

UNIVERSIDADE FEDERAL DE SANTA CATARINA

PÓS-GRADUAÇÃO EM LETRAS-INGLÊS

**THE ROLE OF COGNATES IN READING COMPREHENSION: A COGNITIVE
PERSPECTIVE**

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To my brother Francisco and my nieces
Thayná and Thayane.

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ABSTRACT**THE ROLE OF COGNATES IN READING COMPREHENSION: A COGNITIVE
PERSPECTIVE****VILMAR FERREIRA DE SOUZA****UNIVERSIDADE FEDERAL DE SANTA CATARINA****2003**Supervising Professor: Dr^a Lêda Maria Braga Tomitch

Research on cognates has strongly indicated that there is a close relationship between cognates management and reading comprehension success (e.g. DeSouza, 2000; Moss, 1992; Nash, 1970; Holmes, 1986). The present investigation set out to explore that relationship from a cognitive perspective. The underlying contention that cognates do enhance reading comprehension generated the three following research questions: (a) Do cognates help in skimming a text for general comprehension? If so, to what extent do they do this? (b) Do cognates enhance prediction? If so, how do they do this? (c) Do cognates enhance recall? If so, to what extent do they do this? In order to answer the above research questions three different experiments were designed and applied to twenty-two ESP learners at The Extracurricular Language Courses Centre of the Federal University of Santa Catarina. The Experiments (i) investigated cognates and skimming a text for general comprehension, (ii) examined cognates and the process of making predictions through the use of titles, and (iii) verified whether or not a text with twice as many cognates would yield more recall than a text with half of them. The results suggest that (i) cognates play a facilitative role in aiding learners to get the general comprehension of texts, (ii) the quantity and quality of predictions made by participants were much higher for the text with twice as many cognates (T1) than for the text with half of them (T2), and (iii) both the quantity and quality of recall were much higher for T1. Nevertheless, the two comprehension tests that followed each experiment did not capture a significant difference between the two texts: Only Experiment 2 yielded the expected results, that is, that T1 would produce a comprehension rate right above that of T2. Some hypotheses were raised in an attempt to account for the failure of the other two experiments. In the light of the present findings, some limitations were acknowledged along with suggestions for future research and some pedagogical implications. All the discussion in the present work borrowed insights from both schema and working memory capacity theories.

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RESUMO

THE ROLE OF COGNATES IN READING COMPREHENSION: A COGNITIVE PERSPECTIVE

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As pesquisas sobre cognatos têm fortemente indicado que existe uma próxima relação entre o manuseio de cognatos e o sucesso em compreensão leitora (e.g. DeSouza, 2000; Moss, 1992; Nash, 1970; Holmes, 1986). A presente investigação explorou essa relação de uma perspectiva cognitiva. A crença de que os cognatos intensificam a compreensão leitora gerou as três perguntas de pesquisa a seguir: (a) Os cognatos ajudam a fazer o 'skimming' to texto para se obter a compreensão geral do mesmo? Se ajudarem, até que ponto eles fazem isso? (b), Os cognatos ajudam no processo de predição? Se ajudarem, como eles fazem isso? e (c) Os cognatos aumentam o número de proposições lembradas de um texto? Se aumentarem, até que ponto eles o fazem? Para responder a estas perguntas, três experimentos diferentes foram desenvolvidos e aplicados a vinte e dois aprendizes de Inglês Instrumental (ESP) do Curso Extracurricular da Universidade Federal de Santa Catarina. Os experimentos investigaram (i) os cognatos e 'skimming' um texto para se obter a compreensão geral, (ii) os cognatos e o processo de predição usando títulos e finalmente (iii) se um texto com o dobro de cognatos produziria maior número de proposições lembradas do que um texto com metade deles. Os resultados sugerem que (i) os cognatos desempenham um papel facilitador na compreensão geral de um texto, (ii) a quantidade e a qualidade das predições feitas foram maiores e melhores para o texto com o dobro de cognatos (T1) do que para o texto com metade deles (T2) e (iii) ambos a quantidade e a qualidade das proposições lembradas foram bem maiores para T1. Entretanto, os dois testes de compreensão leitora que foram aplicados depois de cada experimento não captaram uma diferença significativa entre os dois textos. Somente o Experimento 2 produziu os resultados esperados, isto é, o nível de compreensão leitora foi maior para T1 do que para T2. Levantou-se algumas hipóteses para dar de conta dessa inconsistência. À luz dos resultados obtidos, algumas limitações foram reconhecidas juntamente com sugestões para futuras pesquisas e algumas implicações pedagógicas. Toda a discussão deste trabalho tomou emprestado conceitos das teorias dos esquemas e da capacidade da memória de trabalho.

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Chapter 1 - Introduction

“...E é sempre melhor o impreciso que embala do que
o certo que basta,
Porque o que basta acaba onde basta, e onde acaba
Não basta...”
(A Casa Branca Nau Preta- Fernando Pessoa)

1.1 Opening Words

The XX century witnessed an unprecedented scale of human achievements: Man has unravelled the mysterious Moon; the aeroplane industry has bridged distances from pole to pole and the World Wide Web has put all planet's inhabitants at a finger click of distance from one another, to name but a few. In parallel with these paramount conquests, one language stood aloft from the midst of the untold number of languages spoken in the world: English.

Bearing the reputation as the most used language in the world today by non-native speakers, the English language has become a pre-requisite to personal and professional development in many areas of human activities. In addition, the English language has widely been associated with technological and scientific achievements. Indeed, as Alptekin and Alptekin (1995) put it “As the lingua franca of the twentieth century, English is one of the most important means for acquiring access to Anglo-American technology” (p.21).

Put this way, one wonders that this state of affairs constitutes a position which goes uncritically. Nevertheless, there are voices out there challenging this widespread position of English as the neutral ‘lingua franca’. A representative instance of these voices is that of Rogers (1995) who, by examining the role of teaching and learning of English in the

developing world, states that, to some extent, this exaggeration means more to feed in learners with false hopes of access to the Western technological and scientific conquests. He draws upon Freire's educational view to make his point that the neutrality implied by a lingua franca does not seem to be possible in education. According to Freire (1972, as cited in Rogers, 1995, p.11),

There is no such thing as a neutral education process. Education either functions as an instrument which is used to facilitate the integration of the younger generation into the logic of the present system and bring about conformity to it or it becomes the 'practice of freedom', the means by which men and women deal critically and creatively with reality and discover how to participate in the transformation of their world.

Rogers believes that the widespread of the English language, especially in the developing countries, is more an instrument of alienation to the western culture and less an instrument of 'practice of freedom' that education is supposed to provide. In his own words,

One reason for my mistrust of the use of English as a means of access to change and improvement is that in countries of Asia, Africa and the Pacific where I have seen English taught, its function has too often been the first function Freire describes above, and too rarely the second (p.11).

In spite of Rogers' heart-warming claim, the English language has unquestionably followed the path of the off-borders widespread. This status has produced an equal race to English learning and teaching. The corollary of this race is the current crowded arena of developments in the field of teaching and learning English as a foreign language world-wide. Although the political, social and cultural implications of this widespread would beg for pages afield of hot discussion, they do not belong in the scope of this brief introduction. Thus, a brisk move is made to highlight the role of English in the Brazilian context focusing on English for Specific Purposes (ESP).

The urgent need for the teaching of English for specific purposes in Brazil was strongly felt in the late seventies (Celani, Holmes, Ramos & Scott, 1988). For these authors, some factors contributed for the establishment of an ESP National Project in 1977, attracting twenty universities in the first moment. Among these factors was the fact that the Pontifical University of São Paulo (PUC-SP) was then attracting many English teachers from all over the country for its M.A course in applied linguistics, many of whom with a keen interest in ESP. Another factor derived from the need shown by many Brazilian university language departments to offer specialised English courses for an increasing number of learners of both pure and applied sciences.

After the survey of the actual needs, demands and resources of these participating universities throughout the country had been concluded, three main aims for the Project were established: “teacher development, materials production and the setting up of a national resource center” (p.5). The Brazilian Ministry of Education provided the financial support in the first moment and later the British Overseas Development Administration, through the British Council, agreed to send three Key English Language Teaching (KELT) professors with ESP expertise to contribute with the national ESP project. Two of these professors were welcomed at PUC-SP and the other at the Federal University of Santa Catarina (UFSC).

In the heart of the philosophy underlying the establishment of this national project in a country with the cultural diversities and the size of Brazil was the belief that no standardised textbook would be developed. The emphasis of the project was then in the very production of materials and the development of teachers, enabling them to produce their own materials in consonance with their specific needs. As Celani et al.(1988) claim,

It would not be coherent with the Project philosophy as described above, to produce materials and then train teachers to use them. Instead, teachers should be helped to produce their own materials, however uneven the products thus created might be, and however much ‘re-inventing the wheel’ might go on. This is consistent with a process as opposed to product orientation (p. 6).

This orientation immediately begged for a national teachers development programme which came about in the early eighties. Thus, the core of this programme was to develop in the teachers the understanding that their focus should shift from a grammar-vocabulary teaching approach to an effective reading strategies teaching approach.

In line with this commitment, reading has been approached (or should have) as a strategic activity which demanded strategic procedures to produce the intended effect of fostering reading comprehension within a relative small amount of time. Therefore, the teaching of reading strategies constituted the core part of the work of the professionals involved in this national programme.

At this point it is productive to define the word *strategy*, because, according to Lorch, Klusewitz, and Lorch (1995), in order to theorise about reading, the definition of *strategy* constitutes a key starting point. This need stems from the fact that this word has been used by many different researchers to convey different meanings.

Quinn (1998) traces the definition of *strategy* as back as to the Greeks. For him, the word *strategos* first referred to “the art of the general”. This military sense proceeds in time and by Alexander’s kingdom, it meant “the skill of employing forces to overcome opposition and to create a unified system of global governance” (p.3). Of interest for the present investigation is to identify in these old uses of the term one basic characteristic which has reached our time: intentionality.

This is the case of the definition by Van Dijk and Kintsch (1983, p.64), for whom *strategy* is “The idea of an agent about the best way to act in order to reach a goal”. The same intentional tone is found in Brown (1980, p.456) who views a *strategy* as “any deliberate, planful control of activities that gives birth to comprehension. For Pritchard (1990, p.275), *strategy* is viewed as “a deliberate action that readers take voluntarily to develop an understanding of what they read”.

Nevertheless, cognitive psychologists argue that these actions may be even unconscious, and that readers take them to cope with memory limitations. This is the case of the definition provided by Lorch, Klusewitz, and Lorch (1995, p.375). For these researchers strategies are “simple processing principles for coping with memory limitations, probably without any awareness of doing so”.

Departing from the discussion above, it is clear that the very definition of the term *strategy* remains blurred in the reading literature. Actually, as Tomitch (2002, p.2) observes, “the term strategy has been used interchangeably with skills”. In this work it is of high interest to distinguish these two terms in order to clear room for the discussion on cognates management as a powerful strategy in reading comprehension. Thus, that author, following Paris, Wasik and Turner (1991) and Cohen (1998), makes clear the distinction between those two terms:

... the term skill is used to refer to more automatic reading processes like decoding and lexical access, whereas the term strategies encompasses processes like deciding to reread a text for clarification and extracting salient points to summarize the text (p.3).

In the present investigation, the definition of strategy provided by Pritchard (1990) will be preferred because in addition to contemplate the intentional component, it adds the notion of choice. Therefore, cognates management is a reading strategy in that readers have it at their disposal whenever the need arises and also in that they can choose among other reading strategies to decide which one to employ in a certain reading situation. This strategy is approached in this work from a cognitive perspective. Approaching cognates from a cognitive perspective means that the focus will be placed on a) what happens (or is hypothesised to happen) in the readers’ minds when they encounter these elements in a text in English; b) what role(s) the cognatic words play (or may play) in integrating pieces of scattered information across the text; c) how these particles help in activating relevant

schemata needed for text processing and d) how cognates and memory relate (or may relate) in the construction of meaning from texts.

To address the above issues, the present investigation set out to examine a) cognates and skimming a text for general comprehension; b) cognates and prediction and c) cognates and written free recall. In the first case the purpose is to investigate how cognates can aid the construction of the general comprehension of the text by integrating large pieces of text into a coherent representation. As for the second point, research concentrates on how and to what extent cognates enhance predicting and finally, the relation between cognates and free written recall is examined.

It is widely agreed that cognates play a relevant role in reading comprehension (e.g. Holmes, 1986; DeSouza, 2000; Moss, 1992; Nash, 1970; Nagy et al., 1993). The nature and extent of this role has been unsatisfactorily investigated. Some researchers, for example, have assumed that this role is mainly in building up students' confidence in the first stages of the reading process as well as in promoting the students' motivation (e.g. Scaramucci, 1995).

Other researchers propose different justifications for focusing on cognates in the reading classroom context. Gillian Moss (1992), for instance, points out that cognates "are extremely frequent" what leads, still according to her, to an enormous "saving in time and gain in confidence" (p.143). In addition to this, Holmes (1986) draws attention to the fact that cognates, along with other visual cues, are useful complements for skimming a text for general comprehension as well as for supplying Krashen's 'comprehensive input'.

Finally, cognates are believed to participate strongly in laying a foundation for the text. There is consensus in the literature that successful reading results in the construction of a coherent mental representation of a text (e.g. Gernsbacker, 1997; Jones, 1995; Kamas, & Reder, 1995; Kintsch & Franzke, 1995; van Oostendorp & Goldman, 1999).

The Structure Building Framework (Gernsbacker, 1997) views the process of reading as comprised of three subprocesses: first, readers lay a foundation for what is to come; second, they map on new information and finally they shift to construct a new substructure, if the incoming piece of information does not cohere with the existing mental representation they had already constructed. Within this parameter, cognates are hypothesised to help readers to skim a text for general comprehension thus enhancing the subprocess of laying a foundation for the incoming information. In addition to the positive effects above, I believe that cognates also enhance prediction and free written recall.

In spite of the discussion favouring the strategy of cognates management as a relevant tool in teaching reading English as a foreign language, Holmes (1986) recognises that the technique of recognising cognates is “scarcely mentioned in the literature and featured in few textbooks” (p.14).

Although Holmes’s observation has lost strength since then, the recent materials dealing with reading from an ESP perspective have included cognates as part of their content, but the way these particles have been approached has still remained unsatisfactory in that they have mostly focused on the recognition aspect mentioned by Holmes. This conclusion may be drawn from two recently published books in the field. The first is a book called *Reading Strategies for Computing* (Oliveira, 1999), in which the author dedicates a whole unit to cognates. However, the focus remains almost on their pure identification with unsubstantial connections to more complex reading strategies such as prediction. The other book “*Inglês Instrumental*” (Vieira, 2001) presents cognates as a reading strategy along with skimming, scanning etc., but also does not go any further. In short, none of these books treats explicitly cognates in relation to predicting and free recall, for instance.

I believe that by only identifying cognates learners have access to half of the benefits these particles can produce. Because of this, I have used in this work the phrase *cognates*

management as a more comprehensive activity to encompass both recognition and operationalisation of cognates as an alternative to approach this strategy. Thus, the first step in dealing with cognates is to train learners to identify as many as possible of them and for how long necessary for this identification process to become automatic. In this way, the matching reading subprocess of these particles may occur effortlessly and efficiently thus allowing readers to use their memory resources for other subprocesses. Besides, these resources may be allocated to help readers to perform higher-level operations such as skimming for the general comprehension, predicting and free written recall.

By approaching cognates from this broader perspective, the present investigation expects to help teachers and learners to optimise the effect that cognates may exert in reading comprehension by relating them to other reading strategies such as prediction. Moreover, the current focus aims at expanding the word-level identification approach to more highly demanding operations as those discussed above. Unfortunately, this word-level approach has long been considered the preferred one by most teachers. Indeed, as Tomitch (1988) puts it:

... we also know that students do not receive proper instruction on reading comprehension in their foreign language classes. Most of the time they are not taught reading strategies but only formal aspects of language (p. 6).

It is my hope that the complaint made above together with Holmes's (1986) give way to a more strategic reading teaching and learning of English as a foreign language, to justify the comprehensive efforts the National ESP programme has pursued from its very birth. Actually, the hard but rewarding path to help learners become strategic and independent readers seems to be common ground among every party involved in education. Paris et al. (1991), upon discussing the development of strategic readers, conclude that:

One of the hallmarks of education and literacy is the ability to read thoughtfully and flexibly. The development of strategic reading is a lifelong endeavour that is supported by parents, peers, and teachers who instil enthusiasm, knowledge, and confidence... Thus, strategic reading contributes directly to lifelong educating and personal satisfaction (p. 635).

1.2 The problem

The underlying assumption of this thesis is that cognates do play a relevant role in reading comprehension. The recognition that this role has been poorly investigated constitutes the core problem of this investigation. This inadequacy of treatment of reading strategies in general, and in particular cognates management, has long been recognised in the area of teaching reading (Tomitch 1988; Holmes, 1986; DeSouza, 2000; Moss, 1992, among others).

Therefore, the main objective of this work is to verify the participation of cognates in reading comprehension. I assume that these particles help learners to skim a text for general comprehension, to predict more quantitatively and qualitatively, and to promote more free recall.

1.3 Motivation for the study and justification

My first contact with the world of reading from a teacher's perspective occurred in the Spring of 1995, when I was required to prepare a unit to teach reading for a pilot group of students preparing for the university entrance examination. Until then, words like *skimming*, *scanning* and *prediction* were totally unfamiliar to me. I was graduating in that year from the Federal University of Ceará.

Even as a novice teacher, I soon intuitively realised the effect of cognates in reading comprehension. This realisation was mainly derived from the untold times learners showed that they had understood a piece of language because it resembled the Portuguese counterpart.

These frequent occurrences rose my awareness as to search for support to my early intuitions in the reading literature. Luckily, I learned that some researchers had already made big claims about the strategy of cognates recognition (e.g. Moss, 1992; Holmes, 1986). These same authors, however, argued that teachers took for granted that learners easily recognised cognates properly, when they certainly did not. A piece of evidence to support this claim comes from a study by Moss (1992) on cognates recognition rate. This researcher found an overall average cognates recognition rate of 60% among students in their first year of university study. This author suggests that teachers should not be satisfied with nothing less than a 90% recognition rate.

The realisation that the role of cognates in reading comprehension has been underestimated constitute the core motivation for the present study. The acknowledgement that these particles are a powerful tool in the process of teaching and learning English as a FL and that their effective management may contribute to fostering reading comprehension are the justifications of this work.

1.4 General objective and research questions

Within the parameter above and in agreement with the previous discussion, this investigation aims at analysing the participation of cognates in the reading process and relating them to other reading strategies such as prediction.

In order to achieve this, this study set out to pursue answers for the following three research questions:

- a) **Do cognates help in skimming a text for general comprehension? If so, to what extent do they do this?**
- b) **Do cognates enhance prediction? If so, how do they do this?**
- c) **Do cognates enhance recall? If so, to what extent do they do this?**

1.5 The study

The underlying assumption of this investigation is that cognates enhance reading comprehension. It is hypothesised that this enhancement is achieved because these particles contribute to a) skimming a text for general comprehension; b) to triggering more prediction and c) to producing more recall. In order to pursue empirical support for the research questions above, three different experiments were designed. Experiment 1 (hereafter cited as only Experiment 1) investigated cognates and skimming a text for general comprehension; Experiment 2 (hereafter cited simply as Experiment 2), examined cognates and prediction, and Experiment 3 (henceforth referred to as Experiment 3) verified the correlation between cognates and written free recall. Those experiments were conducted with twenty-two ESP learners from the Extracurricular Courses at UFSC. The participants dealt with six expository texts in English.

1.6 Organisation of the dissertation

The second chapter reviews the literature on reading, on the relationship between vocabulary and reading, and on cognates. It also includes the pertinent aspects concerning language transfer, schema theory and memory. In relation to reading, an overview of its

component processes is presented followed by a brief examination of the most representative examples of the reading models. The second part of this review concentrates on the role of vocabulary learning and its relation to reading comprehension. This part brings together the hotly fuelled debate of whether grammar or vocabulary plays a stronger role in reading. The next section deals with cognates. It starts with a discussion of the role of cognates in vocabulary learning and reading comprehension, followed by their tentative classification and definition. Then, cognates are connected to each aspect investigated here, namely, skimming, prediction and free written recall. Finally, they are articulated with language transfer, schema theory, and memory.

Chapter 3 presents the methodological part. Since this work is made up of three different experiments, each experiment is presented separately. Therefore, the subjects, the materials and the procedures are shown in this order for each of the three experiments.

Chapter 4 presents and discusses the results. Here again the results are presented and discussed in relation to each experiment, but cross-references to any of the experiments are found.

The last chapter retakes the main findings of the present study, acknowledges its shortcomings, discusses its possible pedagogical implications and offers suggestions on how to expand and/or refine the findings in here. Moreover, this chapter provides some suggestions on how to implement the strategy of cognates management in an effortless and effective fashion.

Chapter 2 - Review of Literature

The first section of the present review focuses on the reading process and the reading models. In relation to the former, the discussion concentrates on its complexity and on the different perspectives from which different researchers approach the reading process. As for the latter, the reading models are highlighted and exemplified.

The second part discusses vocabulary knowledge and its relation to reading comprehension. The last section deals with cognates. In this section, cognates are first considered in terms of their relation to reading comprehension followed by their tentative definition and classification. Then, these particles are articulated with the most pertinent aspects on each topic investigated in this work, namely, skimming, prediction and free recall. Finally, cognates are related to language transfer, schema theory and memory.

2.1 The Reading Process

Few areas in linguistics, if any, have enjoyed such a remarkable attention than reading. The corollary of this is an immense patchwork of research findings made up of a great amount of diverging and converging pieces. These pieces, given their abundance, are almost impossible to be reviewed, as Alderson points out (1984, as cited in Scaramucci,1995). What emerges from this crowded arena is a multicoloured landscape with valleys and peaks of all nature and types.

The origin of this state of affairs is not difficult to trace. Before the sixties, there was, in accordance with Samuels and Kamil (1984), no great interest in conceptualising knowledge and studying reading from a process point of view. The production up to then was mainly oriented by the behaviourist psychology, and reading was largely seen as a decoding passive

activity. With the increasing interest of psychology and sociology in language, linguistics entered a new era of renewed breath.

Within this new perspective, reading gained the status of a highly complex cognitive process. Indeed, a few theorists would argue, if any, against the grounded assumption that comprehending a text results in the construction of a coherent mental representation (e.g. Gernsbacher, 1997; Jones, 1995; Kamas, & Reder, 1995; Kintsch & Franzke, 1995; van Oostendorp & Goldman, 1999).

Although this assumption is well established in reading research, the mechanisms which converge to construct such a representation constitute a hot debate among researchers. On the one hand, some researchers defend the position that this representation is achieved by using the resources available in the text, that is, the emphasis is on the information provided by the text itself, or the text-base. Because this comprehension is achieved by using information mostly from the text, these theorists are said to assume a minimalist position (e.g. McKoon & Ratcliff, 1992; Kintsch, 1988).

