

## **Chapter 1**

### **Literature Review**

#### **1.1 Introduction**

##### *1.1.1 L2 Reading*

Understanding second language acquisition (SLA) has been a topic of study for many years. L2 reading has been studied from many different perspectives such as the importance of L1 transfer in learning to read in a second language, mental translation as an L2 reading strategy, social influences of L2 reading development, and understanding the limited knowledge of L2 readers in relation to cultural and contextual factors (Grabe, 2002, pp. 52-55).

The purpose of this study is to investigate L2 text comprehension from the perspective of language processing within the field of cognitive science, especially with reference to attentional resources. The role of attention in second language acquisition with regard to the notion of detection is a crucial aspect of L2 aural and written comprehension (Tomlin and Villa, 1994; VanPatten, 1996). As a function of attention, detection selects specific elements found in the input to be registered in working memory where they are subject to further processing by the L2 learner. During attention, more specifically detection, VanPatten (1996) posits that form and meaning, which are not independent of one another, compete for the limited cognitive resources available to the adult L2 learner, especially, in the early stages of second language acquisition. Consequently, in these early stages, the demands of comprehending a message deplete the attentional system making it more difficult for the L2 learner to process for linguistic form and content or meaning at the

same time (Tomlin and Villa, 1994; VanPatten, 1996). The overall purpose of this thesis is not to establish that second language acquisition results from conscious or subconscious processes, but is to determine the effect of attention to form versus attention to meaning while processing input for meaning during the intermediate and advanced stages of second language acquisition (Bouden, Greenslade, & Sanz, 1999, p. 66).

### *1.1.2 A Cognitive Perspective on L2 Aural and L2 Text Comprehension*

Bouden, Greenslade, & Sanz (1999, p. 69) claim that L2 learners approach both listening and reading tasks with a number of L1 processes, skills, and strategies that can be transferred to an L2 context with the ability to assist in decoding and comprehending information. This often involves a complex interaction between lower-level processes such as subconscious phonological recognition of words as well as accessing lexical entries and higher-level metacognitive processes such as interpretation and making inferences. Due to the limited capacity to attend to a large amount of input at one given time, not all incoming input is able to be processed. While this is apparent in one's first language, it becomes more obvious in L2 listeners and readers when limited attentional abilities must compete between processing for meaning and processing for form (VanPatten, 1996, p. 16). If the limited attentional capacity of L2 learners must process for meaning and form, what effects will this have on their comprehension (Bouden, Greenslade, & Sanz, 1999, pp. 70-71; VanPatten, 1990)?

There are a number of studies that have examined this problem. Lee (1998) investigated the relation between comprehension and input processing with beginning level L2 learners of Spanish to determine if they are affected by morphological characteristics of verbs in the input (such as subjunctive morphology versus non-subjunctive morphology)

and found that the subjunctive morphology adversely affected comprehension while non-subjunctive morphology did not. Doughty (2002) investigated deriving meaning from focus on form. Deriving meaning from focus on form involves drawing the early stage L2 learner's conscious attention to linguistic elements of a text such as lexical and grammatical items, as a way to derive further meaning from a text after an initial sense of meaning of a L2 text had been established. More specifically, Doughty (2002) proposes that focus on form is an instructional expedient for addressing pervasive, systematic, remediable or persistent L2 learning problems. VanPatten (1990) examined the problem of detection of L2 aural comprehension to determine if comprehension would be affected if a L2 learner was obligated to focus conscious attention on lexical items or grammatical items while listening for meaning in Spanish. Bouden, Greenslade, & Sanz (1999) carried out a conceptual replication of VanPatten (1990) in order to test the results of his study with L2 text comprehension instead of L2 aural comprehension. The purpose of the present study is to build on VanPatten (1990) and Bouden, Greenslade, & Sanz (1999) by testing conscious focus of attention on content and form using L2 learner's of English in Mexico.

### *1.1.3 Motivation for Research and Methodological issues*

The motivation for this thesis is to investigate attention to form versus attention to content in the comprehension of L2 reading texts. The purpose of exploring this issue is to contribute to the overall body of knowledge with regards to the role of attention in second language acquisition, especially during detection; and to gain a fuller understanding of working memory and its limited processing capacity of detected L2 input. This thesis will also attempt to test and to contribute to a greater understanding of VanPatten's (1996) two

principles of second language input processing with regard to written L2 input (see Section 1.24 of this Chapter).

