UNIVERSIDADE FEDERAL DE SANTA CATARINA

PÓS-GRADUAÇÃO EM LETRAS/INGLÊS E LITERATURA CORRESPONDENTE

AN INVESTIGATION OF L2 READING COMPREHENSION OF LINEAR TEXTS AND HYPERTEXTS AND WORKING MEMORY CAPACITY

INGRID FONTANINI

Tese submetida à Universidade Federal de Santa Catarina em cumprimento parcial dos requisitos para obtenção do grau de

DOUTOR EM LETRAS

FLORIANÓPOLIS

Março de 2007

To my dear sons, Adriano and Rodrigo,

with all my love.

ACKNOWLEDGMENTS

I would like to extend my special appreciation to my academic advisor, Dr. Lêda Maria Braga Tomitch, for her support over the course of my academic studies at the Federal University of Santa Catarina (USFC).

I also extend my appreciation to the committee for their valuable insights.

I am deeply grateful to professor Dr. Cliff McKnight, from Loughborough University, who has contributed with a great deal of his time and energy, providing me valuable academic support while I was under his assistance.

I also extend my gratitude to professor Dr. Angela Marconi de Araújo from the State University of Maringá (UEM) for her precious statistical assistance.

I am also in debt to my friend, Dr. Andréia S. Rauber, for her tremendous help.

My deepest gratitude goes to my family, especially my sons, Rodrigo and Adriano, for their emotional support, love, and encouragement through my entire journey.

Finally, I would like to express my gratitude to CNPq for providing the funding for my studies.

ABSTRACT

AN INVESTIGATION OF L2 READING COMPREHENSION OF LINEAR TEXTS AND HYPERTEXTS AND WORKING MEMORY CAPACITY

INGRID FONTANINI

UNIVERSIDADE FEDERAL DE SANTA CATARINA

2007

Supervising Professor: Dr. Lêda Maria Braga Tomitch

The aim of this study was to investigate L2 reading (English) derived from texts presented in two different modes, as a linear text and as a hypertext, in order to verify possible differences in comprehension. The reason for such scrutiny resides in the fact that different standpoints can be found in the literature about the effects nonlinear texts can cause for processing, achieving coherence and thus, building a mental representation (Dillon, 1996; Smith, 1994; Charney, 1994, McKnight, Dillon & Richardson, 1993). In order to achieve the objectives proposed here, two texts, having similar characteristics, were designed and presented as hypertexts and as linear texts. Four research questions and hypotheses framed this investigation, and three different instruments were used to collect the data: recall of main propositions, comprehension questions and contradictions. In addition to these instruments, a modified version of the original Daneman and Carpenter's (1980) reading span test developed by Torres (2003) was applied, considering the assumption that there is a relationship between participants' performance and their working memory spans (Tomitch, 2005, Torres, 2003, Engle, Kane & Tuholsky, 1999; Daneman & Capenter, 1980). Forty-two participants from two nationalities (21 Brazilians and 21 Chinese) and from different universities (Universidade Federal de Santa Catarina, Univerisdade Estadual de

Maringá, and Loughborough University, UK) participated in this study. The results obtained signal to the fact that hypertexts might compromise comprehension, especially, for low-span participants. An unexpected outcome was obtained in relation to the Chinese participants who presented lower working memory spans compared to the Brazilian group, and therefore, presented lower performance. The broad conclusion achieved here is that different variables such as readers' working memory capacity, their first language, and the mode of text presentation may interfere in L2 reading, and each one of theses characteristics might hamper, in different ways, in the construction of a coherent mental representation.

Number of pages: 182
Number of words: 45,961

RESUMO

UMA INVESTIGAÇÃO DA LEITURA EM SEGUNDA LÍNGUA DE TEXTOS LINEARES E HIPERTEXTOS E DA MEMÓRIA DE TRABALHO

INGRID FONTANINI

UNIVERSIDADE FEDERAL DE SANTA CATARINA
2007

Professora Orientadora: Dra. Lêda Maria Braga Tomitch

O objetivo desse estudo foi investigar a leitura em L2 (Inglês), em textos apresentados de formas distintas: como texto linear e como hipertexto, para verificar possíveis diferenças na compreensão resultante. A razão para tal escrutino reside no fato da divergência encontrada, na literatura, a respeito dos efeitos da não linearidade para o processamento das informações e, conseqüentemente, para a compreensão de textos (Dillon, 1996; Smith, 1994; Charney; 1994; McKnight, Dillon & Richardson, 1993). Para alcançar os objetivos propostos, dois textos, com características similares, foram elaborados e apresentados como hipertextos e como textos lineares. Quatro perguntas de pesquisa e quatro hipóteses foram criadas para essa investigação, e três diferentes instrumentos de coleta foram utilizados: (a) evocações das idéias principais, (b) questionários com perguntas de compreensão e (c) contradições. Além desses instrumentos de coleta, foi também utilizada uma versão do teste de leitura desenvolvido por Daneman e Carpenter (1980) e adaptado por Torres (2003), considerando-se a hipótese da relação direta entre a amplitude da memória e a performance em atividades envolvendo a compreensão (Tomitch, 2005; Torres, 2003, Engle, Kane, & Tuholsky, 1999; Daneman & Capernter, 1980). Quarenta e duas pessoas participaram do estudo: 21 brasileiros recrutados em duas universidades brasileiras (Universidade Federal de Santa Catarina e Universidade Estadual de Maringá) e 21

chineses recrutados na Inglaterra (Loughborough University). Os resultados obtidos sinalizam para o fato de que os hipertextos podem comprometer a compreensão, principalmente para os leitores de baixa amplitude de memória. Dados inesperados foram obtidos em relação aos chineses que apresentaram uma amplitude de memória inferior a dos brasileiros, conseqüentemente, apresentando um pior desempenho. A conclusão fundamental obtida nesse estudo é que diferentes variáveis tais como a capacidade de memória do leitor, sua língua materna, e o modo de apresentação de um texto podem influenciar na leitura em L2, e cada uma dessas varáveis pode interferir, de modo diferente, na construção da representação mental do texto.

Número de páginas: 182
Número de palavras: 45.961

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1

INTRODUCTION

Comprehension is a prerequisite for people to interact with the environment. In a series of experimental studies called “An Experimental Study of Some Problems of Perceiving and Imaging”, Bartlett in 1916 was already trying to explain the importance of what he called the “effort after meaning” (Bartlett, 2004, p. 56), that is, the effort people are always making to comprehend what they perceive in the external world.

Considering reading, it could be said that comprehension of texts involves not only the construction of a mental representation, but above all, it requires the construction of a coherent mental representation. Hence, coherence can be considered a critical component for comprehension. However, despite the innumerous attempts to conceptualize and describe coherence, due to its complexity, it is still a matter of continuous debate (Bublitz, Lenk & Ventola, 1997).

The process of constructing meaning is cyclical, starting with the processing of information embedded in words, sentences and paragraphs, undergoing to deeper stages where information captured from the text, together with the information already stored in readers’ long-term memory form the mental representation of the text. Hence, coherence is a mental process, and it occurs at different levels, that is, locally and globally.

Local coherence involves the processing and integration of words, sentences and paragraphs- it may be achieved when processing micro level information, or microprocessing. Global coherence involves the integration of the whole text- it may be attained while processing global information, or macroprocessing (van Dijk, 1997; Kintsch, 1998). Local and global coherence are not text-inherent characteristics given

that different factors such as readers' cognitive abilities, and the additional information brought by readers can affect their achievement. However, if, on the one hand, achieving coherence is an individual process, on the other, it should be at least partially, a joint process, taking into account that writers and readers should share some of the intended meaning proposed in the text. Hence, the way texts are rhetorically organized and structured may help them to attain this goal.

Despite the fact that research covering different aspects of reading has extensively been done for many years (Tomitch, 2003; Fontanini & Weissheimer, 2005; Torres, 2003; Fortkamp, 2000; Carrell, Devine & Eskey, 1998; Dillon & Richardson, 1990, Goodman, 1998, 1976, 1970; McKnight, Richardson & Dillon, 1989; Rumelhart, 1977, just to name a few), it is still possible to find some unresolved issues such as the effects of linearity/nonlinearity in text, and its effect for achieving coherence, and thus, comprehension. Non-linearity is the fundamental characteristic of hypertexts.

Hypertexts, contrary to linear texts, present information in a non-sequential order, encapsulated in nodes, which can be located in different places on computer screens. In order to achieve comprehension, readers need to select and integrate the appropriate nodes, forming a coherent network of information. To facilitate such process, hypertext writers design some facilities such as maps and menus, indicating the best paths to follow for integrating information; readers have the flexibility to make their own choices in terms of reading.

However, considering that the amount of information and nodes may vary in size, sometimes without clear illustration of how these nodes should be best interrelated, and interconnected, the flexibility in reading hypertexts can become a limiting factor for achieving comprehension. In other words, readers can get lost while selecting and integrating the nodes, missing important information necessary to identify the central

ideas in the texts they are reading, compromising their understanding (Charney, 1994; Reinking & Schreiner, 1985; Kieras, 1980)

During the past few years, computers have increasingly been used for conveying information; from light entertainment to scientific and pedagogic materials. In addition, different forms of written tests are commonly being applied via computers nowadays, in hypertext formats. This boost in the use of electronic environments as means not only to spread information, but to collect data as well, has stimulated many researchers to investigate and question comprehension resulting from reading electronic texts (Marcuschi, 2004; Melo, 2004; Oliveira, 2002; Hofman & Oostendorp, 1999; Perfetti, 1996; Dillon, 1996; McKnight 1996; Liestal, 1994, among many others).

In addition to the modes texts are organized, another crucial aspect that might affect comprehension is related to readers' cognitive abilities, for example, their working memory capacity. Working memory is a mechanism responsible for on line processing, and it plays a role in complex cognitive tasks such as language comprehension (Just & Carpenter, 1992). Individuals vary in their amount of working memory resources available for processing incoming information; therefore they will show a discrepancy in processing efficiency, and in performance (Baddeley & Logie, 1999; Turner & Engle 1989; Daneman & Tardiff, 1987; Daneman & Carpenter, 1980). Hence, taking into account that individuals have a limited capacity for processing information, it could be reasonable to state that the local organization of hypertexts might influence processing, and the achievement of coherence can become harder in this mode of text presentation, compared to linear texts.

Another important aspect related to working memory and reading comprehension is that whereas in L1 there are numerous investigations considering the relationship of these two factors, the same does not occur in L2 (Yoshida, 2000; Harrington & Sawyer,

1992). Hence, further investigation considering the relationship between readers' working memory capacity and L2 reading comprehension could help to clarify some of the phenomena occurring in this area, such as whether the mode of text presentation can affect comprehension, and why.

