Chapter VIII

Discussion and conclusion

8.1 Introduction

This section discusses the results obtained for each dimension of production as affected by both the manipulation of planning time and the manipulation of the +/- Here-and-Now variable, which are considered separately. It does so by first referring to the discussions of previous researchers which are briefly reviewed in order to help interpret the findings in this study. When appropriate, learners' reports[1] about the affective variable questionnaire are used to illustrate what happened before and during performance. Once these three dimensions are dealt with, it goes on to tackle the manipulation of the two variables simultaneously, which is followed by the discussion of the issue of competition for attention. After that, the potential impact of production on acquisition is considered. Finally, the implications of the results of this study for other areas of SLA are analyzed, then some limitations of the study are acknowledged, and some final conclusions are reached.

[1] It will be seen that although they were intended to simply define what learners meant by each affective variable, they reveal interesting information about the processes that take place in the subjects' minds as they speak. These mainly involve comments about lexical access. Since learners were given the opportunity to choose whichever language they preferred to express their ideas, reports in Catalan and Spanish have been translated into English. When appropriate, the translation appears in parentheses immediately below the original text.

8.2 Task complexity and fluency

One of the first conclusions that can be drawn from the results of this experiment is that no single factor can account for the differences in fluency during L2 production. The results described in sections 6.3.1.1. and 6.3.2.1 showed that fluency declines as task demands are made higher along pre-task planning time, as predicted by Hypothesis 1, and also when they are made more complex along the +/- Here-and-Now variable, as predicted by Hypothesis 2. This and the three following sections provide an explanation of how task complexity affects processing conditions, and how these have consequences for fluency during performance. First, the discussions of previous studies regarding the effects of Task Complexity on production will be presented, and this will be followed by the discussion of the results of this study.

In line with several previous planning studies (Foster & Skehan, 1996; Skehan & Foster, 1997; Mehnert, 1998; Ortega, 1999; Yan & Ellis, 2003), providing learners with sufficient pre-task planning time, which reduces task demands, makes learners speak more fluently. In contrast, the absence of pre-task planning time places a heavy burden on learners' processing and memory capacity during performance, by increasing the cognitive load and communicative pressure, and consequently reducing their fluency. In this experiment, the results of Rate A showed this to be true for the simple version of tasks, that is, in the Here-and-Now and, albeit not significantly, for the complex There-and-Then version of tasks, therefore only partially confirming Hypothesis 1. Rate B, however, confirmed Hypothesis 1 by showing that increasing task demands along

planning time significantly affects both levels of complexity, that is, Here-and-Now and There-and-Then.

Explanations by previous researchers of why and how fluency is affected by planning time have been quite general except for Ortega's 1999 study, which will be further discussed in the next section and often referenced throughout this chapter. Hence, Skehan and Foster (1997:201) suggest that planning increases fluency "presumably because it allows subjects time to consider what they are going to say before they have to say it. Absence of planning time means that subjects must think simultaneously about what to say and how to say it, creating the necessity for numerous breaks in the discourse." In Mehnert's words (1998:99), "planning time is used by L2 learners to prepare cognitively and linguistically; that is, to decide on what meaning they want to convey and to search for and activate the linguistic resources best suited to express the intended meaning", which as a consequence triggers better performance. For Yuan and Ellis (2003:2) "clearly planning time helps learners to access linguistic material from memory more easily and more rapidly". Also for Yuan and Ellis, fluency and accuracy are the two dimensions of production which are in competition for resources, and they refer to Wendel (1997) as the first researcher to suggest such competition.

The results of increasing complexity along the +/- Here-and-Now variable confirmed what was stated in Hypothesis 2 as shown by both Rate A and Rate B. Increasing task demands by using context-unsupported, displaced, past-time reference considerably reduces the rate of speech as measured by the number of syllables per

minute. This is also coherent with previous findings by +/- Here-and-Now studies (Robinson, 1995a; Rahimpour, 1997). The two speech rate measures used in this experiment displayed a similar pattern to the one caused by manipulating planning time. Rate A was significantly higher for Here-and-Now tasks under planned conditions and higher, although not significantly, under unplanned conditions. Results of Rate B, on the other hand, showed that when tasks are made increasingly more complex along the +/- Here-and-Now speech rate slows down significantly regardless of how much time is allotted to pre-task planning.

Robinson (1995a) has provided a detailed explanation of how increasing complexity along +/- Here-and-Now significantly affects fluency, an explanation that he relates to memory demands and discourse planning. For Robinson, during There-and-Then task performance, learners need to recall the events at the same time that they code the stories propositionally (i.e. at the same time that they access propositional knowledge, organize it, and code it), and establish transitions between events. When talking about displaced events, in the past and without contextual support, learners need to build semantic schema about the whole narrative, which is not present before them. Conversely, in the Here-and-Now pictures can be described one by one, without need for a general, overall plan for the whole narrative. In the There-and-Then task, therefore, attention is devoted to achieving interpropositional coherence, which slows down fluency considerably.

Although it has been shown that increasing task demands along both planning time and displaced, past time reference affects production speed, I would argue that

they do not affect fluency for the same reasons. In the two following sections an interpretation of the differences in the way planning time and displaced, past time reference differently affect fluency is provided.

8.2.1 Planning time and fluency

As predicted by Hypothesis 1, increasing task complexity along planning time reduces fluency significantly. This happened at both levels of complexity, that is, with both simple Here-and-Now tasks and with complex There-and-Then ones. In the following, it will be argued that planning time contributed to more efficient macro- and micro-planning; it contributed to predicting and solving problems before performance; and it allowed for rehearsal and monitoring prior to performance.

If we accept that cognitive processing resources are limited (e.g. memory capacity), reducing planning time prior to task performance can be expected to affect the different processing components of the production system during performance. Speech rate depends, in Levelt's terms (1989), on how fast speakers move from conceptualizing the message to actually articulating it. Hence, increasing cognitive complexity by reducing pre-task planning time limits the cognitive resources available for developing an intention, as well as for accessing the available information in long-term memory needed to express such intention**,** and it also depletes available resources during lexical access for grammatical and phonological encoding.

Firstly, as we saw in Chapter I, the onset of message production is the generation of communicative intention. I would argue that the type of task can make a difference at this first stage. Opinion tasks, for example, require generating an intention from scratch by finding arguments and organizing them into a coherent plan. In the case of the narratives used here, the communicative intention was largely guided by the structure of the task itself[2]. Whether more determined by task type or less, in order to express an intention, the relevant propositional, situational, and discourse knowledge must be accessed and its chunks organized into manageable propositions. The informational perspective of utterances must be decided on, a job that is carried out by the processing system which Levelt (1989) refers to as the conceptualizer. In my view, the difference that pre-task planning makes is due to how rapidly conceptual information is accessed again during performance. It is reasonable to imagine that planning time is used to instantiate and attend to the information needed to express the learner's intention and that this information should be easily accessed again from LTM during performance. In this sense, when talking about the relationship between memory and attentional capacity, Robinson (1995a:320) has also suggested that "the extent to which relevant preexisting representations are available will determine the efficiency of attentional allocation, which in turn will lead to more successful task performance", representations which can be generated during pre-task planning time. An example of how pre-task planning time is used by learners and how its absence

[2] In the narrative tasks used in this research, the actors and the actions, as well as the relations among them, are quite clearly established. This rigid structure, I would argue, guides the generation of a communicative intention, an issue that will be discussed again when analyzing linguistic complexity. In these circumstances, pre-task planning time may not play a major role in developing an intention.

affects performance is provided by Student 28. When talking about her interpretation of 'frustrated' in the affective variable questionnaire, she expressed how having planning time helped her plan her narrative:

> Student 28: per exemple si tens més temps pots pensar més què és el que ha passat què és el que creus que pot passar i i reflexionar més sobre el que diràs en canvi en un minut és una mica no sé jo també que em poso nerviosa pues se m'esborra tot del cap no sé parlar absolutament res d'anglès o sigui sóc com tonta quan tinc menys temps de d'això.
>
> (Translation: for example if you have more time you can think about it more what happened what you think could happen, and reflect more on what you will say but with one minute it is a little I don't know I get tense and things disappear from my head I don't how to speak English at all I mean I'm like stupid when I have less time than that.)

This is also supported by learners' comments during protocol analysis about the lack of planning time. When asked about what she meant by difficulty Student 30 said:

> Student 30: "For example in the first case it was more difficult for me because I was thinking at the same time I was speaking, but in the other case I could thought about it before and (Researcher: do you mean because of time?) yes"

When enquired about his interpretation of 'frustrated', Student 34 said:

> Student 34: "eh when when when I am thinking about what I have to to tell you eh if it's difficult for me to think and to to choose the words and to explain it's a difficult task and if it easy."