This study is a conceptual replication of VanPatten (1990) and Bouden, Greenslade, and Sanz (1999), altering various features of the original study such as the L2 language being tested, the experimental and warm-up text, and the number of subjects (VanPatten, 2002, p. 779). While both of the previous studies were carried out with L2 learners, they only examined L2 language acquisition with native English speakers learning Spanish. This study contributes to a complete account of the issue by examining intermediate and advanced L2 English learners. Bouden, Greenslade, & Sanz (1999) and VanPatten (1990) posit that in the early stages of second language acquisition, attention to form and to content will compete for the limited cognitive resources available because the process of comprehending a message in a second language has not yet been automatized. This study has examines both intermediate and advanced L2 text comprehension with L2 English learners to address this issue.

#### *1.1.4 Research Question and Overall Design*

Does processing for form and content compete in intermediate and advanced L2 learners of English? Since this study is a conceptual replication, it follows the methodological precedents of VanPatten (1990) and Bouden, Greenslade, and Sanz (1999). The methodological design of the previous studies is experimental research and will be reviewed later in sections 1.3.1 and 1.5.1 of this chapter.

## **1.2 Theoretical Background**

This section provides an account of language processing and text comprehension (section 1.2.3) with regards to how they relate to input processing and the processing of input (section 1.2.1) in working memory (1.2.2), the derivation of intake from L2 input, and the role of attention/detection in comprehension of L2 input (section 1.2.4).

### *1.2.1 Language Processing*

Understanding language processing is crucial to understanding how L2 learners acquire a second language. From the psycholinguistic perspective, processing can be described in terms of levels. Processing of language starts with input, occurs in working memory, and is handled by a number of functionally specialized processors known as modules, although there is disagreement about how these modules are connected and how they function (Harley, 2001, p. 20). Language processing can be defined as the perception, comprehension or decoding of input, and the production of language (Carroll, 1986, p. 50; Smith and Truscott, 2004, p. 1).

In language comprehension, speech perception begins with the reception of a lower level phonetic code. Phonetics studies the physical speech sounds that are made while articulating speech and is a speech sound prior to lexical access. Once the phonetic code is detected by the mental lexicon, it becomes a higher level phonological code. The phonological code is the speech sounds that are represented in the mind (Harley, 1995, pp. 38-41). By way of the phonological form representation in the mental lexicon, word recognition occurs. The mental lexicon contains all information about a recognized word such as its phonological form representation, its syntactic frame representation, and its semantic information, which is the underlying concept behind a word's meaning (Harley, 1995, pp. 53-58). After all lexical information has been identified and each word's

syntactic category is determined such as a noun, verb, adjective, etc., this information is used to form the syntactic structure of a sentence. The syntactic component is responsible for organizing the words in a particular phrase structure according to a particular language's grammar. This process of computing the syntactic structure of a sentence is known as syntactic parsing (Harley, 1995, p.140).

In the syntactic parsing stage of language processing, there are two differing views on how the syntactic frame representation and semantic conceptual information are used in syntactic parsing: the autonomous model and the interactive model. According to the autonomous' perspective, the semantic information of a particular word or sentence can only begin to be processed after a major syntactic unit has been parsed. According to the interactive model, the construction of a semantic representation occurs simultaneously and is used to guide syntactic parsing (Harley, 1995, p. 297). Once syntactic parsing as well as semantic processing have occurred, the linguistic information must now be integrated into a mental representation. The end of language processing and the beginning of representing new information in memory begins with propositional representation (see Section 1.2.3), which is vital to the comprehension of speech and of text (Harley, 1995, pp. 225-226).

Comprehension of linguistic information involves computations in working memory and storage or representation of that same information involves long-term memory. The next section will describe working memory and long-term memory.

### *1.2.2 Memory*

Working memory is a limited-capacity memory system that places a constraint on how input is managed. The function of working memory is to extract from the input anything relevant for ongoing comprehension (Skehan, 1998, pp.43-45). Although

working memory can process a number of computations simultaneously, if the task demands exceed the available working memory resources, the storage capacities of working memory and the computation functions within it will degrade, causing input available for ongoing comprehension not to be comprehended. For example, as already mentioned, detection is a subprocess of attention and detected information interferes with processing of other information and will exhaust a large amount of resources (VanPatten, 1996, p. 16; Tomlin and Villa, 1994, p. 192). Working memory is a temporary memory where knowledge of specific events or linguistic information is represented for a short period of time. Depending on the processes that occur in working memory and the task demands placed on it, linguistic information processed in working memory will either be lost or stored in long-term memory (Skehan, 1998, p. 57).