Hence, considering the aspects mentioned so far, it is possible to say that comprehension of a reading passage may result from the interplay of different variables (a) some intrinsic to readers' characteristics, such as their memory capacity, and (b) some inherent to the texts in question, such as the mode of text presentation. These two variables are interrelated, and directly influence each other in unpredictable ways, making this type of investigation a challenging one. In the next chapters of this study, the aspects briefly introduced here will be discussed in detail.

1.1 Statement of purpose

This study is based on the assumption that L2 hypertexts are more cognitively demanding than L2 linear texts for reading; hence, comprehension deriving for hypertexts can be, to different levels, more compromised. The main reason for assuming this standpoint resides in the facts that (a) working memory has limited resources from processing information, and (b) hypertexts require readers to appropriately choose, retain, and link information from different nodes. That is, readers have to keep track of information previously read, and coherently integrate it to the new incoming information, using the limited memory resources available they have. Additionally, while processing, some information can be missed, and as a consequence, constructing the gist can be affected.

In order to investigate comprehension deriving from the two modes of text presentation, and to verify the assumptions aforementioned, the following aspects were investigated in this study: (1) participants' working memory capacity, considering that working memory can influence comprehension; (2) the number of propositions each participant recalled after reading the texts, taking into account that the propositions recalled would represent the amount of information captured from the texts; (3) participants' performance in the comprehension questions proposed (multiple choice questionnaire), and (4) participants' detection of contradictions, considering that the contradictions would represent a break in coherence, and thus, in the construction of the gist, also reflecting their WM capacity (as it will be discussed in the next Chapter). In addition, ten self-evaluation questions were also provided to observe participants' awareness in relation to their own reading process, in both modes of text presentation.

Hence, this investigation was designed trying to scrutinize performance deriving from these two modes of text presentation to verify which are the possible differences between them, if any.

1.2 Research questions and hypotheses

The central question asked in this work is whether an L2 text presented in two different modes (as a hypertext or as a linear text) can compromise participants' performance in the activities proposed, indicating, therefore, different levels of understanding. This general research question was restated in the following four specific questions:

1) In which mode of text presentation, hypertext or linear text, do participants recall more propositions?
2) In which mode of text presentation, hypertext or linear text, do participants show higher performance in the comprehension questionnaire?
3) What was the relationship between participants' working memory capacity and their performance in the activities proposed in both the hypertexts and the linear texts?
4) In which mode of text presentation, hypertext or linear text, do participants notice more contradictions?

The four questions above were again restated into the following specific hypotheses:

1) Linear texts present information in a sequence, which is logically and chronologically organized. This characteristic, added to the fact that readers are more familiar with this type of text presentation, should benefit comprehension. Therefore, recalls of propositions are expected to be higher for the linear texts compared to hypertexts.
2) In this study, linear texts were assumed to facilitate reading because information seems to be more readily available for processing, integrating, and constructing the micro and macrostructures. Thus, scores in the multiple-choice questionnaire should be higher for linear texts when compared to the hypertexts.
3) There is a straight relationship between working memory capacity and performance, and this correlation is expected to be higher in hypertexts than in the linear texts, taking into account that they are expected to be more demanding for processing.

4) Considering that hypertexts present information in different nodes, which have to be properly selected and integrated, contradictions are expected to be more perceptible in the linear texts than in the hypertexts.

1.3 Significance of the study

A pre-requisite for gaining knowledge is to attain comprehension. In reading, in order to achieve comprehension, readers have to retrieve information from texts, and form a coherent mental representation of them. Even when mastered, reading imposes a high cognitive load on readers. In hypertexts, information is non-sequential and presented in different nodes on computer screens, as already stated. Thus, in order to form a logical mental representation of the subject matter, hypertext readers have to coherently keep track of the information, establishing the semantic relationship among the nodes.

Nowadays, considering the amount of information delivered through hypertexts, which range from simple entertainment material to all kinds of documents, including scientific and educational papers, it would be fundamental to ensure that the mode of text presentation could not compromise understanding. Important reasons for this elucidation reside on facts such as (a) many tests today are applied using hypertext formats (TOEFEL, and IELTS exams, for example), (b) profusion of L2 academic reading material being provided as hypertexts, and (c) the use of hypertext to convey information in long-distance undergraduate and graduate courses. Thus, empirical evidence showing whether there are differences in reading L2 texts in these two modes of presentation (linear texts and hypertexts) could provide important theoretical

foundation to the field. In addition, despite the fact that many researchers have tried to investigate comprehension resulting from hypertexts in L1, additional research is still needed to elucidate possible differences in reading hypertexts in L2.

1.4 Organization of the thesis

This dissertation comprises 4 more chapters in addition to the present one. Thus, Chapter 2 reviews the literature, discussing the issues that were considered essential to frame this investigation. Chapter 3 presents the methodology used in the present study, Chapter 4 shows the results and their discussion, and finally, Chapter 5 concludes this investigation with the final considerations, the limitations noticed, the suggestions for further research, and the pedagogical implications this work may have.

CHAPTER 2

REVIEW OF LITERATURE

This chapter is divided in three sections: (1) the first one is about human memory, with the focus on working memory; (2) the second section discusses important aspects on reading comprehension, and finally (3) the third section is concerned with linear texts and hypertexts. The review of the literature presented here tried to cover the aspects that were considered fundamental in each area discussed, and which were used to frame this investigation.

2.1 Working memory studies

The section on working memory comprises four subsections. It starts with a subsection discussing some of the most significant research on long-term and short-term memory, and explaining the possible relationship between these two systems. The next sub-section section presents a number of essential models on working memory, showing how these different models understand short-term memory and working memory. The third sub-section describes models that try to explain the connection between working memory capacity, and individuals' performance in everyday activities. Finally, the last sub-section provides several models that try to establish the connection between working memory capacity and individuals' performance in second language tasks.

2.1.1 Long-term and short-term memories.

Researchers in the area of human cognition have been trying to unravel some intriguing aspects related to comprehension, such as how incoming sensory information is captured and processed, how much information can be processed simultaneously, or even, what factors may contribute to the different forms of retention people may present. However, despite the fact that theories of human cognition have provided plausible explanations for many questions as the ones above, these issues are not completely understood and they seem to continue controversial, and thus, still questionable, as it will be discussed in the next pages.

Notwithstanding the fact that human memory has been the focus of scientific investigation for a little more than a century, with pioneers such as Wundt (1879), Ebbinghaus, (1879), James (1890), and Titchener (1892) trying to elucidate its functions, and mechanisms scientifically, as Searleman and Herrmann (1994) explain, non-scientific speculations about memory are as old as recorded history when philosophers already acknowledged its existence (Ashcraft, 1994). Thus, in 384 B.C. Aristotle, in his work called De Memoria, was already considering aspects related to learning and memory. Regardless of the fact that Aristotle's studies did not generate a theory on memory, according to modern standards of scientific investigation, some of his findings influenced researchers of the past century (Ashcraft, 1994).

As scientific investigation made headway, different characteristics of human memory started to be observed, and several theories were proposed as attempts to explain its functions, and structures. Among the aspects investigated, one of the most intricate aspect was to bring a plausible theory that could explain the mechanisms and processes involved in some simple everyday activities requiring processing, storing, and

retrieval of information. These mechanisms are mostly executed automatically; nevertheless, they seem to involve a complex integration of different systems. Hence, a variety of experiments were undertaken to elucidate these functions of memory.

During the 18th century, some investigations opened new horizons for theories on memory. Among these studies, a German scholar called Hermann Ebbinghaus (1885) conducted one of the most influential. Ebbinghaus was the first researcher to explore the relationship between practice and learning, as Baddeley (1999) explains. The investigation was on aspects related to the learning and the forgetting of artificial material, having himself as the only subject under investigation, and it was also done under rigorous laboratory conditions (Baddeley, 1999). Studying the relationship between learning and forgetting, Ebbinghaus wanted to verify if the amount of practice reflected the amount of learning, that is, if the relationship was linear or not. In order to achieve his aim, Ebbinghaus created new nonsense syllables (consonant-vowel-consonant), which could not lead to meaningful association, easier for remembering, and tried to memorize them. The experiment was done everyday, at the same time, and twenty-four hours later, after each new session, Ebbinghaus tested himself, measuring the recalled items from his memory.

According to Baddeley (1999), Ebbinghaus's (1885) experiments resulted in two different principles (a) one called the "total time hypothesis", which related learning to the amount of time practiced, an (b) another one called "distributed practice", that is, learning gradually, which stated that distributed practice led to better learning (p.73). The conclusions Ebbinghaus reached shed new light to the psychology field by showing the interconnection among the functions of memory, learning and forgetting, which were not known to earlier researchers. Of paramount importance, Ebbinghaus demonstrated the feasibility of studying the intrinsic phenomena of human memory

under laboratory experimental methods and conditions (Baddeley, 1990). However, if, on the one hand, Ebbinghaus demonstrated that experimental methods could bring good results under laboratory conditions, on the other hand, the results disregarded the complexity and richness of memory in everyday situations.

According to Ashcraft (1994), another influential work in the field trying to elucidate the essential mechanisms of human memory was done by William James (1918), Ebbinghaus's contemporary. James considered human memory divided into two parts: The first one called primary memory (PM), or short-term store, allowing rapid input and retrieval of information, but with a limited capacity for storing. In addition, primary memory would work at the conscious level, that is, it would allow the awareness of occurring facts (Andrade, 2001). Contrary to primary memory, secondary memory, or long-term store (LTS), as it was named, was considered to be larger, and it would not allow voluntary access. The long-term store was also seen as the "repository for past experience" (Ashcraft, 1994, p. 21). Despite James's significant claims about the possible division of memory, according to its functions, it was only around the 1960s that cognitive psychologists started to question this aspect more emphatically (Miller, 1956; Waugh & Norman, 1965; Tulving, 1966; Shallice & Warrington, 1970; Atkinson & Shiffrin, 1971, among others). However, it is important to keep in mind that the connection between primary memory and awareness, proposed by Ebbinghaus, was a characteristic kept on later models of short-term, and working memory (Engle, Kane & Tuholsky, 1999; Norman & Shallice, 1986; Baddeley & Hitch, 1974; among others).

In 1965, in a more evolutionary foundation than a revolutionary one, Waugh and Norman maintained the basic assumptions underlying James's (1918) hypothesis on memory (primary and secondary mechanisms), and proposed that primary memory was not constrained by temporal duration as initially suggested, but by the limitations of

items it could retain (Andrade, 2001). Therefore, according to these two researchers, the probability of recalling an item was directly related to the number of intervening items, and the stimuli could be represented either in primary or secondary memory, and rehearsal would transfer information from primary to secondary memory.