Others, on the other hand, assume that this mental representation is achieved by the construction of an integrated chain of information which includes, besides the text-base, all the information of the reader's past experience, that is, his/her world knowledge. Because of this, these researchers are regarded to defend a constructionist position (e.g. Singer et al., 1994; Trabasso & Sperry, 1985).

These diverging approaches to reading are mainly derived from two sources. The first has to do with the fact that different researchers look at the reading process from different perspectives. As Samuels and Kamil (1984) observe, in addition to this, these researchers are also influenced by the social and intellectual factors that help them to shape their understanding of their reality within a certain situation in time. The second source of this state

of affairs is the very complexity of the reading process, what leads researchers to look at only part of it in detriment of the others.

An overview of this complexity is provided by Gagné, Yekovich and Yekovich (1993). For these researchers, successful reading has to undergo a series of four component processes which may operate either hierarchically or in parallel at any point of the flux of the information processing. These component processes are: 1) decoding; 2) literal comprehension; 3) inferential comprehension and 4) comprehension monitoring.

Decoding is the process of giving meaning to the printed stimuli. This can be achieved either directly from print to meaning or indirectly from print to sound and then to meaning. In the first case, the sub-process is called *matching* whereas in the second it is called *recoding*. This stage of the reading process must be automatized if higher levels of processing are to be pursued.

After the decoding operations are completed, readers move to *literal comprehension*, which consists of two other sub-processes: *lexical access* and *parsing*.

Lexical access is needed because after decoding is terminated, the parts may not fit into the given context. So at this stage there is a selection of what is appropriate for the current context. Consider, for example, the meaning of the word *tear*. At the decoding stage, all meanings of this word are activated in the long-term memory, but the lexical access sub-process selects the appropriate one according to context. When lexical access has been completed, then another sub-process uses the syntactic and linguistic rules to generate meaningful chunks of language. This sub-process is called *parsing* and its product is the construction of propositions.

The process that follows the construction of propositions is called *inferential comprehension* and can be broken down into three sub-processes: *integration*, *summarisation* and *elaboration*. *Integration* is responsible for three jobs: joining clauses within complex

sentences; joining two or more sentences within a paragraph and joining two or more paragraphs across the text. These operations are highly demanding and require a great amount of cognitive resources. The second sub-process is *summarisation* and its function is to form in the reader's mind a coherent mental representation expressed by the main ideas of the text (Kintsch & van Dijk, 1978). Finally, after this coherent representation is constructed, skilled readers bring in their prior knowledge to the ideas of the text thus achieving the final representation of it. They do this through the subprocess termed *elaboration*.

The last process of efficient reading is *comprehension monitoring*, whose basic work is to verify whether or not the reader is achieving his/her goal effectively and efficiently. This process is divided into four sub-processes: *goal setting*, *strategy selection*, *goal checking* and *remediation*.

A skilled reader sets the goal before s/he starts the reading and is able to select the best strategy to achieve it. For instance, when looking up a phone number in the directory, s/he uses the strategy of alphabetic order to effortlessly find the desired number. After this is completed, s/he checks to see whether this goal has been achieved. When this does not occur, the reader breaks down the flux of processing to search for ways to remediate the unmatching piece of information. This remediative effect can be achieved by selecting a new strategy or by discarding the incoherent piece of information, among other tentative strategies.

In short, put as above, the reading process may seem to be a linear and/or step-by-step activity. However, the above tentative description of reading was meant to function as an illustration of the whole process because, as observed earlier, these component subprocess may occur either in a hierarchic or in a parallel fashion. For instance, consider a reader who encounters the word *effortlessly* while reading. In order for s/he to access the meaning of that word s/he must break down the word into at least three parts: *effort*, *less* and *ly*. By doing so, s/he may decode *effort* through matching but then has to interpret the other two particles, by

accessing their functional roles in the word. Actually, the skilled reader has to integrate these particles into the existing structure, that is, *effort*. In addition to these operations, s/he has to check whether his/her interpretation fits into the actual context. This is achieved by the comprehension monitoring component process of reading.

Therefore, even at the very basic level of word-level decoding, higher component processes such as integration and monitoring may operate as well, indicating that reading is better approached as an interactive information process with different component processes participating at the same time at any point of the flux of the information processing.

2.2 The Reading Models

In spite of the high complexity outlined above and the aforementioned contention that this complexity partly derives from the fact that researchers have looked at only an instance of this process in detriment of the others, attempts to depict the reading process from a more comprehensive angle have been made.

In line with the developments in all fields of linguistics and other areas of knowledge such as psychology, researchers have attempted to construct reading models which could account for the complexity of the reading process as outlined above. These reading models can be grouped in three sets: the bottom-up models, the top-down models and the interactive models (Davies, 1995, Samuels & Kamil, 1984).

The classic representative of the bottom-up models is that by Gough (1972). In this model, information is processed in a rather linear and compartmentalised fashion. Thus, the construction of the meaning of a text is viewed as starting from the smallest unit (e.g. letter) and moving on serially to the syllable and then to words and then to propositions, and so forth.

The shortcomings of this bottom-up approach are many. First, it does not recognise any kind of information sharing from one level to another. Second, by relying on only the decoding and literal sub-processes of reading, this model does not take into account the limitation of the working memory capacity which is left overloaded with these bottom-up operations and thus unable to perform higher-level activities such as predicting. Finally, this model discards any participation of the reader's prior knowledge. Therefore, the role of the reader in this reading process is minimised to only pursue the writer's intention literally expressed in the text.

The top-down models were first developed by the successive works of Goodman, culminating in his 'psycholinguistic guessing game' (1973a). The most striking difference between this model and the bottom-up ones is that it dedicates little importance to the decoding and literal comprehension component processes.

Instead, this model emphasises the higher levels of processing such as inferential comprehension and comprehension monitoring. Therefore, for Goodman, reading is a "psycholinguistic guessing game" in that the reader, instead of starting at the letters level (the bottom), s/he starts at the higher level (the top) by making predictions about the text and by building up hypotheses. His/her role then is to confirm and /or discard these hypotheses based on syntactic and semantic input provided by the text.

In order to perform such operations, the reader has to activate pre-existing knowledge and test it against the incoming information. If the incoming information does not cohere with the existing knowledge, the reader builds up other hypotheses and tries to test them again. Here, the role of the reader's prior knowledge is essential for these operations to occur and, contrary to the bottom-up models, s/he constructs the meaning of the text by adding all his knowledge to it.

This model of reading provoked such a strong impact in the pedagogy of teaching reading that, according to Samuels and Kamil (1984), it was not uncommon to encounter expressions such as the *psycholinguistic approach* to teaching reading.

Despite the comprehensive contribution Goodman's model has added to reading theorising and teaching, Samuels and Kamil (1984) point out three pitfalls of his model. The first one has to do with the fact that knowledge of topic and other kinds may be insufficient for many readers reading texts in unfamiliar topics, thus making them unable to make predictions and build up hypotheses. The model does not account for this kind of reading situation. Second, the model does not fit into the skilled readers' reading behaviour, because for them, it is much easier and less time-consuming to simply rely on word recognition than to make predictions. Last, the model describes accurately beginning reading, with readers holding low rates of word recognition, but does not account for the skilled readers' behaviour who have somehow automatised this level of processing.

The interactive models of reading attempted at building a bridge between the top-down and bottom-up models. The most successful attempt in this direction was the model developed by Rumelhart (1977). In this model, information about syntax, semantics, lexis and orthography are all gathered into what he called *the pattern synthesiser*. Then all this information moves to the *message centre*. The functions of this message centre are: (1) to accept this information; (2) to hold it as long as necessary and (3) to distribute it according to processing demands.

The most important contribution of this model is to establish the inter-dependence of all levels of processing within the system. Therefore, a lower level sub-process such as word recognition can perfectly communicate with a higher- level sub-process such as inferential comprehension and vice versa.

A relevant addition to the interactive model of Rumelhart was the model proposed by Stanovich (1980, as cited in Samuels & Kamil, 1984). This model demonstrated that readers can compensate for weaker information sources by relying on stronger ones. As in Rumelhart's model, this compensatory effect can operate in any direction, from lower to higher levels and vice versa. Because of this compensatory component, this model was named the interactive-compensatory model of reading.

The models of reading that followed the ones outlined above pretty much attempted at refining and expanding the existing ones. Of interest to the present work is the language comprehension model developed by Gernsbacher (1997). In this comprehensive model, in order for readers to achieve the coherent mental representation of a text, they have to go through three sub-processes: First, they lay a foundation for the whole text; Second, they map on new information to the existing structure and finally, they shift to construct a substructure if the incoming information does not cohere.

Based on the discussion above, cognates are placed as the particles which may help learners to lay a foundation for the text. It is hypothesised that this can be achieved by having learners skim a text for general comprehension. In addition to this, I believe that cognates also participate strongly in enhancing prediction of a text. This predictive effect may occur because, since cognates are familiar to the reader, they may trigger the reader's background knowledge thus allowing him/her to construct a mental representation based on his/her schemata. Finally, cognates may increase the amount of recall of a text. In what follows, there is an attempt to gather evidence from the current literature on reading processing to corroborate these assumptions. But, before moving on, it is appropriate to highlight the role of vocabulary in reading comprehension and in special, the role of cognates.

2.3 Vocabulary and Reading Comprehension

Although Halliday (1978, p.175) advocates that “there is no sharp dividing line in language between vocabulary and grammar”, this distinction has fuelled a hot debate in linguistics with big claims being made in both directions. The Chomskyan traditional view of language is assumed by linguists like Towell and Hawkins (1994) who, in agreement with the Universal Grammar, state that “human languages are, in fact, considerably alike in their grammatical properties and where they vary they do so in quite restricted ways” (p.58). It follows then, according to this view, that learning a language implies basically acquiring the syntactic structures of that language.

On the other hand, big claims favouring vocabulary, especially in reading, abound. The relationship between vocabulary and text comprehension seems to be intuitively obvious. However, this relationship has proved to be one of the most complex in language studies and it has attracted attention of many researchers. Clifford (1978, as cited in Barr et. al., 1991), for instance, states that the early studies on vocabulary were driven by a common belief in the “relationship between one’s stock of words and one’s stock of ideas” (p.108). More recently, this connection has been made much stronger. Stenberg (1987, as cited in Khodadady, 1999) advocates that “one’s level of vocabulary is highly predictive, if not determinative, of one’s level of reading comprehension” (p.90). In discussing the relationship between vocabulary acquisition and reading, Just and Carpenter (1987) make another connection between linguistic knowledge and world knowledge. They say that the process of acquiring new words and acquiring new concepts is simultaneous and conclude that “the development of vocabulary usually goes hand-in-hand with the development of conceptual knowledge” (p.103).

Although the intrinsic relationship between vocabulary knowledge and reading comprehension is well established in reading research, more serious questions on this issue

such as what is meant by a word, how language and thinking are connected etc., remain to be fully investigated. Instead of addressing these crucial questions to better understand this complex relationship, studies on vocabulary have been mainly concerned with less central themes, such as vocabulary size and growth. These studies have yielded an array of discrepant data, what may have contributed to the current lack of a substantial theory of vocabulary acquisition. In sum, as Barr et al. (1991) put it, “the complexity of that fundamental relationship was not pursued” (p.790).

Considering vocabulary knowledge and reading comprehension to be closely related, one may infer that cognates management may be a powerful strategy to enhance vocabulary acquisition and, consequently, to promote more efficiency in the reading process. The importance of cognates in the reading process has been well investigated and there is agreement that these elements do favour reading comprehension (e.g., Holmes, 1986; Matas, 1990; DeSouza, 2000). Holmes and Matas carried out their studies in a university context with subjects reading specific-domain texts, whereas DeSouza’s study was developed in a high school context with subjects reading texts on general topics. Their results confirm the hypothesis that cognates play a relevant role in reading. The next section elaborates more on this role and attempts to define and classify cognates.

2.4 Cognates and reading comprehension

Agreeing with Nation (1993, p.118) that “the focus of teaching initially needs to be on increasing the size of the learners’ recognition vocabulary”, it follows that cognates should be emphasised at the beginning of reading courses because they contribute to vocabulary acquisition and thus, if the relationship between vocabulary and reading comprehension discussed before holds true, they contribute to reading comprehension. In addition to this,

cognates have been considered of high importance in vocabulary acquisition especially in building up the students' confidence in reading (Scaramucci, 1995). Furthermore, Holmes (1986) advocates that cognates are very important in skimming a text for general comprehension.

Although the advantage of cognates management has become common ground among researchers, this topic has not been satisfactorily explored. A brief scanning through the language teaching materials can testify such an inadequacy of treatment of such a relevant topic. As Holmes (1986) observes, these materials do not usually treat cognates accordingly and when they do, they do it in a very superficial fashion, that is, they do not associate cognates with other aspects of reading such as prediction, for example. Furthermore, the literature in the area also testifies such assumption, since it is sparing and unsystematised. As stated before, cognates are believed to participate strongly in various reading processes, but the nature of this participation and the extent of its benefit have remained an open area in the studies of vocabulary acquisition.

2.4.1 Definition of cognates

The first aspect of cognates dealt with here is their definition. Cognates are differently defined depending on the focus of the investigator. Gillian Moss (1992), for instance, defines a cognate as a term “akin, descended from a common ancestor (from the Latin *co+gnatus*)” (p.142). This definition, as noted, does not take into consideration the semantic aspects, but only the etymological one and was taken directly from the Oxford Dictionary of English Etymology. On the other hand, Rose Nash (1970) considers cognates “not only etymologically related word pairs that can be traced historically to a common origin, but also any pair of words that have formal similarity across the two languages” (p.159). Holmes

(1986) defines a cognate in L2 as “a word which is derived from the same source as a word which has a similar meaning in L1” (p.15).

Here the definition which incorporates the orthographic and the semantic aspects of the term seems to be more appropriate. Thus, cognates in this work are any pair of words which are orthographically similar, share at least one meaning across the two languages and are recognised as such by learners. This definition is preferred because it seems to resolve one basic problem in dealing with cognates- disagreement on the amount of cognates recognised. Thus, according to Holmes (1986, p.16), “in applying the technique of cognate recognition what is important is not whether a word is cognate or not, but whether the word is recognised or not”. This seems to be more reader-friendly, since s/he is not supposed to have etymological knowledge of the word to make effective use of it.

2.4.2 Classification of cognates

The second aspect of cognates to be considered here is their classification. There are in this respect several tentative classifications, but only three will be highlighted here. This choice was motivated by the fact that they differ in perspective and thus approach cognates from different angles.

The first one is that proposed by Sindermann (1982, p.6), where she identifies six groups of cognates, which are listed below:

Group 1: Words which add affixes (e.g., INcomplete).

Group 2: Words with one initial or final letter missing in the English word (e.g., important – importantE).

Group 3: Words which correspond to verbs and their inflections (e.g., occur – occurIR).

Group 4: Words whose final letter is different in English and Spanish (e.g., CurvE – CurvA).

Group 5: Words with different spelling in English and Spanish (e.g., posiTion - posiCion).

Group 6: Words which are identical in both languages (e.g., idea – idea).

The second classification of cognates is given by Rose Nash (1970, pp.159-164). Upon studying what she coined *Englañol*, that is, the “Spanish-influenced English”, she comes to classify them into five categories, as shown below:

- Category 1 - True cognates: The English and Spanish words are etymologically related and their semantic ranges completely or almost completely overlap, for example, *famous* and *linguist*.
- Category 2 - Deceptive Cognates: The semantic ranges of the two words partially overlaps, for example, IBM *actions* for *acción- stock share*.
- Category 3 - False Cognates: “The semantic ranges of the words in contemporary languages do not overlap, for instance, *auditorium* for *audience*.”
- Category 4 - Accidental Cognates: “There is no obvious etymological relationship between the pairs, but a striking similarity in form, either orthographic or phonological or both, for instance, *fabric* for *factory*.”
- Category 5 - Phantom Cognates: “Coined words on a Spanish model, believing that they exist in English, for example, *actitude* for *actitud – attitude*.”

In addition to these two classifications, another is proposed with the aim of being more effective and more pedagogically-oriented. This tentative taxonomy derives from my teaching experience and is meant to encompass the morphological, semantic and syntactic features of cognates. This tridimensional approach is achieved by relating cognates to word-formation elements such as affixes. Thus, from this perspective, cognatic words are classified into the following six groups:

- Class 1: Cognatic Verbs
- Class 2: Cognatic Nouns
- Class 3: Cognatic Adjectives
- Class 4: Cognatic Adverbs
- Class 5: Miscellaneous Cognates
- Class 6: False cognates

Each of the classes above encompasses various subclasses. Because of this, the present taxonomy takes into account only the most productive examples of suffixes to represent each category. Therefore, this classification is incomplete in nature, leaving aside, for example, the

prefixes. It is meant to provide at least a framework within which learners and teachers may build up their own classifications. The next presents the subclasses of each of the six groups.

Class 1 can be broken down into 7 subclasses:

- Subclass 1: Cognatic Verbs ending in ATE (e.g. activate, demonstrate, indicate)
- Subclass 2: Cognatic Verbs ending in FY (e.g. classify, amplify, simplify)
- Subclass 3: Cognatic Verbs ending in ISE (e.g. theorise, criticise, verbalise)
- Subclass 4: Cognatic Verbs ending in ISH (e.g. distinguish, diminish, polish)
- Subclass 5: Cognatic Verbs ending in ED (included, televised, simplified)
- Subclass 6: Cognatic Verbs ending in ING (activating, indicating)

Class 2 is made up of 6 subclasses as follows:

- Subclass 1: Cognatic Nouns ending in ATION, TION, ION (e.g., activation, demonstration)
- Subclass 2: Cognatic Nouns ending in MENT (e.g., establishment,)
- Subclass 3: Cognatic Nouns ending in ER/OR (e.g., painter, instructor)
- Subclass 4: Cognatic Nouns ending in ITY (e.g., responsibility, utility)
- Subclass 5: Cognatic Nouns ending in ISM (e.g., socialism, communism)
- Subclass 6: Cognatic Nouns ending in S/ES/IES (e.g., bananas, activities)

Class 3 has the following subclasses:

- Subclass 1: Cognatic Adjectives ending in OUS/IOUS/EOUS (e.g., curious, virtuous)
- Subclass 2: Cognatic Adjectives ending in IC (e.g., heroic, historic, scientific)
- Subclass 3: Cognatic Adjectives ending in AL (e.g., musical, financial)
- Subclass 4: Cognatic Adjectives ending in IVE (e.g., attractive, communicative)
- Subclass 5: Cognatic Adjectives ending in IBLE/ABLE (e.g., responsible, plausible)
- Subclass 6: Cognatic Adjectives ending in ER (e.g., commoner, clearer, simpler)

Class 4 is divided into the following subclasses:

- Subclass 1: Cognatic Adverbs ending in LY (e.g., literally, personally)
- Subclass 2: Cognatic Adverbs ending in WARDS (e.g., northwards, southwards)

Class 5 is made up of all the other cognates which do not belong in the classes above. They can range from numbers like *six* and *nine* to connecting phrases such as *according to, for example, on the contrary*, etc.

Class 6 contains the words which are orthographically similar, but do not share any semantic feature across the two languages: *actual, apology, idiom, deception and exquisite*.

As said before, this classification is tentative in nature and thus can be expanded on in any direction, for instance, cognates can be grouped based on prefixes. Moreover, the given subclasses above may be enlarged to accommodate others that the teacher and /or learner feel suitable and so forth.

2.4.3 Cognates and prediction

Since when Goodman defined reading as a ‘psycholinguistic guessing game’ (Goodman, 1973a), there has been a remarkable shift in the way reading has been approached. From then on, the focus moved from the linear processes of word recognition and literal comprehension, as can be seen in Gough’s model of reading (1972), to higher levels of processing such as inferential comprehension. Examples of this perspective on reading research can be found in Smith (1973) and elsewhere in Goodman’s work. In this view, factors such as the reader’s prior knowledge and prediction take on relevant roles and come under closer investigation. Prediction allows the reader to build hypotheses and to test them, using his/her knowledge of all nature, what constitutes the basis of this guessing game.

At this point it is productive to discuss the definition of prediction, since many theorists use this term in different contexts. For Tadros (1985), prediction involves signals in the text that require fulfilment from the author. In the absence of these signals, the author is not committed to satisfy the reader’s demands, leaving the reader free to “anticipate” or “guess” what comes next in the text. The first of these distinctions seems to fit into what van den Broek et al. (1995) call forward or predictive inferences. They state that “these inferences occur when the reader anticipates aspects of events that are likely to be described in subsequent text” (p.355). In addition, Trabasso and Suh (1993) define prediction as “a thought that correctly forecasted a future occurrence in the story” (p.18). In the present investigation, prediction will be referred to as anticipation. An important point to make is that

these anticipations do not discriminate between right and wrong. It is my belief that they occur somehow in a chaotic manner and at different levels of prominence. The incoming input is believed to provide a monitoring tool to discard the wrong predictions and to integrate the right ones into the overall representation of the text.

Evidence that cognates may help anticipating and that this anticipation enhances text comprehension may be drawn from different sources. The first source may be observed in Begg, Armour and Kerr (1985, as cited in Kamas & Reder, 1995), when they state that “mere familiarity with the topic of a sentence can cause the sentence to be rated more valid than a comparable sentence on an unfamiliar topic” (p.179). According to these authors, familiarity has been shown to be a very useful cognitive tool. Extending this reasoning a bit further, it is plausible to say that the mere familiarity with a word in a sentence cause this sentence to be rated more valid than a comparable sentence without a familiar word or words.

Relating this to cognates, one can infer that since these elements are familiar to the readers, they are supposed to promote more integrating networks by connecting known facts throughout the text. These connections are hypothesised to enhance integration and thus this integration is supposedly assumed to promote better understanding of the text. This familiarity advantage of cognates stated above is likely to yield a larger number of predictions, be they right or wrong, because as the same authors recognise, “people usually make hypotheses about what they do and do not know, what they do and do not understand, based on the similarity of the input to what is already stored in memory” (Kamas & Reder, 1995, p.199).

Another evidence favouring cognates’ participation in the construction of a mental representation may be drawn from the discussion on situation and context models of reading (Van Dijk, 1999). A situation model accounts for the semantic aspects of discourse processing such as reference, co-reference and coherence. Context models “are a specific kind of experience models and are constructed from the extensive general knowledge people have

about themselves and about other people” (p.132). In line with this view, one can interpret cognates as facilitating tools to construct this framework in which the readers’ experiences, or context models, all converge to the construction of a mental representation of a text. This is achieved by activating world-knowledge structures to be tested against the incoming information. This statement is confirmed by Graesser and Kreuz (1993) when they say that “knowledge-based inferences are produced during reading comprehension when world knowledge structures are activated, and the content of these structures is incorporated into the constructed meaning of the text” (p. 146). Departing from this statement, one can infer that cognates can activate the relevant structures and thus help in constructing anticipations which may or not be confirmed. With the incoming input, it is supposed that the wrong anticipations will be deactivated, giving rise to more accurate ones which will be then integrated into the current representation.