While working memory is where comprehension and production of ongoing language occurs, long-term memory contains a rule-based analytical knowledge system, a memory-based formulaic system, a knowledge of grammar, lexical information, and general schematic knowledge. Long-term memory is also where concepts or mental representations are stored, the same mental representation that is the underlying concept behind a word's meaning. Long-term memory interacts with working memory to change or represent new information (Skehan, 1998, p. 58). When there is new information in working memory, changes may occur in long-term memory and old information may be altered in accordance with this new information. This new information may or may not become a mostly permanent representation in long-term memory (Harley, 2001, p. 275). An important aspect of L1 and L2 text comprehension is how information from text is processed by working memory and stored in long-term memory.

### 1.2.3 Text Comprehension

Text comprehension is the way that information from within a text from different sentences is integrated into a single representation (Stevenson, 1993, 103). In this study, text is defined as printed or written material that consists of a number of sentences. These sentences must somehow be processed by working memory into a single representation that may or may not eventually be stored in long-term memory as a concept (Harley, 2001, p. 311). When text is understood, its meaning is processed and a mental representation of its semantic information is constructed (Noordman and Vonk 1992, p. 373). From the psycholinguistic perspective, it is assumed the text is represented in two basic stages: The first is a propositional representation and the second is Johnson-Laird's (1983) notion of "Mental Models" (Garnham, 1987, pp. 158-159 & Stevenson, 1993, p. 104).

A proposition or a propositional structure is the simplest complete unit of thought encoded by language with the literal meaning of linguistic expressions (Feinstein, Garfield, Baker-Ward, Rissland, Rosebaum, Stillings, & Weisler, 1989, p. 23). A proposition is believed to be held in a middle-memory between working memory and long-term memory where with some minimal inferences, the information in the text is constructed (Harley, 2001, pp. 327-328). Their structure is not equivalent to the words and phrases that they represent. They are considered to be the sense of the words and the phrases that they represent and have a rapidly fading linguistic form (Johnson-Laird, 1983, p. 148). Propositions with some minimal inferences form a text-based representation. Studies of text recall have shown that people generally do not recall a linguistic expression used but recall propositions as complete semantic units (Kintsch, 1974, cited in Stevenson, 1993, p. 106). For example:

Tim ate pizza off of Mr. Jones' head.

1(a)

In the case of example 1(a), a person would be likely to recall this particular proposition as a whole unit by possibly saying: *From Mr. Jones' head, Jim ate Pizza* or *Pizza was eaten by Jim from Mr. Jones' head*, regardless of how implausible that it may seem and regardless of the phrase's linguistic structure. So what gets processed as a propositional unit, gets recalled as a single semantic unit (Stevenson, 1993, p. 106).

Mental Models are the second kind of text-representation that is believed to assist in the integration of text into a single representation and concerns the comprehending of text by way of the making of inferences (Stevenson, 1993, p. 104). Johnson-Laird (1983) posits that an organism carries a small-scale model of their environment that allows it to look for alternatives to its current situation, choose options that are conducive to a particular situation, react to future situations before they arise, utilize the knowledge of past events to deal with future situations, and react to a situation in a competent manner. Similarly, these models of reality need neither be wholly accurate nor correspond completely with what they model in order to be useful. This is the central insight of what is known as the theory of Mental Models (Johnson-Laird, 1993, p. 3). Carreiras, Garnham, & Oakhill (1996) suggest that if the theory of Mental Models allows for an interaction between superficial and content-based representation and is an appropriate framework for understanding how people comprehend text.

Understanding text requires inferences that relate to the propositions in the text and to the reader's knowledge of the world (Noordman and Vonk 1992, pp. 375-376).

Inferences are formulated as a text is being read and are necessary to establish a coherent reading of it (Garnham and Oakhill, 1992, p. 199) Inferences demonstrate that the listener or the reader is going beyond the initial information communicated to him or her by the text

and has begun to form a representation of the text in long-term memory (Harley 2001, p. 311).

