

Chapter 4

Discussion and Conclusions

4.1 Interpretation and Analysis

4.1.1 Interpretation of Recall Scores and Adjusted Recalls Scores

Upon preliminary review of the mean recall scores, differences between the control group and the individual task groups at the intermediate and advanced L2 English levels were found. Consistent with VanPatten (1990) and Bouden, Greenslade, & Sanz (1999), the task groups that yielded the highest mean recall scores were A-NoMarking, A-Content, I-NoMarking, and I-Content; however, unlike VanPatten (1990) at the advanced level, A-Content yielded a higher mean recall score than A-NoMarking. Also, consistent with the above mentioned studies, A-BoundMorph, I-BoundMorph, A-NonContent, and I-NonContent generated the lowest mean recall scores.

The pattern demonstrated by the mean recall scores appeared to support the idea that attending to incoming L2 information occupies a large amount of attentional resources (VanPatten, 1996, p. 16). More importantly, the pattern demonstrated by the mean recall scores seemed to lend support to the idea that conscious focus of attention on L2 lexical content items will occupy less attentional resources and conscious focus of attention non-content lexical items as well as bound morphemes will occupy more attentional resources during detection. This is demonstrated by the higher mean recall scores for A-Content as well as I-Content and the lower mean recall scores for A-BoundMorph, I-BoundMorph, A-NonContent, and I-NonContent and is consistent with VanPatten's (1996) principles of second language processing: L2 Learners process input for meaning before they process it for form, L2 Learners process content words in the input before anything else, L2 Learners

prefer processing lexical items to grammatical items for semantic information, and L2 learners must be able to process informational or communicative content at no or little cost to attentional resources.

The adjusted mean recall scores also demonstrated a similar pattern to that of the mean recall scores: A-NoMarking, I-NoMarking, A-Content, and I-Content yielded the highest adjusted mean recall scores and A-BoundMorph, I-BoundMorph, NonContent, and I-NonContent yielded the lowest adjusted mean recall scores. However one difference occurred in the adjusted mean recall scores when compared to the mean recall score. In the adjusted mean recall scores, I-BoundMorph and A-BoundMorph yielded higher adjusted scores than I-NonContent and A-NonContent. The opposite occurred in the mean recall scores. The pattern demonstrated by the adjusted mean recall scores also appeared to support the above mentioned idea that attending to incoming L2 information occupies a large amount of attentional resources. The importance of the pattern found in the mean recall scores and the adjusted mean recall score is that they both yield a definite pattern that is consistent with Hypothesis I as well as Hypothesis II and that is consistent with the findings of VanPatten (1990) and Boudien, Greenslade, & Sanz (1999).

However, while mean recall scores and adjusted mean recall scores appeared to show a pattern in the data, a statistical difference was not. Both mean recall scores and adjusted mean recall scores represent only a portion of the data gathered and must be compared with other data gathered in the experiment.

4.1.2 Interpretation of Statistical Analysis of Recall Scores

The statistical analysis here revealed, as did the statistical analyses of VanPatten (1990) and Boudien, Greenslade, & Sanz (1999), that there were no statistical differences

found between I-NoMarking and I-Content, nor was there a statistical difference between I-BoundMorph and I-NonContent. Unlike in VanPatten (1990) and Bouden, Greenslade, & Sanz (1999), there was no evidence of a significant difference between I-NoMarking/I-Content and I-BoundMorph/I-NonContent. In short, these results do not offer evidence that there will be a significant drop in comprehension when intermediate L2 learners are directed to read for content while marking a specific lexical or grammatical item.

There were no statistical differences found between the advanced L2 level task groups. Overall, this suggests, as VanPatten (1990) had hypothesized, that the more advanced L2 learners should be more able to direct attention to form since they are better equipped to attend to content. Conversely, this differs from the results of VanPatten (1990) at the advanced level, in which there was a significant difference found between the task group that listened for content while marking the bound morpheme *-n* and the control group, the lexical content item task group, and the non-content lexical item task group in VanPatten (1990).