The last piece of evidence favouring cognates and anticipation can be drawn from the landscape model (van den Broek et al., 1999). This reading model postulates that there are four sources of activation at any reading cycle and readers have all these at their disposal at different degrees. These four sources are first, the text itself being processed; second, the information contained in the immediately preceding reading cycle is supposed to, at least partly, be carried over to the next reading cycle; third, readers may reactivate information in earlier cycles and finally, readers are expected to access and activate background knowledge. This model also presents evidence of these four types of activation. Because these sources of activation do not occur at the same level, concepts being the focus of reading are supposed to be more activated than others, what constitutes a fluctuation of “peaks” and “valleys”, making up a “landscape” of activation.

Within this framework, one may place cognates as a source of activation. Given the memory constraints, it is feasible to think that information from a previous reading cycle is

only carried over to the next reading cycle if it is easy to recall and necessary to the current reading cycle. Thus, as easily comprehended and stored in memory given the amount of overlap, cognates may facilitate the process of carryover during reading. In addition, cognates can activate information from even earlier cycles. Finally, assuming that background knowledge comprises also language knowledge and knowledge of all kinds, one may speculate that cognates may instantiate activation of any domain during the reading process.

2.4.4 Cognates and written free recall

Another important aspect in which cognates seem to actively participate is free recall. It is agreed that readers read almost invariably for a specific purpose, be it apply for a test, resolve a problem etc. In being so, the capacity to retrieve information previously stored may be a key aspect of reading comprehension.

Although this is intuitively obvious, there is a debate on the validity of recall as a measure of comprehension, despite a relative agreement among most researchers (Bransford, 1980, as cited in Trabasso & Suh, 1993). These authors present two reasons why this is the case: The first one is that recall happens long after comprehension and the second is that different processes of construction and reconstruction are likely to occur in recall (Trabasso & Suh, 1993).

Nevertheless, there is good evidence that recall may reveal many underlying processes which are likely to have happened on-line during comprehension. As Trabasso, Suh, Payton and Jain (1995) put it, “several studies of text recall have shown a correlation between what is remembered and what people are hypothesised to do during reading. The hypothesised processes may be inferred from discourse analysis of a text” (pp.219-220).

If this is the case, it follows that the amount of recall is closely related to the amount of integration supposed to have occurred in the reading process. In the same vein, the more

integration of sentences in the text, the more recall. It is at this point that cognates seem to participate.

If comprehending a text means to construct a coherent mental representation of it, it may be inferred that the more propositions a subject is able to recall from a text, the more coherent this mental representation will tend to be. Cognates, as known elements to the reader, may facilitate the retention of more items to be recalled, thus enhancing this process.

In order for this to happen, cognates may enhance integration at both local and global levels. This integration may be achieved by readers constantly checking incoming information against the existing information in the representation being constructed. This information checking may depart from the local level (text-base coherence) to a more global level (situation model coherence) or vice versa. In the first case, attention will be focused on lower-level processes such as word identification, whereas in the second, focus will be on higher processes such as inferencing. These operations are believed to occur hierarchically and/or in parallel.

2.4.5 Cognates and skimming a text for general comprehension

As Holmes (1986) acknowledges, cognates are useful complements for skimming a text for general comprehension. Skimming, considered as a reading strategy to grasp the general content of the text, may be facilitated by the use of cognates, since these elements almost invariably represent content words such as verbs, nouns and adjectives. By recognising as many as possible of these elements, it is believed that individuals may access more easily the general idea of the text and thus embark in other high reading processes such as hypotheses raising, prediction etc.

At this point it is productive to discuss how the reading strategy of skimming is presented in textbooks as well as how it is related to general comprehension and cognates.

Skimming is almost always presented as a strategy to get the general idea of a text. This conclusion stems from three books on ESP: Vieira (2001), Oliveira (1999) and Evaristo, Nunes, Rosa, Brandão, Sampaio, Araújo and Franco (1996).

In her book entitled *Inglês Instrumental*, Vieira divides the book into four parts of which the first one is dedicated to general comprehension. The first unit is called *Awareness of Strategies*, in which she lists nine reading strategies including skimming, prediction and cognates recognition. As for skimming, she states that this strategy presupposes “a fast and superficial reading aimed at capturing the general idea of the text” (p.10). Cognates are presented as a separate reading strategy under the label *identification of transparent words or cognates* and, according to that author, the aim is to show that even among different languages one can find common known words. There is, however, no clear connection among cognates, skimming, and general comprehension.

Oliveira (1999), in her book *Reading Strategies for Computing*, dedicates a whole unit to cognates and presents skimming as a reading strategy. However, the level of connection between cognates, skimming and general comprehension remains shallow. For example, after defining cognates, she advises that the learner should pay attention to these elements because they are very important for understanding vocabulary (p.42). Only slightly she connects cognates to general comprehension by presenting a text in French and asking learners to check what they could understand with the help of cognates. Besides this instance, the treatment of cognates is not directly connected to reading comprehension, but remains mostly at the word level.

Evaristo et al. (1996), on the contrary, do not include cognates as a separate reading strategy. Nevertheless, they articulate these particles with general comprehension in a unit entitled *General Comprehension*. They state that general comprehension is achieved by the reader in a fast way and that its aim is to discover whether or not the text is suitable for his/her

needs. Then they present cognates as useful ‘hints’, along with repeated words and typographic cues, in order to pursue this general comprehension. In the following unit, they introduce skimming, and say that by the end of the unit the reader should be able to capture the general meaning of a text. To achieve this, they suggest that the reader use the ‘hints’ presented in the previous unit, namely, cognates, repeated words and typographic cues.

Based on the discussion above two considerations must be made. The first one has to do with the ‘superficiality’ of the general comprehension as indicated by Vieira (2001). It is my belief that general comprehension is, by no means, superficial because if it helps learners to build up a mental representation for the whole incoming information, then it follows that general comprehension constitutes a compulsory and highly important subprocess of reading comprehension. Because of this, care is demanded when discussing the nature of general comprehension in text processing. The second point to make is in relation to Oliveira (1999), who maintains the treatment of cognates almost purely at their identification level. This approach runs counter to the present argument that cognates should be associated with other reading strategies such as skimming and prediction, for instance. This connection is beautifully made by Evaristo et al. (1996), although those authors do not present cognates as a separate reading strategy.

Departing from the above considerations, how do cognates, skimming and general comprehension relate in the present investigation? First, cognates management and skimming are treated as separate reading strategies, although they should be presented together to enhance comprehension. Second, the general comprehension of a text may be as important as the detailed comprehension depending on the readers’ needs and can be achieved by the conjugation of those two reading strategies. Therefore, those two strategies may function as a means to reach the goal of constructing the general comprehension.

In addition to the previous remarks, skimming and cognates may also be interpreted as a way of activating the reader's prior knowledge what constitutes the basis for laying a foundation for the whole text, which is a basic reading subprocess.

According to the Structure Building Framework (Gernsbacher, 1997), the comprehension of a text is achieved by the involvement of at least three component processes: laying a foundation, mapping on new information and shifting to build new substructures. Data to confirm the first of these processes abound. In many studies, it was found that the reading times for the first sentence of a paragraph were significantly lower than the successive ones, even though the sentence did not contain the topic of the paragraph. Cirilo (1981) and Cirilo and Foss (1980, as cited in Gernsbacher, 1997), for example, found that subjects reading sentence-by-sentence in a reading task spent more time during the first sentence than during the sentences occurring later. This phenomenon was also observed in experiments with subjects viewing non-verbal, picture stories (Gernsbacher, 1983). These subjects spent more time viewing the first picture than the pictures occurring later. These results were interpreted as showing that this slowing in time corresponded to the time needed to build a foundation for the paragraph or the picture story.

In accordance with this framework, it may be inferred that the more difficult the first sentence is, the more time will be required to process it. Thus, in a foreign language context, this difficulty increases even more if there are unfamiliar words to process. In the same vein, the more familiar the words are, the easier to process them. Given that starting learners of English as a foreign language have a limited vocabulary repertoire, it is suggested that cognates may play a significant role in facilitating the process of lexical access and consequently in enhancing the process of laying a foundation. This process of laying a foundation may overlap with the general comprehension in that it may provide learners with the necessary information for them to go on mapping coherent information. The reading

strategy skimming, used in connection with cognates, may account for this first step of the reading process as proposed by the Structure Building Framework discussed above.

In addition to this, evidence for the process of laying a foundation may be found in van Daalen-Kapteijns and Elshort-Mohr (1981). Upon studying the word-meaning acquisition process, they postulated that learning a word starts with “the formulation of a rough notion, a model, of a word’s meaning accompanied by empty slots reserved for more specific information” (p. 802). Expanding on this assumption, one can speculate that comprehending a text starts with this rough idea followed by many slots to be filled with pertinent incoming information. If this holds true, then cognates are supposed to be very helpful in the formulation of this rough idea and thus in creating room, or opening more slots, to be filled with coherent incoming information.

2.4.6 Cognates and language transfer

Although the specific types of knowledge and strategies that transfer from L1 to L2 are not known nor are conditions under which this transfer takes place, research on bilingual education has consistently shown that the phenomenon of language transfer is a common aspect of second language acquisition (Ijaz, 1986; Towell & Hawkins, 1994; Block, 1986; Nagy et al., 1993; Nash, 1970; Swan, 1997; Holmes, 1986). Theorists working within the Universal Grammar paradigm believe that all languages, at some deep level, are equal and thus the overlapping aspects of L1 are readily transferred to L2. Towell and Hawkins (1994, p.69), for example, believes that “L2 learners initially transfer the properties of their L1 grammars into their L2 grammars”.

There are claims, however, that not only the grammar properties but also the lexical knowledge is also transferred from L1 to L2. Indeed, as Ijaz (1986, p.405) states, the

“Transfer of lexical meanings from the native language to the target language is a familiar phenomenon with second-language learners at the beginners’ level. Concepts underlying words in the L1 are transferred to the L2 and mapped onto new linguistic labels, regardless of differences in the semantic boundaries of corresponding words”.

This view is also shared by Nash (1970, p.165), when she states that “To do this [to expand the non-native speaker formal vocabulary], he draws on the resources of his first language, transferring associations between form and meaning into the second language”. In addition, as Block (1986, p. 458) explains, this phenomenon occurs because when learners start reading in a second language, s/he has already learned how to recognise language in print, thus, his/her aim in relation to L2 is just to understand specific aspects of that language. Moreover, it seems that learners transfer their already developed knowledge of language in general.

Based on the discussion above and accepting De Groot and Nas’s (1991, p.116) contention that “the links reflecting orthographic and acoustic similarity between words, the nodes for translation, cognates as well as non-cognates, also get connected in the lexical network”, one may assume that cognatic pairs across two languages share the same conceptual node. In being so, by correctly recognising a cognatic word in English, a Brazilian learner promptly retrieves the same concept from his/her semantic memory.

The underlying assumption of this work is that the facilitative effect that cognates may exert in reading comprehension may be due to this saving in mental resources to process words. Since these elements are matched simultaneously across the two languages, they may not constitute an extra burden to the limited cognitive resources of the working memory.

Actually, as Nagy et al.(1993, p.252-3) concluded in their study on the mental organisation of the bilingual lexicon, “the most important finding is the interaction between Spanish vocabulary knowledge and recognition of cognate relationships. (...) this suggest that

the transfer of Spanish lexical knowledge to reading in English is dependent, in part, on recognising the English word as a cognate”.

The last piece of evidence showing that the subprocess of matching may occur efficiently and effortlessly across two languages through cognates may be drawn from Albert and Opler, (1978) below:

It is clear that words in one language, and their translation equivalents in the other (when such exist) are related in the brain in a non-random way, much as a word and its synonym in the same language may be connected in an associational network (p.246).

Although the discussion above is the result of studies of bilinguals, I believe that it also applies to the present investigation with Brazilian monolinguals learning English as a foreign language. For instance, if a Brazilian learner identifies the English word *president* as the Portuguese counterpart *presidente*, s/he went through the same process that did a bilingual, because these two words are supposed to be hooked in the same memory node and therefore they activate the same concept. It is to the issue of activation that the discussion now moves.

2.4.7 Cognates and schema theory

Very few studies on reading comprehension, if any, take for granted the powerful effect that word knowledge exerts in the reading process. This world knowledge is organised in memory in the form of structured units called schemata. This term was developed by Rumelhart and Ortony (1977) and, according to these authors, schemata are “The building blocks of cognition. They are the fundamental elements upon which all information processing depends” (p. 4).

For Gagné et al.(1993), “Schemas are integrated units of declarative knowledge. Schemas can incorporate all three basic types of declarative knowledge- propositions, images and linear orderings” (p.80). In addition, they identify two features that characterise these knowledge structures: the first being the fact that they have variables and the second being the fact that may be organised either hierarchically or embedded one within another.

This schematic knowledge may be not only of events, situations etc, but also about specific features of the language being read. In fact, as Carrell (1983a) and Torres, (1998) agree, in order for the reader to achieve a satisfactory understanding of texts, they should have knowledge about the rhetorical organisation of texts, also termed formal schemata. Moreover, readers should have knowledge about the content area of text, or content schemata. These two types of schemata are connected to the readers’ cultural background.

Although the schema theory was first developed as a comprehensive theory of knowledge in general, the field of reading comprehension has thoroughly relied on its premises to explicate the complexity of the process of reading (Rumelhart & Ortony 1977).

Probably because these mental packed units contain information about all concepts involved in our world, such objects, situation, agents action, in addition to knowledge about language in general and text types, the schema theory has inspired an extraordinary array of studies in the area of reading comprehension. Although the aim of this section is not to review all these studies, but rather to clear room for the discussion of cognates, it suffices to quote Tomitch (1988) in this respect. Upon reviewing a number of studies connected with reading comprehension and schema theory, she concluded that

All the studies reviewed in this section reinforce the importance of text familiarity and prior knowledge for comprehension and retrieval. They all bring evidence to support Ausubel’s theory of meaningful verbal learning according to which learning can only occur when the new information can be connected to concepts already existent in cognitive structure” (p.16).

Therefore, from the discussion above, it is widely held in reading research that the construction of meaning from a text is an interactive process between the information of the text and the information the reader brings into the process, that is, his/her schematic knowledge.

In addition to the statement above, what else has turned the schema theory into a so appealing paradigm to reading research? Anderson (1994, as cited in Torres, 1998, p. 18). proposes six ways in which schemata are shown to be very relevant to the reading process:

- (1) schemata are the foundation on which readers construct their interpretation;
- (2) the possession of an appropriate schemata enables readers to make inferences in order to bridge the gap between the information that is explicitly stated and what remains implicit in a text;
- (3) a schema enables readers to select the most important information and focus their attention on it;
- (4) they help readers to summarise a text;
- (5) they guide readers through memory searches so that they will be able to gain access to the information previously read in a text and
- (6) schemata may be able to supply missing information in a text.

This said, how do schema theory and cognates relate? In the first place, they trigger common concepts across two languages, as already observed. By doing so, they help readers to lay a foundation for the text, in agreement with Anderson's first function above and with the Structure Building Framework (Gernsbacher, 1997).

Moreover, by recognising the right cognates across two languages, readers activate relevant schemata and these schemata enable them to make predictions about the incoming information. This process somehow overlaps with Anderson's second function of schemata as described above.

Finally, by being effortlessly and efficiently mapped onto the existing mental structure, cognates may guide readers through the process of information integration, because they are more likely to be held in memory for a longer period of time given their large amount of overlapping. This facilitative effect may foster integration among concepts at both local and global levels of processing. In the first place, cognates may facilitate the subprocess

of word matching and in the latter, they may allow readers to integrate larger pieces of information throughout the text, since they are supposedly better held in memory given their ease of storage due to their familiar features.

2.4.8 Cognates and memory

Approaching cognates from a cognitive perspective implies to investigate these particles in relation to memory limitations and processing demands. By doing so, what follows is an attempt to place this discussion within these two constructs.

Earlier fragmentation of the human memory system regarded this system as being composed of two parts: short-term memory and long term-memory and this division has been part of our shared cultural knowledge (Fortkamp, 2000). “Technically speaking, long-term memory is the term used by experimental psychologists to refer to previously learned knowledge that is stored for considerable periods of time and can be retrieved during performance” (Baddeley, 1999, as cited in Fortkamp, 2000, p.12). On the other hand, the short-term memory “was conceptualised as a unitary system of limited capacity and a necessary step for both the acquisition and use of information” (Baddeley, 1999, as cited in Fortkamp, 2000, p.14).

This dual division of the human memory system was nevertheless challenged by the seminal work of Baddeley and Hitch (1974). These authors proposed a “multicomponent model of short-term memory store, which they termed working memory, abandoning then the idea of a unitary short-term memory system” (Fortkamp, 2000, p.15). In this way, a new paradigm of research on human memory was established. Short-term memory, as the current cognitive psychology views it, has evolved from a unitary system to a fragment of a more powerful system responsible for on-line cognitive operations, for the co-ordination of these

operations, for the whole mental work we need to perform any activity: working memory” (Fortkamp, 2000, p.19).

Miyake, Just and Carpenter (1994) defines working memory “not only as the storage but also the computational component and is considered the site for both executing various languages processes and storing intermediate and/or final products of comprehension”(p. 176). Thus, working memory is seen as a larger active and cognitive device of the human memory system encompassing the previous passive concept of short-term memory. It has a limited capacity and therefore the storage component is always competing with the computational component for the cognitive resources.

This new view of the arrangement of the human memory system is shared by nearly all researchers in the cognitive psychology and related fields (Fortkamp, 2000; Tomitch, 1999-2000; Tomitch, 1996; Tomitch 1995; Baddeley & Hitch 1974; Daneman & Carpenter, 1980, among many others).

In light of the discussion above, where do cognates stand? To answer this question the findings of a study by Groot and Nas (1991) are enlightening. The objective of this study was to gain insight into the organisation of the mental lexicon of Dutch-English compound bilinguals by comparing within- and between-language repetition- and associative priming effects, in the hope to elucidate the hot puzzle of whether the knowledge of bilinguals is stored in two separate devices or integrated in a single one.

Those authors found that “the links reflecting orthographic and acoustic similarity between words, the nodes for translation, cognates as well as non-cognates, also get connected in the lexical network” (p.116). In addition to this, they found that “cognate translations share a representation at the conceptual level and these shared representations are connected to those of associatively related words at the same level” (p.117).

Thus, the facilitative effect of cognates may take place in two ways. First, if they are linked together in the same lexical node, it follows that they would not require mental resources to be translated from L2 into L1, what constitutes an enormous saving in cognitive resources of the working memory. Second, if they are closely associated with other cognates at the same level, it follows then that they promote integration within and across sentences, because they are more likely to be held in memory for much longer, given the amount of associative counterparts to which they are connected in L1. The integrative effects of cognatic words are tackled in the present investigation by analysing cognates and the construction of general skimming protocols and cognates and free written recall.

Chapter 3 - Method

Sou um técnico, mas tenho técnica só dentro da técnica
Fora disso sou doido, com todo o direito a sê-lo.
(Lisbon Revisited- Fernando Pessoa)

3.1 Participants

The participants of this study were twenty-two learners of English for Specific Purposes (ESP) of the Extracurricular Courses at the Federal University of Santa Catarina (UFSC). These informants were preparing for the compulsory proficiency test as a requirement for their master's and doctoral studies.

Due to the fact that some informants missed classes on the days of the experiments, each experiment was applied to different numbers of participants. Thus, Experiment 1 (cognates and skimming) was concluded by sixteen learners; eighteen participated in Experiment 2 (cognates and prediction) and seventeen took part in Experiment 3. Only nine participants took part in all three experiments. A questionnaire was applied to verify whether they matched the study's requirements (See Appendix A for this questionnaire).

The first requirement was that participants should have little knowledge of English. This criterion was pursued because the literature indicates that the effect of cognates is most relevant at the beginning of a reading course. To certify that this was the case, participants were asked to rank their level of knowledge of the English language using the following scale: **A** - excellent; **B** – very good; **C** – just good; **D** – poor; and **E** - very poor. They were instructed to perform this activity in relation to the four basic language skills: reading, writing, listening and speaking in this order. As the results show, only three participants considered themselves good (B) in any of the four language skills.

The information about their last contact with the English language in a formal setting was also one of the study's requirements. Only one participant informed that he had seen English the semester before. Surprisingly, his rating for the four skills were D, E, D and E (for reading, writing, listening and speaking, in this order). Most of the students informed that their last contact with English had occurred between 1-3 years ago. Four of them had studied English between fifteen and thirty-one years ago.

Their ages ranged from 25 to 46 years old, and their expertise domains also varied. The three major expertise areas were engineering, social sciences and medical sciences.

In short, in addition to the information gathered through this questionnaire, I myself can add that these learners were mainly true beginners and/or nearly-true beginners. The evidence for this comes from the first meetings with the group when the questions they made revealed that even the basic forms of the verb to be were confusing for some of them. Besides, it has been the first time that all of them have studied English from an ESP perspective and moreover, they had never had any instruction on the cognates management strategy, what was verified in the first meeting with the group.

The results of this survey are presented in the form of a table in Appendix B. The first column identifies the participants with a number. The second column brings their ages followed by the approximate interval of time (in years) that they had studied English in a formal setting. Column four presents their feelings towards the English language ranging from *I love it* to *I can't stand it*. The next column gives the information about their purpose of taking the English course – **r** stands for **reading** and **ac test** for **academic test**- and finally the last column shows their ranking of the four basic skills: reading, writing, listening and speaking, in this order (See Appendix B).

3.2 Materials

This study consisted of three different experiments and utilised six expository texts. Each experiment comprised two texts. The first text in each of the three experiments (which henceforth will be referred to as T1) had around twice as many cognates as the second text (henceforth will be called T2).

Three criteria were observed when choosing the texts: First, the texts should have about the same number of words; Second, the first text (T1) should have twice as many cognates as the second text (T2) and last, the texts should contain information of general domain, that is, domain that was not specific of any academic field, as to compensate for the variety of domain expertise of the group.

This design was chosen based on the assumption that the text with twice as many cognates would yield a substantial difference as to the variables examined. The choice of texts with the same number of words was due to the fact that readers would spend almost the same amount of time to read both texts.

Each text was followed by a cognates management activity e.g. *underline the cognates from the text and, list them in a separate sheet of paper*, for instance, and the specific activity to yield the data. Each part of these materials is described below in relation to each experiment.

3.2.1 Materials of experiment 1 (cognates and skimming)

The materials to collect the data for Experiment 1 (cognates and skimming, henceforth simply signalled as Experiment 1), included:

- 1- One text in English with 195 words and 65 cognates. This text was called “India’s anti-polio campaign” and was taken from the magazine *New Scientist*, 25 July 1998 (See Appendix C for the complete text).
- 2- The other text in English contained 185 words and 30 cognates. The text was “Farrah’s warning to parents” and was taken from *The National Enquirer*, 12 June, 2001 (See Appendix D for the text).
- 3- Two strips of paper for each text: The first containing the spaces for participants to write down the cognates recognised in each text and the second containing the space for them to write the sentence they would think was their general comprehension of the text (See Appendix E for these strips of paper).
- 4- Finally, participants were given an 8-question comprehension test for each text after the skimming activity. This test aimed at checking information at the literal level of the text. (See Appendix F for these tests).