Johnson-Laird (1983) suggests that there are two major forms of inferences in Mental Models: implicit *bridging* and explicit *elaborative inferences* (Garnham and Oakhill, 1992, 199). An implicit *bridging* inference is made to establish coherence between a present piece of text and a preceding text. An explicit *elaborative* inference is drawn to embellish textual information. For Example:

Tim rode to New York. (2a)

The bicycle got a flat tire in Stroudsburg. (2b)

In (2b) there is no antecedent for the definite noun phrase *the bicycle*. In order to construct a mental model of the situation, it is necessary to infer that it was a bicycle that Tim rode and not a horse. This is a bridging inference (Stevenson, 1993, p. 112). Implicit *bridging* inferences are necessary to understand written or spoken discourse. In fact, without these inferences, discourses would be beyond anyone's competence to understand (Johnson-Laird, 1983, p. 128). Explicit inferences on the other hand are made only if the reader needs to answer some question about the text and are not necessary for the comprehension of the text (Garnham, 199 and Oakhill, J p. 199). For example:

Jim put a large rock on Tina's finger. (3a)

One might make an inference from example (3a) that Jim and Tina are getting married even though that information is not necessary to understand the text. In summary, propositional representation together with the making of inferences is the way in which text is represented and comprehended (Stevenson, 1993, pp. 104-105).

The following section will discuss how comprehended input, aural and written, is vital to second language acquisition.

#### *1.2.4 Input/Intake and Comprehension in Second Language Acquisition*

VanPatten (1996) claims that input is a critical aspect of second language acquisition and that one might think there are many studies about input. Unfortunately, this is not the case. The main concern of input processing research is how L2 learners derive intake from input regardless of the language being learned and regardless of context (VanPatten, 2002, 757). Intake is input that is detected by working memory and that has been comprehended by the L2 learner, after which it is made available for second language acquisition. Wong (2003) points out that the field of second language acquisition is witnessing an increasing interest in the idea that drawing learner's attention to the formal, grammatical features of L2 input to derive intake is beneficial, and in some cases necessary for optimal L2 development.

In regards to second language learning, Krashen (1985) claims that L2 learners and humans in general, acquire language by receiving and understanding messages from comprehensible input. MacWhinney's (2001) Competition Model is a functional model of L2 acquisition that is designed with regards to input. MacWhinney (2001) posits that language comprehension is based on the detection of a series of L1 cues and that the reliability and availability of these L1 cues determine the degree to which a L2 message is comprehended. The Competition Model recognizes the importance of surface phrase structure, but relates all sentence processing to cue detection and interpretation. Because the L1 cues are highest in reliability and availability, they will be the ones that most affect language comprehension. In Second Language Acquisition, L2 learners may use L1 cues to derive intake from the L2 input that has been received (MacWhinney, 2001, pp.69-71).

In recent years, there has been a focus on discovering strategies used by L2 learners during the decoding of a message (LoCoco, 1987, p. 119). There is a consensus among second language researchers that input and more importantly the derivation of intake, is an essential component in second language acquisition, and learners use input to construct a mental representation of the grammar that they are acquiring (VanPatten, 1996, p. 13). Although there are differing opinions, Schmidt (2002) posits that attention must be directed toward the evidence that is relevant for a particular learning domain. In other words, the receiving of input in the L2 and the derivation of intake from that input is essential to acquire phonology as well as vocabulary, morphology, syntax, and meaning by way of contextual information.

As mentioned previously, L2 learners do not process all of the input that they receive, and comprehended input is reduced to a subset of input called intake, which is made available for second language acquisition (VanPatten, 1996, 13). The derivation of intake from input occurs because the L2 learner unconsciously considers some forms of input more important than other forms of input. The input that the L2 learner unconsciously considers more important will be attended to and detected by working memory, through which it will become available to become intake (Schmidt, 2002, p. 32). Krashen (1981) suggests that intake is essential to L1 learning as well as L2 learning and that intake is the first of all input to be understood. Krashen (1985) takes the Universal Grammar approach and claims that second language acquisition does not require attention to form in the input in order to incorporate new material into a developing interlanguage system, while Schmidt (2002) takes an opposing position, arguing for a central role for conscious processing of grammatical forms in the input. In either case, attending to

incoming information is effortful and only so much data can be attended to at a given time because of the limited attentional capacity of working memory.

VanPatten (1996) posits that attention is an important construct for learning, especially L2 learning, and that learning takes place by way of it. Since unattended stimuli persist in working memory for only a matter of seconds, attention is a necessary and sufficient condition for intake to be derived from input and for long-term memory storage to occur (Schmidt, 2002, p. 16). So if input is not attended to or detected by working memory, intake will not be derived from the input and the input will be lost. At issue is that detecting input takes effort and that working memory has only a limited capacity to deal with stimuli. Moreover, the human cognitive activity of language comprehension consumes a great deal of attentional resources (VanPatten, 1996, p. 16).