VanPatten (1990) offered two reasons for the significant difference between the bound morpheme task group and the non-content lexical item task group, a difference that had not occurred at the beginning and intermediate levels in his study. The first was that the communicative value of definite articles is greater than that of a bound morpheme because a definite article is closer to being word-like than is a bound morpheme. The second is that for early stage learners, listening to Spanish is nothing but a stream of syllables, but for advanced learners, word boundaries become more salient. Thus free morphemes are more recognizable whereas bound morphemes may still be missed since they are not as acoustically salient. In turn, additional resources are occupied in attempting to recognize a bound morpheme. The evidence from this study's advanced level text scores

supports VanPatten's (1990) second explanation by demonstrating that when the input received is written, aural and acoustical salience no longer plays a role in recognition of specific grammatical items and bound morphemes are not necessarily less recognizable than free morphemes.

4.1.3 Interpretation of Text Scores

Table 6 and Table 7 from Chapter 3 have been repeated in this section to facilitate a comparison of the text scores.

Table 6. Intermediate Level Text Item-Detection Scores

Task Group	n	Item	Std. Dev.
I-Content	14	7.357	3.478
I-BoundMorph	13	8.923	2.813
I-NonContent	12	5.333	2.498*

Table 7. Advanced Level Text Item-Detection Scores

Task Group	n	Item	Std. Dev.
A-Content	12	9.917	0.288
A-BoundMorph	12	9.917	3.029
A-NonContent	13	8.231	1.964

Upon preliminary review of the mean text scores, Task I-Content and I-BoundMorph marked a similar number of target items, while at the advanced level, A-Content and A-BoundMorph marked the same number of target items. Although no discernible pattern could be established between I-Content and I-BoundMorph or between A-Content and A-BoundMorph, this was not the case in regards to I-NonContent and A-

NonContent. The subjects that participated in the task groups I-NonContent and A-NonContent marked the fewest number of target items of the three experimental task groups. The statistical analysis revealed no significant difference between mean text scores at the advanced level but there was a significant difference between I-BoundMorph and I-NonContent.

This seems to support the initial evidence presented in the mean text scores that I-NonContent subjects appeared to have difficulty consciously focusing attention on the non-content lexical item *the* and reading for content at the same time. VanPatten (1996) posits that learners process input for meaning before they process it for form, and when a L2 learner's conscious attention is drawn to a grammatical form that has little or no semantic meaning, processing for meaning will suffer because the L2 learner has only limited attentional resources in the L2. It appeared that when I-NonContent was directed to read for content while marking the non-content lexical item *the*, the opposite occurred. The evidence suggests that reading for content may have interfered with the conscious recognition of form.

The question is why did this occur? It is possible that during the experiment, the L2 learners chose to ignore the researcher's instructions and read mostly for content regardless of the researcher's instructions to consciously focus on a specific grammatical item. This seems highly unlikely because it would have lead to lower text scores in all intermediate level task groups. Another possible explanation is that the non-content lexical item *the* was not salient and was difficult to identify. This is unlikely because unlike VanPatten (1990), this study was carried out with written input. The most likely explanation was that, in this case, the communicative value of the bound morpheme *-ing* was greater than the communicative value of the non-content lexical item *the* at the intermediate level.

This contradicts VanPatten's (1990) explanation of the differences found between his advanced level bound morpheme group *-n* and his non-content lexical item group *la*. The evidence from the current study suggests that just because the definite article *the* stands alone and can be translated to *el/la* in Spanish, this does not mean that its communicative value is greater than that of *-ing*. However, VanPatten (1990) used a bound morpheme that does not have a direct translation into English. The *-ing* in English can be translated to *iendo/ando* in Spanish, thus, allowing the intermediate level subjects of this study to recognize its communicative value.

Another factor that may have influenced this was that the bound morpheme *-ing* was also bound to a number of content words in the passage. This may have increased its communicative value, however, this does not explain the lower recall scores of I-BoundMorph. Another explanation is that *-ing* occurred 13 times in the passage and *the* only occurred 11 times. This may have given I-BoundMorph an opportunity to obtain higher text scores than I-NonContent. While this may have been a contributing factor, the content lexical item *commerce* occurred only 10 times, and there was no significant difference found between I-Content and I-NonContent. Also, the significant differences came from the average proportion of target items marked per task group and not the raw number of target items marked. This negates any significant difference occurring between text scores because of one target item occurring more than another. A final explanation is that the non-content item *the* was not recognized because it was part of an automatised process in working memory. Thus, it was more difficult for the subjects in I-NonContent to recognize and mark it because they were so accustomed to processing it in working memory, thus, processing it became so automatic that they failed to recognize it (Field, 2003, p. 113). However, it may not have been any one factor that caused the significant

difference found between I-BoundMorph and I-NonContent, but a combination of the above mentioned factors.