Secondly, as was also seen in Chapter I, formulating a message can be a more or less automatic process. In L1 both lexically driven grammatical and phonological encoding are seen as rather automatic processes, which is not the case when speaking the L2. After working memory has received the preverbal message (i.e. the information that has been activated and attended to configure the intention and which has somehow been organized into a propositional plan), the formulator starts to search for both lemmas and forms that will match the preverbal message which represents the intention.

As far as lemma access is concerned, Poulisse and Bongaerts (1994:42) note that it is commonly accepted in the spreading activation literature that "high frequency words and words that have been used just before require less activation for lexical access than low frequency words and words that have not been used for a while." In this sense, planning time accelerates lexical retrieval which, as we will see below, can be more elaborate as well.

Regarding encoding, as Poulisse (1997:208) notes: "The lack of automaticity could simply be captured by assuming serial, step-by-step processing (at least to some extent) instead of parallel processing at the morphophonological and articulatory levels. As serial processing is slower, it allows the speaker to replenish the resources needed to carry out nonautomatic, attention-demanding processes." In the same fashion as with propositional information, pre-task planning time can give learners the opportunity to instantiate words (i.e. lemmas and their forms) or chunks of the narrative in working memory which will ease their retrieval from LTM during performance with positive

consequences for fluency. Related to this idea are experimental findings of priming studies presented by Cowan (1988), cited by Doughty (2001:226), which suggest that recently attended items can be reactivated from LTM.

Along the same line, Ortega (1999:127) has reported that learners focus on problem-solving (e.g. identifying problem spots or eliminating unessential information), rehearsal (e.g. mentally running through the narrative or reading it to oneself), and memorization (e.g. writing things down in order to remember them later). In absence of pre-task planning time, problems are encountered during performance that have to be solved on the spot, and the message has to be constructed creatively without the possibility of resorting to a rehearsed or partially memorized plan. For example, during performance the learner may find that an L2 lexical item that will match the intended concept is not available due to his or her limited L2 lexicon. In that case, an alternative L2 lexical item needs to be found and, if it is not found, then either an L1 item will be used or a compensatory strategy applied, such as using a similar term, an all purpose word, or simply omitting the term (Dörnyei and Kormos, 1998:363). One of the possibilities is that when a lemma is not found, a phrase of the same meaning will need to be computed, as again Poulisse (1997:218) suggests, an operation which is thought to take longer than just retrieving a lemma. I would argue, then, that on-the-spot problem-solving operations like this can only be expected to take a toll on fluency.

Students' reports support this idea, as expressed by student 17 and student 30 when they asked about what they meant by 'frustrated':

> Student 17: si diguéssim em sentia malament perquè no em sortien les paraules o perquè veia que ho feia malament o veia que no tenia prou fluïdesa parlant
>
> (Translation: we could say I felt bad because words didn't come out or because I could see I was doing it wrong or I could see that I was not fluent enough)
>
> Student 30: what made me feel frustrated is when I I stop when I stop to think and when I don't know when I use the bad past tense and I know but I already said it and things like that

Apart from lexical retrieval, phonological information has to be accessed during performance. During pre-task planning time, phonological representations retrieval and articulatory rehearsal (Ellis, 2001:34) can and do take place. Again Ortega (1999:130) reports that in her experiment learners used planning time for phonological monitoring, which I take as a form of rehearsal before performance. When pre-task planning time is absent, there is no room for generating and momentarily storing a phonological code, and articulatory rehearsal does not occur. Phonological information has to be accessed directly and for the first time, which brings about hesitation and slows down the pace of production.

In contrast to previous suggestions that more complex tasks would benefit more from pre-task planning time (Ortega, 1999), the results of Hypothesis 3 showed that Here-and-Now and There-and-Then tasks benefited equally from planning time, with a slight advantage for Here-and-Now tasks on most production variables. The

explanation may lie in the fact that, as will be seen in the following two sections, during There-and-Then performance, attention was devoted to two other areas of production, that is, lexical complexity and accuracy, while during Here-and-Now performance, attention was allotted only to lexical complexity. Fluency may have been lower for There-and-Then tasks in order to efficiently attend to complexity and accuracy simultaneously.

8.2.2 +/- Here-and-Now and fluency

As predicted by Hypothesis 2, increases in complexity along +/- Here-and-Now also have detrimental effects for fluency under both planned and unplanned conditions. I would say, however, that this happened for other reasons than planning time and with different consequences for other areas of production. Below it is argued that the lack of visual support forces retrieval from memory with negative consequence for fluency. In addition, fluency may have been reduced in order to monitor production in There-and-Then tasks.

In Section 7.2, we saw Robinson's arguments to explain decreasing fluency as organized around memory demands (recall and propositional coding) and discourse planning (schema construction and interpropositional coherence). Complementary to those arguments is the fact that situational knowledge can be directly accessed during Here-and-Now narration, because of the perceptual presence of the story, while it has to be retrieved from memory when narrating in the There-and-Then. In other words,

the propositional organization of the message, while aided by visual prompts in the Here-and-Now version, has to be reconstructed from memory in the There-and-Then one, an operation which consumes memory capacity and has negative effects for fluency. Two examples of the lack of contextual support and their contribution to the perception of difficulty and stress are supplied by students 17 and 4:

> Student 17: que és quan quan és difícil és quan tens poc temps per a prepara-ho i ho has de fer improvisant. I si és més fàcil és quan et deixen prendre nota i pots mirar al davant i no sé
>
> (Translation: when when it's difficult is when you have a short time to prepare and you have to improvise. And it's easier when they let you take notes and you can look and I don't know)
>
> Student 4: lo que passa que ara que m'has tret el paper doncs ja m'he posat més nerviosa perquè m'ho tinc que tenir no més preparat però sembla que ho tinguis que tenir més preparat que més o menys ho tens igual preparat però no sé que costa més
>
> (Translation: what happens is that you took the piece of paper away and I got tense because I must have it readier but it looks as if you should be better prepared more or less and it is prepared also but I don't know it's harder)

In addition to the lack of contextual support affecting fluency, attention allocation policies can also explain decreases in fluency. As seen in the results of the percentage of self-repairs and repaired to unrepaired errors, when tasks were made more complex along +/- Here-and-Now, learners allocated their attention to monitoring

their own speech. Rate A showed that when complexity was increased along +/- Here-and-Now in planned tasks (i.e. from Condition 1 to Condition 3) fluency decreased significantly, which can be partially explained by increases in self-repairs. However, when complexity was raised along unplanned tasks (i.e. from Condition 2 to Condition 4), fluency was reduced but not significantly. As for Rate B, the fact that self-repairs were eliminated from the syllable count explains why speech rate was significantly reduced when increasing task complexity along the Here-and-Now. So it can be concluded that, at least to some extent, learners reduced their speech rate in order to focus on the accuracy of their own production. The interaction between fluency and accuracy will be further discussed in section 8.5.

With regard to the results of Hypothesis 4, the effects predicted for the increase of Task Complexity along the +/- Here-and-Now variable followed the direction indicated by the hypothesis, even if they did not reach statistical significance. The effects caused by the manipulation of Task Complexity along +/- Here-and-Now were greater when planning time was available before performance. In other words, planning time magnified the effect of Task Complexity. In the case of fluency, for example, when learners went from a complex There-and-Then task to a simple Here-and-Now one fluency increased more under planned conditions than under unplanned conditions, where the differences were not so large. It can therefore be concluded that whatever effect Task Complexity had on production, this was enhanced when pre-task planning time was provided.

8.3 Task complexity and linguistic complexity

As seen in Section 6.3.1.2, the findings regarding lexical complexity run counter to what was predicted by Hypothesis 1. The results obtained in this study differ considerably from previous findings on the effects of manipulating task complexity on lexical and structural complexity.

While most studies have found little or no effects of task complexity on lexical complexity, this study has found a considerable impact of planning time on lexical complexity. The three measures of lexical complexity used in this experiment indicated significant gains in lexical complexity in the two planned conditions (i.e. Condition 1 and Condition 3) as compared to the two unplanned ones (i.e. Condition 2 and Condition 4), contrary to what was hypothesized in Hypothesis 1. No significant impact was found for the +/- Here-and-Now variable in either direction, although under unplanned conditions There-and-Then tasks showed a slight increase in the percentage of lexical words and the ratio of lexical to function words. These results went against what Hypothesis 2 affirmed. Structural complexity results in this study, on the other hand, contradict the relatively consistent findings in the planning time literature while they resemble those of Here-and-Now studies. This means that no significant gains in structural complexity were achieved by providing extended pre-task planning time, contrary to what was predicted by Hypothesis 1. Hypothesis 2 was not confirmed either since no significant differences were found between simple and complex versions of tasks under either planned or unplanned conditions.