As mentioned, detection is a process by which data are registered in working memory and is what makes a particular piece of data available for further processing (Tomlin and Villa, 1994, p. 192). Detection is a subprocess of attention, which is the aspect of input processing that most directly relates to the derivation of intake. However, detection causes interference with the processing of other information, and it occupies a large amount of attentional resources. So not all input that is attended to or detected will become available for the derivation of intake. It is also important to note that even if incoming L2 information is comprehended or understood, it may not become available for the derivation of intake (VanPatten, 1996, p. 16). VanPatten (1996) posits that because not all incoming linguistic information becomes available for intake, L2 learners may have a subconscious preference for the processing of L2 information.

From this idea VanPatten (1996) developed two principles of second language input processing:

Principle 1:

-L2 Learners process input for meaning before they process it for form.

This means that if a L2 learner with basic comprehension is attempting to get meaning out of the input, he or she will most likely process for the meaning in the input before processing formal features of language.

-L2 Learners process content words in the input before anything else. For example:

John is the owner of the car. (3b)

In example (3b) the L2 learner will process the words that best express the meaning of the utterance such as *John*, *owner*, and *car*.

-L2 Learners prefer processing lexical items to grammatical items for semantic information. For example:

Yesterday John studded his boots. (3c)

In example (3c), the L2 learner will process the lexical item *yesterday* instead of the bound morpheme *-ed* to figure out that the action took place in the past (VanPatten, 1996, pp. 17-19).

Principle 2:

For L2 learners to process form that is non-meaningful, e.g. third person *-s*, they must be able to process informational or communicative content at no or little cost to attentional resources. For example:

John looks tired. (4a)

In example (4a), the L2 learner must be advanced enough in his or her second language to understand the meaning of *John*, *look*, and *tired* in order to process the bound morpheme *-s*

with little or no cost to comprehension. A number of studies have been carried out to determine how L2 learners process for input and meaning in their second language, and these are summarized in the following section.

### **1.3 Relevant Studies in Aural and Text Comprehension**

#### *1.3.1 Major Studies on Second Language Aural and Text Comprehension and Input*

VanPatten (1990) explores the question of whether or not L2 learners can focus conscious attention on both form and meaning when processing L2 input. VanPatten (1990) hypothesized that if L2 learners have difficulty directing attention toward both content and form, then a task involving the conscious focus of attention on a non-content grammatical item in the input will negatively affect comprehension. If these same L2 learners perform a task involving the conscious focus of attention on a content lexical item, comprehension will not be negatively affected. Lastly, he hypothesized that more advanced learners should be more able to direct attention to form and attention to content at the same time since they are better equipped to attend to content.

VanPatten (1990) tested these hypotheses using beginning level, intermediate level, and advanced level L2 learners of Spanish. The subjects were assigned to one of four groups: (1) listen to the passage only (Task I), (2) listen to the passage and make a checkmark for any and all occurrences of the content word *inflación* (Task II), (3) listen to the passage and make a checkmark for any and all occurrences of the definite article *la* (Task III); (4) listen to the passage and make a checkmark for any and all occurrences of the verbal inflection *-n* (Task IV). After listening to the passage, the subjects carried out a free writing recall, from which, an idea analysis was used to obtain the subjects mean recall

scores which represented the idea units that the subjects were able to recall from the experimental text. Mean Recall Scores from VanPatten (1990) are displayed in Table 1.

**Table 1.** VanPatten (1990) Mean Recall Scores by task and level

	<b>Task I</b>	<b>Task II</b>	<b>Task III</b>	<b>Task IV</b>
Beginning	9.13	6.90	3.75	2.75
Intermediate	10.13	10.00	5.50	6.96
Advanced	19.15	16.35	13.07	6.27

Note. From "Attending to form And Content in the Input," by Bill VanPatten (1990), *Studies in Second Language Acquisition*, 12, 287-301. Copyright 1990 by Cambridge University Press.

At the beginning and intermediate levels, VanPatten (1990) found that the mean recall scores demonstrated a pattern of higher recall rates for Task I and Task II when compared to Task III and Task IV. At the advanced level, VanPatten found a similar pattern to that of the beginning and advanced levels. Task I and Task II received the highest recall score while Task III and Task IV demonstrated a pattern of lower recall scores.