Following the fundamentals of the quantitative model developed by Waugh and Norman (1965), that is, memory capacity related to number of items, Atkinson and Shiffrin (1971) proposed a new model in memory, suggesting what they have called a short-term store; a "place" for storing temporary information. As the previous models, the short-term store would also have limited and temporary storage capacity; however, this mechanism would not only hold information but it would also act as a working memory, that is, it would, in addition, control information, as the researchers explain:

> Because consciousness is equated with the short-term store and because control processes are centered in and act through it, the short-term store is considered a *working memory*: A system in which decisions are made, problems are solved and information flow is directed (Atkinson & Shiffrin, 1971, p. 83) (stress added).

Thus, according to the definition, the short-term store would have multiple functions such as manipulating the cognitive input, processing, and controlling it. Moreover, according to Atkinson and Shiffrin (1968), information would first need to pass through different sensory buffers, simultaneously, and through rehearsal, it would go to long-term memory. The amount of rehearsal would be a facilitator for storage, as previously suggested by Waugh and Norman (1965). Despite the fact that Atkinson and Shiffrin suggested the term working memory, they were only referring to the way short-term memory would function, and not as a model, as farther researcher proposed, and as it will be later discussed (Badeley, 1999).

Atkinson and Shiffrin's (1968) model comprised three stages (a) a sensory memory; (b) a short-term store, and (c) a long-term store. The long-term store kept the most important characteristic initially proposed by James, that is, it would be unlimited in capacity, and retrieval would depend on different characteristics, such as encoding, and time of exposure. Yet again, despite the great contributions of Atkinson and Shiffrin's (1968) model to cognitive research, it had some limitations. Among them, the fact that it did not provide evidence that could account for patients with only short-term memory impairment who could still live a normal life (Baddeley, 1999), considering that the model proposed that all input should pass through the short-term store.

Hence, notwithstanding the fact that the two-store models of memory, as the one discussed previously, offered plausible explanations for some cognitive phenomena, these models started to be undermined by results obtained from neuropsychological studies, which showed that a unitary short-term memory could not be the only route leading to long-term memory (Andrade, 2001). In other words, taking into account that at the same time that some amnesic patients could show good ability to remember free recall lists (recency effect), they could also have great difficulty remembering what they ate for breakfast (Baddeley, 1999), this phenomenon corroborated the need for the existence of different systems acting in the operation of memory and comprehension.

More recently, a plethora of findings support the existence of different memory systems, executing different functions, as it can be found in the literature of human cognition, and as Baddeley (1990) describes:

1. Tasks such as free recall appeared to have separate long and short-term components.
2. Short-term store appeared to have a very limited storage capacity, but to have rapid input and retrieval from storage, where long-term store appeared to couple massive storage capacity with substantial limitations in the rate of input and retrieval.
3. Short-term store appeared to rely on acoustic or phonological coding while long-term store seemed to be more dependent on semantic codes.

> 4. Neuropsychological evidence suggested that long- and short-term stores could be separately and differentially impaired in different types of patients (p. 65).

Thus, further investigation on the cognitive aspects of human memory started to raise new considerations on aspects related to short-term memory, among them, whether it comprised subset systems responsible for performing different functions, or it should be regarded as a single construct with multiple roles. This subject is discussed in the next section.

2.1.2 Working memory research

Experimental psychology has devoted decades investigating and trying to explain the role of short-term memory in human cognition. As discussed in the previous section, short-term memory was firstly conceived as a passive unitary system, with limited capacity for storing and retrieving information (Tomitch, 2003; Engle & Oransky, 1999; Ashcraft, 1994; Baddeley, 1990, just to name a few researchers). In 1974, Baddeley and Hitch directly tested the hypothesis that short-term memory was a multicomponent system, not only responsible for storing information, but also for processing it, functioning as a working memory, as already suggested by Atkinson and Shiffrin (1968), although not tested as such at that time (Andrade, 2001). Thus, based on the assumption that, if short term-memory was one single limited capacity construct responsible for the execution of many different levels of cognitive demands, once overloaded, the concurrent task would be impaired, Baddeley and Hitch (1974) conducted an experiment on a concurrent task technique (reasoning or learning plus remembering). The conclusion these researchers obtained was that concurrent memory

load of up to six items impaired performance in reasoning, comprehension, and free recall. On the other hand, concurrent memory load of three items did not completely impair the three sorts of tasks. Furthermore, Baddeley and Hitch (1974) also discovered that phonemic similarity among input constrained both reasoning and comprehension, while articulatory suppression of stimulus items impaired only recall, and reasoning (Richardson, 1996). These results corroborated their claim that short-term memory could not be considered a single system, but it should be seen as a multiple system construct composed by a controlling central executive, and two subsidiary slave systems, according to these two researchers.

One of the subsidiary slave systems of working memory proposed by Baddeley and Hitch (1974) was initially called “phonemic loop” (p.77), and “phonemic rehearsal buffer” (p. 86). This system was involved in the brief maintenance and rehearsal of verbal stimuli. In a subsequent study, Baddeley, Thomson, and Buchanan (1975) changed the term phonemic rehearsal buffer to “articulatory rehearsal loop” (Richardson, 1996, p. 19). According to these researchers, this system could explain some phenomena such as the effects of articulatory suppression, word length, and neurological patients with selective deficits of verbal short-term memory (Richardson, 1996). More recently, Baddeley (1999) explained that the phonological loop, as it is called nowadays, helps in phonological long-term learning, as for example, in acquiring new words in both native and foreign languages (Baddeley, 1999).

An additional slave system developed by Baddeley and Hitch (1974), and supported by a subsequent study (Baddeley & Lieberman, 1980) was called the “visuo-spatial scratchpad” or “sketchpad” (Richardson, 1996, p. 21). This component of working memory was claimed to be responsible for the temporary retention of visual and spatial information. The sketchpad is supposed to be fed in two ways- directly

through visual perception, or indirectly when there is a generalization of a visual image, that is, when images are mentally generated, as Baddeley (1999) explains. The researchers also point to the fact that, contrary to the phonological loop, there has been less work on the role of the visuo-spatial sketchpad in everyday cognition.

The final component of the working memory system developed by Baddeley and Hitch (1974) was called the central executive. While the subsidiary systems of working memory, in the original Baddeley and Hitch's (1974) model, had clear defined functions, initially, the operation of the central component (central executive) was obscure in its role (Richardson, 1996). Hence, early versions on the roles of the central executive claimed that it served for both information processing, and information storing for the exceeding capacity of the phonemic buffers (Baddeley & Hitch, 1974; Baddeley, 1979; Hitch & Baddeley, 1977). As it will be discussed later, nowadays the models on working memory understand the central executive as a system responsible for processing information only.

As a processing model, the initial formulation of the central executive was firstly based on a theory developed by Norman and Shallice (1986), called the model of attention control. The reason for adopting the fundamentals of Norman and Shallice's (1986) model resided in the fact that their theory provided good account for explaining some phenomena occurring in the central executive in working memory, as Baddeley (1999) explains. Therefore, before discussing about the central executive, it is important to know more about Norman and Shallice's (1986) model.

The main objective of Norman and Shallice's (1986) model was to explain how, and why sometimes activities run out of peoples' control, leading to undesirable actions, such as going to work by car and after an intense working day, taking the bus to go back home, leaving the car in the car park. Hence, according to these researchers, this type of

behavior could be explained as a lapse of attention control, which in turn, resulted in the slip of the action described. Thus, attention control, and its consequence for human actions constituted one of the main interests in Norman and Shallice's (1986) investigations.

In order to achieve their aim, Norman and Shallice (1980-1986) started to observe peoples' mental lapses, occurring in everyday activities, as well as abnormal behaviors occurring in neuropsychological patients (Baddeley, 1999). Observations led these researchers to formulate the hypothesis that two separate components acted to control ongoing actions: the content scheduling and the Supervisor Attentional System (SAS).

According to Norman and Shallice (1980-1986), when executing habitual daily activities, it is possible to notice that some actions run automatically because they result from a well-learned skill, such as driving a car. Generally speaking, a person does not need controlled attention for the act of driving a car when he/she has already acquired procedural knowledge (automatic comprehension), which guides the actions, or performance. In this case, it could be said that, stimulus triggers only a single schema, and cognitive responses result from reflex. However, when two ongoing activities require the establishment of priority to one of them, the system needs to inhibit one of the actions, and to select the most appropriate one (schema) to be carried out. In other words, when several conflicting ongoing activities (schemas) are simultaneously activated the best schema needs to be activated. These processes occur through the contention scheduling (Norman & Shallice, 1980), which was considered a mechanism for action selection in their model.

The second component of Normal and Shallice's (1980) model, the supervisory attentional system (SAS), is "linked to the operation of will" as Baddeley (1999, p. 92) explains, and enables the complete interruption of an action in progress, and the

activation of weaker action schemas. These characteristics, deactivation and reactivation of different schemas, make it possible for a person to change habitual behaviors, and to learn new tasks (Andrade, 2001).

The central executive in the initial model developed by Baddeley and Hitch (1974) had dual-purpose characteristics- processing and storage mechanisms, encompassing all working memory functions which were not executed by the slave systems- the visuo-spatial sketchpad, and the phonological loop (Andrade, 2001). Hence, the central executive was seen as a limited-capacity system, responsible for actions such as reasoning, decision making, and for coordinating the functions of the slave systems (Richardson, 1996; Logie, 1995).

However, over time, the initial concept of the central executive suffered important reformulations; the storage characteristic was dismissed, and the role of attention came into focus, because as Baddeley (1981) explains,

> An adequate theory of the Central Executive would probably include not only a specification of its method of manipulating control processes and integrating the growing number of peripheral system, but would also require an understanding of selective attention and probably of the role and function of consciousness (p. 21).

Hence, in the updated version, Baddeley (1993) claimed that the central executive was an attentional system, functioning to coordinate information derived from the subsidiary systems, nevertheless, with no storage capacity, as it was firstly conceived (Baddeley, 1999; Baddeley, 1979; Hitch & Baddeley, 1977). Thus, the central executive evolved, as a theoretical concept, from a dual-purpose processing and storage system to a processing one, performing tasks such as strategy switching, selective attention, retrieval from long-term memory, and dual task co-ordination system (Baddeley, 1996). As it can be noticed, in the reformulation of the central executive Baddeley (1999)

brought the importance of the elucidation of the role of attention, essential for any theory on cognition.