Regarding the discussion of planning time in previous studies, it should be noted that neither Foster and Skehan (1996) nor Skehan and Foster (1997) measured lexical complexity since they operationalized complexity with exclusively structural complexity in mind. Mehnert (1998:99), who used weighted lexical density[3] to measure lexical complexity, found that lexical density increased along with pre-task planning time and concluded that: "Of particular interest are the results for weighted lexical density, which provide evidence to confirm the assumption that the degree to which discourse is planned is a source of difference in spoken language in this regard." Ortega (1999) did not find any differences in lexical range between planned and unplanned tasks, but she admitted but this may have been due to the type of measure she used for the calculation, type-toke ratio, which is sensitive to text length. While her protocol analysis reports suggested that learners use planning time to access words and consider different possibilities, her results did not show any gains in lexical complexity, which made her conclude that (Ortega, 1999:133): "the lack of consistently higher degrees of lexical richness in planned output seems in need of explanation". Yuan and Ellis (2003), who used the mean segmental type-token ratio[4] as a measure, found that their pre-task planning group outperformed their on-line planning one, a phenomenon they did not discuss in detail.

[3] He divided linguistic items into grammatical and lexical ones. These were then organized into high and low frequency items. High frequency items, which means that they appeared more than once in the text, were given half the weight of low frequency ones, and finally the percentage of weighted lexical items was calculated.

[4] The Mean Segmental Type-Token Ratio (MSTTR), which they based on Richards and Malvern (2002), divides narratives into 40-word segments for which the type-token ratio is calculated. Then the mean scores are added and the total is divided by the total number of segments. All of these operations are meant to compensate for differences in text length, a major drawback of the traditional type-token ratio.

Task complexity studies concerned with the +/- Here-and-Now variable have shown gains in lexical complexity for There-and-Then tasks. Robinson (1995a) found a higher percentage of lexical words for There-and-Then narrative, which he argued was the consequence of interpropositional coherence and focusing on lexical meaning triggered by this level of complexity. He added that during There-and-Then performance learners need to draw much more on declarative than on procedural memory as they remember events. Rahimpour (1997) did not find any differences in lexical complexity among any of the three levels of task complexity he operationalized. He explained such lack of differences as a consequence of the structure of the tasks which were one-way, and speculated that differences would have been found had he used two-way tasks.

Gains in structural complexity as a result of providing pre-task planning have been a consistent finding in planning time studies. (Skehan & Foster, 1997; Mehnert, 1998; Ortega 1999; Yuan and Ellis, 2003). Again, explanations about why structural complexity improved during performance when given pre-task planning time are quite generic and are usually advanced in opposition to linguistic complexity, two dimensions which are thought to be in competition. Foster and Skehan (1996:318) found that narrative tasks generated higher levels of complexity than information or opinion exchange ones. They suggested that subjects "receive additional benefit from the structure that the detailed planning condition provides." And they added that specific instructions as to how to plan: "enable them to make more inroads into a problem they might otherwise not be able to analyze so effectively", which in turn

triggers more complex language. Skehan and Foster (1997:201) concluded their 1996 study in a similar way, by saying that "the more a planned task pushes subjects into attempting complex language, the weaker the control over language form." Mehnert (1998) confirmed Skehan and Foster's statement that any gains in accuracy and complexity are not achieved simultaneously. Ortega (1999) simply stated that her results were consistent with previous findings. Yuan and Ellis (2003:20) referred to Wendel's (1997) argument that pre-task planning plays a major role in enhancing complexity and they added that subjects "used the pre-task planning time to organize the story by thinking initially about what they wanted to say and only secondarily how they would say it in English. In terms of Levelt's (1989) Speech Production Model they prioritized conceptualization over formulation and articulation. This resulted in enhanced complexity".

As far as +/- Here-and-Now studies are concerned, none of them found any significant differences in structural complexity among different levels of task complexity. Robinson (1995a) provided four reasons to explain such behavior: firstly, structural complexity was not achieved due to the non-interactive nature of tasks; secondly, he questioned the validity of the measure S-Nodes per T-Units, which was originally created for written discourse; in the third place, the subjects' proficiency may not have been high enough to capture differences between a pragmatic mode and a syntactic mode, the latter of which is expected to generate higher structural complexity; and finally, he attributed the lack of complexity to the open condition of tasks, as opposed to a closed condition. Rahimpour (1997), who found differences in

structural complexity with neither open nor closed tasks, argued problems with the measure, S-Nodes per T-Unit, which he speculated would be more appropriate for written language.

The results obtained in this study regarding structural complexity contrast with most studies (Skehan & Foster, 1997; Mehnert, 1998; Ortega, 1999; Yuan & Ellis, 2003), while they are consistent with a few others (Foster and Skehan, 1996; Robinson, 1995a; Rahimpour, 1997). The following two sections provide an explanation that distinguishes between the effects of planning time and the ones of +/- Here-and-Now on linguistic complexity.

8.3.1 Planning time and lexical and structural complexity

Contrary to what Hypothesis 1 put forward, the results of the three measures of lexical complexity in this study showed that the provision of extended planning time has beneficial effects for lexical complexity. In this section, it is argued that planning time may contribute to higher conceptual elaboration; it can cause a higher chance of accessing less activated terms; it leads learners to consider a larger number of alternatives; and the lack of planning time may lead to repetitions that reduce the levels of lexical complexity. As for structural complexity, results are explained as being largely determined by the internal structure of the stories.

If we accept Poulisse's (1997) suggestion that the L2 system is incomplete and it lacks automaticity, the benefits of providing learners with pre-task planning time can

be explained in at least four ways. Firstly, I would argue that the longer time learners are given to plan their speech, the more conceptually elaborate this may become. The configuration of pre-verbal messages are the result of attention and control, and 10 minutes' planning time provides learners with the opportunity to consider different possibilities. As a result, messages sent to the formulator can be expected to be more elaborate conceptually than when they have to be instantaneously generated for the first time during performance. Such quantitative and qualitative higher elaboration may lead learners to use more elaborate (in terms of quantity or variety) and more precise (in terms of quality) vocabulary. This, in my view, is reflected by the Guiraud's Index, which showed that learners used more different types of words when they had been given more planning time. Rather than repeat 'the man' all the time, they used alternative words like 'the patient' or they adjectivized people and places. On the contrary, constructing the message at the same time that it is being uttered forces learners to use simpler phrases with little adjectivation and elaboration. I would distinguish this type of elaboration from structural elaboration, though, which I believe to be determined by the structure of the narratives themselves, and which operates at the propositional and interpropositional level, as discussed below.

Secondly, as seen in Chapter I, when lexical access takes place, several items that are similar in meaning are activated, mainly in the L2 but also in the L1. The item that matches the concept in the pre-verbal message most clearly will be selected. It is reasonable to believe that the highest frequency items will receive more activation and may have a higher chance of being selected. This process, however, may be altered by

pre-task planning time. Ortega (1999:133) stated that: "It is noteworthy that according to speakers' self-reports in the study reported here, planning can be expected to have the strongest beneficial effect on improving lexical retrieval processes and lexical choices." Planning time gives learners the opportunity to activate low frequency items, as opposed to just high frequency ones, which can be retrieved again during performance. Like some of Ortega's (1999) learners who reported that they had toyed with different possibilities, protocol analysis in this study has triggered similar findings. For example, student 28 admitted to using writing during planning time to consider less repetitive words:

> Student 28: and if you can write it is better because you can see good the verbs and that you're using, the vocabulary, and if it's at the moment it's always al menos jo (translation: "at least in my case") I always use the same words to design a lot of things and a lot of sensations and

The consequence of toying with different possibilities may have been the cause of the wider variety of terms used during performance, a variety that in my view is captured by the percentage of lexical words.

In the third place, pre-task planning time can provide learners with the opportunity to identify the words they do not have and search for alternative words that will be similar in meaning. In the absence of planning time, trouble spots have to be avoided by using problem-solving mechanisms that Dörnyei and Kormos (1998:359) refer to as being related to L2 resource deficit, such as reducing the message, using an L1 word, or abandoning the plan altogether.

