88
Help from peers (HFP)	.39	.13	1.00	0.13	0.65
Other	.02	.02	.13	-0.02	0.06

A one-way MANOVA was used to look for significant differences between the strategy use scores of adjective and verb single-word items, with part of speech as the independent variable and the strategy use scores (means) of each meaning-discovery strategy as the dependent variables. The results were insignificant, F (7, 106) = 0.137, p=0.995; Wilks' lambda = 0.991. It appears that meaning-discovery strategy use does not vary with regard to the word class of the unknown word.

Figure 6 SWI Adjective and Verb Confidence Intervals



The MDPS idioms were labeled by function: adjectival if they performed a descriptive function or verbal if they stood in for an action. Strategy use scores for adjectival and verbal idioms were analyzed similarly to the single-word item adjectives and verbs reported above. For adjectival idioms, as shown in Table 12 below, the strategy use scores rank CC (mean 3.21), UD (mean 1.84), ILM (mean 1.30), AOV (mean 1.25), CSV (mean 0.68), and HFP (mean 0.26), not counting one use of Other. CC is the only meaning-discovery strategy for which the confidence interval does not overlap another strategy. The confidence intervals of UD, ILM and AOV all overlap. ILM, AOV and CSV all also overlap. Finally, CSV and HFP overlap. While

the rank ordering appears different, it cannot be stated conclusively that adjectival idioms lead to different strategy use than the overall results.

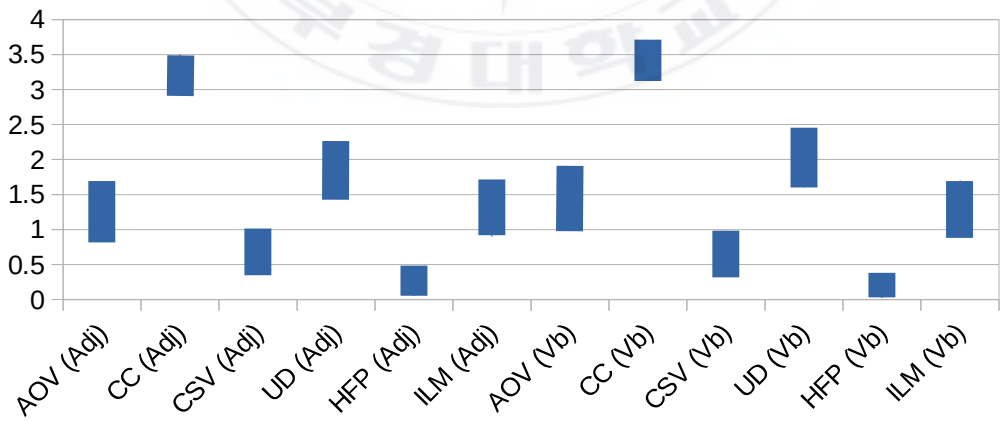
The strategy use scores for idioms with a verbal function, shown in Table 12 below, were the same as the overall rankings: CC (mean 3.42), UD (mean 2.02), AOV (mean 1.44), ILM (mean 1.30), CSV (mean 0.65), HFP (mean 0.19). The examination of confidence intervals for the means shows that only CC was distinct from other strategies. UD, AOV and ILM all overlap. ILM also overlaps with CSV, and CSV and HFP also overlap.

Comparing the strategy use scores for the six strategies used on adjectival and verbal idioms using a one-way MANOVA, with the grammatical function of the idiom as the independent variable and the strategy use scores (means) of each meaning-discovery strategy as the dependent variables, the results showed no significance, F (7, 106) = 0.366, p=0.920; Wilks' lambda = 0.976.

Table 12 Strategy Use Scores for Adjectival and Verbal Idioms

Strategy n=57	Mean	SE	SD	95% Confidence Intervals of Means	
Adjectival Idioms					
Using context clues (CC)	3.21	.14	1.08	2.92	3.50
Using a dictionary (UD)	1.84	.20	1.52	1.44	2.24
Imagining the literal meaning (ILM)	1.30	.20	1.52	0.90	1.70
Analysis of the vocabulary (AOV)	1.25	.21	1.61	0.82	1.68
Comparing similar vocabulary (CSV)	.68	.16	1.21	0.36	1.00
Help from peers (HFP)	.26	.11	.79	0.05	0.47
Other	.02	.02	.13	-0.02	0.06
Verbal Idioms					
Using context clues (CC)	3.42	.14	1.09	3.13	3.71
Using a dictionary (UD)	2.02	.21	1.58	1.60	2.44
Analysis of the vocabulary (AOV)	1.44	.23	1.71	0.99	1.89
Imagining the literal meaning (ILM)	1.30	.20	1.50	0.90	1.70
Comparing similar vocabulary (CSV)	.65	.17	1.25	0.32	0.98
Help from peers (HFP)	.19	.09	.64	0.02	0.36
Other	.02	.02	.13	-0.02	0.06

Figure 7 Adjectival and Verbal Idiom Confidence Intervals



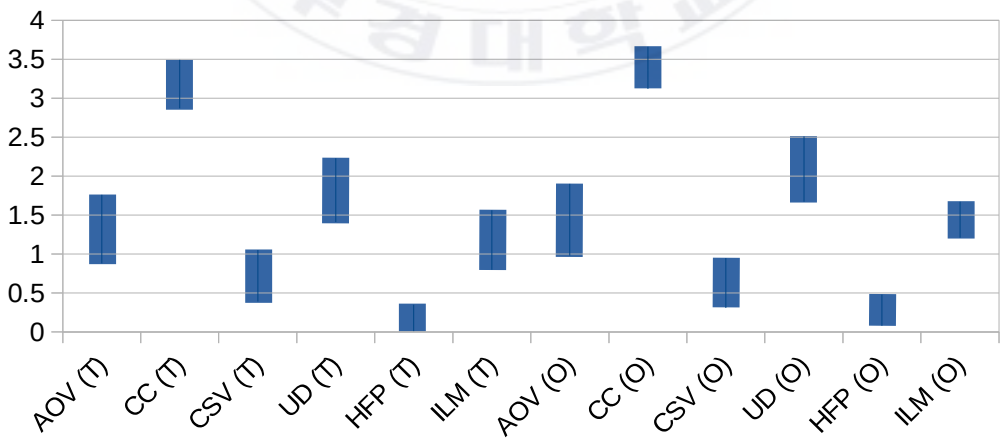
The next intra-lexical variable, transparency, only applies to idioms. Each idiom was tagged as either transparent or opaque. The strategy use scores for transparent and opaque idioms is shown in Table 13 below. The rankings for transparent idioms do not deviate from the overall results, CC (mean 3.18), UD (mean 1.82), AOV (mean 1.32), ILM (mean 1.18), CSV (mean 0.72), HFP (mean 0.18). Confidence intervals for CC at the top and HFP at the bottom did not overlap with any other strategies. UD, AOV and ILM all overlap, and AOV, ILM and CSV also all overlap.

Strategy use scores for opaque idioms show a slight variation in that the scores for AOV and ILM were equal. Other than that, the ordering was unchanged: CC (mean 3.39), UD (mean 2.09), AOV and ILM (mean 1.44), CSV (mean 0.63), HFP (mean 0.28), plus one use of the Other category which is not further considered. Examining the confidence interval of the means, CC does not overlap with any other strategies. UD, AOV and ILM all overlap. CSV and HFP also overlap. As was seen before, the relative usage of particular strategies cannot be determined with confidence from this data.

Table 13 Strategy Use Scores for Transparent and Opaque Idioms

Strategy n=57	Mean	SE	SD	95% Confidence Intervals of Means	
Transparent					
Using context clues (CC)	3.18	.16	1.17	2.87	3.49
Using a dictionary (UD)	1.82	.20	1.54	1.41	2.23
Analysis of the vocabulary (AOV)	1.32	.22	1.65	0.88	1.76
Imagining the literal meaning (ILM)	1.18	.19	1.45	0.80	1.56
Comparing similar vocabulary (CSV)	.72	.17	1.25	0.39	1.05
Help from peers (HFP)	.18	.08	.63	0.01	0.35
Other	.02	.02	.13	-0.02	0.06
Opaque					
Using context clues (CC)	3.39	.14	1.03	3.12	3.66
Using a dictionary (UD)	2.09	.21	1.57	1.67	2.51
Analysis of the vocabulary (AOV)	1.44	.23	1.75	0.98	1.90
Imagining the literal meaning (ILM)	1.44	.22	1.64	1.21	1.67
Comparing similar vocabulary (CSV)	.63	.16	1.19	0.31	0.95
Help from peers (HFP)	.28	.10	.77	0.08	0.48
Other	.02	.02	.13	-0.02	0.06

Figure 8 Transparent and Opaque Idiom Confidence Intervals



A one-way MANOVA analysis of strategy use scores for the six strategies for both transparent and opaque idioms, with transparency as the independent variable and the strategy use scores (means) of each meaning-discovery strategy as the dependent variables, found no significant differences, F (7, 106) = 0.679, p=0.689; Wilks' Lambda = 0.957.

The final intra-lexical factor of idioms is the presence or absence of uncommon constituent word items within the idiom. The strategy use scores for these items were calculated, and the means compared, as shown in Table 14 below. The rank ordering of the strategies used for common constituent word idioms does not vary from the overall results: CC (mean 3.23), UD (mean 1.82), AOV (mean 1.33), ILM (mean 1.28), CSV (mean 0.60), HFP (mean 0.16). No Other strategies were employed by the participants on any of these items. When the confidence intervals of each mean are compared, again CC is distinct from all other strategies. UD, AOV and ILM all overlap with each other. AOV, ILM and CSV also all overlap with each other. CSV overlaps with HFP. Once more, the data is inconclusive as to the actual rank ordering of strategies, other than CC being the most used. For idioms that contain an uncommon constituent words, the rank order is identical to the overall results: CC (mean 3.33), UD (mean 2.09), AOV (mean 1.42), ILM

(mean 1.33), CSV (mean 0.75), HFP (mean 0.30). The examination of the confidence intervals shows that CC was distinct from all other strategies. UD, AOV and ILM all overlapped. AOV, ILM and CSV also all overlapped. CSV and HFP also overlapped. As with the other intra-lexical variables examined, the rank orders are uncertain, other than the dominant use of CC.