The original model of a multicomponent working memory, as it could be noticed, was modified over the years. More recently, Baddeley (2000) proposed the "episodic buffer" (p. 09), the fourth component for the original model of working memory developed by Baddeley and Hitch (1974). According to Baddeley (2000), the episodic buffer is limited in capacity and storage, and the central executive can access it. The limitation of the episodic buffer resides in the fact that it provides simultaneous entrance to different codes, which in turn consumes working memory resources. The main characteristic of this buffer is its capacity for holding and *integrating* information from different sources such as the phonological loop, the visuouspatial sketchpad, and the long-term memory (the phonological loop and the visuouspatial sketchpad cannot integrate information). In addition, according to Baddeley (2000), the episodic buffer supports the idea that working memory is not simply the activated portion of long-term memory, as proposed by some models (Ericsson & Kintsch, 1995; Ericsson & Pennington, 1993; Ericsson & Delaney's 1999), although Baddeley (2000) admits certain relation between these two systems.

The fundamental importance of Baddeley and Hitch's (1974) model is that it was from their seminal work that working memory started to be considered a system capable of storing and manipulating information necessary for the accomplishment of some complex cognitive tasks such as reasoning and learning (Baddeley, 1992; Miyake & Shah, 1999, among others). Nowadays, different models and definitions of working memory can be found in the literature, among them, one which tried to encapsulate its basic functions was proposed by Miyake and Shah (1999). According to these researchers, working memory is a multi-component system, limited in its capacity, and

working for the service of complex cognitive tasks. These researchers also explain that working memory is not located in a fixed place or box in the brain, as initially conceived, and it is strictly linked to long-term memory (LTM). Furthermore, the currently activated long-term memory representations form the basis of working memory contents. The aforementioned aspects seem to encompass the most important characteristics of working memory that emerge as commonsensical among researchers. However, there still exist innumerous conflicting perspectives related to working memory issues, as it is possible to notice from the discussion that follows.

As an attempt to establish possible divergences, and to bring together commonalities on working memory views, Miyake and Shah (1999) raised eight questions, and gave them to different groups of researchers. These questions covered topics related to the functions and systems of working memory, and they can be considered to encompass the core of its construct, taking into account that they cover aspects related to the basic mechanisms and representations in working memory such as (a) its nature and limitations, (b) its role in complex cognitive activities, (c) its relationship to long-term memory, and (d) the role of previous knowledge among others. Considering that these aspects are of fundamental importance for studies on working memory, and thus, to this investigation, the result of their survey is presented next.

One of the central aspects, commonsensical among current researchers on working memory, and implicitly or explicitly stated in the survey answers, is that working memory is not a box in the mind, a metaphor firstly used to conceptualize it in the short-term models, as already said. The assumptions underlying this view is that (a) working memory is a system, not a place, and consequently, biologically speaking, (b) different parts of the brain are activated, and get involved to “produce the working

memory phenomena" (Miyake & Shah, 1999, p. 444). In addition, working memory is agreed to be a system related to the control and regulation of complex cognitive activities such as thinking, processing information, and reasoning, and not only a mechanism for pure memorization.

Thus, working memory is related to the control and regulation of peoples' cognitive actions. Nevertheless, these relations are explained through different perspectives among the models. Hence, for some researchers, the control mechanisms are directly bound to the control of attention (Baddeley & Loggie, 1999; Engle, Kane & Tuholski, 1999; Baddeley, 1996a), that is, to the amount of working memory resources devoted to execute an on line task. Awareness seems to be the key word in such models. For other researchers, control and regulation result from the interaction between production rules, and working memory contents. The assumption underlying this view is that working memory does not have specific control mechanisms (Kieras, Meyer, Mueller & Seymour, 1999). Thus, according to these models, cognition is a process in which several if- rules are compared to contents of memory (LTM), and if the current condition (the if- part) matches the information in memory, then the rule fires, and its actions (the then- part) are executed. These processes might change memory content, and then the cycle is repeated, and different rules are fired. The sequence of rules firings produces behavior and cognitive control (Kieras et al., 1999).

Similar to the production-system above, which does not postulate specific control mechanisms in working memory, some researchers claim that the control and regulation of working memory result from the exchange of information deriving from different subsystems, for example, the acoustic subsystem, the propositional subsystem, the visual subsystem, and the body state subsystem (Barnard, 1999; Schneider, 1999). Research in the cognitive area also brought new perspectives to the initial central

executive theory developed by Baddeley and Hitch (1974), in relation to its control and regulation functions, as already discussed. Nevertheless, the precise specification of how working memory perform these functions seem not to be completely known yet, as models bring different explanations to these functions.

Miyake and Shah (1999) also asked the researchers who participated in their research on working memory to explain which would be its limitations. Results indicate that working memory is a very limited capacity system, and different factors such as skills, strategies, background knowledge, and specification of tasks can constrain its limitations, in different ways and degrees, affecting processing efficiency. Therefore, working memory capacity may vary not only from the types of tasks proposed, but it may also vary according to individuals, and its limitations may reflect the interaction and interference of multiple systems (Miyake & Shah, 1999).

The relationship between long-term knowledge and working memory was also questioned among the researchers. According to the answers obtained, it is possible to conclude that models vary in the way they theorize the relationship between these two systems. Therefore, while in some models the difference is structural, that is, these two systems are separated, and serve different functions (Baddeley & Loggie, 1999; Schneider, 1999), other researchers consider working memory and long-term memory part of the same construct, that is, working memory represents the active part of long-term memory (Cowan, 1999; Engle Kane & Tuholsky, 1999). A third trend of researchers postulates that the relation between long-term and working memory is not in terms of its structures (distinct systems), nor in terms of its functions (continuity of flow of information), but rather, in terms of levels of processing. Accordingly, while the subsystems of working memory would be implicated in shallower levels of processing, long-term memory would be related to deeper ones. These models follow the original

Craik and Lockhart (1972) model, which established different levels of processing: the deeper the elaboration of the input, the better its recall.

Notwithstanding the fact that there are distinct standpoints in relation to the relationship between working memory and long-term memory in the literature, taking into account that aspects such as background knowledge, skills and strategy may affect individuals' performance in everyday activities, the straight relationship between these two systems cannot be denied.

Another important issue raised by Miyake and Shah (1999) was related to the basic mechanisms of working memory. Results indicated that it seems to be commonsensical among researchers that the basic mechanisms underlying working memory are: (a) encoding, (b) maintenance, and (c) retrieval (Kintsch, Healy, Hegarty, Pennington, & Salthouse, 1999, Miyake & Shah, 1999; Engle, Kane, Tuholsky, 1999, among many others). Nevertheless, the assumptions underlying these mechanisms vary in their account, according to different researchers, and their models. For example, for Engle, Kane, and Tuholski's theory (1999), encoding, as well as representations, do not have a fixed characteristic, but may be as varied as perceptions, emotions and thoughts. Maintenance is seen as related to the focus of attention, and information can be kept available in working memory by rehearsal. Attention, in Engle Kane and Tuholski's perspectives, follows Norman and Shallice's (1986) assumptions for the SAS, that is, it is basically related to the conscious control of input. Finally, Engle et al (1999) explain the mechanism of retrieval as being automatic or controlled, resulting from the spreading activation of information.

In another model, Ericsson and Kintsch (1995) proposed what they have called the long-term working memory (LT-WM). Their model derived from the observation of the use of cognitive expertise. According to their model, the long-term working memory

(LT-WM) allows the encoding, and subsequent retrieval of information from long-term memory. The efficiency in retrieving and storing information results from the acquisition of specific skills (memory skills), that "control the way information is encoded in long-term memory (LTM) and the way that selective access to the encoded information can be maintained" (Ericsson & Kintsch, 1995, in Ericsson & Delaney, 1999, p. 267). Despite some possible divergences, the fact that encoding information is mostly related to the proper activation of memory traces in long-term memory seem to be the strongest tendency among researchers, as Miyake and Shah (1999) explain.

When discussing about the nature, structure, and functions of working memory many controversies can still be depicted in the literature, as the outcome brought by Miyake and Shah's inquiries (1999) show. In addition, in the field of cognitive psychology, for example, different views regarding the relationship between short-term memory and working memory are still unsettled, because, if, on the one hand, a researcher claims that short-term memory "is often referred to a as concept quite similar to working memory" (Anderson, 1990 p. 150), on the other hand, it is still possible to find the claim that "working memory is a more complex construct than short-term memory, defined as the set of activated memory elements…" (Cowan, 1995, p. 100). While the first definition refers to short-term memory and working memory as being similar constructs, the second depicts them as separate subsets. Nevertheless, as already discussed, theories seem to agree that working memory is a dynamic system, not a fixed place, capable of storing and processing information, and with a very limited capacity available for processing and storing information (Miyake & Shah, 1999; Tomitch, 1996; Just & Carpenter, 1992 among others).

Another conflicting issue related to working memory is whether the capacity of the system is a task specific factor, that is, whether it varies from individual to

individual in the performance of some specific cognitive tasks, such as reading comprehension, or it is domain free remaining stable across tasks. Approaches using dual-task methodology[1] try to investigate and explain both the structures and functions of working memory.

Studies related to memory functions, which are more important for this work, attempt to establish the correlation between the individuals' working memory capacities and their performance on complex cognitive tasks such as reading comprehension (Tomitch, 2003; Fortkamp, 2000; Just & Carpenter, 1980-1994; Kintsch & van Dijk, 1978; Turner & Engle, 1989; Miyake, Just & Carpenter, 1994, among others). Thus, considering this approach (working memory/performance), processing and storage functions differ from individual to individual, and they can be considered performance constraining factors in activities such as reading comprehension, besides the text itself.

Based on the discussion provided above, in this study, working memory is understood as a limited capacity system, with extremely transient duration, responsible for processing on line information, varying its capacity from individual to individual and having a direct influence in the way information is stored, and retrieved.

In this section, some of the relevant theoretical background on short-term and working memory was provided to offer readers a framework to the next discussion, which focuses on a specific issue related to working memory, that is, the relationship between working memory and individuals' performance in cognitive tasks, one of the central aspects of this investigation.

[1] The dual-task methodology involves asking participants to hold sequence of numbers while also performing a reasoning learning, or comprehension task (Baddeley, 1990, p. 95).

2.1.3 The relationship between working memory capacity and individuals' performance in complex cognitive tasks

As already discussed, working memory is involved in complex cognitive activities. When reading, for example, readers have to execute different mental activities simultaneously. Thus, from the initial visual stimuli to the resulting mental representation of the text, readers have to use their memory resources effectively in order to process, store and retrieve information successfully. Nonetheless, these processes (processing, storing and retrieving) are not always automatic, that is, they require conscious processing, or controlled attention. The capacity to control attention varies from individual to individual, and it seems to have a straight relation to his/her performance in cognitive tasks.