In the fourth place, protocol analysis reports denote that learners are aware that they are speaking slowly, and this is a source of stress. It is therefore plausible that if no pre-task planning time is provided, learners may choose whatever word they can 'find' (i.e. whatever word is activated) in order to keep the pace of the narration at an acceptable level. Also, in order to avoid long silences, words or chunks get repeated in order to have time to plan. This is what Dörnyei and Kormos (1998:368) refer to as problem-solving mechanisms related to time pressure. Repetitions affect lexical complexity as expressed by the Guiraud's Index. Student 33 talked about what he meant by relaxed (i.e. in the question measuring stress), an affective variable that, as we saw, correlated with planning time:

> Student 33 : I don't maybe only I fear if I do it well or no (researcher: vocabulary?) yes yes of course if I find good vocabulary that doesn't repeat

As far as structural complexity is concerned, Hypothesis 1 was not confirmed either. Structural complexity in the experiment presented in this dissertation did not display any significant differences caused by increased planning time. I would like to advance two possible explanations. Firstly, I have suggested at different points that the structure of the narratives tasks used in this study was quite rigid. By this I mean that the fact that the relations among the different actions (e.g. consecutive or simultaneous ones) as well as among characters in the stories were so clearly established may have determined the conceptual plans learners designed for their narratives, leaving little

room for more complex relations that would as a consequence have generated higher syntactic complexity. Secondly, I do not think that any satisfactory explanation has been provided so far as to why planning *per se* should lead to more complex syntactic structures. Beyond that, I would speculate that planning time may have had a greater effect on other task types. With an opinion task, for example, more time should trigger more elaborate argumentation (although not necessarily). However, in the case of narratives, despite having time to decide on what to say and how to say it, which should have theoretically enhanced structural complexity, the well-established and rigid storyline may have overridden any effects of pre-task planning time on structural complexity. While planning time was used to achieve more complex and varied lexical selection it was not used to achieve more syntactically complex utterances.

With regard to Hypothesis 3, the impact of manipulating planning time was similar for the two levels of complexity, hence confirming the hypothesis. This could be explained by the fact that the effects of planning time on production may have overridden the effects of complexity along the +/- Here-and-Now variable. As for structural complexity, results run slightly counter to the predictions since Here-and-Now tasks seem to have benefited more from planning time than There-and-Then ones. No explanation has been found for this effect. As was pointed out before, since no significant differences were found for structural complexity in any direction, structural complexity is in need of further investigation.

8.3.2 +/- Here-and-Now and complexity

Results in Chapter VI showed that increasing complexity along planning time had detrimental effects for complexity, given that time constraints interfere with performance. Increasing cognitive demands along the +/- Here-and-Now, however, did not have a major impact on either lexical or structural complexity hence contradicting Hypothesis 1. It will be explained here that the effects of Task Complexity on complexity may have been caused by the need to achieve interpropositional coherence and dependence on lexical meaning during performance of complex tasks. Regarding the effects of Task Complexity on structural complexity, the idea of manipulating tasks at the level of message conceptualization is proposed in order to find more satisfactory explanations.

Lexical complexity decreased slightly when tasks were made more complex along the +/-There-and-Then under planned conditions. On the other hand, when almost no planning time was supplied, lexical complexity increased slightly, as shown by the percentage of lexical words and the ratio of lexical to function words. This suggests that in the absence of pre-task planning time, learners may have favored lexical complexity during actual performance more than when planning time was provided. This points in Robinson's (1995a) and Rahimpour's (1997) direction, which suggests that There-and-Then tasks lead learners to focus on interpropositional coherence and lexical meaning which has them focus on the words so as to express meaning, as well as on the forms to be produced.

With regard to structural complexity, increasing tasks along the +/- Here-and-Now variable did not seem to have any kind of effect on the narratives produced in this experiment. Rahimpour (1997) did not find higher complexity even when he operationalized a more complex version of narrative tasks, which was a combination of Here-and-Now and There-and-Then tasks. Regarding this issue, I would like to suggest that more research is needed to find out exactly what leads to higher subordination and interpropositional liaisons so that it can be manipulated accordingly. Such research would shed light on whether structural complexity is determined by the internal structure of the task or by some other factors. We have seen that wider activation and rehearsal lead to enhanced lexical complexity but do not necessarily affect structures. I would speculate that Task manipulation to achieve higher structural complexity should work at the level of message conceptualization. Finally, beyond manipulating task design, I conjecture that a focus-on-form treatment that encouraged structural complexity would be a much better option than relying on planning time alone to do the job.

With regard to Hypothesis 4, the difference between Condition 1 and Condition 3 was greater than for unplanned tasks, but against what Hypothesis 2 predicted. I would speculate that after having planned for 10 minutes, they may have need to rely less on content words when performing the There-and-Then task, while when no pre-task planning was available, learners may have depended more on content words to narrate the complex There-and-Then narratives.

8.4 Task complexity and accuracy

Without a doubt, accuracy is the dimension of performance that has triggered the widest variety of results. In the experiment presented in this dissertation, no differences in accuracy were found for either the percentage of error-free units or for the target-like use of articles among any of the four conditions. The results of these two measures went against what was stated in Hypotheses 1 and 2. On the other hand, the percentage of self-repairs and the ratio of repaired to unrepaired errors displayed significant differences when tasks were made more complex among the +/- Here-and-Now variable, thus confirming what was predicted in Hypothesis 2. These findings seem to support the idea that increasing the cognitive complexity of tasks along the +/- Here-and-Now variable had a stronger effects on accuracy than when manipulated along planning time.

Explanations by different researchers about what takes place with accuracy during performance have differed considerably. Foster and Skehan (1996) did not find any significant improvements in accuracy between planning conditions for the narrative task they used, while these existed for complexity. While they speculated about the possible causes of increased complexity (either the consequence of reduced cognitive load or cognitive effects that pushed learners to try out more complex language) the lack of effects for accuracy was attributed to trade-off effects between accuracy and complexity. In their 1997 study, Skehan and Foster found exactly the opposite results, that is, higher accuracy but less complexity for planned narrative

tasks. Skehan and Foster (1997:201) again concluded that: "what this clearly demonstrates is the trade-off between accuracy and complexity. The more planned task pushes subjects into attempting complex language, the weaker the control over language form." This idea of trade-off effects was confirmed by Mehnert (1998:104) who concluded that: "planning leads to performance improvements, but any gains in accuracy and complexity are not simultaneously achieved. This is because attentional resources are limited and therefore allocated either towards achieving accuracy or complexity at any one time." Ortega (1999) found gains in fluency and complexity, the latter measured by the number of words per utterance, but not in accuracy. To the debate on limited attentional resources, Ortega (1999:137) added that the psycholinguistic accounts for lack of proficiency and the trade-off effects hypothesized to exist between accuracy and complexity: "need to be modified to include learner proficiency as a moderating factor because complexity and accuracy, if not fluency, are constructs that need to be defined within particular bands of development and proficiency." Finally, Yuan and Ellis (2003) found no effects of pre-task planning time on accuracy, while they did in the case of their newly operationalized 'online' planning. Following Skehan and Foster (1997), Yuan and Ellis (2003:20) speculated that: "learners may be predisposed to use their planning time to pay attention to how to organize and encode the propositional content rather than for searching their linguistic repertoire to maximize accuracy. Further, because both the no planning and the pre-task planning group were pressured to perform the task rapidly, they were restricted in the opportunities for on-line planning during performance and may have used the

time to access their lexicons rather than to attend to grammatical accuracy." According to Yuan and Ellis, learners focused on both their lexical repertoire and the form of their language because they were also given no time restrictions to perform. Notwithstanding, I believe that the performance conditions were no different from other planning studies since none of them reported restricting performance time. In my view, this would take weight away from the argument that it was online planning that caused learners to focus on form. As I will argue later one, planning time *per se* does not lead to more accurate speech.

Robinson (1995a:122) explained increases in accuracy as measured by the TLU of articles of There-and-Then tasks by saying that: "this greater preoccupation with interpropositional coherence also appears to lead incidentally to a greater attention to the forms produced while performing There-and-Then narratives, as revealed in the higher mean accuracy of target-like use of articles." Rahimpour (1997:133), who also found improvements in accuracy, suggested that There-and-Then tasks lead learners to adopt a syntactic mode, rather than a pragmatic one, in Givon's (1985) terms.

8.4.1 Planning time and accuracy

In general, planning time did not contribute to improved accuracy during performance, thus disconfirming Hypothesis 1. In this section, the arguments advanced to explain why planning time did not have an impact on accuracy have to do with the fact that pre-task planning time *per se* may not necessarily guide learners'

attention to form. The lack of an effect of planning time on accuracy may also be explained by the fact that the measures used may not be sensitive enough.

The only study which has provided evidence of actual use of pre-task planning to focus on form has been Ortega's 1999 study. Her protocol analysis results showed that, when provided with time to plan, learners addressed their attention to both form and meaning, and used different focus-on-form techniques to prepare their language. She pointed out, however, that there exist different orientations towards meaning or form: some learners are meaning-oriented (i.e. focused on the listener) while others are form-oriented (i.e. focused on accuracy). According to her reports, note-taking during pre-task planning helped them plan at the morphosyntactic level, and they used time to focus on weak areas of grammar. They also stretched their interlanguage by embellishing their narratives and used writing to monitor their own language. This evidence, which surfaced in protocol analysis reports, was not supported by Ortega's measures of accuracy, which did not show improvements in planned tasks during performance. In this sense, I would agree with her statement (Ortega, 1999:136) that: "attention to form cannot be assumed as a guaranteed byproduct of pre-task planning opportunity and that the communicative requirements of the task at hand and learners' general predisposition toward communication or proficiency in the L2 can substantially affect decisions regarding conscious allocation of attention and effort."