Table 14 Strategy Use Scores for Common and Uncommon Constituent Word Idioms

Strategy n=57	Mean	SE	SD	95% Confidence Intervals of Means	
Common Constituent Words					
Using context clues (CC)	3.23	.16	1.21	2.91	3.55
Using a dictionary (UD)	1.82	.19	1.45	1.44	2.20
Analysis of the vocabulary (AOV)	1.33	.22	1.66	0.89	1.77
Imagining the literal meaning (ILM)	1.28	.20	1.53	0.87	1.69
Comparing similar vocabulary (CSV)	.60	.16	1.18	0.29	0.91
Help from peers (HFP)	.16	.08	.59	0.00	0.32
Other	.00	.00	.00	0.00	0.00
Uncommon Constituent Words					
Using context clues (CC)	3.33	.14	1.06	3.05	3.61
Using a dictionary (UD)	2.09	.21	1.61	1.66	2.52
Analysis of the vocabulary (AOV)	1.42	.23	1.72	0.96	1.88
Imagining the literal meaning (ILM)	1.33	.21	1.56	0.92	1.74
Comparing similar vocabulary (CSV)	.75	.18	1.33	0.40	1.10
Help from peers (HFP)	.30	.10	.78	0.09	0.51
Other	.04	.04	.27	-0.03	0.11

Comparing the strategy use scores for the six strategies used with common and uncommon constituent word idioms by means of a one-way MANOVA, with commonness of constituent words as the independent variable and the strategy use scores (means) of each meaning-discovery strategy as the dependent variables, showed no significance in the differences, F (7, 106) = 0.678, p=0.690; Wilks' Lambda = 0.957.

Figure 9 Common and Uncommon Word Idiom Confidence Intervals

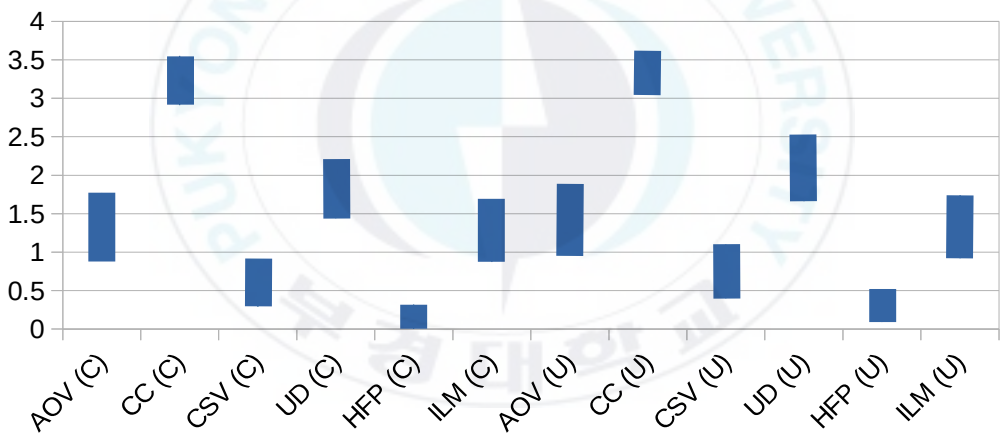
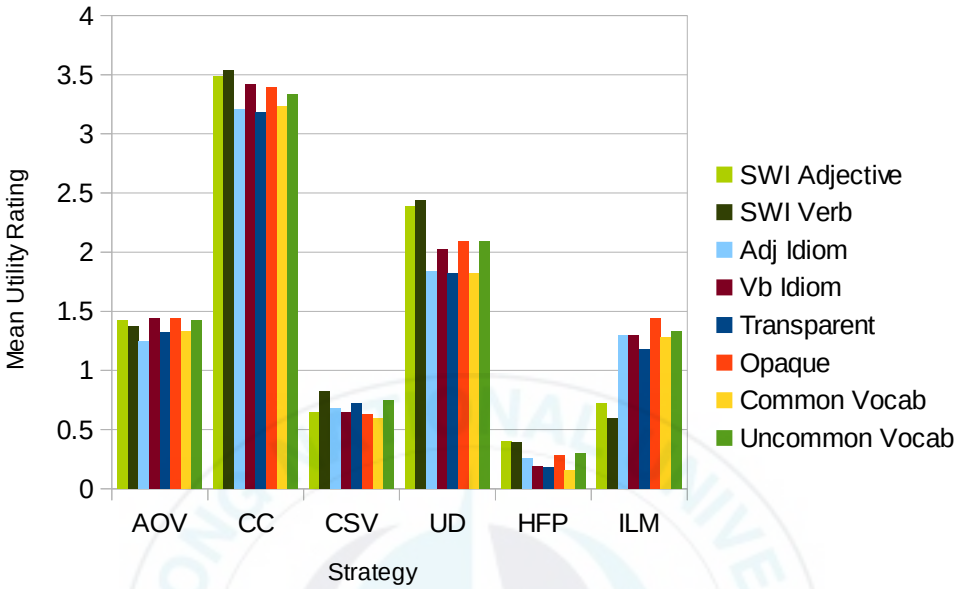


Figure 10 Strategy Use Scores by Intra-Lexical Factors



As a check on this analysis, the data was rearranged. Rather than counting the number of times each participant used each meaning-discovery strategy, the times each meaning-discovery strategy was used on each item, across all of the subjects, was tallied. This resulted in Item Strategy Counts, as shown below in Table 15. Note that the Item Strategy Counts are raw counts, not the mean value. By arranging the data this way, the effects of each type of item can be compared against each other using chi square tests.

Table 15 Item Strategy Counts

Item	AOV	CC	CSV	UD	HFP	ILM	Other
agape	15	44	11	38	10	10	0
canter	19	54	11	32	6	9	0
buxom	18	51	6	30	5	11	0
evince	21	49	13	40	5	6	1
jocose	25	53	12	35	4	11	1
patter	19	47	15	28	4	11	0
randy	23	51	8	33	4	9	0
quibble	19	52	8	39	7	8	0
call the shots	21	48	6	29	1	19	0
below the belt	19	50	7	34	5	22	0
off on a tangent	18	49	11	29	4	17	0
is the cat's whiskers	20	45	9	29	5	22	0
on the flip side	17	38	12	15	2	16	0
throw the book at	19	48	9	26	1	16	0
stuck in a rut	19	46	12	31	3	15	1
sweeten the kitty	24	50	11	30	5	22	1

Chi square tests were done to compare item type (single-word item or idiom) against each meaning-discovery strategy, and also function (verbal or adjectival) against each meaning discovery strategy. None of the fourteen chi square tests showed a significant difference between item type or function and use of strategies. Only the comparison of item type and the ILM strategy approached significance, $c^2(9, N=16) = 16.00$, $p=.067$.

4.2.2 Summary

The quantitative data seem to suggest that intra-lexical factors of vocabulary do not play a large part in influencing what strategies learners use when attempting to discover the meaning of previously unknown words or idioms. However, the number of items of each type in this study was low, and further studies are needed to confirm or disprove these tentative findings.

4.3 Effectiveness of Meaning-Discovery Strategy Use

4.3.1 Data from the Meaning Discovery Process Survey

In order to gain a measure of effectiveness of strategy use, each subject's responses were rated for correctness, and a percentage of correct answers was tallied. As can be seen in Table 16, the overall percent correct score is 53.46%, meaning that the participants correctly discovered the meanings to just over half of all items on the MDPS. Fewer single-word items (50.09%) were guessed correctly than idioms (56.58%).

Table 16 Percent Correct Descriptive Data

Score n=57	Mean	SE	SD
% Correct Total (16 items)	53.46	3.69	27.82
% Correct Single-Word Items (8 items)	50.09	3.70	27.90
% Correct Idioms (8 items)	56.58	4.24	31.99

The correlations between the overall percent correct scores and the overall strategy use scores showed statistically significant correlations for three of the six strategies: analysis of the vocabulary [$r(55)=-.39$, $p=.003$], comparing similar vocabulary [$r(55)=-.46$, $p=.000$], and using a dictionary [$r(55)=.49$, $p=.000$]. Using a dictionary had a positive correlation, while analysis of the vocabulary and comparing similar vocabulary both had a negative correlation. This suggests that dictionary use may have assisted the participants to guess the correct meanings, and that trying to analyze the words or idioms, as well as comparing similar words that are already known, may have hindered comprehension.

Correlations for the percent correct scores of only single-word items with the strategy use scores for single-word items showed some differences from the overall results. For single-word items, comparing similar vocabulary [$r(55)=-.43$, $p=.001$], using a dictionary [$r(55)=.46$, $p=.000$] and imagining

the literal meaning [$r(55)=-.29$, $p=.031$] showed significant correlations with the percent correct scores. Participants who used a dictionary often may have been more likely to have guessed the correct meanings of the single-word items, and participants comparing similar known words and imagining literal meanings appear to have been less likely to guess correctly.

A third set of correlations performed on the percent correct score for idioms and the strategy use scores for idioms were similar to the overall results, with statistically significant correlations detected for analysis of the vocabulary [$r(55)=-.44$, $p=.001$], comparing similar vocabulary [$r(55)=-.41$, $p=.002$], and using a dictionary [$r(55)=.45$, $p=.000$]. Again, participants that used a dictionary often seem to have been more likely to guess the meanings of the idioms, while those that analyzed the words that make up the idiom and/or compared the idiom to other known vocabulary appear more likely to guess an incorrect answer.

To examine whether there is a causal link between the use of these strategies and successfully guessing meanings, the researcher used multiple regression analysis. The first regression analysis was done with the overall strategy use scores as the independent variables, and the overall percent correct score as the dependent variable, as shown in Table 17.

Table 17 Overall Results Regression Analysis

	b	*SE b*	β	*t*
Constant	38.48	15.79		2.44
Analysis of the Vocabulary	-1.20	0.50	-.25*	-2.40
Using Context Clues	0.76	0.91	.09	.84
Comparing Similar Vocabulary	-2.21	0.70	-.34**	-3.18
Using a Dictionary	2.44	0.57	.47***	4.26
Help from Peers	-2.83	0.97	-.30*	-2.92
Imagining the Literal Meaning	-0.06	0.63	-.01	-0.10

Note: R^2=.52 (*ps* <.001). *p <.05, **p <.01, ***p <.001.