A number of studies have tried to outline individuals' cognitive abilities, that is, how thinking occurs within the mechanisms of different memory systems. Among these investigations, one of the first attempts to measure an individual's short-term memory was developed by Joseph Jacobs when trying to investigate the mental capacity of one of his students (Jacobs, 1887, as cited in Baddeley, 1990, p. 22); it was called the Memory Span. This test consisted of presenting a subject with some items and asking him/her to repeat them back verbatim. However, the scope of this test was limited because, as Perfetti and Lesgold (1977) explain, this method of measuring the mental capacity does not reflect processing abilities.

Attempting to correlate the individual's trade-off between processing and storing capacities, Daneman and Carpenter (1980) developed the Reading Span Test- a working memory capacity measure. The assumption framing the reading span test is that it measures the efficiency with which readers can comprehend sentences and hence store

them in long-term memory" (Baddeley, 1998, p. 239). This test requires readers to process and store sentences for comprehension, and an additional task of maintaining and retrieving the last word of a given set of sentences. The test was constructed with sixty unrelated sentences, thirteen to sixteen words in length, and each sentence had a different ending. For example:

> When at last his eyes opened, there was no gleam of triumph, no shade of anger.
>
> The taxi turned up Michigan Avenue where they had a clear view of the lake (p. 453).

Therefore, in the example above, participants should have to read aloud the sentences, trying to memorize the final words of each sentence (anger, and lake), for further recall. Subjects who scored more than four items were classified as high-spans, and they were assumed to be superior at comprehension, performing the activities proposed better than lower spans subjects (Just & Carpenter, 1992).

Results from the reading span test led Daneman and Carpenter (1980) to raise the assumption that while processing a sentence readers make the same cognitive computations; nonetheless, differences in comprehension are due to the speed and efficacy by which mental resources are utilized. Thus, considering the working memory span tests, speed and efficacy of processing are crucial aspects taking into account that the faster and the more accurately readers process the sentences, the more time they will have to rehearse the to-be-remembered final words. Low-span readers seem not to be able to utilize these resources efficiently.

Despite the influential work of Daneman and Carpenter (1980; 1983) their approach was claimed to be specific to tasks involving reading. Opposing to what was considered a memory task-specific view, Turner and Engle (1989) proposed the

operation-word span test. The operation-word span test comprises mostly the same basic procedures of the reading span test, that is, a processing and a storing function. However, mathematical operations are used instead of words, and the most important characteristic of this test is that it is claimed to be a general memory capacity predictor.

The operation-word span test consists of a task in which subjects solve a string of arithmetic operations and afterwards read aloud a word that follows the string. After a series of such operation-word strings, participants recall the words. For example:

(4 x 2)- 5 = 7 BALL
(6 / 3) + 3= 5 CAR

Turner and Engle (1989) called their measure of working memory the general-capacity view because they assumed the correlation to account for any complex cognitive tasks. In addition, and more recently, Engle and Conway (1998) disputed the view of the reading span test as being task specific, claiming that this test, similar to the operation-word span test, also reflects the “domain-free attentional resources” (p. 83) of working memory. This point was also corroborated by Engle, Kane and Tuholski (1999), who explained that the importance of the span tests rely on the fact that the “measures of working memory capacity reliably predict performance in a wide variety of real-world cognitive tasks” (p.103).

Despite the fact that Engle, Cantor and Carullo (1992) emphasized the unitary nature of working memory, that is, domain-general aspects of working memory, in opposition to a domain-specific view, that is, domain-specific codes or representation in working memory (Miyake & Shah, 1999), more recently Engle, Kane and Tuholski (1999), admit that “in truth, however, the working memory/attention system is probably neither entirely unitary nor entirely separable into domain-specific systems” (p.125). As

it can be noticed, this aspect is not completely understood nor explained in the literature.

Another important issue in relation to the span tests is to identify what they reflect. It seems to be consistent among researchers that complex cognitive tasks such as the reading span test, or the operation-word span test reflect the operation of different systems, producing cognitive processing and behavior. However, there is a distinction made by the theories in relation to how complex cognitive activities are executed as explained by Kintsch, Healey, Heagarty and Salthouse (1999). For example, in Engle, Kane and Tuholski's (1999) model, the interplay, and coordination between short-term memory (STM), and controlled attention (in opposition to automatic response) generate cognitive behavior. Other researchers explain that performance, such as in the span tasks, results from the coordination of the slave systems and the central executive in working memory (Daneman & Carpenter, 1980; Baddeley & Logie, 1999).

Most of the research relating individual's working memory capacity, and performance was done considering individuals' first language. In the next sub-section, some of the investigation relating individual's working memory capacity and performance in the second language will be presented.

2.1.4 Working memory capacity and individuals' performance in L2

While there is a profusion of studies relating working memory with performance in L1 (Daneman & Carpenter, 1980; Just & Carpenter, 1992; Cantor & Engle, 1993, among others), few investigations have tried to establish such correlation in L2, as explained by Harrington and Sawyer (1992). Among them, it is possible to find Torres

(2003), Fortkamp (2000), Berquist (1997) and Harrington and Sawyer (1992). Thus, one of the paramount questions postulated in relation to working memory capacity and L1 performance, and still controversial, could also be posed here in relation to working memory capacity and L2 performance: What are the sources of working memory limitations in an L2 reading activity? Are they related *to* information decay (Baddeley & Logie, 1999), or to the efficiency of controlled attention (Engle et al., 1999)? Are they related to the lack of skill or knowledge for efficient encoding and retrieval (Ericsson & Delaney, 1999), or even to the lack of inhibitory control (Engle et al., 1999)? In addition, it could be asked, may L2 proficiency be considered a decisive factor for processing efficiency? It could be hypothesized here that, it is the interplay of some of these different aspects that act upon performance in an L2 reading activity. Nevertheless, these questions, which may characterize the sources of working memory limitations, are brought here only for reflection given that they may represent, in different degrees, the sources of working memory limitations, in both L1 and L2, and they still represent unresolved issues in the literature. However, some studies examining the relationship between working memory capacity and L2 performance have already concluded that:

a) Proficiency among individuals was related to processing efficiency, that is, to the way information was processed and encoded (Berquist, 1997).

b) The reading span tests in L2 correlated strongly with L2 performance (Harrington & Sawyer, 1992; Yoshida, 2000).

c) L2 word/digit span tests did not correlate significantly with L2 reading performance (Harrington & Sawyer, 1992).

d) L2 WM capacity was lower than in L1 in all subjects, including the ones with advanced L2 levels (Berquist, 1997).

e) When constructing main ideas in L2, high span readers tend to act more strategically- prior knowledge is applied effectively as a means to overcome difficulties lessening the burden on working memory (Torres, 2003).

As it can be inferred from the results of the aforesaid investigations, L2 working memory span tests revealed to be a good predictor of L2 proficiency, despite the fact that the same subject may have a diverse span in his/her L1. These assumptions support the important fact that higher working memory capacity individuals in L2, contrary to the low-span ones, may also present superior performance at any reading task proposed.

This chapter offered some of the relevant theories on working memory, which were used as the framework for this investigation. Thus, according to the discussion provided, it is possible to state that different levels of comprehension result not only from text characteristics, but, in addition, it seems to have a straight relationship to the individuals' cognitive abilities, for example, to their working memory capacity.

Another aspect discussed in this chapter was that while there is substantial research considering different aspects of L1 reading, and working memory, related investigation of L2 reading is still required. Moreover, it still remains scarce research in L2 examining the potential effects of different modes of text presentation such as hypertext and linear text, taking into account individuals' working memory capacities as one of the possible variables for imposing constraint to comprehension.

Thus, the aim of this work was to investigate L2 reading comprehension resulting from two different modes of text presentation- a hypertext, and a linear text, also taking into account participants' working memory capacity as an additional crucial variable to explain their performance.

The first section provided an overview on studies showing how different models understand and explain the basis of human memory, focusing mainly on working

memory. In the next section, some of the important aspects related to reading comprehension are presented.

2.2 Reading comprehension: Coherence and the local and global organization in texts

Comprehension involves building a mental representation of the information being processed. When reading, different variables may hamper the construction of mental representations, among them coherence is one of the major factors. During the last two decades, the concept of coherence was less associated to cohesion, a text characteristic, to focus on the readers' performance, and cognition (Bublitz, 1997). Thus, according to Hoey (1991), coherence is "*a quality assigned to a text by a reader* or listener, and is a measure of the extent to which the reader or listener finds that the text holds together and makes sense as unity…" (p. 266) (stress added). Lehman and Schraw (2002) understand coherence as "the extent to which the text segments are linked structurally to themselves and information in memory" (p. 738). Coherence is also seen as "how the meaning of sentences- that is, propositions "hang together" (van Dijk, 1997, p. 09). Aligned with these definitions, in this work coherence is understood as a mental process, in which information coming from a text is logically interrelated and organized, resulting in the construction of a consistent mental representation. It is also assumed here that, although coherence varies from readers to readings, ideal comprehension would be that shared by the reader and the writer's intended meaning.

The process of constructing meaning is cyclical, starting with a shallow processing at the textbase level, and undergoing into deeper stages involving not only

textual information but also the readers' background knowledge (Van Dijk, 1997; Just & Carpenter, 1992; van Dijk & Kintsch. 1983). Thus, in order to comprehend a text, readers have to orchestrate (coordinate) information, integrating it from different sources. This process occurs under the constraint of a limited working memory capacity.

Thus, when writers make their ideas more explicit, and organize the information cohesively, they may help readers to achieve coherence more easily. Cohesion, differently from coherence, is basically a text characteristic; differently from coherence, which is a mental process, it is a visible one considering that words provide it, and it can be defined as "the way certain words or grammatical features of a sentence can connect that sentence to its predecessor (and successor) in a text" (Hoey, 1991, p.03). Cohesion, mainly in long and difficult texts, may be an important element because it enables readers to link the web of information faster and smoother, and as a result, it may assist readers in achieving comprehension by facilitating the integration of information while processing it.

Nevertheless, cohesive features (such as reference for example) may have effect only at the surface level of the discourse, and their efficacy may be partial and specific, that is, varying from reader to reader, according to their skills, language proficiency and knowledge of the world (Urquhart & Weir, 1998). Thus, different views can be found in the literature related to the benefits of using connectives. Hence, at the same time that some researchers emphasize the importance of connectives for facilitating coherence (Sinatra & Loxterman, 1991; Lorch, 1977; Halliday & Hasan 1976; Britton, Glynn, Meyer & Penland, 1982), others place a reduced amount of importance on them (van Dijk 1977; Loman & Meyer, 1983 among others). Thus, the integrative benefits of connectors may still need more research to be conclusive.