Another reason for the lack of differences in accuracy may be the nature of the measures themselves. Although the percentage of error-free clauses or T-Units has been often used because of its potential to detect general differences in accuracy, I

would argue that it may be too general a measure to capture instances of focus on form. This measure entails that all T-units that contain at least one error should be eliminated from the count, but it does not distinguish T-units with few errors from T-units with a lot of errors, nor does it contemplate self-repairs. This would also apply to error-free clauses. So, in my view and as it happened with several other studies, the percentage of error-free T-Units did not help distinguish among learners coming from similar levels of proficiency. The TLU of articles proved to discriminate performance more clearly, as shown by the results of comparing the low difficulty/stress group to the high difficulty/stress one. However, it was not sensitive enough to distinguish between performances under different conditions in any direction, that is, neither when providing pre-task planning time nor when making tasks more complex along +/- Here-and-Now. As I will argue in the next session, the percentage of self-repairs and the ratio of repaired to unrepaired errors are much more revealing of how learners focus on form.

Inaccuracies in the case of L2 learners, whether lexical, grammatical or phonological, are the result of faulty selection and/or encoding. In the case of lexical items, because of an incomplete and not fully specified L2 lexicon, when other problem-solving mechanisms (e.g. approximation or use of all purpose words) have not been applied or have failed, learners may use the wrong term to express their intended meaning. As we saw at the beginning of this dissertation, this may take the shape of a foreignized word, a wrong coinage, or a literal translation. As far as syntax is concerned, learners make syntactic errors because their L2 lemmas may be connected

with the syntactic information of their L1 cognates. This is because they have not fully acquired the syntactic features of the L2 lemma or because the syntactic labels of the L1 cognate are wrongly activated (Dörnyei and Kormos, 2000:355). Similarly, and as the surface structure is being built, morphonologial information corresponding to the lemma is activated and encoded. The conceptual specification activates the lemma, but it is often the case with L2 speakers that it does not retrieve the correct lexeme. Two examples of widespread errors in this study were errors with possessive pronouns and morphological errors. For example, 'his' and 'her' share all the conceptual specification, conceptual arguments, syntactic category, and grammatical functions, but they differ in the diacritic parameter 'gender'[5]. When a possessive adjective is required, both 'his' and 'her' are activated and learners may retrieve the wrong lexeme because, at their particular stage of development, their diacritic parameters are not sufficiently specified in their lexicon or the connections are still weak. As Muñoz (1991) has pointed out, in the case of Spanish learners of English, 'his' may be more activated than 'her because of its higher frequency in the learners' input. Something similar happens with verbal inflections. For instance, 'go' and 'went' are two items that share the same conceptual specifications and syntactic features but differ in the diacritic feature 'tense'[6]. Again, it is not unusual in narrations that a learner who is telling the story in the past first uses the word 'go' to immediately replace it, in most cases, with the right one, 'went'. This is probably due to the fact that 'go' usually receives more activation and therefore is wrongly selected first, although through monitoring it is immediately substituted. It

[5] This is because learners are at particular state of development in which those forms are not yet stable.
[6] See Poulisse and Bongaerts (1994:49) for a similar case. For them, words are stored in both full and decomposed forms (i.e. inflectional morphemes).

would therefore be reasonable to believe that during performance, selection and encoding are less problematic if prior pre-task planning time has been used to focus on forms and detect trouble spots. None of the measures in this experiment, however, has shown any gains in accuracy due to reducing cognitive load by providing pre-task planning time. I would argue that this is because providing planning time *per se* does not lead learners to focus on form. As I see it, planning time liberates cognitive load but does not necessarily direct learners' attention to how they are encoding the message during performance.

As predicted by Hypothesis 3, no significant differences were found for the impact of planning time on accuracy between the two levels of complexity. There is a slight advantage, however, for Here-and-Now tasks. This may be explained by the fact that attention was addressed to both accuracy and complexity during There-and-Then performance whereas only to complexity during Here-and-Now performance.

8.4.2 +/- Here-and-Now and accuracy

The results of the experiment showed that increasing complexity along the +/- Here-and-Now variable played an important role in drawing learners' attention to form. As Hypothesis 2 predicted, accuracy was expected to be significantly higher for There-and-Then tasks and, with regard to the percentage of self-repairs and the ratio of repaired to unrepaired errors are concerned, it was. The results of these two measures, which as I argued before are more sensitive to what goes on during performance than

the percentage of error-free T-Units and TLU of articles, have shown that learners monitor their own speech more carefully when tasks are made more complex by removing contextual/visual support, and making references to events in the past. While under all conditions learners made a non-significantly different number of mistakes, under Condition 3 and Condition 4 they repaired a significantly higher number of errors than under Condition 1 and Condition 2. The only study on planning time that has considered monitoring is Yuan and Ellis's study (2003), who found that the on-line planning group spoke more slowly but reformulated and self-corrected more often. They, nonetheless, had no specific measurements for these two phenomena. The explanation of why this happened, however, is far from straightforward. It is argued here that higher attention to form as a consequence of increasing Task Complexity along the +/- Here-and-Now variable may be explained in terms of both stage of development, and by the fact that microplanning is affected by Task Complexity in a way that draws learners' attention to form.

I would agree with Robinson (1995a) who, following Givon (1985), suggests that There-and-Then tasks push learners into a syntactic rather than a pragmatic mode. Robinson also speculates that the fact that during There-and-Then performance speakers are forced to achieve interpropositional coherence leads them to focus on form. But I would also suggest that probably the fact that tasks were narrated in the past may have contributed to increased monitoring. As we saw in Chapter I, the kind of repairs are carried out depends on both the context of the interaction, and the task characteristics, but also on the task type. Van Hest (1996) already reported that tasks

requiring more precise description (e.g. storytelling) triggered a higher number of A-repairs (syntactic, tense and aspect self-repairs) than in task with less rigid structures (e.g. an interview task). In my view, it is higher complexity along the +/- Here-and-Now variable that leads learners to pay more attention to form. In the tasks that concern us, a closer look at the type of repairs reveals that the main difference among conditions was due not to lexical repair but to morphological ones. This means that at their particular stage of development, which should not be very different among learners as shown by C-test results, subjects may have been more ready to detect and repair the form of verbs in the past. In other words, one may speculate that learners may be more 'ready' to detect and repair problems with past tense morphology than with present tense morphology (3rd person singular "-s").

In addition to that, manipulating tasks along the +/- Here-and-Now forces changes in macro and microplanning. For macroplanning, learners needed to keep the whole story in mind rather than narrating the story vignette by vignette which, as I argued before, should have had consequences on structural complexity. As I also suggested, this is in need of further research since no significant differences were found for structural complexity in any direction. In the case of microplanning, Task Complexity may have drawn learners' attention to both regular and irregular past tense inflections (Robinson, personal communication), which triggered higher results for the percentage of self-repairs and the ratio of repaired to unrepaired errors. As we saw when discussing lexical complexity, when planning time was removed, the effects of manipulating cognitive complexity along the +/- Here-and-Now on macro and

microplanning also led to a slightly higher lexical complexity during There-and-Then performance.

Regarding Hypothesis 4, the fact that the impact of increasing Task Complexity along the +/- Here-and-Now variable on accuracy was greater under planned conditions suggests that attention to accuracy can be more efficiently allotted without any detrimental effects for complexity; whereas when tasks that are made complex along both variables, learners tend to focus more on accuracy alone.

8.5 Effects on production of the simultaneous manipulation of the two variables

Certainly, manipulating task features along both pre-task planning time and context-unsupported, displaced past time reference has displayed interesting synergies between the two variables. In general, increasing complexity along pre-task planning time brings learners closer to the 'real' processing conditions under which narrative discourse in conversation often takes place, that is, without previous preparation and often using displaced, past time reference. However, the results of this dissertation lead us to draw the conclusion that these increases in complexity do not seem to direct learners' attention to any particular grammatical features of their language. If, on the contrary, pre-task planning time is provided, as it is often the case in instructional contexts, learners will achieve a more lexically rich and varied performance as well as a more fluent one. On the other hand, increasing complexity along the +/- Here-and-Now variable makes learners reduce their rate of speech but also pushes them to focus

on how they code their messages. Reducing complexity along this latter variable only produces a minor improvement in fluency.

Under Condition 1, that is, with the support of the context (i.e. comic strips) and in the present, pre-task planning time had the effect of ensuring a fluent and lexically complex performance but did not particularly draw the learners' attention to how they encoded their messages. In this sense I would agree with Yuan and Ellis (2003:7) who conclude that: "It follows that pre-task planning does not greatly assist formulation, especially of grammatical morphology. Thus, the linguistic correlate of effort put into conceptualizing what to say is enhanced complexity and fluency rather than accuracy." Furthermore, the fact that planning time improves lexical complexity but does not improve accuracy does not necessarily have to be explained in terms of limited attention or competition for attention (see Section 8.5.1). It may also be explained by the fact that providing planning time *per se* does not guide learners towards more accurate speech. Although it has been shown that during pre-task planning time, attention to form can and does take place, the results described in this study as well as in some previous ones show that pre-task planning time does not focus learners on form during performance in any particular way.