The analysis shows that the strategy use scores account for just over half of the variation in the percent correct scores. It shows that the biggest factor was dictionary use, which was a significant positive factor in achieving a high score. Comparing similar vocabulary, help from peers, and analysis of the vocabulary were also significant factors in the model, but all had a negative influence on correctness scores. Using context clues and imagining the literal meaning of the vocabulary did not seem to have any effect on achieving a high correctness score on the task.

A second regression analysis performed using only the percent correct scores and strategy use scores for MDPS items with single-word items showed slightly different results from the overall result, as reported in Table 18.

Table 18 Single-Word Item Regression Analysis

	b	*SE b*	β	*t*
Constant	52.78	14.59		3.62
Analysis of the Vocabulary	-1.01	0.94	-.12	-1.07
Using Context Clues	-2.29	1.72	-.14	-1.33
Comparing Similar Vocabulary	-2.80	1.25	-.24*	-2.25
Using a Dictionary	5.309	1.01	.54***	4.83
Help from Peers	-6.49	1.60	-.43***	-4.05
Imagining the Literal Meaning	-0.34	1.44	-.03	-0.24

Note: R^2=.51 (*ps* <.001). *p <.05, **p <.01, ***p <.001.

As with the overall results, the regression analysis shows that just over half of the variance can be attributed to strategy use, with using a dictionary again showing a significant positive effect, and comparing similar vocabulary and help from peers both showing a significant negative effect on the correctness score. The data suggest that, at least in this case, using a dictionary is the only reliable meaning-discovery strategy for use with single-word items.

A third regression analysis was performed to test for the effects of strategy use scores for the eight idiom items on the MDPS on the percent correct score for idioms. The results show differences in the effectiveness of

the meaning-discovery strategies from both the overall and single-word item results, as shown in Table 19 below.

Table 19 Idiom Regression Analysis

	b	*SE b*	β	*t*
Constant	20.68	14.67		1.41
Analysis of the Vocabulary	-3.39	0.95	-.35**	-3.57
Using Context Clues	4.48	1.62	.29**	2.75
Comparing Similar Vocabulary	-3.84	1.37	-.28**	-2.81
Using a Dictionary	4.95	1.08	.46***	4.57
Help from Peers	-2.31	2.40	-.09	-0.97
Imagining the Literal Meaning	0.92	1.07	.09	0.87

Note: R^2=.57 (*ps* <.001). *p <.05, **p <.01, ***p <.001.

The R^2 value shows that a slightly larger amount of the variance in correctness scores can be attributed to strategy use for the idioms on the MDPS. It also shows that four strategies had significant effects on the results. Using context clues and using a dictionary both showed a significant positive effect on correctness scores. Analysis of the vocabulary and comparing similar vocabulary both showed a significant negative effect. The interesting difference with the results for single-word items is that for idioms, context plays a significant role in predicting the discovery of the meanings of the

unknown idioms, along with dictionary use. Other strategies seemed to either play no part or mislead the participants into incorrect answers.

Looking at these results, it seems clear that using a dictionary is a strong predictor of correctly discovering the meaning of a previously unknown vocabulary. For unknown idioms, the use of context clues can also successfully predict discovering the meaning of the previously unknown idiom. As these are popular strategies for learners (Park, 2001; Schmitt, 1997; Wu, 2005), the data here suggests that learners are correct in relying primarily on these strategies. Learners should be encouraged to continue searching context for clues to a word's meaning and to search for the meaning in a dictionary. Because context clues are not always helpful and multiple exposures in context are needed to ascertain the correct meaning (Ellis, 1997; Hudson, 2007), learners in an EFL environment should be encouraged to use their dictionaries when they encounter unknown words.

Analysis of the unknown vocabulary, comparing the unknown vocabulary to similar known vocabulary, help from peers and imagining the literal meaning of the vocabulary appear unlikely to lead to discovery of the meaning, and in some instances may be more likely to lead the learner astray. It is also possible that these strategies were negative predictors because the

participants did not employ them effectively, or the design of the study did not support their use in some way.

Previously, patterns of strategy use were observed for most participants in this study (see Section 4.1.2 above). Overall percent correct scores, single-word item percent correct scores, and idiom percent correct scores of the students who were inconsistent, somewhat consistent, and mostly consistent were all compared by one-way ANOVA, with consistency as the independent variable and percent correct scores as the dependent variable. None of the results were significant, as shown in Table 20.

Table 20 Effects of Consistency of Strategy Use

% Correct Scores	df (between groups)	df (within groups)	*F*	*p*
Overall	2	54	0.94	.40
Single-Word Items	2	54	1.11	.34
Idioms	2	54	0.67	.52

4.3.2 Data from the Think-Aloud Protocols

The quantitative analysis of the MDPS shows that using a dictionary is the only strategy with a positive effect on overall correctness, yet it was not used by the participants of the think-aloud protocols. However, using context

clues did show a positive effect for items containing idioms, and the other strategies showed negative effects in all or selected cases. While the think-aloud data cannot shed light on the most positive meaning-discovery strategy used in this study, it can provide insight into the remaining strategies and how they may or may not have affected the outcomes of the task.

Before presenting examples from the think-aloud transcripts, some overall data on the success rates on the think-aloud task is presented. As was done with the MDPS items, each item on the think-aloud task was rated for correctness, given 0 points for an incorrect or avoided answer, 1 point for a partially correct answer, and 2 points for a correct answer and converted into a percent correct score. The raw numbers and percent correct scores for each participant in the think-aloud session are given below in Table 21 below.

The mean of the percent correct scores is 40.63%, which is substantially lower than the mean percent correct score for the MDPS, 53.46%. In light of the fact that the participants did not use their dictionaries for the think-aloud task and also may have felt more nervous having to speak their thoughts aloud while being recorded, this is not surprising.

In the post session interviews, each participant listed the strategies that they felt worked well for them, as well as the ones they felt did not work well.

Their answers to these questions provide insight into their preferred methods for approaching unknown vocabulary in English, and also may help explain why certain strategies examined in this study were less helpful or even counterproductive at times.

Table 21 Think-Aloud Protocol Correctness Data

Participant	Level	#Correct	#Partially Correct	#Incorrect	#Avoided	% Correct
HY	Lower	3	3	4	6	28.13
JS	Lower	1	5	10	0	21.88
DY	Average	4	6	4	2	43.75
DH	Average	5	3	3	5	40.63
HW	Higher	7	3	3	3	53.13
YY	Higher	7	4	3	2	56.25

The two above-average subjects, HW and YY, actually had little to say about this. When discussing what was helpful and what was not, HW had this exchange with the interviewer:

HW: Somehow comparing what's in front and behind.

Interviewer: Ah, what are you comparing to that's in front and behind?

HW: Context.

Interviewer: Ah, you refer to the context before and after...compared to...so then, there wasn't much effect, you're saying?

HW: There wasn't any effect of using my background knowledge. (HW Transcript)

HW found context to be helpful, but relying on background knowledge to be unhelpful. He makes no mention of any other strategies. Participant YY also relied heavily on context clues and imagination, as she reports:

I usually, like just tried to get a, uh, hint, in in uh, in given sentences, and uh, tried to like, imagine it, and if I like, just like like this, um, but uh, if I can't imagine it I just tried to get a, um, get a kind of hint, or like... um, hint or other ways, like if I can get any any of them, then I'm just like um, how can I say, like since I... read lots of sentences, I just tried to guess in those sentences. (YY Transcript)

When asked what strategies were not helpful, she had to think about it and repeated what did work for her, finally ending by saying, “so uh, yeah, I don't really, yeah I can't really think of use…useless things” (YY Transcript).

Looking only at these exchanges, without reference to the participants' relative level of English, it would be possible to make the assumption that their level of metacognitive awareness is not especially high. While that may be the case, considering that both often used other strategies to supplement their inferences made with context clues, and that both are considered by the researcher to have English ability slightly above their peers, that assumption may be flawed. For example, YY mentions that she often imagined the scenes in the passages, yet in only two instances did the researcher code her as having used ILM. HW used AOV five times while YY used it four times, and YY also used CSV five times. A more likely explanation may be that because their English is more developed than their peers, both have partially or completely automatized the use of some of the meaning-discovery strategies, which have now for them become skills (Anderson, 2003). If this is the case, it may make doing similar research with advanced level English speakers difficult.

The two below-average participants, HY and JS, provide more insight into what worked, and more importantly, what didn't work so well. Discussing what worked well, HY said, "As for me, I always…when I don't understand a word I look at the entire sentence, and use the context to piece together the meaning like a puzzle." (HY Transcript). Context clues were useful, if she was able to translate the passages first. When that happened, she could fit the meaning of the unknown vocabulary into the passage. This underscores the research on general vocabulary learning, in which multiple exposures to an unknown word, in multiple, comprehensible contexts, are necessary (Ellis, 1997; Hudson, 2007; Krashen, 1982, 1993; Laufer & Ravenhorst-Kalovski, 2010; Nagy, 1997). When asked what didn't work, HY gave more detail about what happens when the context in a passage is incomprehensible.

> What is it… While I'm doing that, and in this kind of case where I don't understand the phrase, I take a look at each word and ask "What could this mean?" When I think about putting the pieces together in this way, well…I think it's not so helpful. (HY Transcript).

It seems that when context is beyond the learner's reach, they may turn to bottom-up methods of comprehension. At least in HY's case, this bottom-up analysis of a sentence often does not lead to comprehension of the unknown word.

JS, in discussing what worked well for him, also claims context is most helpful, and provides an example of what he does when context fails:

> Ah, well...in the sentences, in the words. The easiest thing is picking out some words from the sentence. When just picking some context doesn't work, and I'm stuck, the final way is like this. I know fingertips means fingertips but like this, I'm still not quite sure I know the meaning, but I think it's close to the meaning, isn't it? That's what I was thinking. (JS Transcript)

JS believes that context clues are usually enough, but when they fail, he then tries to look literally at the meaning, but that does not always help. When asked what meaning-discovery strategies did not help, he says, "Um, using prefixes and suffixes" (JS Transcript). When asked to give an example, he

replies, "I can't get the meaning at all that way. The base word of presage means a wise man but then this doesn't seem to fit." (JS Transcript). While JS knows that the suffix 'pre-' signifies something happening before another thing, and the base word 'sage' is a wise man, but this was insufficient to aid in comprehension of the unknown vocabulary. Analysis of the root and affixes of a word may only be of limited value to many learners. This may help to explain the significant negative correlation found between the AOV meaning-discovery strategy and correctness scores reported above.