Nevertheless, and as already said, considering that the process of constructing meaning is cyclical starting with a superficial processing of the grammatical and lexical features for the extraction of the ideas that come directly from the texts (van Dijk, 1997), it would be reasonable to think that the more cohesive the writers make the texts, the less constraints the information would cause for processing, facilitating reading, coherence, and thus, comprehension.

According to Tapiero and Otero (1999), the process of constructing a mental representation involves three levels: (1) the very surface level where readers recognize the exact wording and syntax of the text, (2) the level where readers are able to locally construct a coherent textbase with the integration of local information, and (3) the deeper level where readers are able to construct a coherent mental representation of the text, integrating information derived from different sources (Lehman & Schraw, 2002; Tapiero & Otero, 1999; Graesser, Bertus, & Magliano, 1995; Kintsch and van Dijk, 1978). Hence, at the very local level, processing and comprehending a text can be compromised if readers are not familiar with the vocabulary, or the syntax used in the text. In fact, L2 readers, and low-span subjects can be affected by reading complex texts.

The constraints for understanding a reading passage can occur at both local and global levels in texts (Hofman & Oostendorp, 1999; Dee-Lucas & Larkin, 1995). Local coherence occurs when readers, processing the texts, integrate words, phrases and sentences currently read, and kept in working memory, with the immediately preceding context (Kintsch, 1998; Lorch & O´Brien 1995). Writers can facilitate the achievement of local coherence by, for example, using argument overlap, or clearly establishing the relationship among sentences (Murray, 1995). They can also use cohesive elements

such as conjunctions, references, and ellipsis, which make the text clearer (Murray, 1995; Goldman & Murray, 1992).

All the previous text features and mechanisms play different roles at the surface level of the text, indicating the suitable connections among the textual elements readers should observe in order to facilitate words, sentences, and paragraph level integration. Such linking may speed up reading, mainly in long texts, decreasing the need for the production of inferences, which are working memory resource consuming (Keenan & Kintsch, 1974). When achieving local coherence readers are able to produce referential and causal links more easily, which, in turn, may facilitate the construction of global coherence (Kintsch, 1998; Campbell, 1995).

Global coherence results from the integration of information extracted from the text, and the readers' background knowledge, creating a broader context for the text. In this case, readers generate what is called the situation model, or the mental representation of the text (Just & Carpenter, 1987; van Dijk & Kintsch, 1983; Johnson-Laird, 1983). Hence, creating a coherent mental representation involves the reconstruction of the information captured from the text, and the information stored in long term memory, creating a related consistent sequence of ideas and events.

Thus, while local processing involves matching information currently being processed, global processing involves connecting information from prior cycles, which is not activated anymore. However, in both cases, readers have to keep information available in their working memories for further integration, which is working memory resources consuming.

Considering the structure of hypertexts, attaining coherence may be more demanding, taking into consideration that readers have to localize not only the information to link, but also the nodes in which the appropriate information is rooted in

order to link it. Thus, in this case, coherence may be harder to accomplish, mainly for low-span readers who have less attentional resources for executing this task.

In this sub-section a discussion about coherence in texts was presented; in the next one, the focus is on the role of coherence for reading hypertexts.

2.2.1 The local and global organization in texts-- the role of coherence in hypertexts and linear texts

As already discussed, coherence is fundamental for understanding. Unlike linear texts, hypertexts present information in different nodes, which can cause a break in the flow of reading, compromising coherence at both local and global levels. In hypertexts, readers navigate through different nodes, linking them to construct the gist. However, inappropriate linking could result in unsuitable connections causing the interruption of the preceding flow of ideas, thoughts or concepts. In this case, comprehension could be compromised.

While writers of linear texts establish cohesion by making words and sentences run together through common referents, enabling readers to construct cohesion and local and global coherence (Foltz, 1992), in hypertext documents cohesion is given within each node, making possible the achievement of local cohesion and coherence. Nevertheless, in order to help in the attainment of global coherence hypertext writers use, for example, maps and node titles to make explicit which paths should be followed for better information integration (Hofman & Oostendorp, 1999; Dee-Lucas & Larking 1995; McKnight, Dillon & Richardson, 1993).

The importance of text coherence for processing has been shown by a number of experiments. McNamara, Kintsch, Songer and Kintsch (1996) conducted two

experiments using linear texts, investigating the role of text coherence in the comprehension of scientific texts. The aim of the first study was to observe the impact of improving text cohesion. Three versions of the same text were provided: (a) an original text with cohesively interrelated sentences; (b) a revised version with macro signals illustrating the underlying structure of the text; (c) an expanded version that included explanatory details that could supply the lack of readers' background knowledge. Participants were thirty-six middle school students. Results showed that the subjects who read the more coherent, revised version of the original text performed better in the activities of free recall, answering to written questions, and a keyword sorting task.

In the second experiment conducted by McNamara et al., (1996), the interplay between readers' background knowledge, and the local and global coherence in a text was investigated. This time, four versions of a text were used as stimuli (a) the first text, containing maximum coherence at both local and global levels, (b) the second, presenting highest coherence at the surface level, but minimal coherence at a global level, (c) the third, showing high coherence at the global level, but low coherence at the local level, and finally (d) the four the text, presenting low coherence at both local and global levels. Participants were fifty-six middle school students. Results showed that subjects with little background knowledge in the area under discussion benefited more from the coherent text versions.

Foltz (1992) investigated the role of coherence in both linear texts and hypertexts. Seventy-three undergraduate students participated in the experiment reading a linear text, and two versions of a hypertext: A coherent one, and another hypertext lacking coherence. These texts were on economics. Half of the participants read the chapter for a general goal and the other half read it for a specific goal. After reading the texts,

participants had to answer comprehension questions, and write an essay. Results from this investigation showed that the more consistently the text was read and perceived, the greater the number of propositions remembered, and the better the written essay.

The entire outcome obtained, according to Foltz (1992), shows that coherence is an important aspect of comprehension, mainly when readers have to read complex materials. However, despite the importance of coherence for processing/comprehension, Foltz (1996) explains that "in the development of hypertext, the coherence between linked nodes is not often considered" (Foltz, 1996, p.16), which may affect reading, and thus, comprehension.

Empirical studies, as the ones aforesaid, show the importance of coherence at both local and global levels. Integration of information can be facilitated when texts present a logical, chronological or syntactic order, enabling readers to integrate the contents of different parts of the text, building a coherent mental representation more easily and effortlessly. Less proficient readers will benefit more from a well-structured hypertext.

The discussion of coherence, as seen previously, can become even more complex considering the nature of hypertexts where information can be mostly randomly accessed. In hypertexts where information is not carefully conveyed, that is, with textual features pointing to possible links, or which are not hierarchically organized, for example, a break in the flow of reading may occur, constraining readers' achievement of coherence. This aspect, in turn, may compromise comprehension, and the construction of a coherent mental representation. Lack of coherence can be more critical for low-span readers who have less memory resources for dealing with incoming information.

In order to lessen the constraints for processing hypertext writers can signal, throughout the text, how ideas are interconnected in different nodes. This organization

may enable readers to predict what the text will include, how it will be organized, and how the relationships among ideas are made, facilitating processing. Thus, at the local level, coherence can be facilitated by the use of heading and logical connectives, for example. These two structural markers may help readers to identify the main ideas and help them to integrate different nodes suitably.

Headings are typographical cues used in both linear texts and hypertexts. In hypertexts, however, headings are more salient serving as recall prompts (Dee-Lucas & Larking, 1995), at both local and global levels. Local headings are used to introduce the topic of a node, and global headings are applied to facilitate the identification of the content of the text as a whole. Considering that information in hypertexts is spread in different locations on a screen, these two types of text-base techniques may facilitate the processing of important information within the text.

In order to confirm the importance of headings, Lacroix (1999) conducted one experiment testing the effects of headings on macrostructure construction and organization. Eight participants read hypertexts presented in different conditions- four with headings and four without headings, and were asked to write a summary and prepare a report outline. Results indicated that participants who read the hypertexts with local and global headings performed better in the activity, recalling more important facts in their summaries.

Logical connectives, in the same line as headings, are used to organize information and to facilitate processing at the surface level of texts. Often, logical connectives are conjunctions (e.g. and, but, however, in addition), and their main function is to signal the intersentential relations (Murray, 1995). According to Kintsch (1990), connectives are also important for facilitating the construction of a coherent mental representation.

However, the use of logical connectives is more restricted in hypertexts (Keep & McLaughlin, 1995), that is, they are used to interconnect sentences within a node, but not to signal the connections among different nodes. For example, a node in a hypertext cannot start with the connective “however”, as this paragraph did, because writers do not know which links readers will make while reading.

Despite the controversial standpoints about the integrative benefits of the logical connectives in the literature, it can be hypothesized that in hypertexts the achievement of local coherence, and consequently global coherence, might be somehow compromised due to the lack of such local cues (Hunter, 1995).

Besides the possible effects of local cues for preventing coherence breaks, disruption in coherence can also occur due to, for example, the statement of contradictory information. Contradictions can be harder to notice in hypertexts because they may be presented spaced out in different nodes. Considering that readers need to have both contradicting pieces of formation available in working memory to be able to notice them (Kamas & Reder, 1995), locating contradictions in different nodes could be a constraint for processing, essentially considering low-span L2 readers. This subject is the topic of the next sub-section.

In this work, coherence is considered one of the central issues for three main reasons (a) it enables the exploration of readers’ levels of comprehension, that is, the resulting mental representations readers constructed after reading the texts (hypertext and linear text), (b) it makes possible for some readers to detect the contradictions while reading the two texts, and (c) considering that coherence in hypertexts was not a central issue of investigation until recently (Fritz, 1999), it is a subject worth scrutinizing.

2.2.2 Linearity and contradictions as structural aspects in constructing meaning in texts and from texts

While processing a text, readers can construct their mental representations from two different sources: the propositions that are directly extracted from the text, generating what is called the textbase representations, and the information they have already encoded in their long-term memory, called the situation model. Different modes of text presentation and text content may influence processing, and thus, the way readers construct their mental representation.

One of the crucial points when discussing about hypertexts is the issue of linearity and its effects on processing. As already discussed, hypertexts, contrary to linear texts, present information set in different nodes, which may be located in different parts on a computer screen. In order to construct the textbase, and the situation model of a hypertext, readers have to link the information embedded in each node accurately to form a coherent mental representation. Such a process may be demanding for different reasons, some deriving from the readers' part, and some from the hypertext itself.