3.2.2 Materials of experiment 2 (cognates and prediction)

The materials to collect the data for Experiment 2 (cognates and prediction, henceforth referred to simply as Experiment 2), were the following:

- 1- One text in English with 218 words and 64 cognates. This text was called “Gonorrhoea in Thailand (3 million cases)” and was taken from the *IDRC Reports*, April 1987 (See Appendix G for the complete text).
- 2- The other text in English contained 220 words and 36 cognates. The text was “Good-bye generation gap” and was taken from the textbook *Passages*, workbook 1, p.48 (See Appendix H for the whole text).

- 3- One strip of paper containing the title of each text with a three-line space for participants to provide three predictions based on these titles (See Appendix I for an example).
- 4- Finally, participants were given a comprehension test of eight questions after the prediction activity (See Appendix J for the tests).

3.2.3 Materials of experiment 3 (cognates and free recall)

The materials to collect the data for Experiment 3 (cognates and free recall, henceforth simply signalled as Experiment 3), consisted of:

- 1- One text in English containing 181 words and 64 cognates. The text was “How not to save the tiger” and was taken from the magazine *New Scientist* – conservation biology, vol.12, p. 865 (See Appendix K for the whole text).
- 2- The other text in English with 184 words and 26 cognates. This text was called “Quick-thinking brother saves big sister’s life” and was taken from the magazine *The National Enquirer*, October 2, 2001 (See Appendix L for the complete text).
- 3- A blank sheet of paper in which learners were asked to write down everything they could remember from the text (See Appendix M for the original).
- 4- Next, participants were given an 8-question comprehension test for each text after the recall activity (See Appendix N for these tests).
- 5- Finally, learners were given a strip of paper containing twenty spaces for them to write down the words they could remember from the text (See Appendix O for this).

3.3 Procedures

For each one of the three experiments different procedures were adopted. Thus, they are presented individually for each experiment. In this work they appear in English, but they were actually given in Portuguese. In each step of the three experiments, there is a signal where to find the original in Portuguese.

3.3.1 Procedures in experiment 1

Before handing out the first text (T1), a strip of paper with four instructions was given. (See Appendix P for these instructions in Portuguese). These instructions are translated below:

- 1- Do not try to read the text.
- 2- Underline all cognate words of the text, including the repeated ones and proper names.
You have two minutes to complete this task. If you finish earlier, please turn the text down.
- 3- Now, transport to this strip of paper all the cognates you have underlined, including the repeated ones and the proper names. You have three minutes to end this task. Then the experimenter will collect the text.
- 4- The second strip of paper was given with the following: Based only on the cognates you wrote down, try to create a sentence that you believe represents your general comprehension of the text. You have five minutes to do so.
- 5- Finally, an eight-question comprehension test (See Appendix F) was given with the following instruction: You have fifteen minutes to answer the questions below about the text “Farrah’s warning to parents”.

The same procedures were used for T2.

3.3.2 Procedures in experiment 2

- 1- Identify in the title the cognate words and write them down;
- 2- Based on these cognates, make three predictions about the whole text.

Finally, learners were given an eight-question comprehension test after the presentation of each title with the following instruction:

- 3- You have fifteen minutes to answer the questions below about the text “Gonorrhoea in Thailand (3 million cases)”.

These same instructions were given to T2 (See appendix Q for these instructions in Portuguese).

3.3.3 Procedures in experiment 3

Informants were given a sheet of paper containing the text “How not to save the tiger”. This text contained the double of cognates of the other. The instructions were as follows:

- 1- Do not try to read the text.
- 2- Just underline all cognates of the text. You have three minutes to do so. If any of you finish earlier, please turn the text down.

The next step was the following: learners were given another sheet of paper with two more instructions which read as follows:

- 3- Come back to the text and read it. You have five minutes to do so. When the time is over, the text will be collected by the experimenter.

- 4- In the space below, write down freely everything you can remember from the text, in Portuguese and in any order. You have ten minutes to do this.
- 5- The next step was to answer the comprehension test of eight questions. The instruction was the following: You have fifteen minutes to answer the questions below about the text “How not to save the tiger”.
- 6- Last, participants were given a strip of paper with twenty spaces and the instruction: Write down, in English, twenty words you can remember from the text (ten minutes).

The same procedures were used with the second text, that is, T2 (See appendix P for an example).

3.4 Data collection

The data were collected in four sessions. The first experiment was carried out on June 5. The second one took place on June 19. The last experiment was carried out in two different sessions, due to time constraints: The first occurred on June 24 and the other on June 26. This data collection occurred while I was the participants’ teacher of ESP at the Extracurricular Language Courses of the Federal University of Santa Catarina in the first half of the year 2002.

3.5 Data analysis

The analysis of the data was both quantitatively and qualitatively. Whenever the need arose, these two analyses were used to lay support to the point being made. In Experiment 3, for example, a qualitative analysis was performed to verify the kinds of words recalled as for the variable cognates. Since the study comprises three experiments, the analysis was also performed in relation to each of these experiments.

3.6 Reading comprehension measures

a) Reading comprehension tests

Each text used in this study was followed by a reading comprehension test. The aim of this test was to check whether cognates enhanced comprehension. Therefore, the study utilised six comprehension tests. In preparing the tests, it was cared for the kind of questions to include. Each test was divided into two parts of four questions each. The first four questions aimed to capture information related to the main idea of the text, whereas the last four searched for information at a more local level. Each question was considered to be worth one point and if the subject identified half the answer, he was awarded a half point.

b) Written free recall protocols

Experiment 3, which investigated cognates and free recall, utilised the participants' free recall as a measure of reading comprehension. To achieve this, each text was divided into propositions based on Carrell (1992). The participants' answers were checked against these propositions and given one point to the ones coincident in the answering key protocols (See appendix S for the propositions of both texts).

c) General comprehension or skimming protocols

Experiment 1 looked at cognates and skimming a text for general comprehension. In this study general comprehension includes any true piece of information of the source text. This piece of information may or may not overlap with the main idea. In addition, it may also

be a simple detail that may aid readers to construct a mental representation of the text, no matter how deep this representation may be.

The data collected were the sentences the participants provided as their general comprehension of the texts. These sentences were broken down into skimming units. For the purpose of this work, a skimming unit represented a piece of information present in the source text and was made up of a subject, a verb and its complements. This definition derived from Pritchard's (1990) definition of idea unit, for whom "... an idea unit was defined as a verb phrase with a stated or understood subject that, together with its modifiers, formed a single idea unit" (p.278).

The present study differs from Pritchard's in that it does not investigate cognates and main idea, although acknowledges that Pritchard's definition of idea unit is suitable to the present definition of skimming unit, since it allows the researcher to gather information from both general and detailed levels of text processing.

Chapter 4 - Presentation and Discussion of Results

The discussion of the results of this study will also be done separately, that is, in relation to each of the three experiments. Experiment 1 investigated cognates and skimming and aimed at answering Research Question #1: Do cognates help in skimming a text for general comprehension? If so, to what extent do they do this?

Experiment 2 examined cognates and prediction and attempted to answer Research Question #2: Do cognates enhance prediction? If so, how do they do this?

The last experiment evaluated the effect of cognates in free written recall by pursuing answer to Research Question #3: Do cognates enhance recall? If so, to what extent do they do this?

The presentation and analysis of the results are presented below in this order.

4.1 Experiment 1 (Cognates and skimming)

In order to discuss whether or not cognates enhance the construction of the general comprehension of a text, it is compulsory to delimit, in light of the discussion presented at 2.4.5., the nature of this general comprehension, since this term is generally ill-defined and used without clear cut boundaries. In this study general comprehension includes any true piece of information of the source text. This piece of information may or may not overlap with the main idea, but surely is somehow related to it. However, it may also be a simple detail that may aid readers to construct a mental representation of the text, no matter how deep this representation may be. Moreover, general comprehension is closely related to Gernsbacher's (1997) laying a foundation subprocess of language learning, as discussed elsewhere in the present work. Therefore, if any

piece of information helps readers to build up in their minds this foundation for the incoming information, then this piece of information is surely aiding the construction of this general comprehension. For example, T2 is about a famous star who is speaking out her heart-wrenching story with her addicted child in order to help parents to protect their children. So, if as the general comprehension protocol the participants had given a statement like “The text is about drugs” they would have laid a secure foundation to be expanded on with coherent incoming information. It is pretty much probable that upon such foundation the pieces of information concerning ‘problems in the family’, ‘youngsters and drugs’ and ‘parents despair in face of the widespread of drugs among teens’ would naturally emerge from the learners’ schemata.

Sixteen learners of ESP dealt with two texts in English (See Appendices C and D for the texts). Those learners were asked to perform two cognatic pre-reading activities before they were demanded to provide the skimming protocols. These skimming protocols consisted of a sentence covering their understanding of the text based only on the cognates they had identified (See Appendix P for the instructions).

Scoring

Each general comprehension protocol (henceforth used interchangeably with skimming protocols) was examined in relation to the number of skimming units it contained. It was assumed that each skimming unit represented a piece of information present in the source text and was made up of a subject, a verb and its complements. This definition derived from Pritchard’s (1990) definition of idea unit, for whom “... an idea unit was defined as a verb phrase with a stated or understood subject that, together with its modifiers, formed a single idea unit” (p.278).

The present study differs from Pritchard's in that it does not investigate cognates and main idea, although acknowledges that Pritchard's definition of idea unit is suitable to the present definition of skimming unit, since it allows the researcher to gather information at both general and detailed levels of text processing.

In order to illustrate how the skimming protocols were categorised, consider the following protocol by P1 in relation to T1. This text was about a campaign in India to eradicate the virus of polio (See appendix C).

Campanha para erradicar a pólio (paralisia infantil) na Índia.// Através de uma campanha de vacinação antígeno busca-se eliminar o vírus // que causa a pólio (paralisia infantil). [Campaign to eradicate polio (infant paralysis) in India.// Through a vaccination campaign which aims at eliminating the virus // that causes polio (infant paralysis)].

Although respondents were requested to provide only one sentence as their general understanding of the text, nearly all of them provided more than one sentence as can be seen in the above protocol. This protocol was divided into three skimming units separated above by double slashes. Notice that the first and second units contain almost the same information except for the fact that the second informs that the disease is caused by a virus. Thus, this protocol was rated as containing three different skimming units.

An example of the protocols of T2 can be seen in the protocol of P12:

Trata-se de um curso para pessoas // que tem problemas familiares. // Pretende-se ajudar as pessoas// a compartilhar suas histórias, // de maneira a que elas se ajudem mutuamente. [The text is about a course for people // with family problems. // It aims at helping people // to share their stories // so that they can help one another.]

As can be seen, this protocol was divided into five skimming units, but only three of them coincide with the skimming units in the source text, namely, that people have family problems; that [the course?] aims at helping people, and that people may help each other. Text 2 was about a famous star who was telling her son's heart-wrenching story with drugs in order to help parents

to prevent their children to fall victims of this plague. Therefore, the rating to this protocol was 3 (See Appendix T for all protocols).

Table 1 below shows the number of cognates recognised in T1 and T2 followed by the number of skimming units identified in the respective protocols. The numbers in parenthesis represent the number of cognates recognised by the researcher in each text.

Table 1: Participants' identification of cognates in T1 and T2 followed by their skimming units (SUs) in the protocols of the respective texts.

Participants	Cog. of T1(65) (%)	Cog. of T2(30) (%)	SUs of T1	Sus of T2
P1	49,23	56,67	3	2
P2	66,15	86,67	3	2
P3	47,69	53,33	2	0
P4	69,23	63,33	2	3
P5	70,77	63,33	3	0
P6	43,07	30,00	1	0
P7	81,54	100,0	2	0
P8	30,77	100,0	9	4
P9	61,54	50,00	7	3
P10	72,31	40,00	4	1
P11	66,15	73,33	3	0
P12	63,07	43,33	9	3
P13	76,92	53,33	2	1
P14	43,07	86,67	5	4
P15	67,69	80,00	3	2
P16	55,38	76,67	4	0
Mean	60,28	66,04	62	25

As the table above shows, if one considers the percentages of cognates recognised in both T1 and T2, it is clear that the rate is very low, approximately 60% for both texts. If taken separately, only PP 7 and 13 in T1 performed satisfactorily but still well below the desired amount. In T2, however, participants performed much better with two of them (P7 and P8) managing to identify as many cognates as did the researcher.

This low recognition rate of cognates constitutes no surprise in the literature. DeSouza (2000) and Moss (1992), for example, found similar results in their studies aimed at investigating the cognates recognition rates among their participants. DeSouza examined these rates with high school pupils and found a figure near to 70% of recognition. Moss studied her Spanish-speaking learners of English and came to a recognition rate close to 80%. Both findings are considered very low, what makes Moss advise teachers not to be satisfied with anything less than a 90% recognition rate.

The discrepant recognition rates found above provide evidence to justify Holmes's (1986) preoccupation with determining the number of cognates in a text. He claims that, in dealing with cognates, one is in a safer ground if he/she talks about cognate-rich text and cognate-poor text. The present investigation assumes this to hold true, although acknowledging that these terms are even more vague than the figures shown above, saying little about the number of cognates of a text. It follows thus that establishing a threshold of cognates for a text gives both teacher and researcher a clearer picture of how many cognates learners recognise in contrast to the number identified by the researcher or teacher. Moreover, this procedure enables teachers and learners to identify their level of cognates recognition and to guide them on how to improve towards a satisfactory 90% recognition rate.

The findings that emerged from these counts are also in accordance with the definition of cognates proposed at the outset of this work, which assumes cognates to be "any pair of words which are orthographically similar, share at least one meaning across the two languages, and are recognised as such by learners" (DeSouza, 2000, p.17). It follows thus that what constitutes identical orthography may considerably differ from learner to learner depending on the amount of overlapping identity shared by the two words. This is exactly the clear message from the data just discussed.

Another point to make concerning these discrepant cognates identification data is that they clearly show that teachers and learners do look at the same phenomenon from different perspectives. Therefore, instead of taking for granted that what the teacher easily recognises as a cognate is so recognised by the learner, teachers should work out ways to diminish this large gap. The implication of this statement will be considered in depth in the next chapter.

As for the relationship between cognates identification and skimming a text for general comprehension, Table 1 shows that the text with twice as many cognates (T1) produced more than twice as many skimming units than did the text with half of cognates (T2). Indeed, T1 produced 148% more skimming units than did T2, a finding that nicely confirmed the prediction of the present study.

As the results indicate, cognates played a deciding role on the construction of the general comprehension protocols by not only allowing participants to write more than one sentence for the text with more cognates but also by guiding these sentences construction to closely relate to the actual information of the texts. The figures above nicely responds affirmatively the Research Question #1 of this experiment, that is, that cognates help learners to skim a text for general comprehension.

The effect of cognates on skimming a text for general comprehension has already been investigated in a study by Holmes (1986). A group of six students of Portuguese Language and Literature at the Catholic University of São Paulo participated in that study. They were first asked to read what the researcher called ‘an informative text’ and then to provide a summary of the text, in a paragraph-by-paragraph fashion. This investigator concluded that cognates helped in the building up of this general comprehension by identifying the cognates correctly translated in the participants’ summaries.

There are, however, two problems with the study by Holmes presented above: First, since the experimenter did not control for the amount of time to perform the tasks, the participants had the chance to elaborate as much as they wanted and could, thus relying heavily on their world knowledge. Because of this, the effect of cognates may have been jeopardised in that experiment. The second problem was that there was no treatment of cognates either explicitly or implicitly, either before or after the experiment. The researcher concluded that they helped in the construction of the general idea of the text by identifying them on the participants' summaries. It is difficult then to distinguish and delimit the role that cognates may have played in those findings.

The present study tried to tap on these two pitfalls by strictly timing the activities of the experiment and by managing separately the cognates of the texts. Participants had only two minutes to underline all cognates from the text and they were given five minutes to transport these cognates to a separate sheet of paper. Then the researcher collected the texts and they were asked to provide a general comprehension protocol based only on the cognates they had transported to the strip of paper. They were given only five minutes to formulate their sentences that would represent their understanding of the texts. This way, the researcher hoped to have at least lessened the effects of other variables, which might have masqueraded the effect of cognates, such as the overuse of their prior knowledge.

Although the present results indicate a strong relationship between cognates and skimming a text for general comprehension, they also raise questions as to what other factors may have contributed to the present findings and it is here that I attempt to analyse to what extent and how cognates may have helped in the construction of the participants' mental representations yielded in their protocols.

First, in order to construct a coherent sentence based only on cognates, participants had to resort to their declarative knowledge, in special, to their schemata. Thus, they succeeded in doing so because they mapped new information activated by cognates on to an existing macrostructure provided by the schema ‘vaccination campaign’. Therefore, by having the macrostructure ‘vaccination campaign’ well formed in their declarative memory, it was very easy for them to infer that, for example, 1) a vaccination campaign is carried out to prevent a disease (in this case ‘polio’); that 2) this campaign must take place somewhere (in India); that 3) this campaign must have a price (US\$ 2.7 billion) and that 4) this price must be paid by someone (Unicef, WHO and other international agencies). All this chain of connections was easily mapped throughout their protocols because they nicely conformed to the well known schema for ‘vaccination campaign’. Consider the following protocol of participant 15 in relation to T1 in which those connections are beautifully articulated:

O texto fala d contaminação de famílias e de parentes e que as pessoas infectadas teriam vacinas para se proteger. O programa de erradicação teve sucesso na Índia e o programa está presente em Bangladesh, Nepal, Paquistão, particularmente nas áreas mais densamente populosas Nigéria, Etiópia e Sudão. As pessoas fazem parte de programa da UNICEF e para erradicar o programa precisa de 2.7 bilhões de dólares para a completa erradicação.

It is well accepted in the current literature on reading that there is a close relationship between prior knowledge and reading success (e.g. Afflerbach, 1990, Chiesi et al., 1979, Fincher-Kiefer et al., 1988, Pritchard, 1990). Pritchard (1990), for example, investigated the influence of cultural background knowledge between American and Paluan readers. These subjects read two texts about a typical event in both countries that differs a lot in terms of the way it is conducted: a funeral. In this study, Pritchard found that readers reading their own culturally-bound text performed better in the tests of reading comprehension than when reading the text in the other culture. In this study, prior knowledge related to vocabulary knowledge represented by the

familiarity of cognates. This study predicted that this familiarity effect would emerge from the participants' protocols. The present findings confirmed the above prediction.

Another study showing the above relationship was that carried out by Afflerbach (1990). This study aimed at investigating the types of strategies learners employ to formulate the main idea of both familiar and unfamiliar texts. The strategies he researched were automatic, draft and revision and topic/comment. To investigate the influence of domain knowledge on the construction of main ideas, the author had two groups of doctoral students provide summaries of their main ideas of the familiar and unfamiliar texts. Half of these students were expert in chemistry and the other half in anthropology. The author concluded that the familiar texts provided many more automatic constructions of the main idea than did the unfamiliar text, indicating that subject knowledge was a powerful predictor of main idea construction success and thus of reading comprehension.

The second factor that may have contributed to the findings in the present study may have been the pre-reading activities at the beginning of the experiment. The effect of pre-reading activities in vocabulary teaching and learning has been considered a good predictor of reading success. This is the case of a study carried out by Tomitch (1988), in which she found that individuals who were taught vocabulary before reading, performed better in the reading comprehension measures that followed the teaching than did those who were not.

In the present study, participants were first asked to underline the cognates of the text as soon as they could and then they were asked to transport these cognates to a list. These two pre-reading activities, conjugated with the schemata discussion just made, may have fostered the process of schema activation. Therefore, by pinning together the scattered cognates guided by a superordinate structure, participants were able to provide such rich protocols.

The findings in here are also in accordance with the Structure Framework Building (Gernsbacher, 1997). In this framework, readers first lay a foundation for their reading, then they map incoming information on to this foundation and finally they move to construct new substructures if this information does not cohere with the existing one. The fact that participants constructed so nice sentences as their general comprehension of the passages based only on cognates may also be attributed to the fact that cognates may have provided a reasonable ground for laying a foundation which provided a clear ground for them to map new information on to the existing one based on their schema 'vaccination campaign'. The conjugation of these factors may have, to some extent, been responsible for such performances.

In relation to the protocols of T2, one observation must be made. Although participants performed accordingly with T2, that is, they produced less than a half of skimming units, it was noted that the overall amount of writing was unexpectedly smaller in relation to this text. The present investigation predicted that the schema 'drugs' would be as easy as the schema 'polio' to be processed. However, the findings showed that T2 was much harder to process and even harder to connect the scattered ideas suggested by cognates.

In light of the difficulty above, two attempts are provided to account for these findings. The first derives from the fact that the very title of T2 contained a false cognate and the second has to do with the participants' failure to identify *drugs* as a cognate.

The problem of false cognates constitutes a complicating feature for teachers focusing on cognates management, because their effect on reading comprehension may be devastating. This is the case of the present results, in which the false cognate *parents*, was translated into *relatives* by eight out of sixteen respondents, as can be seen in the protocol of participant 1 below:

Os parentes protegem os viciados em drogas, / conforme publicação no instituto nacional.

In spite of the fact that this mistranslation did not spoil the general comprehension of the text, it nevertheless prevented participants to provide better skimming protocols. Had participants translated *parents* into the Portuguese *pais*, they would probably have made sense of the word *children*, for example, as well as the word *teens*, thus allowing them to create more cohesive and coherent protocols. Although these words are not cognates, they certainly belonged in the participants' mental lexicon, given their overuse in the Brazilian society both inside and outside the school settings.

Although false cognates did not belong in the scope of this investigation, they did exert a powerful effect in the results. This may have been avoided, had the experimenter warned participants of the false cognate of the title and translated it. However, this did not occur because this false cognate had already been introduced in the course more than once and the very textbook the participants used presented this word as an example of a false cognate. Therefore, the experimenter took for granted that this false cognate would not provoke such outcome.

Another evidence showing the powerful effect of false cognates in reading comprehension may be drawn from an informal class episode with another group of students. These students were divided into groups of five and asked to go over a text, paying attention to the typographic clues and everything else they could find to help them to construct the general idea of the text. They had already been instructed on cognates identification and thus were asked to rely heavily on them for this activity. The text was about the Japanese government educational policy to attract more foreign students to their universities. Because *policy* was read as a cognate with *police* in Portuguese, a group came out with something like this as their general comprehension of the text: "that the text was about the Japanese police trying to train better their police force in order to serve better the public". These two examples clearly show that false cognates do play a negative role in reading comprehension and that once reader lay a foundation for a false cognate,

it seems too difficult for them to monitor their understanding even though the context makes it clear. In the case being discussed, even the cognates *universities, students, and institutions* did not help learners to update their former representation.

The second attempt to interpret the results of T2 has to do with the word *drugs*. The researcher took for granted that this word would be easily recognised as a cognate by all participants given the amount of overlap with its counterpart in Portuguese *drogas*. However, this did not occur. Nine out of 16 respondents failed to identify *drugs* as a cognate in Portuguese, even though there were two clear tips in the text that may have led them to come up with a coherent link: *vicious* and *cycle*. It was expected that these two cognates would allow for a coherent integration of *drugs* into this representation.