The two average level participants both give very detailed and insightful answers to these two questions. In order to explain what worked well for him, DH gives a detailed retrospective breakdown of his thought process as he examined the context surrounding the idiom *with flying colors* and highlights what clues within the context led him to the meaning.

> Another thing, what is flying colors I perfectly, almost perfectly got it. What's flying color when I look at it, I suddenly thought it had a positive meaning connected to job interview. Just seeing job interview and flying colors with the previous sentence, ah! She got hired So flying

> colors means flying around...haha!...It's that kind of word..flying colors means that... Color flying around. It looks good. The part of speech is exactly right. In that way, I could guess the meaning exactly and move on to the next one. (DH Transcript)

He explains that the context lead him to the meaning almost perfectly. First, he noted from context that the meaning was positive, and related to a job interview. In the next sentence it says hired, and he then relates that with the *flying* part of *with flying colors*. From this, he's able to connect the literal meaning of *flying color* to success in the job interview. He then checks to make sure that the part of speech makes sense in the sentence, which it does. And in that way, he comes to the conclusion that *with flying colors* means to do something nearly perfectly.

The level of detail in this description is helpful, and shows that much of DH's thought processes for this item went unspoken during the think-aloud session. When he attempted to find the meaning of this item, he translated portions of the sentences as he read them. The analysis of context, imagining the literal meaning, and checking the part of speech went mostly unstated.

Here is the section of the transcript where DH attempts to comprehend the meaning of *with flying colors*:

> April com... April completed the to job...April that's a name...completed the job interview...job interview was completed..with flying colors Oh!...flying color has a good meaning, right? and was hired on the spot ah... finished...flying colors means she did well, that's right.
> (DH Transcript)

Again, this may show that DH has also automatized some of the meaning-discovery strategies into skills (Anderson, 2003). This underscores the difficulty of trying to observe and interpret internal thought processes, and the need to triangulate the data (Mathison, 1988).

Instead of providing a detailed retrospective analysis like DH, DY explains in general terms the method she used on the unknown vocabulary:

> Well, it's because when there are one or two sentences around it, I can look at the sentence and get an idea

about it. From the context I can tell if the word is positive or negative, and then what? If there's to infinitive or, what, a noun after it, and I check the voice of the sentence, like that, I could guess the meaning. (DY Transcript)

Her approach is logical and methodical and does not appear to be a process of trial and error, as Cooper (1999) observed in his study. First, she segments the context into easily understood portions by looking at one or two sentences at a time. From the context, she next gauges whether the meaning is positive or negative. Next she checks the part of speech. If the unknown word is proceeded by "to" it is likely a verb, while if it is followed by a noun, it is likely an adjective. Finally, she examines the grammatical voice to see if the sentence is active or passive. From these clues, she is then able to make a guess at the meaning.

DY also explains in detail what she believes does not work well for discovering the meaning of unknown vocabulary:

> What doesn't help me...when I see a word on its own, especially this kind of word...haha...what, how to pronounce it? What does it sound like? I don't know. And then...I keep looking at only the word, and think if it's familiar. I keep wondering what kind of word it is but I can't imagine it...then...that word was really difficult (DY Transcript)

She believes that an examination of the word, divorced from context, to be unhelpful. Word associations or using the imagination do not lead to the answer. Context is key to comprehension of unknown vocabulary for her.

This reinforces the other findings of this study. Learners often use context clues, and believe the method of examining context clues to guess the meaning of unfamiliar words to be helpful. The quantitative data of this study did not show many effects of context upon the correctness of answers to the items on the MDPS or the think-aloud protocols, except in the case of idioms. Part of the reason for the lack of effect can be explained by the fact that context was used so often. Many participants in the study looked at context clues as their first step to guessing the meaning, and those that used other

meaning-discovery strategies first often looked for context clues later. For this reason, the strategy was used as often on items which were correctly answered as on those that were incorrectly answered.

Whether context clues work in any one particular instance is not especially important, as it has been shown that multiple exposures in context are needed to acquire a new word (Ellis, 1997; Hudson, 2007). Learners believe in the use and effectiveness of context, even if it isn't helpful in all instances. It also shows that learners do not distinguish between single-word items and idioms in their application of meaning-discovery strategies. They apply their repertoire of meaning-discovery strategies to any unknown vocabulary they encounter, only adding to their standard methods or modifying them when they don't quickly come to find the meaning.

4.3.3 Summary

The use of dictionaries was shown to be the only consistent significant positive predictor of correctness. The use of context clues was a significantly positive predictor for idioms. Comparing similar vocabulary was shown to be a consistent significant negative predictor of correctness. Analysis of the vocabulary item and help from peers were also significant negative predictors

overall. The think-aloud data suggests that learners favor the use of context clues, and that other strategies such as analysis of the vocabulary or comparing similar vocabulary known are unhelpful.

4.4 Discussion of Findings

4.4.1 Differences in Strategy Use Between Single-Word Items and Idioms

Examining what meaning-discovery strategies learners used on the MDPS and in the think-aloud protocols, it was indicated that a variety of strategies are often used. Some participants used every suggested strategy on the MDPS, and two additional strategies were also listed by the participants. Two strategies, using a dictionary and using context clues, stood out as the most used meaning-discovery strategies on both types of vocabulary. In the think-aloud protocols, the researcher observed evidence of the four meaning-discovery strategies from the MDPS that could be used without outside input being used nearly equally on both types of vocabulary.

The collected data suggest that intermediate level Korean learners of English are most likely to try and use context clues to discover the meanings of unknown English vocabulary. Using context clues rated significantly higher

in its strategy use score on the MDPS than any other meaning-discovery strategy in the overall results and in each analysis of subgroups of MDPS items. Using context clues was also observed being used much more often than any other strategy in the analysis of the think-aloud protocols, and being used repeatedly for assessment of different aspects of each context. The learners that took part in this study rely on and prefer to use context clues to guess the meanings of unknown English vocabulary more than any of the other strategies being investigated.

Coming in just behind context clues in both level of use and learner preference is the use of dictionaries to look up the meaning of unknown vocabulary. Using dictionaries ranked significantly higher than all strategies save for using context clues on the overall strategy use scores of the MDPS data and also in most of the subgroups of MDPS items that were analyzed. While there is no data from the think-aloud protocols to support the preference among learners for dictionary use to decipher unknown English vocabulary, the MDPS data indicate how popular and how helpful this meaning-discovery strategy is among the learners surveyed here. This is more or less in line with the previous research into meaning-discovery strategy use

(Park, 2001; Schmitt, 1997; Wu, 2005), with the exception that the previous studies found dictionary use to rate higher than the use of context clues.

4.4.2 Differences in Strategy Use Based on Intra-lexical Factors

The type of unknown vocabulary played little part in determining which meaning-discovery strategies learners employed to guess the meaning of the vocabulary. Meaning-discovery strategy use was consistent regardless of whether the unknown vocabulary was a single-word item or an idiom. The rate of use also did not change depending on the word class or function of the vocabulary, and in the case of idioms, whether the idiom was transparent or opaque or whether the idiom contained only common constituent words or some uncommon constituent words. While the number of items in each category was small due to practicality concerns, the data appear to support the proposition that intra-lexical factors do not influence learner actions when faced with unknown English vocabulary. This may be due to the fact that any unknown vocabulary is equally unknowable to the learner at first. Until the unknown vocabulary has been analyzed to some degree, the learner may not know enough to make a conscious decision about tactical strategy use in any particular situation. Alternately, the results may be due to the tendency of

most of the participants observed in this study to rely on a single or small number of patterns of methodical strategy use. This is an area where additional research may be needed to determine whether the observed lack of difference is due to sample size, lack of information to make a choice of strategy by the learners, or simply due to learners preferring certain methods of meaning-discovery strategy application.

The methodical use of meaning-discovery strategies observed in this study stands in contrast to the findings of Cooper (1999) and Lee (2003). Examining both the self-report data of the MDPS and the observed strategy use patterns of the think-aloud protocols, it seems that, at least for contemporary intermediate level Korean university students, meaning-discovery strategies are applied methodically. Learners tend to have a small repertoire of meaning-discovery strategies that they use, a sort of standard operating procedure (SOP). If that SOP does not work, they may then attempt to apply other strategies to the problem of the unknown vocabulary. This indicates that the majority of learners observed here use strategies in a smart, flexible manner. Most of them rely on what usually works and when their normal method fails, they attempt other courses of action.

There are several possible reasons that the results found here may differ from the previous studies. First, Cooper's (1999) study was a small-scale study using only think-aloud protocols. As there were some participants in the current study that did use a more heuristic, trial and error approach like Cooper (1999) reports, it may be that the small sample of learners Cooper studied happened to be among the minority of learners that are not methodical. Lee's (2003) study was larger than Cooper's (1999) study and came to similar conclusions, but there are some faults with the methodology of the study. Lee (2003) divided the participants into two groups, one elementary level and one intermediate level, by their TOEIC scores. The two groups were then presented with different sets of idiomatic vocabulary. The elementary level group had many more decomposable idioms, while the intermediate group had many more nondecomposable idioms. Because the two groups had differing proficiency levels as well as different types of idioms to comprehend, the observed differences in meaning-discovery strategy use may not be as cut and dry as Lee (2003) reports. The data observed in this study casts doubt upon Lee's (2003) findings.

Even if Cooper (1999) and Lee (2003) did provide transferable qualitative data and generalizable quantitative evidence, respectively, at the

time of their experiments, there may be another reason that the results of the current study differ. In the seventeen years since Cooper's (1999) study and the thirteen years since Lee's (2003) study, the way English language learners are taught, in Korea or other educational contexts, may well have changed. If in recent years English language instructors have been coaching learners to use meaning-discovery strategies more methodically, this may account for the change (Connor et al., 2014). More evidence is needed to support or disprove this proposition.

4.4.3 Effectiveness of Meaning-Discovery Strategy Use

Turning now to the effectiveness of the meaning-discovery strategies, using a dictionary was the only meaning-discovery strategy that consistently and significantly predicted a higher percentage of correct answers on the MDPS. Using context clues was also usually a positive predictor, but not always significantly so. Imagining the literal meaning of vocabulary did rate as a positive predictor for idioms only, although the result was not statistically significant. Comparing similar vocabulary, help from peers, and analysis of the vocabulary always emerged as negative predictors, although comparing

similar vocabulary was the only meaning-discovery strategy that was consistently significant in that regard.