4.1.4 Interpretation of Statistical Analysis of Adjusted Recall Scores

As stated in Chapter 3, the adjusted mean recall scores are the mean recall scores adjusted for the differences found between the mean recall scores and the mean text scores. The adjusted recall scores did appear to correct for the differences found between the mean text scores of the three experimental task groups. This was demonstrated by the change in numerical position of the mean recall scores that occurred between I-BoundMorph and I-NonContent.

The statistical analysis of the intermediate level adjusted recall scores revealed a significant difference between I-Content and I-NonContent. This appeared to support, at least in part, the notion that when beginning L2 learners are consciously directed to focus on a non-content lexical item while reading for content, comprehension will become more difficult. In part, this result also appears to be consistent with the findings of VanPatten (1990) in regards to the recall scores of a non-content lexical item at the intermediate levels. Lastly, the statistical analysis of the adjusted mean recall scores yielded no other significant differences at the intermediate or the advanced levels. An examination of how the above mentioned information relates Hypotheses I and II will be addressed in the next section.

4.2 Discussion of Hypotheses

4.2.1 Discussion of Hypotheses Ia and Ib

The principal purpose of this study was to ascertain the affects that directing a L2 English learner to consciously focus attention on a particular lexical or grammatical item would have on his or her reading comprehension due to the limited attentional resources possessed by the L2 learner.

-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 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.

Evidence supporting Hypotheses Ia and Hypothesis IIa would demonstrate that I-Content and A-Content were able to consciously focus on a lexical content item while attending to the experimental text's content without significantly affecting comprehension when compared to I-BoundMorph, I-NonContent, A-BoundMorph, and A-NonContent. Any significantly adverse affects to L2 comprehension for I-Content as well as A-Content when compared to I-BoundMorph, I-NonContent, A-BoundMorph, and A-NonContent will not support Hypothesis Ia and Hypothesis IIa.

Evidence that appears to support these hypotheses can be found in the mean recall scores and the adjusted mean recall scores. Upon reviewing the mean recall scores, I-Content received the highest recall scores of the three experimental task groups at the intermediate level and A-Content yielded highest recall scores of all task groups at the advanced level. At the intermediate level, focusing on a lexical content item did not appear to strain attention resources, and the subjects apparently were able to focus on a lexical content item and read for content without it adversely affecting comprehension. A-Content at the advanced level obtained the highest recall scores of the two experimental task groups and the control group. This seems to support Hypothesis Ia and Hypothesis IIa and indicates that intermediate and advanced level L2 learners were able to consciously focus attention on a lexical content item while reading for content, without adversely affecting comprehension.

The statistical analysis of the mean recall scores and the adjusted mean recall scores yielded similar results at the intermediate and the advanced levels. There were no significant differences found between I-Content any other of the three task groups at the intermediate level or between A-Content and any other of the three task groups at the advanced levels. This seems to support the initial conclusions made about Hypothesis Ia and Hypothesis IIa based on the mean recall scores and the adjusted mean recall scores; that is, comprehension will not be adversely affected by consciously focusing on a lexical content item.

However, I-Content did not yield a significantly higher recall score than I-BoundMorph or I-NonContent, and A-Content did not yield a significantly higher recall score than A-BoundMorph or A-NonContent. This does not appear to support Hypothesis Ia and Hypothesis IIa because it does not demonstrate that consciously focusing on a

content lexical item while reading for comprehension was be easier than consciously attention focusing on a bound morpheme or a non-content lexical item.

As demonstrated by a statistical analysis of the data gathered, consciously focusing on a lexical content item did not adversely affect comprehension. This indicates that the intermediate and advanced level L2 learners may have read for content while consciously or subconsciously focusing on content words in the text without an adverse affect to comprehension. This is consistent with the findings of VanPatten (1990) using aural input in Spanish as the primary medium with beginning, intermediate, and advanced L2 Spanish learners and Bouden, Greenslade, & Sanz (1999) using written input in Spanish as the primary medium with intermediate level L2 Spanish learners. This also partially lends support to VanPatten's two principles of second language input processing.