For Condition 2, which keeps tasks simple at the level of contextual support and present time reference but makes them complex by reducing planning time, all dimensions of production are negatively affected, which confirms both Skehan's and Robinson's predictions. Speech rate is significantly slower than in that of its planned counterpart. If anything, and as shown by protocol analysis reports, under this

condition, learners use their resources to find the words they need to communicate their message, which still generates a low percentage of lexical words and low ratio of lexical to function words, as well as a minimal level of monitoring and self-repairs.

Condition 3, which makes tasks simple along planning time but complex along displaced, past time reference, triggers lexically complex language as well as increased attention to form, with only fluency being affected negatively. This may also explain the results obtained for Hypothesis 4. Under planned conditions, the effects of increasing task complexity along the +/- Here-and-Now on fluency were stronger than when doing so along unplanned ones. This means that when comparing Condition 1 to Condition 3, in Condition 3 attention was geared towards both complexity and accuracy with negative consequences for fluency. Going from Condition 2 to Condition 4, that is, from an unplanned Here-and-Now task to an unplanned There-and-Then one, led learners only to focus on self-repairs under Condition 4, and hence the mean difference in fluency was lower than between planned tasks. This also conforms to Robinson's predictions for monologic tasks, which suggests that if tasks are kept simple along resource-dispersing variables (e.g. planning time) but are made more complex along resource-directing variables (e.g. +/- Here-and-Now), attention may be allotted to complexity and accuracy simultaneously.

Finally, Condition 4 makes tasks complex at both levels, which has negative effects for fluency and complexity and only has positive effects for monitoring of learners' own speech. This conforms to both Skehan's and Robinson's prediction that if

tasks are made more complex along planning time, attention be drawn to either complexity or accuracy, but not both simultaneously.

These findings lead us to discuss the issue of competition for attention, which is the subject of the next section.

8.5.1 Competition for attention

During the review of both planning time and Here-and-Now studies, we saw that trade-off effects have been hypothesized to exist between the different dimensions of production. Hence, Foster and Skehan (1996) and Skehan and Foster (1997) suggested that trade-off effects exist between accuracy and complexity, a conclusion that was also reached by Mehnert (1998). In both cases, it was concluded that any gains in complexity are achieved at the expense of accuracy and vice versa. Yuan and Ellis (2003) found that trade-off effects took place between fluency and accuracy in accordance, they stated, with a similar interpretation of Wendel's (1997).

First of all, despite the fact that the metaphor that has prevailed is one of limited capacity in which the three dimensions of production compete equally for attention, I would argue that fluency should be considered to be separate from complexity and accuracy. This research has shown that fluency is reduced when processing demands are high. If processing load is reduced, for example, by the effect of providing pre-task planning time, fluency increases. These two facts show fluency to be clearly sensitive to processing. But the results of this experiment present quite a complex picture of how

fluency interacts with complexity and accuracy, a picture which depends on the direction in which planning time is manipulated. When extended pre-task planning time is provided, significant gains are found for fluency and lexical complexity at the expense of attention to structural complexity or accuracy. When task demands are made higher by reducing planning time, resources do not seem to be employed to improve performance in any of the other areas, as seen by the results of lexical and structural complexity, and accuracy. Nevertheless, I would like to suggest that fluency does not require attention in the same way that complexity and accuracy do. Differences in fluency are the consequence of what happens with complexity and accuracy, but it does not diminish because of the lack of attentional control. In other words, higher fluency is not the consequence of attention allocation policies, as complexity and accuracy would be, but the consequence of more efficient message planning and faster lexical access and selection. Wickens (1989:73) suggests that when two tasks are being carried out simultaneously, confusion between the tasks may lead to poor performance. However, a number of strategies can be applied, and he adds: "One such strategy may be to continue to try to perform the two activities in parallel but at some lower rate of performance, perhaps by being more careful, in a manner that will slow the rate of responses. This strategy will be effortful and extract a toll on resources, but will reduce the degree of confusion that results." In contrast, planning utterances, finding the words to express meaning, and coding them grammatically and phonologically, all involve conscious attention allocation, at least in the case of L2 speakers, with detrimental effects for fluency.

Secondly, I believe that the results obtained for Condition 3 disprove the argument that there are not enough attentional resources to focus on complexity and accuracy simultaneously. As we saw in the previous section, if tasks are made simple along resource-dispersing dimensions but made complex along resource-directing ones, a simultaneous focus on accuracy and complexity is possible. Even people who have drawn on multiple source models have come to the conclusion that complexity and accuracy compete for attention. Kormos (2000:348), who uses Wickens' (1989) model as a reference, has argued that the different dimensions of production draw on the same resource pool: "Upon processing their speech, L2 learners need to rely on the same verbal resource pool; therefore the various phases of speech production need to compete with each other for attentional resources." Maybe the explanation lies in the fact that the concept 'resource pool' has not been sufficiently defined. In this sense, Robinson (2003a:646) indicated that: "codes would have to be representationally specified, as would resource pools." I would add that, regarding performance, we also need to clarify the nature of the dimensions of accuracy and complexity. If we see them as just two dimensions of a single task (i.e. speaking) that draw on a single pool of resources and therefore compete, as Skehan and Kormos suggest, then we need to define what the limits of such capacity are and account for how time-sharing can be achieved, as in Condition 3 of this experiment where learners paid attention to both meaning and morphosyntactic forms. If we take a multiple-resource approach, it remains to be proven that what happens during speech is that accuracy and complexity

are two tasks (i.e. in a dual-task conception like Wickens', 1989) that draw on different resource pools and can therefore be attended to simultaneously.

One of the strongest arguments against the limited-capacity conception of attention has been advanced by Robinson (2003a, forthcoming). Based on attention models that go beyond the limited capacity idea, Robinson suggests that (2003a: 646):

> "these trade-off effects (form vs. function, accuracy vs. fluency) may be better explained not in terms of *a priori* capacity limits on a single pool of attention but in terms of control functions during central processing (allocation policy, time constraints on scheduling attention allocation), and interference occurring during resource allocation to those specific task demands which central processing responds to. From the perspective of interference theory, explanations linking relative ease or difficulty of L2 comprehension, or different characteristics of L2 production, to task demands may be more legitimately framed in terms of confusion and cross-talk between codes (of L1, interlanguage, and L2 syntax, morphology, semantics, and phonology/orthography) within specific resource pools during task performance, rather than in terms of global capacity limitations."

The results of lexical complexity and accuracy obtained for Condition 3 also contradict Kormos' (1999) argument regarding less effective monitoring during L2. She says that because of attentional limitations, learners notice fewer errors because some processes are less automatic and therefore take attention away from monitoring. If we elaborate on the argument, we could say that higher cognitive demands (i.e. higher

complexity) should also reduce monitoring. Although this may be true when increasing Task Complexity along planning time, it is contradicted by Condition 3 (as compared to Condition 1).

8.5.2 Task complexity, affective perception, and production.

The results in this dissertation have confirmed the validity of the construct of task complexity as shown by the learners' perception of difficulty. The more complex tasks are made along the cognitive demands they impose on learner, the more difficult and stressful they are perceived to be, and the lower the level of confidence they generate. Interest and motivation, however, do not necessarily decrease when tasks are made more complex.

Opinions about the difficulty, stress, and confidence generated by a task included a majority of references to accessing vocabulary. Not being able to express meaning, as opposed to form, seemed to lead learners to find the task difficult and stressful, and to have little confidence in how well they had performed. Answers to the three different questions, however, provide slightly different nuances. Hence, apart from how easily they could find or use words, difficulty was associated with clarity of the storyline. This perception, I believe, does not necessarily mean that some plots were easier or more difficult to understand but, rather, that when planning time was severely limited, storyline comprehension may have had to happen online and may not have completely satisfied learners' expectations. Adding to the perception of difficulty, narrating in the

past tense was found to be more difficult than narrating in the present (which learners tend to find easier). Stress, on the other hand, was also associated with learners' own monitoring of their performance. The fact that learners reported that they knew they were not doing a good job, their awareness of dysfluency, and their inability to express themselves point in this direction, which was not part of the assessment of difficulty. Confidence, we saw, was closely associated with stress, as shown by their strong correlation under all conditions (i.e. the more relaxed, the more confident). From the point of view of the learners' interpretations, confidence shared many characteristics with stress, such as not finding words or using incorrect ones, their awareness of dysfluency, and their monitoring and detection of errors. It was suggested by some, however, that confidence was measured against their own standards of proficiency or quality, and the outcome of performance was measured against what they had planned, which would distinguish between their perception of the two variables.