The discussion above is consistent with two shared beliefs on cognates: The first has to do with the fact that what is easily recognised by teachers as a cognate is not valid for learners and the second is that students must be made aware of the tricky effect that false cognates may have in reading comprehension.

The results discussed above indicated that cognates help readers to skim a text for general comprehension. This effect was thus hypothesised to resonate in the reading comprehension tests, since the underlying assumption of this investigation is that cognates improve reading comprehension. In order to test this relationship effect, a comprehension open-ended test was designed containing eight questions. The first four questions tapped on the main idea of the text and the last four searched for more detailed information. This design was chosen because the aim of the experiment was to verify the general comprehension of the participants and thus this general comprehension is assumed to comprise both levels of understanding. The study predicted that once participants recognised more cognates and that these cognates helped them to constructed better understanding protocols of the texts, they would behave accordingly in relation

to the comprehension tests. In other words, it was expected that the same difference shown between the participants' success in recognising cognates and constructing skimming protocols would be verified in these comprehension tests.

Table 2 below shows the number of cognates followed by the number of right answers to the comprehension tests. Each right answer in the tests was given 1 point and when the answer was only partially correct, it was given a half point (0,5). The results are given in percentages.

Table 2: Participants' cognates identified in T1 and T2 and the respective comprehensive tests' scores.

Participants	Cog. of T1(65) (%)	Cog. of T2(30) (%)	Comp.Test T1(8) (%)	Comp.Test T2(8) (%)
P1	49,23	56,67	56,25	81,25
P2	66,15	86,67	56,25	56,25
P3	47,69	53,33	56,25	68,75
P4	69,23	63,33	68,75	68,75
P5	70,77	63,33	68,75	75,00
P6	43,07	30,00	81,25	50,00
P7	81,54	100,0	81,25	62,50
P8	30,77	100,0	68,75	81,25
P9	61,54	50,00	68,75	68,75
P10	72,31	40,00	37,50	68,75
P11	66,15	73,33	56,25	68,75
P12	63,07	43,33	56,25	50,00
P13	76,92	53,33	56,25	81,25
P14	43,07	86,67	75,00	62,50
P15	67,69	80,00	56,25	68,75
P16	55,38	76,67	56,25	75,00
Mean	60,28	67,50	62,50	67,96

As can be seen from Table 2 above, the assumption that the facilitative effect of cognates as measured by the skimming protocols would resonate in the comprehension tests was not verified. The mean results of both comprehension tests were 62,50% and 67, 96% respectively, indicating that T2 even allowed participants to perform slightly better than T1. This finding is exactly the opposite of the prediction that participants would perform much better when

answering questions of T1, since that text contained twice as many cognates and had produced more than twice as many skimming units.

In light of the present discussion, a probable explanation is provided in an attempt to account for those unexpected findings. It has been discussed earlier that the fact that may have caused participants to perform so badly in their skimming protocols of T2 was twofold: the first was that their protocols revealed that they had processed the word *parents* as a false cognate and went on mapping new information accordingly and the second was that they had failed to recognise *drugs* as a cognate in Portuguese and thus could not link *vicious cycle*, *parents* and *drugs* together, for example.

Nevertheless, when they read these words in the questions of the tests they immediately made these associations and managed to monitor their previous representations of the text by updating them. After this, it was rather easy for them to account for a coherent representation for the rest of the text and to answer the questions based on this new representation. An example of the kind of questions made in the comprehension test may be question 2 of T2 which runs as follows: *De que modo ela está ajudando os pais no combate às drogas (In what ways is she helping parents to fight drugs?)*. As can be observed the two words that caused the aforementioned problems, e.g. *parents* and *drugs*, were clearly translated in this question. I believe that at this point, participants immediately updated their first foundation by shifting to construct another one, which included the two words above. In doing so, it became quite easy for them to go on mapping coherent information.

4.2 Experiment 2 (cognates and prediction)

Experiment 2 aimed at investigating whether or not cognates helped prediction. The terms *prediction* and *anticipation* in this dissertation will be used interchangeably in accordance with the discussion in section 2.4.3. The present study predicted that, since cognates are assumed to be directly matched with a correspondent item in the reader's declarative memory, they are expected to trigger relevant schemata and that these schemata would enhance reading comprehension.

In order to verify whether this is the case, eighteen learners of ESP took part in this experiment. As with Experiment 1, this experiment also utilised two texts in English (See Appendices G and H for these texts).

The data were collected by having participants provide three anticipations for each of the titles of each text. The title of T1 contained four cognates and the title of T2 had only one cognate. The study predicted that T1 title would trigger learners' schemata much more than would T2, thus allowing them to provide more accurate predictions.

In designing the present Experiment, the title was chosen because, according to Flammer and Tauber (1982), "a title may be taken as clue to a certain organisation" (p.381). In addition to this, Kintsch and van Dijk (1975) and Kieras (1978) advocate that text organisation studies are concerned with two basic levels of analysis. According to the latter, "very high-level conventions, known as schemata, frames, or macrostructure, determine the organisation of the content of large units of prose, such as entire stories" (p 13). The second level of analysis has to do with the intra and inter sentential ties, their constituent references and referents.

Of relevance for the present work is the first level of analysis, because, by considering a title as a frame capable of determining even the content of the whole text, one can building on this by believing that a title is a good prompt for triggering predictions about the text. In fact, the same authors above state that "An important common property of all of the high level

organisational conventions is that they are based on the reader's expectations about the content, or the organisation of the content of the passage" (p 14).

In line with this discussion, it was assumed that the titles of the texts in this experiment would be good organisers of the kind of predictions participants would make and cognates would be a facilitating tool in this process of prediction making by activating common concepts across two languages.

Scoring

Each participant was requested to provide three predictions for each title. Therefore, it was expected an overall number of a hundred and eighteen predictions of the two texts. However, some participants failed to provide three predictions and because of this, the total number of anticipations was only eighty-five, what represents twenty-one per cent less than the number desired. In addition to this quantitative analysis, a qualitative analysis was also conducted to verify whether or not these anticipations were present in the texts.

As an illustration of how these anticipations were categorised, consider the protocol of Participant 1 in relation to T1. The title of the text was "Gonorrhoea in Thailand (3 million cases)" and the predictions were the following:

Predição 1- Uma epidemia numa região. Predição 2- descaso com a saúde pública. Predição 3- alerta a população para os casos de contágio. [Prediction 1 - an epidemic in a region. Prediction 2 -unconcern with the public health. Prediction 3 - warning to the population as to the contagious cases].

That participant managed to provide the three anticipations demanded and in addition, the all of them were contemplated in the actual text. Now consider the protocol of Participant 8 in relation to T2. The T2 title was "Good-bye generation gap" and the predictions were as follows:

Predição 1 a geração atual. Predição 2 a geração que passou. Predição 3 no prediction. [Prediction 1- the current generation. Prediction 2 - the generation just gone. Prediction 3 - no prediction].

In the case above, the participant failed to provide the three anticipations and thus the third prediction was replaced by a *no prediction* phrase. Therefore, the rating for that protocol was two in both analyses, because these two predictions are present in the text (See Appendix U for all predictions).

The results of both analyses are shown in Table 3 below. The second column presents the number of RPs (raw predictions) of T1 followed by the number of RPs of T2. The number of RPs refers to the total amount of predictions made, regardless their having been contemplated in the text. The next two columns present the right predictions (OK P) made for T1 and T2 respectively. A right prediction was the one found in the actual text.

Table 3: Number of raw predictions (RPs) of T1 and T2 respectively followed by the number of right predictions (OKPs) of T1 and T2 in this order.

Participant	RPs T1	RPs T2	OKPs T1	OKPs T2
P 1	3	3	2	3
P 2	3	3	3	0
P 3	2	3	2	3
P 4	1	1	1	1
P 5	3	1	3	0
P 6	3	2	3	2
P 7	3	0	1	0
P 8	3	2	2	2
P 9	3	1	3	1
P 10	1	1	1	1
P 11	2	3	2	2
P 12	3	3	3	2
P 13	3	3	3	1
P 14	3	3	2	2
P 15	3	1	3	0
P 16	3	1	3	0
P 17	3	3	3	3
P 18	3	3	3	2
Total	49	36	43	25

As can be noted in Table 3 above, the text with twice as many cognates yielded 36,2 % more raw predictions than did the text with about half of cognates and more importantly, the quality of those predictions was also significant. T1 produced 72% more right predictions than did T2. Therefore, the answer to Research Question 2 is that cognates do contribute to prediction.

Moreover, these findings are in accordance with the prediction that the title with more cognates would yield more anticipations than the title with less cognates. This effect was expected because the more cognates in the title, the stronger the foundation participants made, thus allowing them to anticipate more.

In light of the above findings, two points are noteworthy: the first is that the cognate *generation* in T2 was misinterpreted by two participants and that the word *good-bye* also in T2 may have played an important role in these results.

Participants 15 and 16 mistranslated the word *generation*. Participant 15 translated it into the Portuguese *generalização* and failed to provide any additional prediction, what indicates that, since this word provided no foundation for him/her, he/she could not map any other piece of information. Participant 16 failed to recognise it as a cognate of *geração* but then provided the following prediction: “a geração gap está se acabando porque todos morreram”. This may indicate that this participant managed to update his/her first representation of the text by adding the information “porque todos morreram”, however, it was not sufficient for him/her to re-access the word *geração* in Portuguese.

In relation to the word *good-bye* it is necessary to make some remarks in light of the powerful effect this word exerted in the present results. First, the protocols revealed that this word belonged in the respondents’ mental lexicon as a familiar word since it appeared either literally translated into the Portuguese counterpart “adeus” as in the protocols of Participants 3, 4, 10, 12 and 13 or clearly suggested as in Protocol 9: “está acabando a geração gap”. This strong

effect of the word *good-bye* may be due to the high frequency of this English word in the Brazilians everyday lives through songs, films etc., thus allowing respondents to guess more. Nearly all protocols included the word *good-bye* in either way, what clearly indicates that this word was essential for the construction of all the representations yielded in the protocols.

Another remark to make about the word *good-bye* is that it instantiated a schema indicating a transition between something old to something new. This is clear in the protocols through the use of words like *mudanças, novo, velho*, or the equivalent verb phrases such as *está acabando, está morrendo etc.* As an illustration of this effect, consider the protocol of P11 below in relation to T2:

Prediction 1 - fala de uma geração. Prediction 2- fala das pessoas que se foram. Prediction 3- fala de uma geração que morreu na guerra.

A piece of evidence favouring cognates' participation in the construction of this mental schema may be drawn from the discussion on situation and context models of reading (Van Dijk, 1999, p.132). For this author, context models "are a specific kind of experience models and are constructed from the extensive general knowledge people have about themselves and about other people". I would add that this general knowledge also applies for anything and any event experienced by humans. Graesser and Kreuz (1993) reinforce the point being made here by stating that "knowledge-based inferences are produced during reading comprehension when world knowledge structures are activated, and the content of these structures is incorporated into the constructed meaning of the text" (p. 146).

Departing from the discussion above and in light of the present results, one can maintain that participants in this study elaborated on their schematic information to construct a schema for their protocols. The title 1 results offer clear pieces of evidence on how informants constructed

their representations based on the schemata triggered by cognates and their background knowledge.

The first piece of evidence comes from the use of the word *epidemics* in their protocols of T1. Six participants mentioned this word although it was not present in the title. This information was inferred from their knowledge that 3 million cases of a certain disease in a country constitute an epidemic.

Another piece of evidence is that readers already knew that gonorrhoea was a sexually-transmitted disease and nine respondents included this information in their protocols. As an illustration, consider protocol 18 below in relation to T1:

Prediction 1- muitos casos de Gonorréia na Tailândia. Prediction 2- promiscuidade sexual.
Prediction 3- falta de prevenção para as DST (Doenças sexualmente transmitidas).

Note that the respondent used the acronym DST which stands for sexually-transmitted disease in Portuguese. In addition to this information, he/she also included that this disease was mainly spread through the abuse of sexual relations, that is, sexual promiscuity. Actually, respondents 12, 14 and 18 mentioned this in their protocols.

Finally, participants related the well-stabilised schema of an epidemic to the government failure to prevent it somehow. This is very clear in the above protocol. In addition, six respondents mentioned that the current state of the epidemics was due in part to the lack of a government campaign to prevent the spread of the disease.

As discussed earlier, the presence of the word *good-bye* in the title together with the cognate *generation* were responsible by nearly all guesses participants made. These guesses form the basis of the “psycholinguistic guessing game” view of reading, according to the top-down models of reading advocated, for instance, by Smith (1973) and Goodman (1973a). In these

models, the primary role of the reader is to check their hypotheses made based on their prior knowledge and text cues. To do this, the reader must activate relevant schemata and these schemata may only be activated by known knowledge. In the present protocols, it is clear that the word *good-bye* and the cognate *generation* served as powerful prompts to activate these relevant schemata.

In the same vein, since the word *gap* was totally unknown for all participants, it did not help the process of prediction making. In fact, only four respondents included it in their protocols and besides, they used it to describe the kind of generation, as can be observed in the following protocol of Participant 4:

Prediction 1 - tchau geração gap. Prediction 2 - no prediction. Prediction 3 - no prediction.

Because this informant did not access the meaning of the word *gap*, he/she failed to provide any additional prediction.

In relation to the guessing game above, Holmes (1986) calls attention as to the meaning of the word *game* in the English language. For him, the word *game* can be viewed either as an amusement like hide and seek in which there is no loser or as an organised activity like chess with clear and strict rules in which some training will decide between less and better skilled achievers.

In the first place, if one considers game in the first sense, thus guessing through cognates may have no loss nor gain and that readers are free enough to guess whatever they want in whichever fashion they wish. However, if the second sense is taken, that is, that of an organised activity, then there must have rules which, if followed, would guarantee rewarding. This study

subscribes to the second sense of the meaning of the word and considers cognates to function as an organising tool for the success of this guessing game.

Another point to make in light of these results is to relate them to the concept of *familiarity* discussed in Chapter 2. Another reinforcing evidence that cognates helped anticipating may be drawn from Begg, Armour and Kerr (1985, as cited in Kamas & Reder, 1995), when they state that “mere familiarity with the topic of a sentence can cause the sentence to be rated more valid than a comparable sentence on an unfamiliar topic” (p.179). According to these authors, familiarity has been shown to be a very useful cognitive tool. Expanding on this assumption, it is plausible to assume that the mere familiarity of a word in a text may cause this text to be more familiar thus allowing the reader to make more predictions. The effect of cognates (familiar words) in the titles of T1 and T2 just analysed in the present results maintain their assumption to hold true.

In summary, the data analysed above indicate strongly that cognates boosted and guided the process of prediction making. As with the rules of a football match, cognates functioned as delimiting tools guiding readers’ predictions within very well formed knowledge schemata: In T1 the schema of a ‘vaccination campaign’ and in T2 the schema of ‘a generation being born and another dying out’. In what follows, the presentation and discussion of the results in relation to the comprehension tests are carried out in an attempt to verify if the positive effect of cognates on prediction making is reflected in the comprehension tests of the participants.

The underlying assumption of this study is that cognates enhance comprehension. In order to verify the relationship between cognates, anticipations and comprehension, participants were given an eight-question comprehension test in order to obtain information about how much they had understood from the text. The expectation was that T1 would allow learners to perform better

because it provided them with a deeper foundation in light of the high amount of anticipations made. The results of these comprehension tests are given below in Table 4.

Table 4: Participants' scores on the comprehension tests of T1 and T2

Participant	Comp. Test T1 (8) (%)	Comp. Test T2 (8) (%)
P 1	68,75	62,50
P 2	75,00	68,75
P 3	93,75	93,75
P 4	37,50	56,25
P 5	87,50	62,50
P 6	93,75	62,50
P 7	37,50	68,75
P 8	62,50	56,25
P 9	100,0	62,50
P 10	93,75	62,50
P 11	68,75	62,50
P 12	100,0	62,50
P 13	81,25	75,00
P 14	81,25	75,00
P 15	68,75	56,25
P 16	50,00	50,00
P 17	75,00	37,50
P 18	93,75	56,25
Mean	76,04	62,84

As can be seen in Table 4 above, the difference, in percentage terms, is small (13,20%), but still significant. Contrary to the mean results of Experiment 1, which produced a difference of less than five per cent, the present results allow for the contention that the positive effect of cognates in the titles did enhance the process of anticipation making and that this enhancement may also have resonated in the comprehension tests. Moreover, if one browses through the T1

results separately, it is clearly seen that six participants (P3, P6, P9, P10, P12 and P18) achieved a success rate of more than ninety per cent. On the other hand, only one participant (P3) managed to do so in the results of T2. The last remark about these data is that in relation to T2 only one participant (P3) managed to achieve an eighty per cent success rate. As for T1, nevertheless, nine respondents went beyond that level, indicating a strong relationship between cognates, predictions and comprehension.

The effect of titles has long been investigated as a facilitating tool on both recall and comprehension (Bock, 1980; Schwarz & Flammer, 1981, and Flammer & Tauber, 1982). Schwarz and Flammer (1981) had subjects read a literary text that seemed quite easy to understand, although the main message was somewhat unusual. Between the reading and the free recall all subjects had to work on a ten-minute distractor task. There were four conditions, three with an appropriate title and one without title (control). The title was presented either before reading or immediately after reading or after the distractor task, that is, immediately before free recall. Free recall was highest when the title was read first, second highest when title was given immediately after reading and worst when the title was either not given or given immediately before free recall but after the distractor task.

The authors explained these results by considering the titles the basis for organising ideas both for acquisition/encoding processes as well as for retrieval/reconstruction processes. In the same vein, its absence was assumed to prevent subjects from achieving a convincing and thorough organisation, leaving the content mentally unorganised or partially or inconsistently organised.

In addition to this facilitative recall effect, it has been claimed that titles also help comprehension. In a study by Smith and Swinney (1992), they investigated how people processed information in the absence or presence of a schema, that is, the title. Half the texts were given

preceded by a title which activated relevant schemata while the other half without the schema. They found that the reading times per sentence was significantly longer when subjects read the texts without schemas, suggesting that titles help not only recall but also online comprehension.

In the present study, titles were used as an organising framework for making predictions. The results just discussed here endorsed the belief that the management of cognates in conjunction with titles are good prompts for schemata activation and, in line with the argument being made throughout this work, this fusion enhances reading comprehension, as the figures in Table 4 above show.

4.3 Results of experiment 3 (cognates and written free recall)

This experiment aimed at answering Research Question #3: Do cognates enhance recall? If so, to what extent do they do this? As discussed earlier, the rationale behind this research question is that it was assumed that if cognates enhanced recall, then they were hypothesised to have aided integration and thus comprehension. As with Experiments 1 and 2, the present Experiment utilised two texts in English, the first with twice as many cognates as the second text (See Appendices K and L).

This experiment was developed in five phases. In the first phase, participants were given three minutes to underline all cognates in the text. After they had finished this task, they were given five minutes to read the text. Next, they were requested to write down everything they could remember from the text, but without referring back to it. The fourth phase consisted of a test with eight comprehension questions which checked their literal comprehension of the text. Finally, they were requested to write down twenty words in English from the text. This delayed written recall took place thirty-three minutes after the participants had been presented with the

text. The rationale for this last phase was that the more cognates they recalled, the higher the level of retention of these words, indicating that cognates may have effectively been used in the comprehension of the texts.

Scoring

Each recall protocol was scored for the number of idea units it contained. For the purpose of this experiment, it was adopted the definition by Carell, (1992), for whom an idea unit or proposition consists of “a single clause (main or subordinate, including adverbial and relative clauses). Each infinitival construction, gerundive, nominalised verb phrase, and conjunct was also identified as a separate idea unit” (p.6). Torres (1998) and Baretta (1998) also used this definition in order to categorise idea units in their studies. In addition, they followed Meyer’s (1975) and Meyer and Freedle’s (1984) hierarchical subdivision into top-, high-, mid-, and low- idea units. However, unlike those researchers, propositions in this study were not organised into such hierarchy, since the aim of the present work was not to investigate the quality of recall, but only to verify the overall amount of recall. Based on the discussion above, T1 was considered to have twenty-five propositions and T2, twenty-nine propositions (See Appendix S for these propositions). An X was used in the participant’s recall protocol to indicate that the proposition was present in the source text. If the participant repeated or paraphrased the proposition of the source text, this proposition was assumed to be a right proposition (OkP); in the same vein, if the proposition did not coincide with one in the actual text then it was labelled a wrong proposition. (See Appendix V for the recall protocols of both texts).

The recall results are presented in Table 5 below. The first column shows the number of right propositions (OkP) of T1, that is, the text with around twice as many cognates followed by the amount of right propositions (OkP) of T2.

Table 5: Number of right propositions (OkPs) recalled from T1 and T2 respectively

Participant	OkP T1	OkP T2
P1	2	2
P2	7	2
P3	9	6
P4	0	0
P5	9	1
P6	4	1
P7	7	3
P8	5	2
P9	5	3
P10	6	3
P11	7	8
P12	7	8
P13	6	4
P14	5	3
P15	7	3
P16	5	5
P17	2	0
Mean	5.4	3.1

Based on the results above, the assumption that the text with twice as many cognates would yield around twice as many right propositions recalled was nicely confirmed. As can be observed, T1 produced a mean result of 5.4 against 3.1 produced by T2. Rounding off those figures and speaking in terms of percentage, T1 yielded 67% more right propositions than did T2. This positive finding is in accordance with the rationale of this experiment, that is, that T1 would enable participants to construct better recalls because they contained more known words, namely, cognates, and thus facilitated in the process of integrating sentences across the text in a more coherent fashion. Departing from these results, it is probably safe to assume that cognates did help comprehension, in spite of the discussion at 2.4.4 of this work.

That discussion presented two diverging views as for the validity of recall as a measure of comprehension. The present study assumes the favourable view which advocates a strong correlation between recall and comprehension (Trabasso et al., 1995).

As hypothesised earlier, this integrative effect of cognates may have occurred at both local and global levels. In the first case, integration may have taken place at the word level, for example, word identification and matching. The present results show that the amount of cognates recognised as such was roughly proportional to the amount of propositions recalled, indicating a direct relation between these two variables. At the global level, cognates may have triggered relevant schemata and that these schemata may have facilitated and guided recall. This process of integration at both levels of processing may have been possible because cognates allowed participants to match pieces of scattered information into coherent strings of elaborated information. Indeed, as Kamas and Reder (1995) put it:

Retrieval from memory involves finding partial matches between the memory probe or representation in working memory and the structure in memory. Partial matches are based primarily on shared clusters of matching features, rather than features all in the exact same relationship in the probe as in memory (p.181).

In order to verify whether the effect of cognates in the free written recalls also resonated in another measure of comprehension, a comprehension test with eight questions was applied to each text right after the participants had finished their recall task. The results of these tests are shown in Table 6 below preceded by the number of cognates identified by participants in each text.