The multiple regression analysis of the overall results on the MDPS shows that only using a dictionary made a significant positive impact on correctness. Using context clues was also a positive predictor of correctness, but not significantly so. This indicates that regardless of whether the unknown vocabulary is a single-word item or an idiom, examining context clues may help, but dictionary look-ups are more accurate. The other strategies were all negative predictors, and all but imagining the literal meaning of the vocabulary were significant negative predictors. This indicates that although many learners may view various other meaning-discovery strategies as helpful, in this case at least the other meaning-discovery strategies examined were not especially helpful and in fact may have contributed to more incorrect answers.

Using a dictionary significantly predicted correct answers when multiple regression analysis was used to compare strategy use scores (IV) with correctness scores (DV) for single-word items. It was the only positive predictor in this analysis. While only comparing similar vocabulary and help from peers were significant negative predictors, all five remaining predictors

were negative. This is unexpected, as context clues are believed to be helpful for determining the meaning of unknown words in most cases for intermediate level EFL learners (Nagy, 1997). This result may be due to the fact that multiple exposures in context are usually needed to pick up words through context alone, with little conscious effort (Ellis, 1997; Hudson, 2007; Melka, 1997; Nagy, 1997), and that for EFL learners, a relatively high level of proficiency is needed before this can occur (Nagy, 1997). As context sometimes helped and sometimes did not, these learners may be on or near the threshold level for context clues to be effective on a regular basis.

It may also be the case that looking up a single-word item in a dictionary is easier than looking up an idiom. This being so, the participants of the study may have been forced to rely more on their analysis of context clues when examining items containing idioms. The fact that the uncommon constituent vocabulary in the idioms were more frequent words than the single-word items being investigated may also be a factor. The single-word items were all completely unfamiliar, while the words that made up the idioms were generally familiar, but semantically opaque. The complete unfamiliarity of the single-word items may have necessitated dictionary use, while the

familiarity of the idioms' constituent vocabulary and knowledge of more literal senses of the words could have facilitated the use of context clues.

For idioms, in contrast to single-word items, both using a dictionary and using context clues were significant positive predictors of correctly discovering the meaning of the idiom. Imagining the literal meaning was also a positive predictor, but not significantly so. The remaining meaning-discovery strategies on the MDPS: analysis of the vocabulary, comparing similar vocabulary, and help from peers served as negative predictors of correctness. Analysis of the vocabulary and comparing similar vocabulary were both significant negative predictors. In this case, context is seen to play a larger role in guessing the correct meaning of unknown vocabulary. One possible explanation for this is that there was some difference in the contexts provided for the vocabulary on the MDPS that made it easier to guess the meaning for the idioms than for the single-word items. Another explanation may be that the combination of using context clues along with imagining the literal meaning (a meaning-discovery strategy which makes little or no sense in the case of single-word items) allowed the learners to better guess at the meaning. This may require more study in the future.

While there were no significant differences in the levels of meaning-discovery strategy use between single-word items and idioms, there were differences in the effectiveness of the various meaning-discovery strategies between these two types of vocabulary. The fact that learners view using context clues more favorably than any other strategy led to its heavy use in the MDPS, as well as in the think-aloud protocols. This may have contributed to the lack of effectiveness of using context clues in this study. The participants in the MDPS study used context clues often. Many used it on every item, or nearly so. The perception of utility that the learners possess towards using context clues meant it was used regardless of whether it was actually helpful in any particular instance. This reliance on context clues, combined with the difficulty of correctly guessing unknown English vocabulary the first time it is encountered, may have led to the positive but insignificant effect of CC in the overall effectiveness results and the negative but insignificant effect on single-word items, in addition to the significant positive results for idioms. This again underscores the idea that the learners are not merely using trial-and-error methods of approaching unknown vocabulary, but are making conscious choices to use what they believe will work, regardless of how effective it may or may not have been in the past.

Using dictionaries, in particular using bilingual or electronic dictionaries, rated as the most preferred meaning-discovery strategy in previous studies (Park, 2001; Schmitt, 1997; Wu, 2005), and in this study, it was rated as the second-most preferred meaning-discovery strategy. Using a dictionary was also the only consistently effective strategy examined in this study. While dictionary use did not ensure accurate responses, teachers should encourage the use of this strategy. Using context clues may cause fewer interruptions in comprehension than using a dictionary, but searching for the meaning of the unknown vocabulary is more reliable. The pedagogical implications of the effects of context clues, dictionary use, and the other strategies investigated in this study will be discussed in the next chapter.

V. Conclusion

5.1 Summary

This study was designed to use a task-based self-report survey together with think-aloud protocols of an online task to examine which meaning-discovery strategies learners use the most often, as well as to examine the effectiveness of the various strategies employed by the learners. The study attempted to look for differences in strategy use between two types of unknown vocabulary – single-word items and idioms, as well as differences in strategy use between various intra-lexical factors that can be used to distinguish vocabulary items of each type.

In an effort to triangulate the data collected in this study, two instruments were used. The MDPS is a quantitative online self-report survey instrument, refined from a similar instrument used in a preliminary study, and collected data on combinations of meaning-discovery strategies used to comprehend individual instances of unknown vocabulary, as well as the effectiveness of the small number of strategies employed. Think-aloud

protocols of a task identical to that on the MDPS were used to gain a qualitative, observed source of online processing data. Similar findings from both methods of data collection suggest that the data collected is reliable.

In general, the findings of this study were in line with previous studies (Park, 2001; Schmitt, 1997; Wu, 2005) that looked into the use of meaning-discovery strategies by learners when faced with unknown vocabulary. A related examination of patterns of meaning-discovery strategy use when faced with unknown idioms, however, differed from previous studies (Cooper, 1999; Lee, 2003). This study presents evidence that the strategies used to comprehend idioms do not differ greatly from those used to comprehend unknown single-word items that are encountered when reading. Likewise, the choices of meaning-discovery strategies do not show much variation between several intra-lexical factors of the unknown vocabulary that were examined, although the evidence presented is not robust.

The data examined in this study suggest that use of a dictionary is the most dependable and effective strategy to discover the meaning of unknown vocabulary, with the use of context clues also showing some effectiveness, in particular with idioms. Other meaning-discovery strategies examined in this study appeared more likely to lead to incorrect meanings, or no meaning at

all. As there is no body of work examining the effectiveness of various meaning-discovery strategies on idioms or other multi-word items with which to compare the results of this study, future studies will need to be carried out to determine the robustness of the results presented here with regard to the effectiveness of the meaning-discovery strategies examined here.

The fact that instances of the use of individual idioms are rare within the language suggests that learners would do better to focus on more frequent words rather than idioms. However, learners are at the same time encouraged to gain communicative competence and native-like ability, suggesting that learners should become familiar with idiomatic language. This paradox of teaching English idioms to second or foreign language learners may have a solution. If, as the research here suggests, learners can employ meaning-discovery strategies equally well or possibly even better when encountering unknown idioms as when encountering unknown single-word items, then learners need not be explicitly taught idioms in classes or in textbooks, although being introduced to them through educational texts should also not be discouraged. Instead, learners should be equipped with sound strategies for meaning-discovery and meaning-consolidation, such as dictionary look-up strategies and the use of context clues. By instructing learners in these

strategies, and encouraging them to use them for any type of unknown vocabulary, learners will be prepared to tackle the meanings of unknown idioms when they are encountered, while keeping instruction time focused on more frequent and practical vocabulary that the learners need to know. In this way, teachers can prepare learners with the tools they need to comprehend idioms which they may encounter independently in the future, while not wasting valuable preparation and classroom time trying to guess which idioms their learners will need to know in order to teach them explicitly during lessons.

5.2 Pedagogical Implications

This study examined how learners use meaning-discovery strategies to arrive at a meaning for unknown English vocabulary upon first encountering it. Because long-term retention or acquisition of the vocabulary is not being studied, the pedagogical implications of this study are somewhat limited. Although meaning-discovery in and of itself is insufficient for acquisition, it is still a necessary step toward vocabulary acquisition. For this reason, there are

some implications for classroom practice and teachable learner behavior that can be drawn from this study.

The purpose of any vocabulary learning strategy is to assist learners in improving their vocabularies independently (Nyikos & Fan, 2007). In an EFL environment, such strategies compensate for the lack of exposure to English outside of the classroom. While ESL learners are likely to pick up at least partial knowledge of many words through repeated exposure (Ellis, 1995), EFL learners need to make a conscious effort to increase their vocabulary from English when they are exposed to it. The results of this study suggest that meaning-discovery strategies are effective means of guessing at semantic components of word knowledge on an initial encounter. Because encounters with infrequent vocabulary are rare for EFL learners and multiple exposures in context are needed to acquire vocabulary knowledge through exposure alone (Laufer, 2001), teachers need to encourage learners to be proactive when they encounter an unknown vocabulary item. Rather than simply passing by the word, they should be encouraged to stop and engage with the unknown vocabulary using meaning-discovery strategies to assess its probable meaning. Otherwise, they may be missing out in a chance to increase their

vocabulary, and another chance to acquire that particular word may not come again for some time.

Teachers should also take care in instructing learners of the pros and cons of various meaning-discovery strategies. The results of this study taken from the MDPS suggest that most learners are methodical in their application of meaning-discovery strategies. Good strategy use is a learned behavior (Grenfell & Macaro, 2007) so teachers should instruct learners so that the learners can develop not only a strategy use routine that they prefer, but one which will be more likely to be effective in a variety of encounters. Teachers should also instruct learners to be flexible when their standard operating procedure fails to lead them to the meaning of an unknown vocabulary item. This instruction should be explicit, repeated, and presented with opportunities for the learners to practice using the strategies in order for the instruction to be effective (Nyikos & Fan, 2007; Taylor et al., 2006).

Based on the results of both the MDPS and the think-aloud protocols, searching for meaning using context clues is the most used meaning-discovery strategy. While it did not prove to be the most effective strategy in this study, there is evidence that it is a necessary strategy to use before certain other strategies may be employed. In the think-aloud protocols, in most cases the

learners used compensation strategies such as translations into the L1 and repetition to establish the context before using any meaning-discovery strategies. Once the context was established, the participants could search for context clues, analyze the part of speech of the target vocabulary, or imagine the literal meaning. Without context, these strategies become more difficult to use. While context clues were not always shown to be effective in this study, there is evidence that it may be necessary to use context clues to aid other strategies.