According to some researchers, hypertext readers may have difficulty in processing hypertexts due to aspects such as (a) limitations of working memory capacity, (b) lack of background knowledge, (c) lack of proficiency in the L2 language, and (d) lack of goals and interest, among others. Hypertexts may be constraining due to characteristics such as (a) the electronic environment itself (Dillon, 1992; McKnight, Dillon & Richardson, (b) the effects of linearity for processing, and (c) the hypertext organization (Marcuschi, 2001; Dee-Lucas, 1996; Dee-Lucas & Larking, 1995, Hoffman & Oostendorp, 1999, among others). The aspect of linearity is one of the most debatable in the literature in relation to hypertexts, and its effects for processing is still controversial, as the next paragraphs will show.

Texts are written to convey meaning, and the surface structure of a text may facilitate, to different degrees, the way this meaning is achieved (Alderson, 2000; Lacroix, 1999, Dee-Lucas, 1996; Kintsch & van Dijk, 1978, among others), mainly when considering the limitations of working memory capacity for processing new information. According to some researchers, one feature that may facilitate text integration is linearity (Rouet, Levonen, Dillon, & Spiro, 1996; Dee-Lucas, 1996; Beaugrande, 1984).

Linearity can be described as the relation each word establishes between its predecessor and its successor (Waller, 1991). Givón (1990) explains the principle of linearity saying that "the order of clauses in coherent discourse will tend to correspond to the temporal order of the occurrence of the depicted event" (p. 971), and, in addition, he claims that the principle of linearity "is reflected in the strong tendency to place the subordinate clause that codes the cause before the one that codes the effect, and the one that codes the condition before the one that codes its entailment" (p. 971). In another standpoint, De Beaugrande (1980) claims that, "linearity reflects the organization of the language modalities of speech and writing, rather than one-by-one mental process" (p. 104).

Thus, according to the definitions above, linearity is related to the surface level of texts, that is, to the straightforward sequence of interrelated words, phrases, paragraphs writers use to convey their ideas. However, it is crucial to remember that ideas entail more than just the surface level of a text, and in this sense, linearity is defined here as the logical and chronological sequence by which writers establish the occurrence of ideas and events, following a straightforward order of words, sentences, and paragraphs.

Linearity is used to facilitate processing, and despite the fact that cognitive processes do not occur in a linear manner, in order for the input to cohere, ideas have to

attain a certain stability (Kintsch, 1998), which I call linearity. However, as with textual markers discussed previously, the extent to which the linear flow of information facilitates text processing and comprehension is still very controversial given that different factors, besides linearity, interfere and influence in the construction of a mental representation.

Hypertexts are "conventionally described *as non-linear*" (Whalley, 1993, p. 07) (stress added). Thus, in hypertexts information is disrupted, that is, it is presented in different nodes, forming a web. This characteristic, that at the same time promotes more flexibility and appeal to the act of reading may also impose a burden on working memory, disrupting the flow of processing, and thus the construction of a coherent mental representation. As a result, some important information, or even contradictory statements can become unnoticed. But what are contradictions? What are the effects of contradictions for processing? These important questions are discussed in the next paragraphs.

According to the Macmillan English Dictionary "a contradiction is a difference in two or more statements, ideas, stories etc that makes it impossible for both or all of them to be true" (p. 302). The use of contradictions may cause a break in both local and global coherence, distorting comprehension (Kamas & Reder, 1995). However, contradictions are sometimes very hard to notice because, as van den Broek, Young and Tzeng (1999) explain, noticing them requires readers to keep the two pieces of incompatible information activated simultaneously. Considering the limitations of the attentional resources available in working memory for processing and storing, such process can be even more demanding, and challenging for low-span L2 readers.

Attempting to explain how information is processed, van den Broek, Young and Tzeng (1999) state that a proposition, or a concept is processed in cycles, and may vary

in its levels of activation. These levels of activations fluctuate according to four sources: (1) the text which is currently processed; (2) the information which is carried over from immediately preceding reading cycles; (3) the reactivation of concepts already stored in earlier cycles, and (4) the readers' background knowledge (van den Broek et al., 1999).

Considering the discussion above, in order for a contradiction to be detected it has to be reactivated from prior processing cycles, and "the more strongly the earlier information is represented in memory (i.e., the greater its node and connection strengths), the more likely it is to be retrieved at a later cycle" (van den Broek et al., 1999, p. 87). However, different factors determine which information is more strongly represented in memory, among them it is possible to find: (a) the text itself, that is, the way information is presented; (b) the readers' working memory span, and (c) the readers' background knowledge. The more effectively concepts are connected and stored in working memory, the easier the reactivation of the conflicting pieces of information.

Readers need to update their mental representations when contradictions are detected. They can do it by means of suppressing or inhibiting the erroneous information, or by keeping it in the mental representation (van den Broek, 1999; Borek, P.; Young, M.; Tzeng, Y., 1999). Keeping the erroneous information in the mental representation will lead readers to construct an incoherent mental representation. Nevertheless, perceiving contradictions can be more demanding, for example, if information is presented in long texts, in different segments of the text far apart from each other, and if readers are low-spans.

In hypertexts, contrary to linear texts, contradictions can be presented in different nodes, which may disrupt the flow of reading. In this case, the detection of contradictions could be compromised for three different reasons (1) considering the

limitations of working memory capacity for processing information, (2) taking into account that "in order to detect a contradiction within a passage, *both contradictory propositions must be part of working memory at the same time*" (Kamas & Reder, 1995, p. 186), (stress added), (3) bearing in mind that navigating through different nodes can also represent a constraint for processing. For these reasons, it could be hypothesized that detecting contradictions in hypertexts is harder than in linear texts, especially for low-span L2 readers

In order to understand the phenomena which trigger comprehension, such as the detection of contradictions, for example, researchers have been seeking for answers investigating different aspects of the reading process; from texts to readers, different models of reading have been trying to scrutinize which are the determinant factors for processing that lead readers to understand a text. This is the subject of the next section.

2.2.3 Models of text comprehension- Kintsch and van Dijk's model

The relationship between textual elements, as well as readers' cognitive characteristics have been the central point of numerous investigations attempting to understand and explain which factors are involved in the reading comprehension process, and how they interrelate helping or affecting processing at both local and global levels (Kintsch 1998; Albrech & O'Brien, 1995; Zwaan & Brown, 1996; Kintsch, 1983; Perfetti, 1985; van Dijk & Kintsch, 1983, just to name some).

Three generations of cognitive research in text comprehension have tried to explain how readers construct a memory representation from the text they read, focusing on different perspectives. The first generation had two lines of research- the

first one was more concerned with top-down processes, and the second line with bottom-up processes. Thus, the focus of the first line of research (top-down) was to determine the nature of the memory representations resulting from reading (Mandle & Johnson, 1977; Stein & Glenn, 1979, among others). Hence, investigation was related to the role of text features in the overall structure of the text, and their influence on recall. In the second line of research (bottom-up), the examination was associated with the effects each textual feature played in the maintenance of coherence. According to van den Broek, Young and Tzeng (1999), models focusing on bottom-up effects enlighten that readers try to construct their mental representation in terms of coherent referential (Kintsch, 1988; Kintsch & van Dijk, 1978,) and causal structure (Trabasso, Secco & van den Broek, 1984; Graesser & Clark, 1985). In this first generation of research, the central point was the product of reading.

The second generation of cognitive research changed the focus from the product to the process of reading, with methodologies such as eye-tracking techniques helping to measure online activities and activation (Broek, Young & Tzeng, 1999). Researchers from this generation tried to explain how readers read, that is, how comprehension is achieved while readers proceed thorough a text (van den Broek, 1990; Kintsch, 1988; Fletcher & Bloomm, 1988, among others).

Finally, the third generation attempted to understand the relation between comprehension processes and memory representations (van den Broek, Young & Tzeng, 1999). Researchers from this trend attempted to explain how readers develop and update their mental representations, considering online and offline aspects of reading (Goldman & Varma 1995; Risden, Fletcher & Thurlow, 1996, among others).

Among these different lines of research present above, the present study tends to draw upon the model of text comprehension developed by Kintsch and van Dijk (1978),

van Dijk and Kintsch (1983), and Kintsch (1998). The reasons for using their model are the following: (I) knowledge in text can be organized logically, and this logic can be established by means of propositions. Propositional representations, as Kintsch (1998) explains, “are helpful for describing the semantic characteristics of experimental texts, and they are useful for scoring recall and other data from experimental subjects” (p. 73), (II) Kintsch and van Dijk’s model is also relevant for establishing and understanding the construction of the situation model and the textbase readers construct.

In this study, participants will read a hypertext and a linear text, only once, and will have to do a recall of what they have read, among other written activities. Considering that propositions form webs of knowledge representation, scoring them and investigating their use will allow the visualization of how participants constructed their textbase and their situation models, in the two modes of text presentation (hypertext and linear texts). Finally, (III) Kintsch and van Dijk have used expository texts in many investigations to obtain their data, the same stimuli which will be used in this work.

2.2.4. A propositional representation- Kintsch and van Dijk’s model

It has been discussed so far that comprehension results from different sources, some derived from the texts, and some intrinsic to the readers’ characteristics. For investigating both the local and the global level of discourse, that is, the text base and the situation model, one of the most influential work is proposed by Kintsch and van Dijk (1978), van Dijk and Kintsch (1983), and Kintsch (1998). According to these researchers’ model, the basic units of analysis for investigating text comprehension are

called "propositions"[1], which are considered to be the "semantic processing units of the mind" (Kintsch, 1998, p. 69).

According to van Dijk and Kintsch (1983), propositions result from the interconnection among verbs, adjectives, adverbs, and sentence connectives being mostly traceable elements, that is, they explicitly show how features of a text are related. The result of such organization is a hierarchically organized textual structure, which facilitates processing and the “associations among concepts” (Anderson, 1990, p. 219). Propositions can be distinguished as “micropropositions" and "macropropositions".

Micropropositions are units used to organize the writers' ideas. They form the text base or local level of the discourse, also known as microstructure. Nevertheless, the microstructure not only enables us to verify how the local semantic structure is constructed, but when scrutinized, it may also explain how readers have achieved comprehension.

When readers organize and hierarchically relate the propositions available in the microstructure, they form the macrostructure, or the overall organization of a text (Kintsch, 1998). The interplay of text base elements, and aspects such as general cultural knowledge, situation type, participants’ categories, and type of interaction work together in the formation of the macrostructures (van Dijk & Kintsch, 1983; Kintsch, 1998).

Thus, while microstructures enable analysis at the local level of the discourse, macrostructures allow us to investigate the discourse as a whole. Moreover, since macrostructures represent the main ideas of texts, they are also important for

[1] According to Stember (2003), Anderson and Bower coined the term *proposition* in 1973, meaning the underlying relation among concepts.

investigating readers' comprehension, and recall eliciting how readers process/comprehend specific texts.