The mean recall scores, as well as a statistical analysis, seemed to support VanPatten's (1990) hypotheses. Lower level beginning and intermediate L2 learners, appeared to have difficulty attending to meaning and form when consciously focusing attention on a non-content grammatical item. However, these same learners did not appear to have difficulty attending to meaning and form when consciously focusing attention on a content lexical item. As mention previously, VanPatten (1990) predicted that advanced level learners will not exhibit the same patterns of performance on the tasks as the early stage learners.

The mean recall scores and a statistical analysis offered mixed support for this hypothesis. In the case of Task III, comprehension was not negatively affected. At the

advanced level, the mean recall scores of Task III when compared to that of the mean recall scores of Task III at the beginning and intermediate levels demonstrated that advanced level L2 learners were able to focus attention on a non-content lexical item, while the lower level L2 learners were not, offering evidence to support VanPatten's (1990) hypothesis. However, Task IV received significantly lower recall scores than Task I, Task II, as well as Task III and demonstrated the same patterns found at the beginning and intermediate levels, offering evidence that does not support VanPatten's (1990) hypothesis.

The evidence found in VanPatten (1990) suggests that lower level L2 learners have difficulty directing conscious focus of attention on meaning and on non-content grammatical form, a non-content lexical item and a bound morpheme, at the same time. At the advanced level, the evidence found in VanPatten (1990) suggests that L2 learners may or may not have difficulty directing conscious focus of attention on meaning and on non-content grammatical form depending on which non-content grammatical form is being focused on.

Lee (1998) examined a similar question by investigating the relationship of verb morphology to second language reading comprehension and input processing. Lee's (1998) research question states: "Are comprehension and input processing affected by the morphological characteristics of the input?" Subjects for the study were enrolled in a second semester Spanish course at a Midwestern university in the United States. The subjects consisted of 71 individuals in four different classes. Three versions of a passage were used in the experiment. In passage (A), nine targeted verbs appeared in their original subjunctive form. In version (B), the nine targeted verbs were substituted with their infinitive forms so that they would maintain their semantic value but no longer be morphologically encoded. In version (C), the nine targeted verbs were substituted with

invented morphological endings. The verbs still maintained semantic value because the stems still carried lexical meaning. The subjects were given three packets of material to read and were instructed to read for 20 minutes without reviewing what they had read. The students were then asked to do a written recall that was scored with an idea unit analysis (Lee, 1998, pp. 37-42).

What Lee (1998) found was that linguistically and contextually appropriate verb forms yield significantly lower comprehension than infinitival and substituted verb forms with invented morphological endings. This may have occurred because the subjunctive verb forms were more varied and linguistically richer than the infinitival and the substituted verb forms (Lee, 1998, pp. 41-42). Lee (1998) posited that noticing and detecting the subjunctive verb form occupied a large amount of attentional resources, and because of this, the subjects were not able to focus on the text's meaning even though the subjects were not directed to focus conscious attention on the subjunctive morphology.

This seems to support VanPatten (1990), demonstrating that the detection of a grammatical item, in this case a bound morpheme, may cause comprehension to be negatively affected. Lee (1998) and VanPatten (1990) demonstrate that detection of a given form does not mean that it will be comprehended and that detected information causes interference with comprehension of aural or written input (Lee, 1998, p. 42).

Bouden, Greenslade, & Sanz (1999) tested the results of VanPatten (1990) by investigating the affects of conscious focus of attention on a grammatical item or a lexical item in the comprehension of L2 reading texts. Bouden, Greenslade, & Sanz (1999) hypothesized that, at the early stages of L2 acquisition, processing for meaning and processing for form compete for the L2 learner's limited attentional capacity and that when L2 learners are instructed to focus attention on a lexical content item in the text, their

comprehension will not be negatively affected. Bouden, Greenslade, & Sanz (1999) was a conceptual replication of the VanPatten (1990) because while using the same experimental text and task groups as used in VanPatten (1990), Bouden, Greenslade, & Sanz (1999) used written instead of aural as the primary form of input. Bouden, Greenslade, & Sanz (1999) also only tested intermediate L2 learners of Spanish while VanPatten (1990) tested beginning, intermediate, and advanced. The subjects were assigned to one of four groups: (1) read the passage for content only (Task I), (2) read the passage for content and circle any and all occurrences of the content word *inflación* (Task II), (3) read the passage for content and circle any and all occurrences of the definite article *la* (Task III); (4) read the passage and circle any and all occurrences of the verbal inflection *-n* (Task IV).