Dictionary use was shown in this study to have the greatest effect toward successfully arriving at the meaning of unknown vocabulary. Dictionary use, however, is not without its drawbacks. The way information is organized and the way definitions are worded in dictionaries may hinder their overall level of utility for language learners (Nagy & Scott, 2004; Scholfield, 1997). Another problem is that learners may expect a simple one-to-one correspondence between the L1 and L2 words when using a bilingual dictionary, which is rarely the case (Nagy & Scott, 2004). Learners may arrive at erroneous or incomplete meanings when employing a dictionary if not able to use other forms of knowledge such as part of speech or context to find the correct sense of the unknown word (Nyikos & Fan, 2007). Teachers need to

make learners aware of these issues, so as to minimize them, while encouraging dictionary use during reading activities or general vocabulary activities.

While there are some concerns that dictionary use may hinder comprehension of a text by interrupting the reading act (Krashen, 1993; Scholfield, 1997), there is also evidence that strategic dictionary use provides a deeper level of engagement with an unknown vocabulary item, which assists with acquisition through both meaning-discovery and meaning-consolidation (Hudson, 2007; Scholfield, 1997). If this is a concern for teachers, after searching for the unknown vocabulary learners should be advised to go back and re-read the entire sentence, or better yet entire paragraph, rather than continuing to read from the unknown word after a dictionary look-up. This may be somewhat more time consuming, but it will allow the learners to refresh their memory about the meaning of the passage they are reading and also give them another chance to examine the new word in its context.

Analysis of vocabulary had a significant negative effect as a predictor of effectiveness with idioms in this study. The non-compositional nature of idioms may be the reason why analysis of the constituent vocabulary of the

idiom was ineffective. AOV was also a negative, although insignificant, predictor of effectiveness for single-word items. Evidence from the think-aloud protocols may help to explain this, and provide some guidance for teachers and learners. Analysis of root words and affixes may not always lead to a satisfactory meaning. For example, when trying to guess the meaning of the target word *presage*, subject JS knew that the prefix *pre-* meant before, and knew the noun sense of the root *sage* meant a wise man. Possibly because he failed to analyze part of speech to determine that the word *presage* was a verb, he failed to successfully analyze the vocabulary. This should not be taken to mean that the strategy has no value, though. Analysis of the target word can assist with dictionary use, especially for words which can be used as more than one part of speech, or which have a variety of senses, are homonyms (Laufer, 1997). By successfully analyzing the part of speech or root and affixes, the learner is more likely to select the correct meaning of the word when searching in a dictionary. It may also aid with inferring from context in a similar manner, or serve as a check when a guess is made from context clues, as subject DY mentioned in her think-aloud protocol.

Comparing similar vocabulary was rarely used in both the MDPS and the think-aloud protocols, and it was a significant negative predictor of

effectiveness for both single-word items and idioms. One possible explanation for both the low level of use and lack of effectiveness of this strategy is that the learners that took part in this study have not developed their vocabularies enough to have a wide range of similar single-word items or idioms with which to compare the target vocabulary used in this study. Another explanation may be that superficial similarities to unrelated words the learners did know misled them as to the meanings of the target vocabulary (Laufer, 1997). This strategy may be best used by native speakers when expanding their vocabularies, rather than for language learners, and teachers of language learners may do well to warn learners of the possible risk of misinterpreting a word due to a superficial similarity if they do use this strategy.

Imagining the literal meaning of the target vocabulary is a strategy that was discovered in the preliminary study, when idioms were the only target vocabulary. In the present study, it was not expected to be effective for single-word items because the single-word items were not, for the most part, used in figurative senses. The regression analysis performed in this study showed slightly negative effects on guessing the meaning of single-word items, and slightly positive effects on guessing the meaning of idioms, but neither was significant. The evidence presented here suggests that this strategy is not

particularly helpful or harmful. Teachers may suggest this as a way to contrast the context when faced with idioms, but it should probably not be recommended for use with unknown single-word items, unless the learner has some idea that the single-word item may be used in some figurative sense in the context in which it is encountered.

Help from peers was the least used strategy on the MDPS, used slightly more with single-word items than with idioms. However, it was a strong negative predictor of correctness for single-word items and only a weak negative predictor for idioms. This suggests that this strategy is unreliable, especially compared to using a dictionary. While in the past, this strategy may have been used more often due to the expedience of simply asking a peer, with the ease of access to online dictionaries, it may be better to encourage learners to use a dictionary rather than to consult with their peers whose vocabulary knowledge may not be reliable.

Learners with solid vocabulary learning strategies and their own preferred methods of discovering the meanings of unknown words can come to guess the meaning of unfamiliar vocabulary if they are on the lookout for such vocabulary and do not avoid engagement with the unknown words. Teachers do not need to waste valuable classroom time teaching rarely

encountered vocabulary items if they instead instill solid strategies for approaching unknown vocabulary in their learners. The learners can then do the work on their own. This will lead to greater successful engagement with a wider range of authentic materials. The important thing for EFL learners to be aware of is that an encounter with an unknown vocabulary item is a chance to acquire that vocabulary if they make an effort to engage with it, and that if they do not take the opportunity to engage with that vocabulary they may not get another chance for some time. Learners who wish to improve their vocabulary either to improve their pragmatic ability to achieve high test scores or their functional desires to improve their communicative competence.

5.3 Limitations

This study has some limitations. The first limitation involves using self-report data to study learners' strategy use. White, Schramm and Chamot (2007) discuss three aspects of self-report data that may limit studies of learner strategies: “learners may not understand or interpret accurately the strategy description in each item, may claim to use strategies they do not use, and may fail to recall strategies they have used in the past” (p. 95). In order to

mitigate this limitation, the directions as well as each strategy were provided in Korean and examples of strategy use were given by the researcher before collecting the data. It is hoped that the voluntary nature of the study dissuaded participants from willfully giving inaccurate information. The task-based nature of the MDPS and think-aloud protocols make it less likely that the participants would fail to recall a strategy they have just used.

A second limitation involves the number of and choice of target vocabulary, the contexts in which they were placed, and the number of strategies listed as options for participants. Steps were taken to select vocabulary which would not already be familiar to the participants (Nation & Webb, 2011), although the number of items was limited due to practicality concerns. Especially with regard to the various intra-lexical items studied, there seems to have been not enough items to draw valid conclusions. Contexts for each target vocabulary item were chosen based on a desire to have authentic passages. Some, however, may have been too short, or not content-rich enough to allow effective inferences to be drawn. Nation and Webb (2011) suggest that this may not overly limit the findings, as it more accurately simulates actual reading conditions, where some authentic contexts will be more helpful than others. The suggested meaning-discovery strategies

suggested on the MDPS were selected to provide a variety of methods to discover meanings, and based on previous research (Park, 2001; Schmitt, 1997; Wu, 2005) to be the most likely to be used. While participants had an option to use other strategies, few did so, suggesting that listing more strategies might have been helpful to them.

The final limitation of the study concerns the likelihood of the participants encountering vocabulary similar to that in this study in the course of their daily lives. Most of the participants of this study are English majors, so they may be likely to encounter lower frequency single-words, Bands 9 to 23 on the Compleat Web VP (Cobb, n.d.) in their studies. Which idioms they may be exposed to depends on the individual participants. Those that often interact with authentic English media such as movies, television, sports news, or conversation with native speakers are more likely to encounter idioms than those that do not (Johnson-Laird, 1993; Moon, 1997).

5.4 Implications for Future Research

The results of this study provide evidence of the types of meaning-discovery strategies that intermediate level EFL learners in Korea use, and

which strategies they find helpful. This study also provides evidence of the effectiveness of meaning-discovery strategies. The results differ somewhat from previous studies of learners' meaning-discovery strategy use and preferences. There are also some differences from previous studies that investigated learner actions taken to guess at the meanings of previously unknown single-word items and idioms. These differences and the implications that can be drawn from them are three-fold.

The first of the three implications that can be drawn from this research is that from a learner standpoint, there may be no perceived difference between an unknown single-word item and a multi-word item such as an idiom. Psycholinguistic research into idiom processing indicates that people process all of the constituent words that make up idioms, even if the phrase is recognized as an idiom, and that the idiomatic sense of the phrase, or the constituent words, is accessed along with other literal or figurative meanings of the constituent words (Abel, 2003; Cacciari & Tabossi, 1988; Flores d'Arcais, 1993; Levorato, 1993). The results of this study regarding what meaning-discovery strategies learners use when faced with unknown single-word items and idioms can be explained with this model of processing. Learners do not vary their choices of meaning-discovery strategies depending on the type of

unknown vocabulary they have to comprehend because the lexical processing needed to comprehend either is the same. This also supports Ellis's (1997) claim that learners "don't care about linguists' analyses of language. They don't care about grammar or whether words or morphemes are the atomic units of language" (p. 122). For learners, an incomprehensible or unknown string of text, whether a single-word item or an idiom, is an equally hindering gap in the comprehension of the text that needs filling.

This being the case, the implication that can be drawn is that future research into idioms, and possibly other multi-word items, needs to be aware of how multi-word items are approached by the learners being studied. Idioms and other multi-word items may be treated the same as unknown single-word items by the participants, so researchers should consider that in studies of idioms, outcomes may be similar to results of studies done with single-word items. It may also be useful to researchers in the future to consider multi-word items as a specialized form of collocation, and idioms in particular as a polyseme of the collocation as a whole.

It is beyond the scope of this study to say that all multi-word items in English may be approached in the same way that single-word items are by learners, so future studies may want to investigate other types of multi-word

items, such as compounds, phrasal verbs, fixed phrases and prefabs (Moon, 1997), to see if similar results to these are obtained. From the results obtained here, it seems safe to say that idioms are viewed by learners in the same way they view single-word items which may have both literal and figurative senses of meaning.

The second implication that can be drawn from this study regards the study of learner actions taken to comprehend idioms, or other types of unknown vocabulary. While the results of this study are similar to previous studies of meaning-discovery strategy use (Park, 2001; Schmitt, 1997; Wu, 2005) with regard to which meaning-discovery strategies are favored by learners, they differ from studies that examine the actual application of these meaning-discovery strategies by learners (Cooper, 1999; Lee, 2003). Learners favor using context clues and bilingual dictionaries over other types of meaning-discovery strategies, and as this study shows, these two strategies were the most effective means to arrive at the meanings of unknown vocabulary. The fact that in this study context clues was favored over bilingual dictionaries in contrast to the previous studies may be explained either by the fact that the vast majority of participants in this study were English majors while in the previous studies the participants appear to have been of a mix of

majors, or else by the fact that since over a decade has passed since those earlier studies, contemporary learners may be encouraged by their teachers to use context clues more often.