Interest and motivation can be clearly differentiated from the three other affective variables. As shown in Section 7.5, interest and motivation correlated under all conditions, suggesting that when a task was found to be interesting, learners said they would like to do similar tasks in the future. In my view, what distinguished interest from motivation was that answers about interest referred to the task they had just done, whereas motivation reflected their opinions about the future. Hence, learners found tasks interesting because they had given them an opportunity to practice, were different from previous experiences, and had posed a challenge to them. Motivation was interpreted in a similar way but with a projection towards the future.

Another important feature that the results of affective perception have revealed is that the less difficult learners think the task is, the less stressful they find it, and the more confidence they have while performing the task, the better they can meet task demands. In Section 7.8 we saw that the low difficulty/stress group used a higher (almost significant) number target-like use of articles when tasks were made more complex along +/- Here-and-Now, as predicted by Hypothesis 2. Robinson (2003a:653) has suggested: "Levels of stress, arousal, and performance increase to a point beyond which performance declines, and this point is reached earlier on complex tasks than simpler ones". Attention as effort is therefore related to affective influences on SLA, such as motivation (Dörnyei, 1998, 2002), and the distinction between facilitating and debilitating anxiety (Jacob, 1996).

8.6 Task complexity and sequencing in syllabus design

In this study, interaction between task complexity and sequencing was only found for the percentage of lexical words and the ratio of lexical to function words. Four tasks with four levels of complexity were used, and they were performed by subjects in two different sessions. Such limited exposure to the tasks may not have been enough to detect the differences that sequence can be expected to have on production. The fact that under sequence 3, which organized tasks from simple to complex, a higher level of lexical complexity was achieved, brings hope of discovering

how sequencing based on increasing complexity can contribute to better performance on more complex tasks.

Beyond statistical comparisons, sequencing narrative tasks from simple to complex can assist learners in the transition from more lexical, meaning-focused production to a more balanced production of meaning and form. The simplest task, under Condition 1, showed high levels of fluency and lexical variety without particularly focusing on form. A more balanced performance between lexical complexity and accuracy was achieved under Condition 3. Therefore, organizing tasks from simple to complex may produce a transition from a more meaning-focused type of production to a more balanced mode of production that contemplates both meaning and form.

In my view, planning time can serve an effective function. Beyond a more efficient allocation of attentional resources and the possibility of rehearsing, learners have time to release tension before performance, as evidenced by their ratings of frustration when planning time is not available. Learners displayed high levels of perception of difficulty, stress, and lack of confidence when tasks were made complex along both planning time and +/- Here-and-Now. Therefore, providing learners with a series of tasks that slowly increase in complexity may lead them to gain confidence, feel less stressed, and perceive tasks as less difficult if they start with simple ones and complex ones come at the end. In Robinson's words (2001a:314), organizing tasks in such a way is likely to result in: "equilibration of perceived workload across

performance on simple and final complex versions leading to positive effects on affective variables such as anxiety and motivation."

Finally, more efficient scheduling of task elements may lead learners to achieve gains in automatization (DeKeyser, 2001) as well as functional mapping and restructuring (Doughty, 2001). This can be achieved by having learners move from simple to more complex tasks that progressively take them to the processing conditions they will encounter in real-world performance.

8.7 Task complexity and interlanguage development

As stated at the beginning of this dissertation, our main concern has been with production itself, not acquisition. However, although little is known about the interaction between production and development, I believe that the findings in this research suggest that some conditions may be more propicious for learning than others. In any case, any claims made here have to be taken as speculative.

Planning time has been shown to have an enormous potential to draw learners' attention to both meaning and form. Firstly, its effects during performance can cause learners to speak faster and use a wider variety of words. This, as shown by protocol analysis results, has a positive impact on learners' perception of stress and confidence. It is reasonable to imagine that with an already formulated plan, learners may choose to take more risks, and stretch their interlanguage during performance (Skehan, 1998), one way in which planning time can contribute to learning.

Secondly, planning time can promote the cognitive macro and microprocesses that were discussed in section 1.5.2.3. Providing pre-task planning time can facilitate the selection, rehearsal, and cognitive comparison which have been claimed to contribute to learning. The specific design of this experiment, however, has not provided an explanation of how planning time can contribute to the more unconscious processes of internalization, analysis, mapping, and restructuring.

Thirdly, planning time can facilitate attention allocation policies and more efficient time sharing. As we saw under Condition 3, learners devoted their attention to both conceptualization, by producing more elaborate language in terms of lexical complexity, and formulation, as shown by their enhanced self-monitoring. This balance of focus between meaning and form can be expected to contribute to interlanguage development.

Manipulating tasks along the Here-and-Now had been shown to push learners toward higher complexity and accuracy during actual performance. Condition 3 in this study showed that learners not only have faster lexical access and variety, but also enhanced monitoring (accuracy) of their speech. Production is the testing ground of learners' hypotheses about the language. The kind of problem-solving mechanisms (Dörnyei and Kormos, 1999) that learners engage in lead them to push their output and test their hypotheses. This, in turn, may have positive effects of acquisition (Swain, 1985; Izumi et al. 1999).

Additionally, monitoring in more complex tasks, especially when accompanied by pre-task planning time, can be expected to cause learners to check their speech, both

internal and overt, against their receptive knowledge (De Bot, 1996:551). The results obtained under Condition 3 point in this direction.

We also saw that lexical items may not be completely specified in the lexicon of L2 speakers. Engaging in production can put lemmas to test. If learners find that they are missing knowledge, in the sense of Schmidt's (1990, 1993, 2001) 'noticing the gap', they may have to search for input in subsequent interactions (Swain, 1985). When gaps that were detected are eventually filled, interlanguage development can progress.

Finally, the kind of rehearsal that takes place during self-repairs, which as we saw are promoted by enhanced complexity along the +/- Here-and-Now, may contribute to encoding in long-term memory (Robinson, 1995b; Swain, 1995). In that case, proceduralization (Anderson et al., 1997) and automatization (DeKeyser, 2001) may be one of the consequences.

It can be concluded, then, that a combination of dimensions which free up cognitive load while at the same time, pushing learners to focus on form can be expected to have positive effects for learning.

8.8 Implications for pedagogical interventions

This study has exclusively focused on the construct of Task Complexity and has manipulated two task features in order to test their impact on production in an experimental setting. However, it has explicitly excluded any kind of pedagogical intervention either prior or during performance.

I believe that the simplicity and economy of the operationalization of both planning time and +/- Here-and-Now make them easily adaptable to instructional contexts. Tasks in pedagogic contexts can be easily manipulated to promote fluency and complexity if planning time is provided. By asking learners to speak in the past and without visual support, their attention can be drawn to how they formulate their messages.

Beyond that, the manipulation of Task Complexity can be combined with an array of pedagogical forms of intervention (See Doughty & Williams, 1998 for a review) such as input flooding, recasts or elicitations to achieve higher levels of accuracy. If increasing complexity along resource-directing variables has the potential to draw learners' attention to the forms in their own production, it can also lead them to focus on the input they receive (Robinson 2001a, 2001b, 2003a; forthcoming).

8.9 Implications for task-based testing

The findings in this dissertation may also contribute useful information to the area of task-based testing. In this sense, they can be a contribution to the need to conceptualize performance and the processing conditions which influence it (Skehan, 1998:80).

The different conditions under which tasks are performed have shown to generate radically different results. Beyond other factors that may influence performance during testing, such as the learners' level of proficiency or the communicative stress of the situation, Task Complexity, as manipulated along

planning time and the +/- Here-and-Now variable, has been clearly shown to influence performance. The review of the literature in Chapter IV showed that some of these influences are systematic.

In the shift from system-referenced testing to performance-based testing which has accompanied the evolution of task-based approaches, the data in this dissertation can shed some light on how production is affected by different degrees of cognitive complexity. If tasks are to be used to elicit performance data form learners for testing purposes, the conditions under which such elicitation takes place need to be carefully considered. Hence, the findings in this dissertation can contribute information to testing models such as the ones advanced by Bachman and Palmer (1996) and McNamara (1995, 1996).

8.10 Limitations

Inevitably, some limitations have been imposed on this study which should be acknowledged at this point. These have to do with the need to incorporate information from learners' variables and with the need to extend the hypothesis to other task types and task conditions.