After reading the passage, the subjects carried out a free writing recall in their native language, from which an idea analysis was used to obtain the subjects mean recall scores, which represented the idea units that the subjects' were able to recall from the experimental text. Mean Recall Scores from Bouden, Greenslade, & Sanz (1999) are displayed in Table 2.

**Table 2.** Bouden, Greenslade, and Sanz (1990)  
Mean Recall Scores by task and level

	Task I	Task II	Task III	Task IV
Intermediate	22.50	18.00	12.79	13.73

Note. From "Attending To Form And Content In Processing L2 Reading Texts,"  
By Bouden, L., Greenslade, T.A., & Sanz, C. 1999, *Spanish Applied Linguistics*,  
*A Forum For Theory and Research*, 3, 65-89. Copyright 1999 by SAL.

At the intermediate level, the mean recall scores demonstrated higher recall scores for Task I as well as Task II and demonstrated lower recall scores for Task III and Task IV. This was similar to what the mean recall scores of VanPatten (1990) demonstrated. As in VanPatten (1990), the mean recall scores were submitted to statistical analyses (ANOVA

and Tukey's HSD). A significant difference was found between Task I and Task III as well as between Task I and Task IV. A significant difference was also found between Task II and Task III as well as Task II and Task IV. No significant difference was found between Task I and Task II or between Task III and Task IV. These results reflected the results of VanPatten (1990) at the intermediate level.

The results of the study seem to confirm their hypotheses (Bouden, Greenslade, & Sanz, 1999, pp. 76-77). At the early stages of L2 acquisition, processing for meaning and processing for form compete for the learner's limited attentional capacity. As in the VanPatten (1990) study, when meaning and form compete for attentional resources, comprehension is hindered because of attentional constraints in the detection of input. However, in the early stages of L2 acquisition, conscious focus of attention on a content lexical item in the text does not produce the same detrimental effects on comprehension as conscious focus of attention on a non-content grammatical item, even though attentional resources may be diverted.

The results of VanPatten (1990), Lee (1998), and Bouden, Greenslade, & Sanz (1999) are important because they demonstrate that during the early stages of L2 acquisition, conscious or subconscious focus of attention on form can detrimentally affect L2 aural and text comprehension. However, VanPatten (1990) found conflicting results at the advanced L2 level, Lee (1998) only tested lower level L2 learners, and Bouden, Greenslade, & Sanz (1999) only tested the intermediate L2 level.

## **1.4 Hypothesis**

### 1.4.1 Hypotheses

Based on the literature review and the above mentioned studies, the following hypotheses have been formulated to better understand conscious focus of attention on form and content at the intermediate and advanced levels. Hypothesis I is essentially the same as that of VanPatten (1990) and Bounden, Greenslade, & Sanz (1999). Hypothesis II is an adaptation of the hypotheses from VanPatten (1990) and Bounden, Greenslade, & Sanz (1999) that have been adjusted for the purposes of this thesis.

-Hypothesis Ia. A L2 reading task requiring conscious focus of attention on a lexical content item will not adversely affect L2 reading comprehension when compared to the same L2 reading task that does not require conscious focus of attention on a lexical content.

-Hypothesis Ib. A L2 reading task requiring conscious focus of attention on a grammatical item will adversely affect L2 reading comprehension as compared to a L2 reading task that does not require conscious focus of attention on a grammatical item.

-Hypothesis IIa. While advanced L2 learners of English will demonstrate higher reading comprehension scores than intermediate L2 learners of English, consciously focusing attention on a lexical content item will not adversely affect intermediate and advanced level L2 reading comprehension.

Hypothesis IIb. Consciously focusing attention on a grammatical item will adversely affect both intermediate and advanced level reading comprehension.

## **1.5 Methodological Precedents**

The purpose of this section is to lay out the theoretical foundation for the methodology used in this thesis.