However, while the mean recall scores and the adjusted mean recall scores demonstrated a pattern that appeared to be consistent with Hypothesis Ia and Hypothesis IIa, there were no significant differences found either in the mean recall scores or in the adjusted mean recall scores when individual groups are compared at the intermediate and advanced levels. This indicates that there is little difference between focusing on a lexical content item, on non-content lexical item, and on a bound morpheme at the intermediate and advanced levels. This does not support Hypothesis Ia and Hypothesis IIa.

4.2.2 Discussion of Hypotheses Ib and IIb

Evidence supporting Hypothesis Ib and Hypothesis IIb would demonstrate that intermediate and advanced L2 English learners were not able to consciously focus on a non-lexical item or a bound morpheme while attending to the experimental text's content. Significant effects on comprehension for the intermediate and advanced levels are

measured by any significant differences that demonstrate an adverse affect to L2 comprehension in I-BoundMorph and I-NonContent as compared to I-NoMarking or I-Content and between A-BoundMorph and A-NonContent as compared to A-NoMarking and A-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 Iib. Consciously focusing attention a grammatical item will adversely affect both intermediate and advanced level reading comprehension.

Evidence from this study appears to be mixed in regards for its support for Hypothesis Ib and Hypothesis Iib. Upon initial review of the mean recall scores, I-BoundMorph and I-NonContent received lower mean recall scores than I-NoMarking and I-Content at the intermediate levels. Also, A-BoundMorph and A-NonContent received lower mean recall scores than A-NoMarking and A-Content at the advanced level. This was similar to the pattern demonstrated by the mean recall scores for VanPatten (1990) and Bouden, Greenslade, & Sanz (1999) with their control group and content lexical item groups receiving higher recall scores than their bound morpheme groups and non-content lexical item groups and seemed to offer support for Hypothesis Ib and Hypothesis Iib.

The initial statistical analysis of recall scores, however, did not offer support for Hypothesis Ib and Hypothesis IIb. There were no significant differences between task groups at the intermediate or at the advanced levels. This was not consistent with VanPatten (1990) and with Bouden, Greenslade, & Sanz (1999) at the intermediate levels, where evidence from their studies showed a significant difference at the intermediate L2 levels between groups control/content lexical item and bound morpheme/non-content lexical item. At the advanced level, the results were partially consistent with VanPatten (1990) in which there was no significant adverse affect on comprehension when L2 learners read for content and marked a non-content lexical item. However, at the same level, VanPatten (1990) differed from the current study. VanPatten (1990), found that advanced level L2 learners experienced difficulty reading for content while marking a bound morpheme and found a significant difference between his bound morpheme task group when comparing it with all other task groups. While in the current study A-BoundMorph received the lowest mean recall score of the four task groups at the advanced level, this study differed from VanPatten (1990) in that no significant differences were found between A-BoundMorph and any other advanced level task group.

A statistical analysis of the adjusted mean recall scores offered mixed support for Hypothesis Ib and Hypothesis IIb at the intermediate level, but did not offer support at the advanced level. In the adjusted mean recall scores, a significant difference was found between I-NonContent and I-NoMarking, with I-NoMarking receiving the higher comprehension score. It appears that for I-NonContent, the subjects were not able to read for content and easily identify the non-content lexical item *the* at the same time. This offers limited support for Hypothesis Ib as well as IIb and is similar to what Van Patten (1990) and, Bouden Greenslade, & Sanz (1999) found at the intermediate levels. However, there

were no other significant differences found between any other task groups at the intermediate level.

The advanced level adjusted recall scores offered no support for Hypothesis Ib or Hypothesis IIb. While the initial pattern from the mean recall scores was accentuated by adjusting recall scores, no significant difference was found between task groups at the advanced level.

It is difficult to ascertain definitively whether Hypothesis Ib and IIb were supported by the evidence collected in this study. On the one hand, the mean recall scores and the adjusted mean recall scores demonstrate a pattern that appears to be consistent with the results of VanPatten (1990) and Bouden, Greenslade, & Sanz (1999). It appears that I-NonContent had difficulty marking target items while reading for content. Conversely, there is very little evidence offered of significant differences found between the task groups at the intermediate and advanced the advanced levels. The only significant difference that can be found to support Hypothesis Ib and Hypothesis IIb resulted from adjusting the recall scores. Thus, it is difficult to say if there is enough empirical evidence offered from this study to support Hypothesis Ib and IIb. The next section will address whether the cumulative evidence gathered in the study is sufficient to assume that consciously focusing attention on certain types of form in the input will adversely affect comprehension.