In the first place, this study has mainly dealt with the manipulation of two cognitive variables and has largely ignored other variables that may also explain differences in performance. Hence, the study has tried to isolate the effect of cognitive variables by using a repeated measures design, in which the same subjects have gone through the same four levels of complexity. Learners' proficiency was also controlled

for by means of a C-test. The reason for the investigation of only cognitive variables was the fact that these are variables that can be manipulated prospectively during syllabus design, whereas other variables such as affective or ability ones are impossible to control before course implementation. However, it would be naïve to think that learners' factors did not have an influence on performance. As partially shown by the results of section 7.8, affective perception of the tasks themselves and how they are being carried out influence performance in that when learners feel more relaxed and do not perceive the task as being difficult, they may have more resources available to meet the demands imposed by the task. It is quite possible that different levels of aptitude and intelligence had some kind of impact on learners' production. As suggested by Skehan (1989) and Robinson (2002), much more research is needed in the area of individual differences. Even if information about learners' affective and ability variables cannot be used for syllabus design purposes, future research should incorporate instruments that will measure individual differences more accurately in order to achieve a wider picture of what goes on with L2 performance.

Secondly, the statements made in this dissertation have referred to a particular type of task and under a particular kind of interactive condition. This dissertation has used open narrative tasks that learners narrated face-to-face in a monologic fashion in an experimental setting. Questions remain as to whether the hypotheses and results advanced by this study would hold for different task types (e.g. opinion or information-gap tasks) and under different conditions of performance, such as in two-way fashion, or in other environments such as a classroom environment or in

computer-mediated communication. Future research should aim at extending the theoretical constructs, hypotheses, and findings in this dissertation to other contexts in order to confirm or reject their validity.

8.11 Conclusion and summary

The aim of this final section is to summarize and underline the main findings and the general conclusions that can be drawn from them. Some questions for further research are presented at the end of the section.

Task Complexity mediates production in predictable ways.

One of the first conclusions that can be reached from the results presented in this dissertation, and that task-based studies have shown in general, is that tasks may be manipulated to obtain specific effects on production. In this study, Task Complexity has been shown to mediate production and interact with attention and memory processes. As shown by the results of manipulating planning time and the +/- Here-and-Now variables, each variable affected production for different reasons. Firstly, pre-task planning time allowed L2 speakers to activate words and apply a series of problem-solving mechanisms prior to task performance, which have a direct consequence for the fluency with which they speak. In addition to that, the variety and precision of the words used by learners during performance is also enhanced by pre-task planning time. Secondly, the results of the affective variables questionnaire have

shown that planning time may also play an affective role. When learners hesitate and pause too much, and are aware that they are not performing accurately because the task is being perceived as too difficult, they may not be able to meet the demands imposed by the tasks. In this sense, pre-task planning time may take stress away from L2 speakers so that they can meet task demands, take risks and, hopefully, stretch their interlanguage. Increasing complexity along planning time, however, is also important. If pedagogic tasks are to be organized in such a way that they approximate real-world conditions, progressively reducing the planning time allotted to pedagogic tasks seems important, too. Thirdly, planning time may permit the noticing and cognitive comparison micro-processes suggested by Doughty (2001). If learning is to take place, processing in working memory must allow not only for the retrieval of words and their grammatical encoding but also for monitoring of what is being said against what is intended, a process which planning time can but facilitate.

However, and as has been seen in the discussion of the results, planning time cannot alone do the job of drawing attention to accuracy during production. Increasing task demands along the +/- Here-and-Now variable has proven to focus learners on how they are encoding their messages, which in my view may have beneficial effects for their accuracy and, potentially, development. In the case of narrative tasks and the two variables investigated, results in this dissertation confirm Robinson's (2001a; 2001b; 2003a; forthcoming) prediction for the effects of increasing cognitive complexity along resource-directing dimensions. Experimental results in this study could be interpreted as having pushed learners beyond 'basic learner variety' (Klein & Perdue,

1992; Perdue, 1993) and stretched their interlanguage to focus on how certain concepts are grammatized in the L2 (Talmy, 2000). I also believe that under Condition 3, learners had the opportunity to cognitively compare the overlap and divergence between L1 and L2 form-meaning mappings. As an answer to the first question in this dissertation, combining tasks in such a way that they are kept simple at the level of resource-dispersing dimensions but complex at the level of resource-directing one seems to trigger the most positive results of all, since several dimensions of production can be attended simultaneously and interlanguage may potentially develop. In this sense, then, the distinction between features that disperse attention from form and those which direct attention to form is particularly appropriate. Certainly, predictions about how task complexity affects language production cannot be exclusively based on resource-dispersing variables, and so resource-directing dimensions need to be brought into the picture. The fact that learners focused on both lexical complexity and accuracy under Condition 3 seems to disprove previous suggestions by planning time studies (Foster & Skehan, 1996; Mehnert, 1998; Skehan & Foster, 1997) that attention can only be allocated to either accuracy or complexity but not to both simultaneously.

If we consider both the results of the impact of planning time and the +/- Here-and-Now variable on production separately, it would seem more appropriate to modify the second question in this dissertation. Instead of asking which variable has the greater impact on production, the question should be which variable has the greatest impact on each dimension of production.

Task Complexity is a robust and testable construct for task and syllabus design.

In my view, and after a thorough revision of the task-based literature and a controlled experiment, Task Complexity stands as a robust and testable construct for task and syllabus design. On the one hand, the concept of Task Complexity is supported by sound models that have looked into the features of tasks and have tried to relate them to what is known about information-processing. Both the affective variables questionnaire and the protocol analysis have confirmed that Task Complexity matches learners' perceptions under different conditions of performance, and have given us an idea of what goes on in the speaker's mind as he or she tries to produce the L2.

Although it certainly needs to be tested along other task features and with other task types, in this study Task Complexity has been operationalized and tested in an experimental fashion and its results are therefore comparable to other studies. Task Complexity models such as the ones advanced by Skehan (1998) or Robinson (2001a, 2001b, 2003a; forthcoming) have already generated studies of their different features which have revealed both consistent results as well as findings that still need further confirmation. In my view, both Skehan's model and Robinson's model and predictions for the effects of Task Complexity on performance and development are a solid and promising basis for further research.

Task Complexity matches effective perception of difficulty, stress, and confidence, and therefore has important consequences for sequencing.

Task Complexity as operationalized in this particular study has matched the learners' perception of difficulty, stress, and confidence, without detrimental effects for interest or motivation. This is an interesting finding in the sense that progressively increasing complexity may play an important affective role. Firstly, because even if the perception of difficulty, stress, and lack of confidence increases as tasks are made progressively more complex so as to approach real-world conditions, the interest and motivation in performing them does not decrease. Secondly, it was seen that learners who perceived tasks as being easy and felt relaxed during performance showed a tendency to meet the demands imposed on them by the task in a better way that those who had perceived the tasks as difficult and stressful, which supports the idea that tasks need to be sequenced from simple to complex in a syllabus in a principled way. Sequencing tasks in such a way not only provides a more effective scheduling of tasks for them to approximate real-world communication, but also contributes to reducing excessively high levels of stress which may prevent learners from focusing on production and therefore from meeting task demands satisfactorily.

Both L1 and L2 accounts of oral production can enrich the explanation of the processes involved in task performance.

I believe models of L1 and L2 production can enrich the explanation of what happens during task performance and are compatible with explanations coming from cognitive psychology about how production is mediated by the processes of attention and memory. Concepts such as spreading activation, lemma access, and the organization of the lexicon can help provide more accurate explanations of the three areas of production. Considering the findings coming from the extensively researched area of problem-solving mechanisms in studies of complexity and performance can provide interesting insights about how learners monitor their own output and how this can have a positive effect on their accuracy.

Questions for further research.

This study has tried to isolate Task Complexity from other factors that are known to affect production, but in doing so, it has generated a series of questions that can be addressed in future research. As far as Task Complexity and L2 production are concerned: i) how does Task Complexity affect production under different interactive conditions? In this study, narrative tasks have been kept one-way and non-interactive, but will the results obtained in this study hold for two-way interactive tasks? In this sense, some studies (Rahimpour, 1997) have looked at the different effects of Task

Complexity on open and closed versions of tasks; ii) how does Task Complexity interact with learner factors? Some task-based studies have started to cross complexity and learner factors in interesting ways. Hence, Niwa (2000, op. cit. in Robinson, forthcoming) and Ishikawa (Ishikawa, 2004, in preparation) have looked into how individual differences such as aptitude, intelligence, and working memory can differentiate complex task performance; iii) How does Task Complexity interact with focus-on-form instruction? This is an area where research is needed since, to my knowledge, no focus-on-form studies have had Task Complexity as a mediating factor; iv) How does Task Complexity affect acquisition? In this study, increases in Task Complexity along the +/- Here-and-Now variable have led learners to monitor their speech more carefully, but does this attention to form during performance have longer-term effects on accuracy? Related to the issue of acquisition, at least one study (Robinson, 2000), has shown how increasing Task Complexity can lead to more uptake and incorporation of input but, again, this is an area that would benefit from further research.

Concluding this study but motivates me to continue to pursue the complex, yet fascinating, questions which lay ahead.