### **1.5.1 Methodological Precedents**

The relevance of Carrell (1985) to the methodology of this thesis was the use of an idea unit analysis to test whether instruction which focuses on text structure improves

comprehension for readers with poor comprehension. To test this, Carrell (1985) conducted a study with a heterogeneous group of 25 high-intermediate proficiency ESL students, Level 4, enrolled in the intensive English program for foreign students at the Center for English as a Second Language. The subjects that participated in the study were asked to read a number of naturally occurring texts that were selected from a variety of sources. Schemata effects were controlled for by having the subjects read about relatively unknown issues (Carrell, 1985, pp 734-735). The test consisted of reading each text, writing an immediate free recall, and identifying the text's overall organization by answering an open-ended question. Then the text recall was scored by counting the quantity of idea units recalled. The idea units consisted of a single clause, which was main or subordinate and included adverbial or relative clauses. Also, each infinitival construction, gerundive, nominalized verb phrase, conjunct, and optional and/or heavy prepositional phrases was identified as a separate idea unit. (Carrell, 1985, pp. 737, 738, & 741).

VanPatten (1990) used the Carrell (1985) idea unit analysis to analyze his study's results. VanPatten (1990) was carried out by asking L2 Spanish learners at the beginning level, the intermediate level, and the advanced level to listen to a short passage on inflation in their second language. There were 202 subjects in total and an average of 17 subjects per task. The subjects were assigned to one of four groups: (1) listen to the passage only; (2) listen to the passage and note any and all occurrences of the content word *inflación*; (3) listen to the passage and note any and all occurrences of the definite article *la*; (4) listen to the passage and not any and all occurrences of the verbal inflection *-n*. Having the subjects attend to a specific lexical item or grammatical item was operationalized by having the subjects make a check mark, a slash, or any other mark on a blank sheet of paper each time they heard the target item. The passage was constructed so that the content word, the

definite article, and the verbal inflection were evenly distributed throughout the passage. After reading the text, the subjects completed a free writing recall of the text which was analyzed using Carrell's (1985) idea unit analysis (VanPatten, 1990, pp. 291-294).

As mentioned, the Bouden, Greenslade, & Sanz (1999) study is a conceptual replication of VanPatten (1990) using written input instead of aural. The same instruments and procedures were used, and noting the grammatical items as well as the lexical items was operationalized by underlining, circling, or putting a check mark next to the target item (Bouden, Greenslade, & Sanz, 1999 pp. 72-73). The participants in the Bouden, Greenslade, & Sanz (1999) study were third-semester, college level Spanish students in four sections with three different instructors at Georgetown University. The subjects were selected from intact classes at random; a total of 53 subjects participated. A background questionnaire was used to eliminate subjects with learning disabilities. Four researchers administered the experiment using a standardized data elicitation protocol in order to insure that the experimental procedures were followed. After filling out the background questionnaire, the subjects were asked to read a warm-up paragraph at the same level of grammatical and lexical complexity as the experimental passage in order to prime the subjects to read the experimental text. The subjects were then given the experimental text to read and asked to note a specific lexical item or grammatical item. This consisted of the same four tasks as the VanPatten (1990) study. The subjects were given 2 minutes and 30 seconds to read the experimental passage in order to avoid backtracking of the text. This was done to insure that the passage would be read in a linear fashion in order to compensate for the linear nature of aural input as a continuous speech stream (Reading a text is not considered to be a linear activity) (Bouden, Greenslade, & Sanz, 1999 pp. 70-73). The administrators of the experiment gave subjects the relevant schematic information before

the experimental text was administered to insure that a lack of this information would not interfere with their reading comprehension. This was done by telling the subjects about the basic content contained in the text (Eisterhold and Carrell, 1983, pp. 553-556). The passage was the same used in VanPatten's (1990) study about inflation in Latin America (Bouden, Greenslade, & Sanz, 1999 p. 73).

After completing the experimental task, the subjects were asked to do a free writing recall, which was analyzed using Carrell's (1985) idea unit analysis. The test passage contained 53 semantic and syntactic idea units. Each participant's score was computed according to the raw number of idea units contained in the written recall. After data from all task groups were scored, the mean recall scores for each task group were calculated. The raw scores were submitted to two separate one-way analyses of variance (ANOVA), one on Text Scores and another on Recall scores with Task (*control*, *inflación*, *-n*, and *la*) as the independent variable. The Alpha was set at .05 level. The ANOVA on Text scores or the number of marked words was used to determine if there were significant differences between the groups on the number of target items noticed in the text. The ANOVA on Recall scores was used to determine if there were significant differences between groups with respect to the number of idea units recalled from the passage. Scores were then compared post hoc wherever significant factors were identified by means of a Tukey's Test for the Honest Significant difference with the Alpha set at the .05 level (Bouden, Greenslade, & Sanz, 1999 pp. 73-74).