Table 6: Number of cognates recognised by participants in T1 and T2 respectively followed by their respective scores in the comprehension tests.

Participant	Cog of T1	Cog of T2	Comp. Test T1	Comp. Test T2
P1	57,81	92,30	50,00	37,50
P2	68,75	61,53	50,00	25,00
P3	92,18	46,15	50,00	37,50
P4	56,25	69,23	50,00	37,50
P5	67,18	57,69	50,00	50,00
P6	56,25	38,46	50,00	37,50
P7	79,68	42,30	37,50	00,00
P8	79,68	100,0	62,50	25,00
P9	76,56	100,0	50,00	100,0
P10	76,56	42,30	50,00	87,50
P11	92,18	65,38	75,00	62,50
P12	76,56	46,15	50,00	87,50
P13	92,18	53,84	50,00	50,00
P14	71,87	42,30	50,00	50,00
P15	79,68	38,46	50,00	50,00
P16	68,75	46,15	62,50	75,00
P17	62,50	53,84	50,00	50,00
Mean	73,80	58,59	52,20	50,73

As for the number of cognates identified by the participants, the prediction that T1 would yield a higher recognition rate was verified. In terms of percentage, this increase was of 15,21%, considered to be a significant difference. Moreover, by considering the results individually and establishing the threshold of 60% - the average recognition rate found in Experiment 1- one concludes that only participants 1, 4 and 6 failed to achieve that recognition level in T1, whereas in T2 that number of rose to eleven, that is, eleven participants failed to identify less than 60% of cognates, as can be seen in Table 6 above.

Nevertheless, the mean results in relation to the comprehension questions did not capture a significant difference (T1 yielded a positive effect of less than 2% in relation to T2), as shown in Table 6. In light of these findings, the question that follows is, *How is it that participants did so well in the recall protocols and then failed to replicate their performance in the*

comprehension tests? The only probable explanation for this lies in the fact that, as with Experiment 1, subjects may have corrected, updated and managed to construct more coherent representations of the text by seeing clear tips translated in the comprehension questions. For example, the question “*Como Dan salvou a vida de Denise?*” Clearly signals who saved whom. In some protocols, this piece of information was provided in the reversed form, that is, that Denise had saved her brother’s life. Two examples of this misinterpretation may be found in protocols 3 and 16. In the former, one reads ‘*Denise é uma mulher de 32 anos que salvou a vida de seu irmão mais novo*’, whereas in the latter, the participant informs that ‘*Irmã salva irmão da explosão no tower II*’.

Therefore, the failure to replicate their performance in the comprehension questions may be due, again, to the way these questions were elaborated and how much information they disclosed from the text, thus providing participants with the information they needed to perform the task of answering the questions without resorting to cognates.

The last phase of Experiment 3 consisted of a thirty-three-minute delay recall of words. After participants had read the text and provided their immediate written free recalls, as well responded to the comprehension tests, that is, thirty-three minutes after they had been presented with the text, they were asked to write down, in a twenty-space strip of paper, twenty words that they remembered from the text. The rationale behind this was that the cognate-rich text would yield more words recalled and that most of these words would be cognates. The corollary of this statement was that the cognatic words would be much more easily retained in memory given the amount of overlap with their Portuguese counterparts. Table 7 below presents the results of this task.

Table 7: Number of words remembered in the delayed recall of T1 and T2 respectively, followed by the number of cognatic words recalled from both texts

Participant	Recall T1	Recall T2	Cog. T1	Cog. T2
P1	15	19	09	08
P2	17	17	16	12
P3	20	20	15	07
P4	06	12	04	06
P5	20	20	15	05
P6	17	18	11	05
P7	20	20	13	03
P8	20	16	15	06
P9	15	17	11	08
P10	20	20	12	03
P11	20	20	16	07
P12	15	20	12	08
P13	20	16	14	07
P14	20	20	11	07
P15	20	20	11	04
P16	20	20	16	15
P17	13	16	10	06
Mean	17.52	18.29	12.41	06.88

Taken the figures above as a whole, one can see that the number of words recalled was slightly the same for the two texts, with T1 producing a slight difference of 0,77% words. A possible explanation for this finding may be the fact that T1 was a text on how to preserve the Asian population of tigers and thus an array of cognatic words easily emerged from the participants' declarative knowledge which all belonged in the schema "preservation campaign".

Nearly all participants, for instance, included the following in their recall protocols: *tiger, animal, plants, habitats, species, preservation, population, scientist* in addition to many other cognatic words that conformed to this well-formed schema. T2, on the contrary, did not allow for a rich sample of cognatic words, although it produced slightly more words recalled. A plausible account for this was that, in the absence of a cognate-rich text, participants had to resort to another class of words that allowed them to recall better and more easily from the text. Two classes of these words were identified in their protocols: The first class includes the three proper

names in the text and the second, three words related to the schema “family”: *brother*, *sister* and *mother*. Table 8 below shows the frequency of these six words in the participants’ protocols of T2:

Table 8: Number of occurrences of proper words and words related to family in T2

Dan	Denise	Patricia	Brother	Sister	Mother	Total
9	8	8	15	16	12	68

As shown in table 8 above, sixty-eight words recalled included either the three proper names (Dan, Denise and Patricia) or the three names relating to family (brother, mother and sister). This means that, according to the findings above, 21.86% of words recalled were concrete words. The role of concreteness has already been investigated in a study by DeGroot and Nas (1991). These authors analysed the variable concrete/abstract as for the ability individuals had to recall. They concluded that the concrete words provided a much larger amount of words recalled.

Another worthy point to mention in relation to the recall results of T2 is that, in addition to the proper and family names used in their protocols, they also resorted to the highly frequent and easily retrievable elements from the text such as numbers. This was the case of participant 3, for instance, who included four numbers in the recall list of T2. In addition, P10 and P14 included one number each in their protocols. This did not occur to T1, though. The explanation for this may lie in the fact that since T1 had plenty of cognates, participants had a large repertoire of retrievable cognatic words to draw upon, thus not having to resort to numbers, for example.

Nevertheless, as for the number of cognates recalled from the two texts, the figures help to maintain the assumption that cognates do enhance recall. T1, for example, produced an average recall rate of 12.41% of cognates, against 6.88% produced by T2, that is, T1 allowed participants to recall 5.53% more cognates than did T2.

These findings are in accordance with those found by De Groot and Nas (1991). This study investigated the lexical representation of cognates and non-cognates in compound bilinguals and found that cognates were more easily recalled than non-cognates. This ease of recall may be due to the fact that cognates, according to those authors, share the same conceptual features across two languages. Upon doing so, they do not represent an extra burden for working memory, leaving the mental resources available to be allocated to perform another cognitive operations involved in reading comprehension.

In summary, cognates were shown to strongly participate in enhancing the recall of a text. This positive effect has been explained in relation to the discussion, at the outset of this dissertation, on working memory capacity. At that point, we argued that the current view of working memory encompasses two resources: One for storage and the other for processing demands and that there is a permanent trade-off between these two. In order for a text to be processed, both resources need to work simultaneously and it follows then that any difficulty in terms of processing may affect the ease of storage and consequently the quality of comprehension. As for the difficulty at the level of word recognition, this difficulty may be even greater for beginning readers. Cognatic words thus may function as a facilitating tool, because they are believed to be mapped directly on to the existing conceptual knowledge of the reader. Therefore, they are believed to trigger the same existing content schemata in memory thus not requiring an extra demand from working memory resources. In addition, by not overloading working memory, these elements are also hypothesised to enhance integration since they are supposed to be more easily carried from one cycle of comprehension processing to another. Finally, if they contribute to the integrating process, the corollary is that they may have become better retained in memory. The present findings indicate that this was really the case.

Considering the three experiments just presented and discussed in this section, it is safe to assume that cognates do enhance reading comprehension. This enhancing effect was obtained by fusing cognates with skimming, prediction and free recall. Moreover, the present findings were discussed from a cognitive perspective, by connecting cognates to schema theory and working memory capacity theory. In what follows, some closing comments are made, followed by a brief discussion on how to implement the reading strategy of cognates management into the everyday learning and teaching practices of both ESP teachers and learners.

Chapter 5- Final Considerations

“Não me venham com conclusões,
A única conclusão é morrer.”
(Fernando Pessoa)

5.1 Opening Words

The present investigation set out to explore the role of cognates in reading comprehension from a cognitive perspective. The underlying hypothesis that cognates do enhance reading comprehension was unfolded into three research questions: a) Do cognates help in skimming a text for general comprehension? If so, to what extent do they do this? b) Do cognates enhance prediction? If so, how do they do this? c) Do cognates enhance recall? If so, to what extent do they do this?

In order to investigate the above research questions three different experiments were designed and applied to twenty-two ESP learners at The Extracurricular Language Courses Center of The Federal University of Santa Catarina. As for Experiment 1 (cognates and skimming), the results strongly suggested that cognates play a facilitative role in aiding learners to get the general comprehension of texts. Informants of this experiment provided more and better skimming protocols in relation to T1 than in relation to T2. This effect was attributed to the fact that T1 contained twice as many cognates as T2.

Experiment 2 examined cognates and the process of making predictions. Two titles were used: The T1 title contained four cognates, whereas the T2 title contained only one cognate. The quantity and quality of predictions made by participants were much higher for T1 than for T2, indicating that cognates aided predicting as well.

Experiment 3 verified whether or not a text with twice as many cognates would yield more recall than a text with half of them. Here again, the results showed that both the quantity and quality of recall were much higher for the text containing twice as many cognates.

Another noteworthy point to make about the present results relates to the big discrepancies between the experimenter's counts of cognates compared to the respondents' counts. This finding has already been observed in some studies on cognates (e.g. DeSouza, 2000; Moss 1992) and points to some guidelines on how to approach the strategy of cognates management in a classroom context. The implication of this finding is better appreciated elsewhere in this section.

The last remark in terms of the present findings has to do with the fact that false cognates may have played a disruptive role in Experiments 1 and 2. Although the scope of this work did not encompass this topic, their effect has proved to be crucial for the results of Experiments 1 and 2, preventing participants from performing better in their tasks. In Experiment 1, for example, by translating the word "curse" (in T2) into the Portuguese counterpart 'curso', the participants went on mapping incoming information in accordance with this mistranslation. In Experiment 2, P15 translated 'generation' into 'geração' when providing the predictions for T2. Since the word 'geração', made no sense for him/her, s/he failed to provide any additional prediction. These two examples seem to reinforce the disruptive role of false cognates and lay support for the strength of the subprocess of laying a foundation (Gernsbacher, 1997). In this respect, it seems that once learners lay a foundation for the text based on false cognates, it becomes difficult for them to update and monitor their foundation and shift to construct another substructure even though the text provides abundance of evidence for them to do so.

The discussion above constitutes one of the most common complaints of teachers and learners alike when dealing with cognates, according to Holmes (1986). Fortunately, Moss

(1992), after researching a variety of ESP materials used by her Spanish-speaking participants, concludes that false cognates amount to only less than 10% of all cognates. Upon considering the overlapping features between the Portuguese and Spanish languages, it is safe to assume that that figure also applies to Portuguese. Therefore, by considering the word 'parents' a true cognate with the Portuguese 'parentes', learners have only 10% of chance of being inaccurate. This fact clearly indicates that the advantage of cognates far outweighs their perils.

In spite of the pitfall just described, the underlying assumption that cognates enhance reading comprehension was confirmed throughout the three experiments. Nevertheless, one problem arose in Experiments 1 and 3. The three experiments were followed by an eight-question comprehension test and the prediction was that the same facilitating effect that cognates seemed to have exerted in the other phases of the experiments, would replicate in these tests, that is, the study predicted that participants would perform much better when answering questions of T1 than when answering questions of T2. Nevertheless, this difference was not captured. The explanation given to account for this inconsistency was that probably the questions provided participants with overt information from both texts thus allowing them to perform almost equally in the two tests. Moreover, other types of information such as typographic clues, numbers among others may have aided comprehension, thus masking the probable effect attributable to cognates.

The underlying instructional drive of this dissertation was that cognates management, as a powerful reading strategy, could help readers to overcome their language limitations and/or optimising their overall performance in language at the beginning levels of their studies. In light of the present findings, the following is an attempt to build up a framework in which cognates are hypothesised to participate before, while and after reading.

According to Paris et al. (1991), the development of strategic readers encompasses the teaching of reading strategies before, while and after reading. Among the strategies they list for before reading are *skimming the text*, *examining the titles* and *examining the subheadings*. Experiment 1 showed that participants provided better skimming protocols when dealing with T1, that is, the text with twice as many cognates. This strongly suggests that cognates did help in the construction of these protocols by providing a ground foundation for the incoming text. In addition, the fact that learners constructed those coherent and cohesive skimming protocols departing only from the cognates scattered throughout the text, was attributed to the integrative effect they may have provided for this to occur.

Experiment 2 examined cognates as a facilitating tool in titles as for the participants' ability to make predictions using the cognates: T1 contained four cognates against only one of T2. The results demonstrated that T1 produced not only more but also more accurate predictions in relation to the actual text. Thus, in light of the present discussion, it is safe to assume that cognates strongly aid strategies before reading as well.

Those authors also mention *identifying main idea*, *making inferences* and *backtracking* as reading strategies that occur during reading. Here again, cognates are hypothesised to have played a relevant role. For example, as for the identification of the main idea, the skimming protocols in Experiment 1 revealed that participants remained too close to the main ideas of the texts by only resorting to the cognates they identified in the texts. It is clear that not all texts provide such a well-organised structure but at least it is plausible to believe that cognates may also help in the construction of the main idea by triggering relevant and known schemata in the reader's mind. The results of Experiment 2 also shed some light on the issue of inferencing. For example, some protocols included some predictions based only on the words *good-bye* and *generation*. This was the case of P1 who produced the following predictions:

‘mudança de comportamento e hábitos’, ‘causas da mudança’ and ‘consequências [da mudança]’.

Summarising is considered the only reading strategy to happen only after reading has been completed. In order for participants to provide the skimming protocols in Experiment 1 and the written free protocols in Experiment 3 they had somehow to summarise. In the first case they had to write a sentence they thought to be their general comprehension of the text. The fact that the text with twice as many cognates allowed for more and better skimming protocols indicated that cognates might have played a decisive role in this process. As for Experiment 3, participants had to remember everything from the text and they only could have done this by summarising what was in their memory. The results that T1 promoted better performance quantitatively and qualitatively is a good indication of the positive participation of cognates in the process of summarising.

In short, the cognates management strategy has proved to be a powerful tool available for teachers aiming at providing strategic teaching for their students. In other words, this strategy may provide students with a powerful instrument for their growth as self-regulated, strategic and efficient readers, the goals any serious reading curriculum may struggle for. Indeed, helping learners to become strategic is (or should be) the common objective of all agents involved in education, as observed by Paris et al. (1991) at the outset of this dissertation.

In what follows, three basic issues are addressed in light of the above discussion. The first relates to the limitations of this study; the second has to do with the ways in which the findings here can be expanded or challenged by future research and the last point discusses the pedagogical implications for classroom practice and provides some suggestions on how to implement cognates on a daily basis in the classroom.

5. 2 Limitations of the study

Although the present investigation added reliable support to believe that cognates foster reading comprehension, the extent of this support is somehow limited. Below some sources of this limitation are highlighted.

- A- Participants: Two points in this respect needs commenting on. The first relates to the number of participants. Only twenty-two participants do not allow for bigger claims, thus begging for other studies with larger populations. The second limitation relates to the variety of expertise domain of the participants. Because of this, it is hard to see whether a homogeneous group would produce similar results.
- B- Texts: Since the group was highly heterogeneous it was difficult to find a text that met, in addition to the criteria of number of cognates and length, the criterion of domain satisfaction. Thus, the text about the epidemics, the other about the preservation of the tiger species may not have been appealing for most students.
- C- Level of the participants: As already observed the participants of the present study had little or no knowledge of English. It remains unanswered the question of whether or not more advanced learners would benefit from cognates.
- D- Measures of reading comprehension: the protocols of skimming, prediction, and free written recall were used, in addition to the eight open-comprehension questions, as measures of reading comprehension. However, Experiments 1 and 3 failed to capture significant effects with those comprehension tests. This fact may indicate that additional instruments are needed to obtain better results. Reading comprehension as measured by *true and false* statements, for instance, would be an alternative to add to the above ones.

5. 3 Suggestions for future contributions

I believe that the role of cognates is far from being exhausted in the present investigation, therefore with many research windows open for empirical testing.

The first of these research windows is to research cognates and familiarity, to examine how it would contribute to building up a coherent representation of a text. In this line, the adventurous would tackle the role of familiarity in relation to the topic, to vocabulary items etc. In the present work, familiarity was used to explain why readers performed so well in their reading tasks. The focus was on familiarity at the word level, e.g. cognates, but familiarity of the content areas was left untouched in this study. Yet, I consider this topic to be much richer than it was highlighted here.

The second research window I visualise for further development is to investigate cognates and vocabulary development. The present work did not provided clear insights into the relationship between cognates and the development of vocabulary, nor into acquisition. Longitudinal studies are necessary to research to what extent cognates enhance vocabulary development and acquisition.

The third of these windows I suggest more scrutiny is the one relating cognates and main idea. Although this study did not investigate cognates as for the construction of main idea, it nevertheless suggested that the skimming protocols pretty much resembled or somehow overlapped with the main idea of the texts. More research to clarify this profitable relationship is needed.

Although false cognates were not included in the scope of the present research, they nevertheless proved to have played a role in the results. Thus, this indicates that investigating to what extent false cognates hinder or block comprehension is an attractive way to gain more knowledge into the nature of these particles.

Finally, the last research window proposed here to be furthered is the one aimed at investigating whether or not cognates play a positive role with more advanced learners. Holmes (1986) cites this limitation as one of the most common complaint made by teachers in relation to cognates. Longitudinal studies are welcomed to delve into this issue.

5. 4 Pedagogical implications and suggestions for teaching practice

The motivation for this study stemmed from the belief in cognates management as a powerful strategy and the realisation that its application has been underestimated. The finding that the rate of cognates recognised by the participants of the present study is well below the average desired (Moss, 1992) implies that the first pedagogical implication is that ESP teachers should train their students to identify as many cognates as possible until they reach the level of automaticity.

To do this, a simple “cognates hunting” activity may account for this first step. The first procedure is to have a text with as many cognates as possible and have learners underline and count them. Then, the teacher should write on the board these counts and discuss with them the discrepancies, which may emerge. In addition, they have to be reminded that in any text, they will find some (if not many) words they already know and that these words are highly important for the comprehension of the text. This is meant to add to the learners’ motivation and self-confidence in the first days of a reading course.

The second implication derives from the finding that cognates help learners to construct better skimming protocols. Thus, combining these two strategies seems to be a great step to aid learners with the foundation for the text being read. This combination can be achieved by asking learners to identify the cognates and try to formulate the comprehension

they have attained based only on those cognates, in accordance with the procedures used in Experiment 1.

Another possible combination is cognates management and prediction. The results in this study indicated that cognates aid prediction. Therefore, any activity that aims at predicting based on cognates may enhance comprehension. This can be done by utilising titles of texts as done with Experiment 2 of the present study.

The last possible combination is that of cognates and free recall. If the results found here are assumed to aid comprehension, then it is sound to believe that integrating cognates with free recall may constitute a facilitative tool for ESP learners. There are two possible ways to pursue this. The first way is to ask learners to remember the whole text in the form of a free written recall used in this study and the second is to ask them to recall scattered words from the texts just read. If the data found in this experiment are consistent, cognates are supposed to enhance recall, which, according to this researcher, helps comprehension.

The last probable implication of cognates management for teaching ESP for Brazilian students is to fuse this strategy with vocabulary learning and development. This possible link derives from the discussion that cognatic words are hooked in the same conceptual node in memory. It follows then that managing these elements in a systematic and efficient fashion may lead to vocabulary learning. This effect may be achieved by having students keep a cognatic dictionary as they come across these elements in their texts. Fusing this with the most important grammar classes such as nouns, adjectives and verbs and the affixes, may add to valuable increase in the learners' vocabulary repertoire and language awareness. Thus, learners should have an entry for adjectives ending in *ful* (e.g. respectful), another with nouns ending in *tion* (e.g. education) and even another with verbs ending in *ate* (e.g. activate).

Rounding off the discussion raised throughout the present work, one may derive that the role of cognates in reading comprehension has been overestimated to the point of equating

reading with cognates identification and management. Nevertheless, in light of the high complexity of the reading process, as discussed in Chapter 2, the purpose of this study was solely to advocate that cognates may be of prime importance for both ESP practitioners and learners, thereby being highly beneficial in the realm of ESP. Moreover, further research ought to be carried out so that the study of cognates might break new grounds to go beyond ESP and follow new avenues of knowledge such as those of speaking and listening.

“In the beginning was the Word...”

(John 1:1)

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Appendices

Appendix A: The informants' questionnaire

1. PERSONAL INFORMATION

- a) Full name: _____
- b) Age: _____
- c) Address: _____
- d) Home phone number: _____
- e) Cell phone number: _____
- f) Academic Activity(ies): _____

2. LANGUAGE BACKGROUND INFORMATION

- a) When did you last have formal instruction of English before now?

- 1) Between 1 and 3 years ago.
- 2) Between 3 and 5 years ago.
- 3) Between 5 and 8 years ago.
- 4) More than 8 years.
- 5) Other. Specify: _____

- b) Where did you have this instruction?

- 1) In your regular school.
- 2) In an English school.
- 3) Privately.
- 4) Other Specify: _____

- c) What are your feelings towards the English language?

- 1) I love it.
- 2) I like it.
- 3) I don't mind about it.
- 4) I can't stand it.

- d) What do you need English for?

- 1) For reading specific texts in your area.
- 2) For passing an academic examination.
- 3) As a hobby.
- 4) Other: Specify: _____

- e) Consider the following scale:

- A- Excellent B- Very good
- C- Just good D- Poor E- Very poor

Now, rate your knowledge in each of the following skills of the English language:

- a) reading() b) writing() c) listening() d) speaking()

Appendix B: Informants' answers to the questionnaire

Participants	Age	Lang.Inst	Feelings	Purpose	Skills
P 1	32	15	CS	r+ac test	d+e+d+e
P 2	36	5-8	CS	ac test	e+e+e+e
P 3	38	1-3	LI	ac test	c+c+b+c
P 4	41	3-5	DM	r+ac test	d+e+e+e
P 5	38	1-3	LI	r+ac test	d+e+d+e
P 6	28	+ 8	CS	r+ac test	d+e+d+e
P 7	25	½	DM	R	d+e+d+e
P 8	?	31	DM	r+ac test	d+d+d+e
P 9	28	3-5	LI	r	c+c+c+c
P 10	31	0	LI	R	e+e+e+e
P 11	46	+ 20	LI	R+ac test	c+d+e+e
P 12	34	1-3	LI	R+ac test	d+e+d+d
P 13	39	5-8	LI	Ac.test	e+e+e+e
P 14	22	3-5	LO	Aprend. g.	b+c+e+d
P 15	46	25	LI	R	b+d+d+d
P 16	32	+8	LI	R	e+e+e+e
P 17	54	1-3	LI	R	e+e+e+e
P 18	48	+10	CS	R+ac test	e+e+e+e
P19	32	4-6	CS	R+ac test	b+d+d+d
P20	29	+5	DM	R	e+e+e+e
P21	37	+3	DM	R+ac test	e+e+e+e
P22	30	2-4	LI	R+ac test	b+c+e+d

LEGEND:

1. Lang. Inst- The amount of time the participants last saw English in school.
2. CS- Can't stand the English language
3. LI- Like the English language
4. LO- Love the English language
5. DM- Don't mind about it
6. R- The purpose is for reading
7. Ac Test- The purpose is for academic test
8. A, B, C, D and E: Excellent; **B**- very good **C**- just good;; **D**- poor **E**- very poor (Participants' ratings of their knowledge of English)
9. R, W, L and S- reading, writing, listening and speaking in this order.