4.3 Synthesis of Analysis

4.3.1 Consciously Focusing on Form and Meaning

The ability of a L2 learner to attend to form and meaning is an important aspect of learning a second language (VanPatten, 1996, p. 16). If input that is being processed by

working memory during ongoing comprehension is not or cannot be attended to, it will be lost because unattended stimuli in working memory must be attended to for it to eventually be stored in long-term memory (Schmidt, 2002, p. 16). L2 input has a tendency to occupy a large amount of attentional resources especially at the early stages of SLA during detection. While in working memory, if new incoming L2 information is not attended to and detected, intake will not be derived from the input and the new L2 information will not be processed and stored in long-term memory (Tomlin and Villa, 1994, p. 192). The source which L2 learners essentially learn a second language is by what Krashen (1985) calls *comprehensible input* and by what VanPatten (1996) calls *intake*. While this study does not examine exactly how comprehensible input or intake is derived from input during the process of detection, it examines the limitations placed on working memory during online comprehension when attentional resources must be used to process for both form and meaning, thus, possibly not allowing intake to be derived from the input.

The results of this study offer evidence and counter evidence as to whether consciously focusing attention on form and consciously focusing attention on meaning exhaust the limited resources of working memory during the process of detection in the intermediate and advanced stages of SLA. VanPatten (1990) and Bouden, Greenslade, & Sanz (1999) found that there was evidence that conscious attention to form in the input competes with conscious attention to meaning in beginning and intermediate stages of SLA. In this study, a pattern was found in the mean recall scores and the adjusted mean recall scores that suggests that this is the case with regard to L2 English learners. The text scores at the intermediate level also seem to support this but differ from VanPatten (1990) by highlighting that when form and meaning compete, at times it may be attention to form

that is adversely affected and not attention to meaning (An explanation is offered for this later in this section).

However, a statistical analysis of the mean recall scores and adjusted mean recall scores offered very little evidence that consciously focusing on form while reading for meaning will cause significant adverse effects on comprehension. While a pattern was established in the above mentioned scores, very few significant differences were found to support the notion that at the intermediate and advanced stages of SLA consciously focusing on a lexical content item will have a different affect on comprehension than focusing on a non-content lexical item or a bound morpheme. This could suggest, as posited by VanPatten (1990), that while form and meaning do compete to a degree, early stage L2 learners are not incapable of focusing on form and meaning at the same time in the input.

An explanation offered for the significant difference found in the text scores between NonContent and I-BoundMorph is that consciously focusing on form is not something that is generally done in the real world, so the subjects tended to consciously focus on meaning (VanPatten, 1990, p. 1996). This suggests that when L2 learners are instructed to consciously focus attention on form while consciously focusing attention on meaning, the L2 learners may consciously or unconsciously ignore the instruction to focus on form because focusing on meaning may take precedence over focusing on certain types of form, given the limited attentional resources available to the L2 learner.

An alternative explanation is offered by DeKeyser, Harrington, Robinson, & Salaberry (2002). DeKeyser, Harrington, Robinson, & Salaberry (2002) claim that sometimes concurrently performed tasks lead to decrements in performance, and sometimes they do not. Breakdowns in dual-task performance occur when two tasks simultaneously

draw on a number of resource pools. In the case of the current study, the subjects also divided their attention between two tasks: Reading for content and reading for the non-content word *the*, and circling the non-content word *the*. Dual tasks require task switching to be coordinated, which also consumes attentional resources. The decrement in performance between the I-NonContent and I-BoundMorph text scores may have occurred because of a breakdown in dual tasks performance, competition between physically marking the non-content word *the* and reading for content while reading for the non-content word *the* at the same time, not because of the conscious focus of attention on meaning and form at the same time. However, this explanation still demonstrates that there is limited attentional capacity, but this limited attentional capacity is demonstrated by a dual resource, limited-capacity model of attention as opposed to VanPatten's (1990) a single resource limited capacity model of attention (DeKeyser, Harrington, Robinson, & Salaberry, 2002, pp. 808-809).

As mentioned above, in the real world, L2 learners are not required to consciously focus on form. In order to have a fuller understanding of how L2 input is processed in the real world, it is important to examine how this study may be applied to how subconsciously focusing on meaning and form at the same time may compete.