The differences in the application of meaning-discovery strategies, however, is not so easy to explain. Cooper (1999) and Lee (2003) both found evidence of heuristic, trial-and-error application of meaning-discovery strategies when learners attempted to guess at the meanings of unknown idioms. In both this study and in the preliminary study (Laffey, 2016), there is evidence that a greater number of learners approach unknown idioms in a patterned, methodical fashion rather than by trial-and-error. If most learners are methodical in their application of meaning-discovery strategies, studies of which methods are more effective than others are feasible. If, however, the data collected in this study is somehow not representational of most learners, and most learners rarely approach idioms in a systematic fashion, such studies become more difficult. More research is needed to investigate the discrepancy between this study and the earlier studies by Cooper (1999) and Lee (2003).

The final research implication of this study regards the effects of various intra-lexical factors on the selection of meaning-discovery strategies, and the effectiveness of the various strategies with respect to the various intra-

lexical factors. No significant differences were detected in strategy use or effectiveness with regard to whether an idiom played a verbal or adjectival function, whether it was more transparent or more opaque, or whether it contained only common constituent vocabulary items or contained one or more uncommon constituent vocabulary items. Many studies (Abel, 2003; Angel, 2007; Boers & Demecheleer, 2001; Li & Sporleder, 2010; Liu, 2003; Simpson & Mendis, 2003; Titone & Connine, 1994, Titone & Connine, 1999) have attempted to classify idioms by a variety of intra-lexical factors. The evidence from this study is weak, as pointed out in the limitations, due to the small numbers of items belonging to each intra-lexical factor group on the MDPS and in the think-aloud protocols, but if further studies examining learners' meaning-discovery strategy use also show no effects on choice of strategy or the effectiveness of certain strategies with regard to intra-lexical factors, it may limit the practical implications of these various studies. They may be interesting to linguists, but of little to no psychological validity to learners (Ellis, 1997), and as such of limited practical value for teachers. More research is needed to support or refute this implication.

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Appendix A: Meaning Discovery Process Survey

의미 발견 과정에 대한 조사지 A

다음 간 빈칸에 쓰거나 ✓ 표시하시기 바랍니다.

학년: _____
성별: ☐ 남자 ☐ 여자
학과: ☐ 영어영문 ☐ 기타 인문 ☐ 사회 ☐ 자연 ☐ 공학 ☐ 기타
모국어: ☐ 한국어 ☐ 중국어 ☐ 기타: _____
해외 경험: _____ 월간 나라: _____

이 조사지는 생소한 영어 표현을 마주쳤을 때 여러분이 하는 행동을 조사하기 위한 것입니다. 각 문항의 밑줄 친 표현의 뜻을 이전부터 알고 있었다면 ☐ 에 ✓표시를 하고 뜻을 빈칸에 쓴 후 다음 문항으로 넘어가면 됩니다. 단어/숙어의 뜻을 모르면, 그 표현의 뜻을 추측하기 위해 어떤 구체적인 행동을 했는지 아래 네모 안에서 골라 행동을 한 **순서대로** 번호를 쓰고 추측한 뜻을 빈칸에 쓰기 바랍니다. 만약 네모 안에 있는 행동 이외의 행동을 했다면 간단하게 적어주십시오.

1. 표현을 구성하고 있는 요소를 분석해본다.
2. 문맥에서 단서를 찾아본다.
3. 알려진 비슷한 표현과 관련지어본다.
4. 사전을 찾아본다.
5. 다른 사람에게 물어본다.
6. 글자 그대로의 의미를 마음속으로 그려본다.
7. 기타 행동 (쓰세요).

1. Malnikov looked at Cloud, his mouth **agape**, then walked slowly to his desk.
   ☐ 밑줄 친 표현의 뜻을 이미 알고 있다. 뜻: _____
   첫째 행동: _____
   둘째 행동: _____
   셋째 행동: _____

2. Dana watched wolves **canter** through her yard and worried about the safety of her cows.
   ☐ 밑줄 친 표현의 뜻을 이미 알고 있다. 뜻: _____
   첫째 행동: _____
   둘째 행동: _____
   셋째 행동: _____

3. Cathy wasn't fat but she was **buxom** and her shirt was a little tight and showed a lot of skin.
   ☐ 밑줄 친 표현의 뜻을 이미 알고 있다. 뜻: _____
   첫째 행동: _____
   둘째 행동: _____
   셋째 행동: _____

1. 표현을 구성하고 있는 요소를 분석해본다.
2. 문맥에서 단서를 찾아본다.
3. 알려진 비슷한 표현과 관련지어본다.
4. 사전을 찾아본다.
5. 다른 사람에게 물어본다.
6. 글자 그대로의 의미를 마음속으로 그려본다.
7. 기타 행동 (쓰세요).

4. Hodler was an artist, and his mountain paintings **evince** much more than a heavenly admiration for their fantastic properties.

□ 밑줄 친 표현의 뜻을 이미 알고 있다. 뜻: _____
첫째 행동: _____
둘째 행동: _____
셋째 행동: _____

5. Mike was in a good mood, Kris thought at his **jocose** voice, and she hated to spoil it.

□ 밑줄 친 표현의 뜻을 이미 알고 있다. 뜻: _____
첫째 행동: _____
둘째 행동: _____
셋째 행동: _____

6. Her comment made my heart **patter**. I guess the family had all been talking about me.

□ 밑줄 친 표현의 뜻을 이미 알고 있다. 뜻: _____
첫째 행동: _____
둘째 행동: _____
셋째 행동: _____

7. Tarantino's creatively twisted jokes, his **randy** talk, and some crazy performances will keep you laughing at his movies.

□ 밑줄 친 표현의 뜻을 이미 알고 있다. 뜻: _____
첫째 행동: _____
둘째 행동: _____
셋째 행동: _____

8. Anyway, he said, he couldn't **quibble** with the health department's standards since he wants people to be safe.

□ 밑줄 친 표현의 뜻을 이미 알고 있다. 뜻: _____
첫째 행동: _____
둘째 행동: _____
셋째 행동: _____

1. 표현을 구성하고 있는 요소를 분석해본다.
2. 문맥에서 단서를 찾아본다.
3. 알려진 비슷한 표현과 관련지어본다.
4. 사전을 찾아본다.
5. 다른 사람에게 물어본다.
6. 글자 그대로의 의미를 마음속으로 그려본다.
7. 기타 행동 (쓰세요).

9. Please don't ask me to decide that. Ask Mary. She **calls the shots** around here.

□ 밑줄 친 표현의 뜻을 이미 알고 있다. 뜻: _____

첫째 행동: _____

둘째 행동: _____

셋째 행동: _____

10. Josh thought Alex hit **below the belt** when he stole Josh's girlfriend, but everyone else said it was no problem.

□ 밑줄 친 표현의 뜻을 이미 알고 있다. 뜻: _____

첫째 행동: _____

둘째 행동: _____

셋째 행동: _____

11. Jenny was telling us about the movie, but she **went off on a tangent** about her favorite actor and never finished telling us about the movie.

□ 밑줄 친 표현의 뜻을 이미 알고 있다. 뜻: _____

첫째 행동: _____

둘째 행동: _____

셋째 행동: _____

12. This new coffee shop **is the cat's whiskers**. I want to go there every day.

□ 밑줄 친 표현의 뜻을 이미 알고 있다. 뜻: _____

첫째 행동: _____

둘째 행동: _____

셋째 행동: _____

13. Houston is a terrible city to visit, but **on the flip side** it's a great place to live.

□ 밑줄 친 표현의 뜻을 이미 알고 있다. 뜻: _____

첫째 행동: _____

둘째 행동: _____

셋째 행동: _____

1. 표현을 구성하고 있는 요소를 분석해본다.
2. 문맥에서 단서를 찾아본다.
3. 알려진 비슷한 표현과 관련지어본다.
4. 사전을 찾아본다.
5. 다른 사람에게 물어본다.
6. 글자 그대로의 의미를 마음속으로 그려본다.
7. 기타 행동 (쓰세요).

14. The president was angry with the protesters and asked the police to **throw the book at** them.

□ 밑줄 친 표현의 뜻을 이미 알고 있다. 뜻: _____
첫째 행동: _____
둘째 행동: _____
셋째 행동: _____

15. I think I need a new job. This job has me **stuck in a rut** and I hate it.

□ 밑줄 친 표현의 뜻을 이미 알고 있다. 뜻: _____
첫째 행동: _____
둘째 행동: _____
셋째 행동: _____

16. Jane wouldn't trade lunches with Sue, so Sue had to **sweeten the kitty** and buy Jane a drink to go with lunch.

□ 밑줄 친 표현의 뜻을 이미 알고 있다. 뜻: _____
첫째 행동: _____
둘째 행동: _____
셋째 행동: _____

Appendix B: Think-Aloud Protocol Items in Context

1. As he folded his arms across his chest, his **burly** arm muscles showing beneath his old green cape.
2. Those that are in charge are responsible for this most **heinous** act. They can no longer be in positions of power in government.
3. SXSW organizers in 1994 decided to add a computer section, to show off the still **nascent** Internet, and a film section, to show off local movies
4. We have sunk into a **torpid** nation of lazy people. The family dinner has lost out to the fast-food restaurant.
5. Politicians of all types soon joined to **cudgel** the Mexican president for his friendly relationship with the United States.
6. I get the feeling here in the U.S., you know, bars are places – I imagine people sitting up at the bar, drinking, usually alone. They are places where you go to **imbibe** alcohol.
7. The unhappiness of many of the people may **presage** more trouble to come.
8. And that is jokes because jokes are funny – some of them. And we **titter**, we laugh and yet sometimes those go across the line, too.

9. April completed the job interview **with flying colors** and was hired on the spot.

10. The town was so far **behind the times** that it didn't have cable TV, internet, or a McDonalds.

11. I knew what I was doing at work didn't **cut the mustard** so I quit before I was fired.

12. The rich girl hated camping. She was used to having everything **at her fingertips** and didn't know how to get along in the woods.