Appendix C : T1 of Experiment 1

INDIA'S ANTI-POLIO CAMPAIGN

The polio virus is spread by contaminated food or water. It can leave its victims permanently paralysed or even kill them. The parents of the children who received the ineffective vaccine thought their children were protected, yet exposure to the virus could have crippled them.

Since the development of vaccines in the 1950s, polio has been effectively eliminated in the developed world. This success encouraged the WHO to launch a programme to eradicate the disease everywhere else by 2000. But with India accounting for about one-third of the world's polio cases, the failure to vaccinate children properly threatens the WHO efforts.

Apart from India, polio is still present in Asia within Bangladesh, Nepal and Pakistan, particularly in densely populated regions. Within Africa, the disease is also endemic in Nigeria, Ethiopia, Somalia and Sudan. At least 50 000 people are still disabled by the virus each year, according to the Children's Vaccine Initiative, a programme sponsored by UNICEF, the WHO and other international agencies.

The WHO estimates that its polio eradication programme will cost another \$2.7 billion before it is complete, but that this outlay rapidly be recouped in a polio free world.

Source: New Scientist, 25 July 1998

Appendix D: T2 of Experiment 1

FARRAH'S WARNING TO PARENTS

Brave Farrah Fawcett is stepping forward with a startling interview in the hope she can help parents everywhere spare their youngsters the curse of drug abuse.

The gorgeous star has witnessed firsthand the devastation of drugs and is determined to make sure her beloved teenage son doesn't fall victim to this nation-wide plague.

Farrah is telling her heart-wrenching story so that parents will know there is help out there and that they can win the battle and protect their children.

"Kids do drugs because they don't want to think about the emotional pain they're in", says Farrah. "They get high, come down – and the pain is still there. Until you deal with pain, it remains a vicious circle".

Experts say it's important to talk to your teens about drugs – and to take a firm stand like Farrah. For urgent enquiries, you can call the Covenant House crisis line around the clock at 1-800-999-9999. For a list of nearby treatment facilities or publications on how to deal with your teen and drugs, call the National Institute on Drug Abuse Hotline at 1-800-662-4356.

Source: The National Enquirer, 12 June, 2001

Appendix E: 2 strips of paper to collect the skimming protocols of Experiment 1

a) Strip of paper 1

NOME DO RESPONDENTE: _____

NOME DO TEXTO: _____

COGNATOS ENCONTRADOS:

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16		
17	18	19	20	21	22
23	24	25	26	27	28
29	30	31	32	33	34
35	36	37	38	39	40
41	42	43	44	45	46
47	48	49	50		

b) Strip of paper 2

NOME DO RESPONDENTE: _____

NOME DO TEXTO: _____

SENTENÇA: _____

Appendix F: 2 comprehension tests of Experiment 1

a) Comprehension test of T1

NOME DO RESPONDENTE: _____

INSTRUÇÃO: Você terá 15min para responder as questões abaixo sobre o texto **‘India’s Anti-polio campaign’**.

- 1- Na sua opinião, qual a idéia central do texto?
- 2- O que levou a Organização Mundial da Saúde(WHO) a lançar um projeto de erradicação da pólio no mundo inteiro?
- 3- Quais as ameaças para a concretização desse projeto?
- 4- Para que serão necessários, de acordo com a WHO, outros \$ 2.7 bilhões?
- 5- Como o vírus da pólio é transmitido?
- 6- Que fator contribuiu decisivamente para a erradicação do vírus no mundo desenvolvido?
- 7- O que acontece com 50 000 pessoas todo o ano no mundo, de acordo com a **Children’s Vaccine Initiative**?
- 8- Quem patrocina esse programa?

b) Comprehension test of T2

NOME DO RESPONDENTE: _____

INSTRUÇÃO: Você terá 15min para responder as questões abaixo sobre o texto **‘Farrah’s Warning to Parents’**.

- 1- Na sua opinião, qual a idéia central do texto?
- 2- De que modo ela está ajudando os pais no combate às drogas?
- 3- Por que Farrah decidiu combater as drogas?
- 4- O que os estudiosos em drogas sugerem para os pais?
- 5- Por que os adolescentes usam drogas, de acordo com Farrah?
- 6- O que você deve fazer se tiver dúvidas urgentes sobre drogas?
- 7- Quais as horas que você poderá tirar suas dúvidas?
- 8- O que você deve fazer se precisar de informações sobre publicações na área?

Appendix G: T1 of Experiment 2

GONORRHEA IN THAILAND (3 million cases)

In Bangkok, the Thai capital, Dr. Ammuay Trisupha, director of the department of sexually transmitted diseases (STDs) at the Banrak Hospital Centre, is worried. Recent research confirms that STDs are spreading at an alarming rate in Thailand. Out of the populations of 50 million, studies show that 3 million are affected. There are 700 000 prostitutes and masseuses, mostly between the ages of 15 and 24. Some 70 percent are infected with an STD.

In the previous year, Dr. Trisupha personally treated six cases of infant blindness due to infections contracted in childbirth from mothers suffering from untreated gonorrhoea.

This frightening state of affairs persuaded Thailand's Minister of Health to set up a gonorrhoea program directed by Dr. Trisupha. It is financially supported by IDRC. The phenomenal spread of STDs is probably due to migration of people from one region to another, the liberalisation of sexual mores, the lack of resources for STD detection the provinces, and prostitution.

The impoverishment of the rural areas is forcing people to move into the cities and industrial or tourist areas where they try to pick up casual employment. But the high rate of unemployment stacks the odds against them. As a result, prostitution is the only source of income for increasing numbers of people.

Source: IDRC Reports, April 1987.

Appendix H: T2 of Experiment 2

GOODBYE, GENERATION GAP

What happened to the generation gap? In the sixties and seventies, parents and kids didn't agree on very much. At times, it seemed the generations were almost at war over their differences. Hair- especially men's hair' politics, and music were controversial topics. Today, there are fewer differences between the generations, and those that remain are not very important.

In the sixties, young men began to grow their hair long, and older men became infuriated. Today, however, you see ponytails on twenty-year-olds and forty-year-olds. Extreme hairstyles are less common in corporate offices than on college campuses, but they are worn by all ages. Hair still makes a statement, but it is no longer an excuse for declaring war.

The civil rights movement, the antiwar movement, the women's movement, the environment- all were political issues of the sixties and seventies in the United States, and all of them widened the generation gap. Of course, many older people marched for these causes, and many young people stayed at home and watched the marchers on TV.

Nevertheless, the country saw these issues mainly as youth issues. Today, some of these political battles have been partly won, and fighting them has become a familiar part of our political life. Now Americans of all ages line up on both sides of these issues.

(Passages Workbook 1. P. 48)

**Appendix I: 1 strip of paper for each text containing the title
to collect the data for Experiment 2**

1) T1 Title: “GONORRHEA IN THAILAND (3 million cases)”

INSTRUÇÃO 1: Identifique no título as palavras cognatas e as escreva abaixo.

1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____
7 _____ 8 _____

INSTRUÇÃO 2: Baseado nessas cognatas, faça 3 previsões sobre o texto.

Predição A: _____

Predição B: _____

Predição C: _____

2) T2 Title: “GOODBYE, GENERATION GAP”

INSTRUÇÃO 1: Identifique no título as palavras cognatas e as escreva abaixo.

1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____
7 _____ 8 _____

INSTRUÇÃO 2: Baseado nessas cognatas, faça 3 previsões sobre o texto.

Predição A: _____

Predição B: _____

Predição C: _____

Appendix J: 2 comprehension tests of Experiment 2

a) Comprehension test of T1

NOME DO RESPONDENTE: _____

INSTRUÇÃO: Você terá 15min para responder as questões abaixo sobre o texto “Gonorrhea in Thailand”.

- 1- Qual a idéia central do texto?
- 2- Por que o Dr. Ammuay Trisupha está preocupado?
- 3- Quais são os números apresentados pelos estudos em relação ao contágio pelas doenças sexualmente transmitidas(DST)?
- 4- Que ação tomou o ministro da saúde da Tailândia?
- 5- Quais as causas do alarmante contágio das DSTs?

- 6- Por que as pessoas estão abandonando o campo?
- 7- O que encontram nas cidades?
- 8- Qual é a única fonte de renda para a maioria dessas pessoas?

a) Comprehension test of T2

NOME DO RESPONDENTE: _____

INSTRUÇÃO: Você terá 15min para responder as questões abaixo sobre o texto “Good-bye, generation gap”.

- 1- Qual a idéia central do texto?
- 2- Como era a relação entre pais e filhos nas décadas de 60 e 70?
- 3- E como é esta relação hoje?
- 4- Que tópicos eram mais controversos?
- 5- Qual o estilo de cabelo preferido pelos jovens das décadas de 60 e 70? E qual era a reação dos pais?
- 6- Qual é hoje a atitude de jovens e adultos em relação a estilos de cabelos?
- 7- Além do estilo do cabelo, que outros movimentos eram controversos na sociedade americana dos anos 60 e 70?
- 8- Qual é o status desses movimentos hoje?

Appendix K: T1 of Experiment 3

**HOW NOT TO SAVE THE TIGER
the fight against extinction needs to shift ground urgently**

The battle to save the tiger will be lost unless conservationists change their tactics, warns a leading expert.

Only 6000 tigers survive in the wild, just 5 per cent of the number recorded in 1900. Now Eric Dinerstein, chief scientist with the World Wildlife Fund (WWF) in Washington DC, has denounced the current approach of trying to preserve the genetic diversity of the five separate tiger subspecies across Asia. He points out that many of the subspecies exist only as small, vulnerable populations in fragmented habitats where their survival is unviable unless these habitats are linked by protected “natural corridors”, through which tigers and their prey may disperse. He also argues that the variations between populations are too small even to justify their classification as subspecies, let alone define a conservation strategy.

Instead, conservationists should concentrate on boosting strongest, most viable populations of tigers, and on maintaining the diversity and quality of their habitats. This would also help other animals and plants in the same habitat.

(New Scientist – Conservation Biology, vol.12, p. 865)

Appendix L: T2 of Experiment 3

QUICK-THINKING BROTHER SAVES BIG SISTER'S LIFE

Denise Gamble owes her life to her baby brother. The 32-year-old woman had decided to stay in her insurance office on the 100th floor of Tower Two after the first hijacked jet exploded into Tower Two- and it was a telephone call from her brother Dan, 29, that prompted her to get out alive.

“I treat her like a younger sister,” said Dan, who worked in Tower Seven, only one block from Denise’s office. He says he called Denise and told her “Get out! Get out NOW!

Despite building- wide announcements advising workers in Tower Two to stay put, Denise followed her brother’s frantic direction. While others reportedly began climbing back up the doomed stairs of Tower Two, saying they were supposed to remain in their offices, Denise made her way down to the 68th floor. That’s where she was at exactly 9:03 when the second plane hit her building at the 70th floor, rocking the skyscraper and cracking the walls around her.

“She said the stairs shook, the building shook”, said Patricia Gamble, Dan and Denise’s mother.

(The National Enquirer- October 2, 2001)

Appendix M: Sheet of blank paper to collect the recall protocols

NOME DO RESPONDENTE: _____

INSTRUÇÃO 4: Agora volte ao texto e leia-o (5min). O texto será recolhido após esse tempo.

INSTRUÇÃO 5: Abaixo, escreva livremente sobre tudo o que você se lembrar do texto (10min).

Appendix N: 2 comprehension tests of Experiment 3

a) Comprehension test of T1

NOME DO RESPONDENTE: _____

INSTRUÇÃO: Você terá 15min para responder as questões abaixo sobre o texto “How not to save the tiger”.

- 1- Qual a idéia central do texto?
- 2- Qual a advertência dada por Eric Dinerstein aos conservacionistas?
- 3- Quem é Eric Dinerstein?

- 4- Qual é a sua denúncia?
- 5- Quantos tigres existem hoje na Ásia?
- 6- Quantas espécies de tigre existem hoje na Ásia?
- 7- O que Eric Dinerstein sugere que seja feito?
- 8- Além de preservar o tigre, o que mais essa estratégia ajudaria?

a) Comprehension test of T2

NOME DO RESPONDENTE: _____
INSTRUÇÃO: Você terá 15min para responder as questões abaixo sobre o texto “Quick-thinking brother saves big sister’s life”.

- 1- Qual a idéia central do texto?
- 2- Qual a relação de parentesco entre Denise e Dan?
- 3- Onde Denise trabalhava?
- 4- Como Dan salvou a vida de Denise?
- 5- Qual instrução dada aos trabalhadores da Torre Dois?
- 6- Ao invés de seguir tal instrução, o que Denise fez?
- 7- O que aconteceu exatamente às 9h03?
- 8- Quem é Patricia Gamble?

Appendix O: Strip of paper to collect the twenty words recalled

INSTRUÇÃO:Escreva abaixo, 20 palavras em inglês que você lembra do texto (5min).

PALAVRAS LEMBRADAS:

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16		
17	18	19	20		

Appendix P: Instructions in Portuguese for Experiment 1 (cognates and skimming)

1. Não tente ler o texto;

2. Sublinhe todas as palavras cognatas do texto, inclusive as repetidas e nomes próprios. Você terá 120s (2min) para completar essa tarefa. Caso termine antes do tempo, favor virar o texto;
3. Preencha o cabeçalho e depois transponha para a folha todas as cognatas encontradas, inclusive as repetidas e nomes próprios. Em seguida, desconsidere o texto. Você terá 5min(300s) para esta tarefa;
4. Baseando-se apenas nessas cognatas, tente criar uma sentença que você acredite representar a sua compreensão geral do texto. Você terá, no máximo, 5min(300s) para tal.

Appendix Q: Instructions in Portuguese for Experiment 2 (cognates and prediction)

NOME DO RESPONDENTE: _____

INSTRUÇÃO 1: Não tente ler o texto abaixo.

INSTRUÇÃO 2: Apenas sublinhe os cognatos (3min).

INSTRUÇÃO 3: Abaixo, liste todos os cognatos do texto. Você terá 5min para esta atividade. Em caso de terminar antes, favor virar o texto.

INSTRUÇÃO 4: Baseado nessas cognatas, faça 3 predições sobre o texto.

Predição A: _____

Predição B: _____

Predição C: _____

Appendix R: Instructions in Portuguese for Experiment 3 (cognates and free recall)

NOME DO RESPONDENTE: _____

INSTRUÇÃO 1: Não tente ler o texto abaixo.

INSTRUÇÃO 2: Apenas sublinhe os cognatos (3min).

INSTRUÇÃO 3: Abaixo, liste todos os cognatos do texto. Você terá 5min para esta atividade. Em caso de terminar antes, favor virar o texto.

INSTRUÇÃO 4: Agora volte ao texto e leia-o (5min). O texto será recolhido após esse tempo.

INSTRUÇÃO 5: Abaixo, escreva livremente sobre tudo o que você se lembrar do texto (10min).

INSTRUÇÃO 6: Escreva abaixo, 20 palavras em inglês que você lembra do texto (5min).

Appendix S: Propositions of T1 and T2

a) Propositionalisation of T1 (25 propositions)

HOW NOT TO SAVE THE TIGER the fight against extinction needs to shift ground urgently

(01) The battle to save the tiger will be lost (02) unless conservationists change their tactics, (03) warns a leading expert.

(04) Only 6000 tigers survive in the wild,(05) just 5 per cent of the number recorded in 1900.(06) Now Eric Dinerstein, (07) chief scientist with the World Wildlife Fund (WWF) in Washington DC, (08) has denounced the current approach (09) of trying to preserve the genetic diversity (10) of the five separate tiger subspecies across Asia.(11) He points out (12) that many of the subspecies exist only as small, vulnerable populations (13) in fragmented habitats (14) where their survival is unviable (15) unless these habitats are linked by protected “natural corridors”, (16) through which tigers and their prey may disperse.(17) He also argues (18) that the variations between populations are too small (19) even to justify their classification as subspecies, (20) let alone define a conservation strategy.

(21) Instead, conservationists should concentrate on boosting strongest,(22) most viable populations of tigers, (23) and on maintaining the diversity and quality of their habitats.(24) This would also help other animals and plants (25) in the same habitat.

(New Scientist – Conservation Biology, vol.12, p. 865)

a) Propositionalisation of T2

QUICK-THINKING BROTHER SAVES BIG SISTER’S LIFE

(01) Denise Gamble owes her life to her baby brother.(02) The 32-year-old woman had decided (03) to stay in her insurance office on the 100th floor of Tower Two (04) after the first hijacked jet exploded into Tower Two- (05) and it was a telephone call from her brother Dan, (06) 29 (07), that prompted her (08) to get out alive.

(09) “I treat her like a younger sister,” (10) said Dan, (11) who worked in Tower Seven, (12) only one block from Denise’s office. (13) He says he called Denise (14) and told her “Get out! (15) Get out NOW!

(16) Despite building- wide announcements (17) advising workers in Tower Two to stay put, (18) Denise followed her brother’s frantic direction.(19) While others reportedly began climbing back up the doomed stairs of Tower Two,(20) saying they were supposed to remain in their offices, (21) Denise made her way down to the 68th floor. (22) That’s where she was at exactly 9:03 (23) when the second plane hit her building at the 70th floor,(24) rocking the skyscraper (25) and cracking the walls around her.

(26) “She said the stairs shook, (27) the building shook”,(28) said Patricia Gamble,(29) Dan and Denise’s mother.

(The National Enquirer- October 2, 2001)

Appendix T: Results of Experiment 1 (cognates and skimming)

a) Results of T1

PARTICIPANT 01

Campanha para erradicar a pólio (paralisia infantil) na Índia. Através de uma campanha de vacinação antígeno busca-se eliminar o vírus que causa a pólio (paralisia infantil).

PARTICIPANT 02

A campanha de vacinação contra a pólio como uma medida preventiva e permanente na proteção das crianças em várias partes do mundo. Especifica o valor gasto com a campanha que é de 2,7 bilhões.

PARTICIPANT 03

Vítimas contaminadas pelo vírus da paralisia permanentemente são protegidas pela vacina efetivamente, um programa para eliminar com sucesso um programa de erradicação casos na Índia, Ásia, particularmente região da África Nigéria Etiópia etc. são agentes do programa da erradicação.

PARTICIPANT 04

Um programa para a erradicação da poliomielite está sendo feita na Índia e em países da África e Ásia; as vítimas atingidas por esta doença tem seus membros permanentemente paralisados.

PARTICIPANT 05

Campanha antipolio na Índia e nos países do Terceiro mundo. Campanhas realizadas permanentemente poderá erradicar o problema do vírus da pólio. Programa bem elaborados podem erradicar 50 000 pessoas. Iniciativa de Agencias elaboraram programa de vacinação.

PARTICIPANT 06

O programa de erradicação do vírus da pólio através de vacinas que já se encontram presentes em várias regiões.

PARTICIPANT 07

O vírus da pólio provoca paralisia permanente nas suas vítimas. O programa de erradicação da pólio tem tido sucesso em países da Ásia e da África onde a doença tornou-se endêmica.

PARTICIPANT 08

O vírus da pólio contamina vítimas permanentemente, paralisando-as. Pais recebem vacinas para proteger contra exposição ao vírus. A vacina contra-polio foi inventada em 1950 e efetivamente foi sucesso, eliminando o vírus. Encoraja programas para erradicação na Índia, contra casos de pólio. Também esteve presente Ásia, Bangladesh, Nepal, Paquistão em regiões populares particularmente. Há uma endemia na África, Nigéria, Etiópia, Somália e Sudão. A Unicef, agencia internacional também está com o programa de vacina e estima um programa para erradicar a pólio e custa 2.7 bilhões.

PARTICIPANT 09

Índias antipolio campaign – O pólio contamina deixando crianças permanentemente paralisadas. É feito vacinação protegendo da exposição do vírus. Pólio tem sido efetivamente eliminada encorajando campanhas de erradicação. Índia tem casos de vacinação pólio está presente Bangladesh, Nepal, Paquistão e regiões de população na África. É encontrada na forma endêmica na Nigéria, Etiópia Somália e Sudão.

PARTICIPANT 10

O vírus da pólio tem causado vítimas, causando paralisia. Houve vacinas ineficientes para proteger. Foi desenvolvido vacinas eficazes que eliminam com sucesso, como no caso de programas que erradicam o vírus presente em Bangladesh, Nepal, particularmente em regiões de densa população da África.

PARTICIPANT 11

Houve na Índia uma campanha contra a poliomielite. O vírus que contamina as vítimas causa a paralisia. Para isto foi criada uma vacina que efetivamente erradicou casos de paralisia na Índia. Agências estimaram que regiões populosas como Nepal, Paquistão, Somália erradicaram o vírus.

PARTICIPANT 12

O texto se refere a uma campanha que está sendo feita na Índia contra a pólio, ou melhor, para erradicar a pólio. São muitas as vítimas atingidas em vários países e se a pólio não for controlada prejudicará muitas pessoas porque ela pode levar a paralisia. Já existe uma vacina que será levada a várias regiões. Essa campanha faz parte de um programa internacional que ajudará bilhões de pessoas na África, Ásia, etc.

PARTICIPANT 13

Fala de uma campanha anti-polio nas Índias, na Ásia e África em regiões populosas para desenvolver e aplicar vacinas eliminando o vírus.

PARTICIPANT 14

O vírus da pólio está contaminando vítimas que ficam permanentemente paralisadas. Está sendo feita uma campanha para eliminar, erradicar a pólio, vacinando crianças em todo o mundo.

PARTICIPANT 15

O texto fala de contaminação de famílias e de parentes e que as pessoas infectadas teriam vacinas para se proteger. O programa de erradicação teve sucesso na Índia e o programa está presente em Bangladesh, Nepal, Paquistão, particularmente nas áreas mais densamente populosas Nigéria, Etiópia e Sudão. As pessoas fazem parte de programa da Unicef e para erradicar o programa precisa de 2.7 bilhões de dólares para a completa erradicação.

PARTICIPANT 16

Na Índia está sendo realizada uma campanha contra a poliomielite. O vírus contamina as pessoas causando paralisia permanente. O programa de vacinação está eliminando com sucesso o vírus.

b) Results of T2**PARTICIPANT 01**

Os parentes protegem os viciados em drogas, conforme publicação no instituto nacional.