4.3.2 Subconsciously Focusing on Form and Meaning

Lee (1998) suggests that when lower level L2 learners subconsciously detect complicated morphology while reading, their comprehension will be adversely affected. While the current study did not focus on subconscious detection of morphological forms, the evidence found in Lee (1998) should be briefly addressed. The conclusion from Lee (1998) suggests that detected information is not always comprehended and that detected

information may cause greater interference with comprehension of both aural and written input.

The results of Lee (1996) demonstrated that it was subjunctive morphology in Spanish that had caused interference with comprehension. Spanish subjunctive morphology, especially in the past tense, is extremely complicated. The bound morpheme *-ing* may not have caused a significant interference in L2 comprehension because it was more easily recognized and understood by the L2 English learners, mainly because the concept of the morpheme *-ing* is represented in Spanish by *-ando*, and *-y/iendo*. The L2 Spanish Learners in Lee (1998) may not have been as familiar with the concept of the complicated subjunctive morphology in Spanish because it was not similar to a commonly occurring concept in English morphology. This may also explain why the bound morpheme *-n* task group performed so poorly at the advanced levels of VanPatten (1990). Thus, if form and meaning do compete at the early stages of SLA, it may be the role of transfer of grammatical function frequency of a lexical item or a grammatical item that causes form and meaning to compete or not to compete during the process of detection and not focusing consciously or subconsciously on one or the other.

4.4 Implications

4.4.1 Pedagogical Implications

This study has a variety of implications with regard to input processing in the field of second language acquisition, especially relating to input and intake, working memory as well as attention/detection, and pedagogy. It is important to understand that these three

issues are not separate, and that the first two relate to pedagogy in regards to the teaching of a second language.

Krashen (1981) and (1985) suggest that second language acquisition is a result of comprehensible input/intake being derived from the L2 input being processed by working memory. This study suggests that there is a pattern to what input may interfere with the derivation of intake from the input. In the context of this study, even at the intermediate levels of L2 English learning, it appears that drawing the L2 learner's attention to certain types of form will not significantly cause an adverse effect on the derivation of intake. The logic behind this is that although the L2 learners were consciously focusing on form and meaning, all groups were able to recall a significant amount of meaning from the experimental text when compared to the other task groups at the same level. This suggests that the L2 text was comprehended, in turn suggesting that the possibility exists that the derivation of intake will occur.

Once again, the fact that working memory has a limited capacity to process new incoming information especially during attention/detection of L2 information is not being disputed. The recall scores of this study demonstrated that the intermediate and advanced levels of L2 English learners could for the most part process for form and process for meaning with relative ease. At least for this particular context, the current study may have implications as far as establishing a level where form and content may be consciously taught at the same time. While a pattern seems to have been established at both intermediate and advanced levels of SLA, the empirical evidence suggests that it does not appear to be detrimental to the derivation of intake in intermediate and advanced stage for L2 learners to consciously draw their attention to certain lexical and grammatical items in the input.

The most useful application for this study relates to the teaching technique *Focus on Form*. As mentioned in Chapter 1, Doughty (2002) posits that when confronted with deriving meaning from a L2 text, the L2 learner should first read for meaning and then return to the text and derive meaning from form (the text's syntactic structure). This study suggests that this technique would be a useful way to fully derive meaning from content words and form. As demonstrated at the intermediate level of this experiment, at times reading for meaning can interfere with the recognition of form. This particular form may be necessary to derive meaning from a particular text, thus identifying form to derive meaning may draw the L2 learner's attention to syntactic elements that contain meaning that the L2 learner missed when reading for meaning. The recall scores from the advanced level also suggest this *Focus on Form* would also be useful because once the meaning has already been derived from a particular text, consciously focusing attention on a syntactic form to derive meaning will no longer cause the attentional resources to become strained.

4.4.2 Implications for VanPatten (1996): Principles of Second Language Input Processing

While this study did not appear to support all of the elements relating to VanPatten's (1996) principles of language processing, it does support many of these elements and adds to them. The results of this study suggest that L2 learners do process for meaning before they process for form and for L2 learners to process non-meaningful form, they must be able to process meaningful form first. It appears from the results of this study that L2 learners in some cases will ignore non-meaningful form such as in the case of I-NonContent and process mostly for meaning. Although this is speculation and must be studied further, in many cases, form may be secondary and L2 learners may need to attend to form only after processing for meaning, as Doughty (2002) suggests, because meaning in

some cases will take precedence over form. However, the processing of meaning and form in working memory are not independent of one another because syntactic form categorizes words into a comprehensible phrase structure. Thus, meaning cannot be derived from a text if that text is not organized syntactically.