13. Steve has been **nursing a grudge** against Tony since Tony refused to help two years ago.

14. Your son was cheating on the test. Don't just talk to him about it; **rake him over the coals** so he will never do that again.

15. Don't take your car to that shop to get it fixed. They will **take you to the cleaners**, telling you that they need to fix parts that are perfectly fine.

16. I had to work all day and study all night. It's too much pressure. I will **lose my grip** if I don't get some sleep.

Appendix C: Strategy Use Strings

Item	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
agape	26	24	624	34	4	124	2	164	234	214	214	214
canter	26	2	234	2	124	124	12	214	234	2614	124	124
buxom	26	24	126	24	12	12	12	124	234	624	124	214
evince	231	24	124	2	124	124	124	134	234	624	24	12
jocose	124	2	126	2	124	1264	12	124	234	6214	2	214
patter		24	12	2	124	126	123	124	234	1234	23	2
randy	124	24	2	24	124	12	12	164	234	124	24	214
quibble	124	24	62	2	124	12	12	124	234	214	24	264
call the shots	16	2	62	24	124	12	12	624	2	624	24	24
below the belt	64	24	62	2	126		124	25	2	624	24	264
went off on a tangent	6	24	2	24	126	12	12	46	2	6234	24	264
is the cat's whiskers	6	2	62	2	46	12	12	24	2	624	24	26
on the flip side	6	2	2		621		2	2	2	6234	2	26
throw the book at	6	2	2	24	621	12	12	24	24	6324	24	2
stuck in a rut	6	2	2	24	642	12	12	24	214	3624	24	23
sweeten the kitty	246	25	62	2	621	12	12	2	214	6324	2	214

Item	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22	S23	S24
agape	214		24	254	4	542	24	25	24	24	23	14
canter	213	254	4	25	24	542	2	24	2	234	2	14
buxom	214	264	24	54	234	542	24	2	2	246	2	15
evince	234	214	24	4	4	542	24	2	14	234	2	14
jocose	234	26	24	62	234	542	24	24	124	234	234	14
patter	231	236	24	32		542	24	2	2	24	36	14
randy	213	264	24	2	24	542	24	2	124	246	2	14
quibble	254	254	24	52	4	542	24	2	24	24	3	14
call the shots	213	2164	64	214	4	542	264	24	24	1246	2	24
below the belt	261	265	64	21	24	542	264	2	124	124	24	24
went off on a tangent	231	5	24	2	4	542	24	12	24	1246	24	24
is the cat's whiskers	214	256	264	15	4	542	624	24	124	1246	21	24
on the flip side	231		264	2	2	542	62	2	2	1246		24
throw the book at	213	26	264	12	34	542	624	2	2	126	2	24
stuck in a rut	213	264	4	2	27	542		2	24	1246	2	24
sweeten the kitty	231	265	264	15	247	542	624	24	124	124	2	24

Item	S25	S26	S27	S28	S29	S30	S31	S32	S33	S34	S35	S36
agape	2	134	4	24	24	261	132		621	236	5	54
canter	24	124	21	24	24	261	132	2645	621	236	2	2
buxom	2	124		24	24	261	132	264		236	2	2
evince	24	124	4	24	24	261	132	625	621	326	24	234
jocose	24	124	214	24	24	261	132	624	621	236	2	2
patter	26	124	23	24		261	132	245	621	312		2
randy	24	124	24	24	24	261	132	25	621	236	2	4
quibble	24	124		24	24	216	132	24	621	236	21	24
call the shots	264	12	132	24	24	126	132	264	621	236	2	2
below the belt	24	124	24	24	24	261	132	254	621	236	264	234
went off on a tangent	2	124	256	24	24	216	132	24	621	236	264	2
is the cat's whiskers	24	124	124	24		612	132	654	621	236	264	264
on the flip side	2	124	213	24		612	132	34		236	2	264
throw the book at	2	124		24	24	621	132	24	612	236	124	24
stuck in a rut	2	124	214	24	24	621	132	24	612	236	214	64
sweeten the kitty	24	124	623	24		261	132	624	612	236	124	624

Item	S37	S38	S39	S40	S41	S42	S43	S44	S45	S46
agape	254	24	264	2	624	24	23	24	326	254
canter	2	24	24	2	264	24	26	24	213	234
buxom	2	2	2	24	264	2	2	24	216	24
evince	254	24	2	274	24		23	24	362	234
jocose	254	24	2	274	124	21	23	24	126	214
patter	254	24	64	2	264	4	264	24	216	234
randy	2	2	6	2	124	4	24	24	216	132
quibble	254	24	254	2	124	24	24	24	126	324
call the shots	2	2	264		234	2	2	624		126
below the belt	254	264	26	264	124	24	26	624	123	162
went off on a tangent	2	24	2	2	234	2	23	243	126	162
is the cat's whiskers	2	2	364	2	134	4	326	2	263	162
on the flip side		23			236		1	2	316	162
throw the book at	24	2		264	234	2	2	64	213	162
stuck in a rut	524	4	624	26	24	4	23	24	631	162
sweeten the kitty	2	46	264	2	2164	42	236	245	316	162

Item	S47	S48	S49	S50	S51	S52	S53	S54	S55	S56	S57
agape	24	2	234	234	245	16	213	254	214	2	145
canter	24	2	234	236	124	2	213	254	214	2	145
buxom	24	2	234	264	124	1	213	254	214	2	145
evince	24	2	124	231	124	124	231	254	214	24	145
jocose	234	2	134	236	124	1	213	254	214	2	145
patter	24	2	234	234	124	1	132	254	214	2	164
randy	24	2	124	236	245	1	213	254	214	231	124
quibble	24	2	324	264	124	123	213	254	214	24	164
call the shots	24	2	364	126	124	1		124	214	21	164
below the belt	24	2	364	126	123		431	124	214	2	164
went off on a tangent	24	2	364	216	354	123	431	214	214	26	164
is the cat's whiskers	2	2	364	126	324	123	124	154	214	2	164
on the flip side	2	2	364	213	124	1	431	154	214	26	164
throw the book at	2	2	364	216	124		431	214	214	2	164
stuck in a rut	2	2	364	213	234	12	431	154	214	26	134
sweeten the kitty	2	2	364	216	124	123	431	214	214	264	134

Appendix D: Glossary of Terms

Idiom: Idioms are figurative multi-word units that have proven difficult to define. For this study, an idiom can be defined as "a multi-word item which is not the sum of its parts: with a holistic meaning which cannot be retrieved from the individual meanings of the component words" (Moon, 1997, p. 46). Because the figurative nature of idioms would appear to make them more difficult to comprehend, a comparison of meaning-discovery strategies used when faced with idioms and when faced with single-word items is warranted.

Intra-lexical Factor: Intra-lexical factors are "the intrinsic properties of the word which may affect its learnability, properties which are related to the word's form and meaning" (Laufer, 1997, p. 141). Which intra-lexical factors of words make them easier or more difficult to learn may be relative to the age, experience, and language/cultural background of the learner. Because intra-lexical factors may make certain types of vocabulary more difficult to learn, learners may need to apply more or different vocabulary learning strategies depending on the intra-lexical factors of a given word.

Meaning-discovery Strategy: A meaning-discovery strategy is a vocabulary learning strategy used to guess at the meaning of a newly encountered word in a first or second language. They are complemented by consolidation

strategies, which learners use to acquire and reinforce vocabulary knowledge in memory (Schmitt, 1997). This study focuses on examining how learners apply meaning-discovery strategies to single-word items and idioms, as well as how effective these strategies are at arriving at the correct meaning of the unknown vocabulary.

Multi-word item: A grouping of several otherwise independent vocabulary units which gain a unified and specialized meaning (Moon, 1997) can be considered a multi-word item. Examples of multi-word items include compound words, phrasal verbs, prefabricated expressions such as "How do you do?" or "in my opinion," and idioms.

Single-word item: A word in the traditional sense, a single orthographic unit with a holistic meaning or meanings (Moon, 1997) can be considered a single-word item. The majority of people, if asked to describe what a "word" is, would describe single-word items.

Skill: Also known as a process, a skill is an automated action taken by a learner to achieve a goal or overcome a problem (Anderson, 2006). Skills develop from strategies over time, and once they become automatic, they free up attentional resources to focus on other aspects of language processing.

A skill and a strategy perform the same function, the difference lies in whether the action is consciously activated or automatically activated.

Strategy: A strategy is a conscious action taken by a learner to achieve a goal or overcome a problem (Anderson, 2006). Whenever there is a breakdown in language comprehension, strategies can be employed to repair or mitigate the problem, or else to avoid the problem (Canale & Swain, 1980).

Vocabulary: Vocabulary refers to any lexical unit, whether a single-word item or multi-word item, with a singular meaning or meanings (Spratt et al., 2011). The distinction between single-word and multi-word items is one of arbitrary convention, as both single words and multi-word strings can be stored in memory in the same way (N. Ellis, 1995, 1997). In this study the term "vocabulary" is used to refer to both single-word items and multi-word items.

Vocabulary Learning Strategy: Vocabulary learning strategies are specific actions, behaviors, steps or techniques that students use to improve their own progress in developing skills in a second language (Oxford, 1999, cited in Gass, 2013, p. 467). They are the means by which students come to comprehend and acquire vocabulary in a second language (Nyikos & Fan, 2007). This study focuses on the specific subset of vocabulary learning strategies called meaning-discovery strategies.

Abstract in English

This study examines the meaning-discovery strategies used by intermediate level English learners when faced with both unknown single-word items and unknown idioms in English. The study hopes to provide insight into the meaning-discovery strategies learners use by analyzing the differences in strategy use between single-word items and idioms, examining the effects of the intra-lexical factors of grammatical function, transparency, and frequency of an idiom's constituent vocabulary upon choice of strategy, and examining the effectiveness of learners' strategy choices. The data analyzed in this study comes from three sources: a retrospective self-report survey of strategy use and helpfulness, an on-line task-based survey of strategy use, and think-aloud protocols. The findings indicate that Korean intermediate level learners rely mostly on context clues and dictionary look-ups to discover meanings of unknown vocabulary. The findings also show that there are few differences in strategy choice between single-word items and idioms, and between items with differing intra-lexical factors. Dictionary use is shown to be the only consistently effective meaning-discovery strategy, although use of context clues was effective for unknown idioms. The implications of these findings for pedagogy and future research are then discussed.

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