PARTICIPANT 02

O instituto nacional publicou/ desenvolveu temas voltados as drogas. Suas facilidades, a emoção, a importância da participação dos parentes.

PARTICIPANT 03

História de determinada devastação da proteção emocional, vícios, importantes crises, publicadas no instituto nacional.

PARTICIPANT 04

As drogas são uma praga que ataca principalmente pessoas com problemas emocionais, agindo nelas e nas pessoas que as rodeiam.

PARTICIPANT 05

As relações com nossos pais determinam nossas emoções facilitam nossa vida. Publicações mostrou o círculo vicioso na relação com os pais.

PARTICIPANT 06

A devastação determina a criação de histórias que emocionam e reconduz a lições urgentes, facilitadas através de publicações.

PARTICIPANT 07

Farrah's é um instituto que ajuda a localizar pessoas utilizando como instrumento facilitador as histórias contadas por seus parentes.

PARTICIPANT 08

Pais Farrah participaram de um curso sobre drogas, abuso de drogas e também devastação de drogas. Estas drogas estão fazendo vítimas em todas nações. Pais Farrah não protegem as drogas e experts dizem que acontecem por um círculo emocional. Farrah precisa urgentemente de tratamento, por crises. O instituto nacional de abuso de drogas está facilitando publicações de droga para tratamento.

PARTICIPANT 09

O abuso de drogas causam vítimas desta praga. Parentes protegem emocionalmente quem entra neste círculo vicioso. Importantes especialistas falam a respeito.

PARTICIPANT 10

Fala sobre curso referente a proteção emocional contra abuso e vícios.

PARTICIPANT 11

Farrah publicou a história de parentes a partir de uma emoção importante e um esperto círculo o vicioso de (...).

PARTICIPANT 12

Trata-se de um curso para pessoas que tem problemas familiares. Pretende-se ajudar as pessoas a compartilhar suas histórias, de maneira a que elas se ajudem mutuamente.

PARTICIPANT 13

proteção importante de abusos emocionais, vícios.

PARTICIPANT 14

As drogas levam ao abuso e devastação de determinada história, os parentes dos dragados, tem envolvimento emocional, o vício tem influência urgente na crise. Foi publicado pelo de abuso de drogas, como lidar com a crise, facilidades.

PARTICIPANT 15

Farrah está fazendo um curso com a família de drogados pelo abuso de drogas. Instituto nacional fala da importância dos enquetes para a facilidade de se conseguir as drogas.

PARTICIPANT 16

Farrah é um instituto que ajuda a localizar pessoas desaparecidas utilizando como instrumento facilitador as histórias por seus parentes.

Appendix U: Results of Experiment 2 (cognates and prediction)

a) Predictions of T1 (G stands for Gonorrhoea and T for Thailand)

PARTICIPANT 01

1- Uma epidemia numa região 2- descaso com a saúde pública 3- alerta a população para os casos de contágio

PARTICIPANT 02

1- homens e mulheres contaminados pela gonorréia 2- país da gonorréia - epidemia das doenças sexualmente transmissíveis

PARTICIPANT 03

1- incidência de doença venérea na Tailândia 2- alto índice de contaminados pela doença 3- número alto e pesquisa sobre a doença

PARTICIPANT 04

1- existem casos de gonorréia 2- no prediction 3- no prediction

PARTICIPANT 05

1- o número de casos de pessoas com gonorréia na Tailândia 2- a gonorréia preocupa o governo na Tailândia 3- a causa de tantos casos de G na T

PARTICIPANT 06

1-doença venérea sem controle 2- epidemia na T 3- falta de prevenção

PARTICIPANT 07

1- que a população saiba mais a respeito da importância 2- a população não usa preservativos
3- existe muita prostituição

PARTICIPANT 08

1- casos de gonorréia na T 2- epidemia de G na T 3- vacina contra G nos países do 3 mundo

PARTICIPANT 09

1- existem 3 milhões de casos de G na T 2- a G é um problema grave de saúde na T. 3- a G possui alto índice de contaminação

PARTICIPANT 10

1- existem muitas pessoas com G na T 2- há um alto índice de contaminação 3- há muitos casos notificados.

PARTICIPANT 11

1- vai ajudar os doentes 2- fugir devido epidemia 3- pesquisar a doença

PARTICIPANT 12

1- alto índice de gonorréia na T 2- falta campanha para prevenir dst 3- múltiplos parceiros.

PARTICIPANT 13

1- G vira epidemia na T 2- a G na T é a mais contagiosa dst 3- pessoas já estão usando camisinha

PARTICIPANT 14

1- a promiscuidade na T provoca 3 milhões de casos de G 2- a falta de informação provoca 3 milhões de casos de G na T 3- pobreza e falta de política social

PARTICIPANT 15

1- doença presente na T 2- muitas pessoas doente por G 3- doença sexualmente transmissível

PARTICIPANT 16

1- uma doença que atinge uma população de milhões de pessoas 2- pessoas emigram na T.
3- casos críticos de G matam a população

PARTICIPANT 17

1- vários casos de G foram registrados na T 2- campanha preventiva contra a G na T 3- sensibilização da comunidade contra a G

PARTICIPANT 18

1- muitos casos de G na T 2- promiscuidade sexual 3- falta de prevenção para as dst

b) Predictions of T2**PARTICIPANT 01**

1- mudança de comportamento e hábitos 2- causas da mudança 3- consequências

PARTICIPANT 02

1- ele está indo embora 2- está mudando de área 3- mudança de fase

PARTICIPANT 03

1- adeus a uma geração 2- um ciclo de uma geração que marcou 3- fim de um ciclo

PARTICIPANT 04

1- tchau geração gap 2- no prediction 3- no prediction

PARTICIPANT 05

1- fala sobre geração saúde 2- no prediction 3- no prediction

PARTICIPANT 06

1- mudança de costumes 2- nova geração 3- geração em mudança

PARTICIPANT 07

1- no prediction 2- no prediction 3- no prediction

PARTICIPANT 08

1- a geração atual 2- a geração que passou 3- no prediction

PARTICIPANT 09

1- está acabando a geração gap 2- no prediction 3- no prediction

PARTICIPANT 10

1- adeus a uma geração 2- no prediction 3- no prediction

PARTICIPANT 11

1- fala de uma geração 2- fala das pessoas que se foram 3- fala de uma geração que morreu na guerra

PARTICIPANT 12

1- geração problemática 2- adeus a uma geração de computadores 3- adeus a uma geração arruinada.

PARTICIPANT 13

1- adeus para a geração 2 - a geração não vai mais existir 3- acabaram com a geração polícia mortes.

PARTICIPANT 14

1- costumes de uma geração 2- mudança de comportamento 3 - extinção de um grupo étnico.

PARTICIPANT 15

1- generalização 2- no prediction 3 - no prediction

PARTICIPANT 16

1- a geração gap está se acabando porque todos morreram 2- no prediction 3- no prediction

PARTICIPANT 17

1- vai tratar da geração gap 2- pontos positivos dessa geração 3- pontos negativos dessa geração.

PARTICIPANT 18

1- mudança de características da população (condutas) 2- nova geração 3- saudade da geração anterior.

Appendix V: Results of the recall of the texts of Experiment 3 (cognates and recall)

a) Recall of T1 “How not to save the tiger”.

PARTICIPANT 01

(extinção morte urgente).5 por cento do numero recorde em 1900 segundo cientistas.../população dos habitantes.../ proteção/ conservação estratégica.

PARTICIPANT 02

(conservação biológica) Somente 6000 tigres, 5% um percentual, número recorde em 1900./ Segundo um chefe cientista cinco subespecies foram separadas na Asia/ vivem em habitats diferentes/ Estrategicamente a conservação através de proteção de corredores naturais será

uma alternativa./ Busca-se também a conservação não só dos animais mas também das plantas.

PARTICIPANT 03

Os tigres estão ameaçados de extinção/ existem cerca de 6000 tigres vivendo no ambiente selvagem/ o equivalente a 5% dos que existem em 1900/ O cientista chefe do WWF/Whashington relata que a estratégia para salvar o tigre consiste em classificá-lo em subespécies para garantir a diversidade genética/ Os tigres vivem hoje em fragmentos florestais/ e é preciso manter e proteger os corredores ecológicos para garantir a transferência de genes entre os tigres./ A estratégia para proteger os tigres consiste em mapear as subespécies e proteger as plantas e animais do ambiente em que ele vive/.

PARTICIPANT 04

conservation/ animals/ experts/ .

PARTICIPANT 05

(Por que não salvar os tigres) Existe 6000 tigres, o que representa 3% do existente em 1900/ Eric o cientista chefe com a WWF, de Washington, DC identificou 5 subespécies de tigre na Ásia./ A estratégia para salvar os tigres é criar corredores para ligar essas várias subespécies podendo assim reforçar ou melhor ajudar a sobrevivência da espécie./ Devemos ajudar a preservar os animais e plantas.

PARTICIPANT 06

Eloisa: pesquisa de um cientista sobre tigres/ fala de seu habitat diferentes espécies/ fala da extinção desses animais/ onde vivem- problemas com relação a extinção.

PARTICIPANT 07

(como salvar o tigre) Uma guerra está sendo travada pelos cientistas para salvar o tigre de sua extinção/ Somente 6000 foram encontrados no ano de 1900, segundo o cientista chefe, Eric.../ Estratégias estão sendo criadas para a conservação biológica e das plantas pelos cientistas preocupados com a preservação ambiental.

PARTICIPANT 08

Os conservacionistas possuem estratégias de preservação./ Somente 600 espécies sobrevivem das detalhadas em 190 e tal/ a apropriação genética das espécies tem sido denunciada pelo jornal em questão/ os "corredores ecológicos é uma maneira de aumentar a diversidade genética, não deixando que as populações se fragmentem como vem ocorrendo/ a preservação dos habitats naturais de plantas e animais aumenta a diversidade genética.

PARTICIPANT 09

Por que não salvar o tigre/ 1900 havia 5% da população que existe hoje/ existem mais de 6000 sobreviventes no.../ diversidade de subespécies existentes/ conservação/ Ásia/ justificativa de classificação/.

PARTICIPANT 10

Fala da extinção de tigres/ Hoje existe 6000, 5% a menos que a população de 1900/ Agora um cientista, juntamente com a WWF, estão propondo estratégias para mudar a situação. Existe uma subespécie que é muito frágil e vulnerável ao seu habitat./

PARTICIPANT 11

(Como não salvar o tigre) a luta contra a extinção dos animais urgentemente .../ cientista mostrou que hoje existem 6000 tigres, 5% dos recordados em 1900/ ele nos mostra que está descobrindo subespécies(5) e que estão sendo criados na Ásia. Muitas subespécies somente vivem quando pequenos, devido ao habitat. Cientista acha que se o habitat for melhorado, ajudará tanto os tigres, como outros animais e plantas.

PARTICIPANT 12

Paulo: os cientistas estão ajudando o tigre e foram para sua preservação/ somente 6000 ainda sobrevivem o que representa exatamente 5% do que havia inicialmente em 1900, isto de acordo com o cientista chefe do world wildlife foundation (WWF) com sede em

Washington, DC. Os sobreviventes são de uma espécie melhor e vivem na Ásia/ os cientistas estão estudando também a preservação de outras espécies de animais e plantas.

PARTICIPANT 13

Táticas para a conservação das populações de tigres/ cientista denuncia existência de 5 subespécies de tigres na Ásia/ pesquisas voltadas na conservação das populações não levando em consideração as subespécies existentes e o número de animais/ táticas de conservação destes animais deve levar em consideração a diversidade de seu habitat/ e que isso favorecerá outros animais e plantas desses habitats.

PARTICIPANT 14

(como não salvar a espécie tigre) somente 6000 tigres sobrevivem, onde 5 por cento sobrevivem na conservação ecológica biológica/ dear W., o chefe cientista do Mundo (WWF) em Washington/ Também plantas e animais são área de conservação biológica. WR: as, tiger, how, to save, animal, plant, scientist, conservacionist, per cent, populatio., only, will be, survive, to be(??) approach, are, preserve, the better, between subspecies same.

PARTICIPANT 15

O texto fala sobre o salvamento da espécie de tigres, ou seja, a preservação da espécie, pois existem somente 6000 tigres selvagens e destes representam 5% do que existia em 1900. Um cientista e a WWF de Washington estão tentando recolher material genético para preservar a espécie/ Os tigres vivem em áreas inviáveis (habitats inviáveis), / um outro objetivo da WWF é fazer isto com plantas e outras espécies de animais..

PARTICIPANT 16

(como salvar os tigres da extinção). Existiam 6000 tigres asiáticos, uma estratégia para evitar a extinção foi dividir os tigres em subespécies, conforme o habitat. Buscando a prevenção da espécie, preservando ao habitat natural conforme suas características e plantas.

PARTICIPANT 17

(Como preservar as espécies de tigres) pesquisas mostram que os tigres estão sendo extintos. Dados foram colocados no texto que nos mostram a proporção em que estão diminuindo. Seu habitat está sendo modificado portanto reagitar seu habitat é uma forma de preservar a espécie.

b) Recall of T2 “Quick-thinking brother saves big sister’s life”.

PARTICIPANT 01

(grande sistema livre) Denise querido irmão, de 32 anos de idade, que chamou por telefone.

PARTICIPANT 02

Denise, mulher decidida de 32 anos trabalhava nas torres gêmeas que explodiram em setembro. Foi feita reportagem a respeito da explosão, onde detalha fatos, pessoas que lá trabalhavam, bem como os familiares.

PARTICIPANT 03

Denise é uma mulher de 32 anos que salvou a vida de seu irmão mais novo. Ela trabalhava nas torres gêmeas e no dia do atentado tinha saído devido a um telefonema, ela falou com seu irmão no momento da explosão e que o primeiro prédio foi atacado. Ela assistiu a explosão e ligou atrás de seu irmão que também estava fora e trabalhava no prédio, eles receberam ordem após o atentado para “sair já”. Eles se salvaram.

PARTICIPANT 04

Denise, vida, irmão, torre dois, bebê, telefone, sete.

PARTICIPANT 05

Patricia é uma mulher de 32 anos/ seu irmão Dan tem 29 anos/ Patricia solicitou que seu irmão fosse ao seu escritório/ ele chegou precisamente às 8:05.

PARTICIPANT 06

acidente no emprego/ irmãos/ tower seven/ ele telefonou chamando sua irmã pra sair do local/ chamou Denise para a sua direção/ o segundo/ mãe de Dan e Denise.

PARTICIPANT 07

(Mulher salva) Denise Gamble passa sua vida com irmã amis nova/ uma mulher com 32 anos estava em seuescritório, no tower Two./ o telefone toca e ela atende, para alívio de sua irmã mais jovem/ tower second

PARTICIPANT 08

Denise vive com seu irmão bebi/ ela é uma mulher de 32 anos independente, e decidida/ ela trabalha muito para cuidar do seu irmão jovem/ Denise acabou se tornando mãe do irmão.

PARTICIPANT 09

Patrícia tem 32 anos, tem um irmão, dan, com quem se aborreceu ao telefone/ ele tem 29 anos/ ela estaria no twoer two/ ela resolveu ficar no 100... .

PARTICIPANT 10

Acho que é um texto que fala da explosão de um edfício./ Onde a irmã avisa seu irmão que está na torre ao lado, qdo o 1* avião explode/ em seguida um segundo avião atinge a Segunda torre. Alguém recebeu um telefonema avisando para que saísse dali imediatamente./

PARTICIPANT 11

Denise Gamble trabalhava na Segunda torre do world Trade Center, no 1008 th andar. Após a primeira explosão da torre 1, Denise Gamble ligou pra o seu irmão e ele disse que iria salvá-la e mandou-a descer pelas escadas, enquanto muita gente se jogava da janela. Ele estava na torre 7 , uma quadra da torre 2. Ela estava descendo, quando estava no 68 andar, exatamente as 9:02, o 2* avião atacou a torre 2 no 70* andar, mãe de Denise, irmão e Patrícia disseram que ela viu as pedras dos muros caindo sobre ela./

PARTICIPANT 12

Denise Gamble deve sua vida ao seu irmão bebê./ ela trabalhava na torre 2 e antes do avião 1 jato choca-se recebeu telefonema que a fez sair. / Trabalhava no 100* andar / estava descendo no 68th andar quando o 2* avião choca-se com o 70* andar. / Tinha outra pessoa que também ligou(?) ela continuou descendo (seguindo alguém...).

PARTICIPANT 13

Suponho que o texto deva tratar de um irmão que salvou a vida da irmã qual trabalhava em um edifício que sofreu uma explosao.../ houveram ligações por telfone onde um deles disse p/ sair de lá, sair já.

PARTICIPANT 14

O texto retrata sobre um pensador irmão salvando sua grande irmã/ Houve um chamado telefonico dando noticia do acontecimento/ um dos personagens tinha 32 anos de idade/ A fonte do referido texto texto foi de uma revista nacional em fevereiro de 2002./

PARTICIPANT 15

Fala de Denise que tem o irmão Dan. Seu trabalho é no 100 andar de um edifício. / seu irmão se localiza a alguns blocos dali.

PARTICIPANT 16

Irmã salva irmão da explosão no tower II. Qdo o primeiro jato bateu na torre, Denise (irmã) trabalhava lá. Falou com o irmão ao telefone. Denise tem 30 anos e Dan(o irmão) tem 29 anos. Patrícia é a mãe de ambos.

PARTICIPANT 17

O texto é sobre família.

Appendix W: Results of the recall of words of Experiment 3 (cognates and recall)

a) Recall of words of T1: "How not to save the tiger".

PARTICIPANT 01

the, scienty, neews, habitaty, conservation, Eric, animals, per, cent, species, strategies, five, 5, in.

PARTICIPANT 02

subspecies, protector, coredors, five, tiger, strategies, conservation, animals, plants, fragemnted, habitats, Ana, scientist, chef, per cent, separate, naturels, populations.

PARTICIPANT 03

tiger, habitat, ambientalist ecologist, scientist, plants, animals, advertency, subspecies, wild, corredor, chief, preserve, same, life, fragments, forest, this, the, number word help

PARTICIPANT 04

habitat, five, Asia, tigers, per cent, will

PARTICIPANT 05

save, tigers, chief, plants, species, animal, preservation, DC, conectar, subspecies, Asia, how, not, strategic, same, habitat, duurid(??) in, is, denounced.

PARTICIPANT 06

habitat, tigre, populations, only, five, same species, their animals, survive Asia, exist, plants, which, will conservation, also, but, the.

PARTICIPANT 07

tiger, only, biologist, animals, plants, trying, how, battle, would, specie, five, expert, scientist, again, meaning, save, be, the, Eric, science, conservacionist.

PARTICIPANT 08

conservaconist, animals, plants, biologic, naturels, number, cientis, tiger, only, diversidad, genetic,folud(??) this, wild, life, habitats, ecologic, fragments, subspecies.

PARTICIPANT 09

tiger, how, save, across, asia, subspecie, animal whashington, DC, preservation, 5 per, cent, five, habitat, plant.

PARTICIPANT 10

alone, only, five, how, chief, scientis, habitat, expert, figest, save, tigers, trying, asia, urgently specie, not, as, poblacion, has, across.

PARTICIPANT 11

tiger, animal, plants, denoun ced, scientist, expert, extinction, urgently, conservation, habitat, population, unless, how, not, they, asia, per cent, recorded, help, fragmented.

PARTICIPANT 12

truing, world, save, tiger, washington, cientists, conservacionist, habitat, plants, species, asia, per cent, found, accross biology.

PARTICIPANT 13

extinct, tiger, scientists, chief, classification, habitat, diversity, genetic, same, plants, animals, are, populations, how, small, just, subspecies, help conservation, urgent.

PARTICIPANT 14

As, tiger, how, to save, animal , plant, scientist, consevacionist, per cent, population, only, will be, survive, to be, approach, are, preserve, the better, between, subspecies, same

PARTICIPANT 15

save, unviable, he, the, most, tiger, specie, wilt, animals, also, as gentic, chief, approach, too, tactics, per cent, change, their, conservacionist.

PARTICIPANT 16

only, scientist, tigers, species, genetic, save, five, habitat, plants, animals, subspecies, preservation, protect, change, percent, asia, tatic, warn, across.

PARTICIPANT 17

only, tiger, how, habitat, asia, existint, animals, plants, cientistic, wild, species not, chief.

b) **Recall of words of T2 “Quick-thinking brother saves big sister’s life”.**

PARTICIPANT 01

plane, the, Denise, Dan, two, october, brother, 9:03 ,32 year, call, telephone, big, save, sister, office, fwod, 68th, in, of.

PARTICIPANT 02

brother, sister, mother, exploded, two, Dan, he, offices, seven, telephone, directive, Patricia, Denise, out get, 100th, 68th, baby, reporteid.

PARTICIPANT 03

two tower, sister, big, younger, get, mather, call alth, baby, insurance, telephone, said, after, braekdown, clock, life, brother, old, years, dan, denise.

PARTICIPANT 04

Denise, Dan, Patricia, sister, two, seven, mother’s, baby, now, get up, tower.

PARTICIPANT 05

bother, sister, mother, said, is Dan, Patricia , tower, two, other, the, office, get, out, now, there, when, her, old, woman.

PARTICIPANT 06

walked, sister, mother, say, telephone, cll, her, where, now, get, save, direction, had, made, life, brother, baby, that.

PARTICIPANT 07

tower, life, save, brother, younger, telephone, call, alive, two, sister’s, office, baby, years, there, that’s, her, are, queen, for must.

PARTICIPANT 08

live, brother, decided, tower, two, mother, now, give, reported, telephone, baby, youngy, office, year, old,

PARTICIPANT 09

mother, sister, brother, Patricia, Dan, Denise, tower, two, big, saied,national, novenber, new, telephone, 68th, down, woman.

PARTICIPANT 10

had, brother, sister, mother, floow, save, life, baby, he, says, said, get out, quick, thinking, who, director, gambling, had, workers office.

PARTICIPANT 11

baby, tower, two, fllor, plane, second, quick, life, sister, brother, mother, office, climbing, workers, office, call, block, seven, rocking, stairs.

PARTICIPANT 12

stay, put, Patricia, Denise, Dan, Gamble, plane, foor, get, out, now, tower, two, frantic, brother, sister, mother, call, telephone, office.

PARTICIPANT 13

Brother, mother, Denise, Dan, Patrícia, tower, two, seven, explored, save, thinking, say, called, follwed, get, now.

PARTICIPANT 14

baby, brother, sister, Denise, Dan, Patricia, office, worked, called, say, thinking, natural, following, it, she, here, saves, the, exactly, back up, down.

PARTICIPANT 15

Big brother, sister, baby, save she, he, buiding, plane, two, town, her, office, own, says, flowr, 100th, call, telephone, I that.

PARTICIPANT 16

tower, two, mother, brother, sister, office, floor, saide, seven, baby, telephone, became, Denise, patrícia, Dan, 100th, 68th, 70th, 9:03h.

PARTICIPANT 17

sister, brother's, patrícia, Dan, two, tower, monther's life, big, Denise, telephone, said, now, get, working, seven.