4.5 Limitations

4.5.1 Methodological Constraints and Limitations

The methodological limitations and constraints of this study concern the number of subjects used and the uneven number of target items used in the experimental text.

Although an effort was made to acquire more subjects, due to time constraints on many professors at the institution, a larger sample of subjects could not be obtained. However, mean recall scores demonstrated a consistency at both the intermediate and advanced levels; thus, it does not appear that a greater number of subjects would have significantly caused a change in the final mean recall scores.

Although VanPatten (1990) and Bouden, Greenslade, & Sanz (1999) also used an uneven number of target items, this uneven number of target items may have inadvertently caused a higher deficit in comprehension in the subjects that participated in the task groups that had more target items to mark. In both intermediate and advanced level task groups, the highest number of target items marked was the bound morpheme *-ing*. Moreover, both of these groups contained the lowest mean recall scores. It is difficult to ascertain definitively whether this occurred because there was more form available to interfere with comprehension or if the form itself was what interfered with the L2 learner's

comprehension. This did not appear to affect the final results, and the adjusted recalls scores corrected for this.

4.5.2 Constraints on Inter-study Comparisons

A constraint on this study was an inability to conduct a one-to-one comparison of this study with those that were done at the U.S. universities. The principal reason for this was that VanPatten (1990) and Boudin, Greenslade, & Sanz (1999) carried out their studies using the university standards of the United States, especially in regards to the levels used. This study used the standards of the Mexican institution, assuming that the intermediate L2 English levels as well as the advanced levels were actually intermediate and advanced levels. However, familiarity with both the United States' and Mexican systems suggests that a general comparison can be made and it may be assumed that the levels being compared are similar.

The final constraint on this study is that it was a conceptual replication of the previous two. This means that a number of different factors such as target language, native language of subjects, and instruments were not the same as the ones used in the original study. This also prevents a one to one comparison from being made between this study with the previous studies because the results of this study may differ from the others due to these changes and not due to an actual change in the theoretical framework of the previous studies. However, the purpose of the current study was to add to the studies carried out by VanPatten (1990) and Bounden, Greenslade, and Sanz (1999), not to make a direct comparison.

4.6 Future Research

4.6.1 Future Research

Before this study, research of this sort was carried out in a limited manner with only native English speakers learning Spanish. Not only should studies of this nature be carried out with more native English speakers learning a variety of different languages, but also these studies should be carried out with more non-native English speakers learning English. It is recommended that this research be expanded to a number of different L2 environments in order to further test VanPatten's (1996) principles of second language acquisition and to develop better pedagogical techniques for teaching aural and text comprehension.

In addition, further research must be carried out to understand how input is derived from intake. This may lead to discoveries of exactly what syntactic forms may or may not cause L2 learners problems in understanding aural or written language and at what levels. Also, as VanPatten (1996) has proposed, it may lead to the development of pedagogical strategies that will assist second language educators in developing target input to facilitate that derivation of intake from input for L2 learners.

A conceptual replication of this study should be carried out on the current study. Different types of grammatical items should be selected, especially grammatical items that are not conceptually represented in both languages. For example, a study should be carried out with native Spanish speakers learning English. They should read for comprehension while marking the third person *-s* in English. This may cause greater difficulty than marking the bound morpheme *-ing* because the conjugated verb morphology differs from Spanish to English. This of course is only one example of the many ways in which variations of this study can be done.

Research also should be carried out to find out when L2 learners' focus on meaning interferes with the recognition of certain forms. As Doughty (2002) posits, focusing on form should be used to derive meaning from a text after a general meaning has been established. Understanding how meaning and form compete and when there is a preference for meaning and when there is a preference for form by the L2 learner, would have pedagogical applications such as assisting L2 learners in knowing when to focus on form to derive meaning, and when not to focus on form in order not to hinder the derivation of meaning.

Lastly, studies should be carried out testing the nature of VanPatten's single-resource, limited capacity model of attention versus a dual resource, limited capacity model. This will resolve the issue of whether lower recall scores occur because of a competition between form and meaning, depleting limited attentional resources, or if there are other factors such as the physical act of marking a particular grammatical item that may deplete attentional resources.