In order to produce a coherent semantic relationship within micro and macro elements, readers have to mentally select important from irrelevant information within the text. Such search is done by the "macrorules" (van Dijk, 1980) responsible for selection, generalization, and the construction of meaning. Selection sorts relevant from irrelevant propositions, deleting the ones that cannot be bridged. Generalization represents the deletion of redundant information. Finally, construction provides a "superordinate" term for members of a category, such as animals for cats (Brown & Days, 1983). These processes should all occur automatically to avoid a breakdown in processing, thus compromising comprehension.

Another important aspect in Kintsch and van Dijk's (1978) model is related to the recall of main propositions. According to these researchers, two aspects determine recalls (a) the time information remains and overlaps in the short-term buffer[1] across different cycles, and (b) the readers' assignment of importance in the text hierarchy. Thus, texts that reinstate and reinforce important information, and in addition have clear hierarchical organizations, may enable readers to notice main ideas more easily, integrating them faster and coherently, and as a consequence, the recall of information is expected to be better.

When investigating micro and macro structures of texts, researchers are not only trying to understand discourse comprehension from a single perspective, which is the text itself, but they are also trying to scrutinize aspects related to the readers' cognition, that is, how processing might occur from behind the eyes.

---

[1] Short-term buffer is a limited buffer for storing information necessary for further integration (Baddeley, 1999).

In 1983 a critical change in focus was brought to Kintsch and van Dijk's (1978) model, although most of their initial framework for the propositional representation, the distinction between micro and macropropositions, and the cyclical processing remained the same. The shift occurred from texts to focus more on the readers. Thus, coherence that was firstly seen as derived only from argument overlap is now explained by the readers' activation of relevant knowledge. Another change in van Dijk and Kintsch' s (1983) model was the conception of complex propositions in contrast to atomic propositions.

Atomic propositions, as Kintsch (1998) explains consists of a predicate and one or more different arguments such as: Mary gave Peter a book. In this sentence the predicate "give" has three argument slots (agent: Mary, object: book, and a goal: Peter). Complex propositions are formed by a predicate and various atomic propositions, linked by a central propositional meaning such as: This morning, Mary gave a new shirt to Peter at home. In this sentence the predicate "give" has three arguments slots (agent: Mary, object: shirt, goal: Peter, a modifier: new, and two circumstances- time: this morning, and a place: at home). However, when investigating comprehension of texts both atomic and complex propositions are significant because they make clear which aspects of the meaning of a text was central to the readers in the construction of the situation model.

In 1988 a new evolution occurred in Kintsch and van Dijk's (1978) model. Hence, Kintsch started to develop some novel frame for the previous model, and generated the "construction-integration model" (CI). In this model, Kintsch reconsiders the importance of bottom-up process, explaining that human comprehension processes is a mixture of "local rules in conjunction with holistic integration process" (p.119). Hence, according to this researcher, comprehension undergoes two processes: (a) the

construction phase, where textual features are selected and (b) the integration phase, implying the construction of a coherent mental representation.

In the construction phase, the local information derived from the text, in addition to the readers' goals and background knowledge is joined to culminate in the construction of a "coherent mental model" (Kintsch, 1988, p. 119). In the integration phase, considered to be a constraint satisfaction process, information is selected, and only the information that fits together will be stored to form a coherent mental representation.

This shift in perspective, as Kintsch (1998) explains, allowed him to deal more "seriously with the use of knowledge and memory in comprehension" (p. 118). This standpoint is based on the assumption that, contrary to the top-down models which explain comprehension processes occurring under the constraints and control of fixed organized structures, that is, pre-exiting schemas (Schank & Abelson, 1977, as cited in Kintsch, 1998), his new model predicts that comprehension is a more "loosely structured, bottom-up process" (p. 94) which is context adjustable and dependent. Hence, according to this standpoint, texts have a straight relation to processing, and thus, comprehension.

The propositional representation proposed by Kintch and van Dijk (1978), and its different versions, enables researchers to directly observe, analyze and interpret which information within the text was more relevant for comprehension. Thus, the model allows abstract aspects of cognition, such as comprehension, to become feasible data to be scrutinized.

2.2.5 Comprehension in L2 reading

When discussing about any spoken language, Segalowitz and Frenkiel-Fishman (2005) explain that understanding a message "is not simply registering the sequence of words spoken" (p.645), but creating a mental representation for the speakers' intended meaning. In relation to a native language, Slobin (1996) claims that:

> Children are guided by the set of grammatical distinctions in the language to attend to [specific] features of events while speaking….Each native language has trained its speakers to pay different kinds of attention to events and experiences when talking about them. This training is carried out in childhood and is *exceptionally resistant to restructuring in adult second-language acquisition*" (Slobin, 1996, in Segalowitz & Frenkiel-Fishman, p. 654) (stress added).

Thus, native speakers verbal comprehension mechanisms are mostly automatized, which, in turn, make comprehension the result of a fast, efficient and largely unconscious processes (Segalowitz & Frenkel-Fishman, p. 645). This same assumption can be brought to reading in the second language. Hence, when reading, readers have to create a mental representation from the words they read. This mental representation has to be revised and updated as reading unfolds, and this update has to be done appropriately to ensure coherent meaning. Expert first language readers may process reading information automatically, and effortlessly, unless the text imposes some burden for processing due to other factors such as rhetorical organization. Thus, reading is a complex activity, involving a number of cognitive phenomena, in addition to specific text characteristics.

When discussing about reading, in L1 or L2, Bernhard (1991) explains that there are two aspects which permeates this activity: some "visible" and some "invisible". The visible aspects are, for example, the words, sentences and paragraphs, while the

invisible ones are related to the readers' cognitive characteristics. Comprehension results from the interplay of these two aspects (the visible and the invisible), in any human language. However, they may not be coped with in the same way in an L2 reading.

(1) The first visible aspect in reading is word recognition. Experienced L2 readers may process words in a fast and holistic way, or devote attention to the component parts of words when needed (Bernhardt, 1991; Terry, Samuel, & LaBerge, 1976). Nevertheless, less experienced readers can be constrained by word recognition because they may try to process a word letter by letter, which is called component processing (Patberg, Dewitz, & Samuel, 1981). This aspect is mostly noticed in languages that do not share the same orthographic system, such as Chinese and English. In languages sharing the same system, word recognition is easier and faster, in opposition to languages which do not share this same characteristic, such as English and Chinese (a character system) (Bernhardt, 1991; Adams, 1980). Thus, readers from different language backgrounds might be constrained at the initial decoding level in a reading activity, mainly considering that there might be a cross-language influence at this level. This aspect might be more critical with less-fluent readers' who may not be able to properly restrain the influence of the dominant language (Dufour & Kroll, 1995).

(2) The second visible element in reading is syntax. Syntax establishes the relation between and among words in a language (Adams, 1980). Second language readers have two syntactic processing systems: the native one, and the second language (Bernhardt, 1991). While in most cases, the first system is properly developed, such as in literate adult speakers, in an L2 reader it may be poorly developed. When L2 readers feel syntactically constrained by an L2 text, they may rely on the L1 syntactic structure to overcome possible problems (Bernhardt, 1991).

(3) The last visible component in reading is the structure of the text. Bernhardt (1991) makes a distinction between the structure of text, and the text structure. Hence, while the first is related to the way the text is physically displayed, the second is related to its rhetorical organization. In this work, the different structure of texts (hypertext and linear text) will be used to investigate readers' resulting comprehension in L2 reading activities.

Moving to the invisible aspects which permeate reading, that is, those aspects related to readers' cognitive processes, it is possible to find what Bernhardt (1991) calls the "knowledge-driven operations" (p. 93). Both writers and readers held information in long-term memory which constitute their knowledge and which is used to interact with the world. Writer's knowledge is embedded in the text, in the information conveyed, as conceptual knowledge.

In order to comprehend a text, readers must retrieve, and appropriately organize the conceptual knowledge conveyed by it (Adam, 1980), forming the gist. This procedure can be less demanding if the information conveyed by the text finds a niche in readers' previous stored knowledge. Nevertheless, readers and writers may have different background knowledge in relation to the subject being discussed in the text and, in this case, readers might not be able to activate the appropriate pre-existing knowledge to help them understand the text.

According to Bernhardt (1991), there are different types of knowledge- (a) culture-specific, (b) domain-specific, and (c) local-level knowledge. Culture-specific knowledge includes "ritualistic knowledge as well as cultural-historic knowledge" (p. 97). This knowledge also embeds ideologies and values that may not be shared, or even understood by other populations. Domain specific knowledge, as the name suggests, is related to specific areas such as music, arts, languages, and social sciences,

among others. Differently from the previous one, people from different cultures can easily share this type of knowledge. Finally, local-level knowledge can be either an individual's knowledge in relation to his/her own life, or it can also be the knowledge shared by a group of people in relation to certain specific places in a town, for example. All these different types of knowledge may interfere in an L2 reading activity.

Hence, as aforementioned, not only readers' background knowledge influences reading, but also differences in their working memory capacities, as discussed before. Thus, considering the visible and the invisible aspects which may affect this activity, innumerous investigations in L2 reading have already been conducted as attempts to try to understand, and explain which are the crucial factors that permeate and might constrain processing (Sundermeier, Broek & Zwaan, 2005; Tomitch, 2003; Trabasso & Magliano, 1996; van den Broek, 1994; Alderson & Urquhart, 1988; Koda, 1987; Lee, 1986, among many others).

Among the most important findings in L2 reading it is possible to read that: (1) L2 attention control plays an important role in L2 proficiency, independently of a person's skill in accessing L2 word meanings- faster reading individuals process information more efficiently, not simply more quickly (Segalowitz & Frenkiel-Fishman, 2005); (2) comprehension increases in relation to vocabulary and syntactic proficiency (Barnett, 1986); (3) literacy background affects visual and orthographic processing (Brown & Haymes, 1985); (4) contextual clues help readers to guess unknown words, enhancing performance (Haymes, 1981); (5) vocabulary is more important than syntax for text comprehension (Strather & Ulijin, 1987).

In this section, it was discussed that comprehension results from two main sources: the text itself and the readers' background knowledge. In addition, it was said that the final product of reading, which is the construction of a mental representation, is

achieved in cycles, and gradually with the integration of networks of propositions coming from the local level of texts, and the information already stored in long term-memory. When the integration occurs smoothly and in a consistent straightforward manner, coherence is achieved.

In this section, it was also discussed that it is not commonsensical among researchers the effects the surface structure of texts can have for the achievement of coherence, given that innumerous factors may influence its attainment. Nevertheless, considering that comprehension only results from the stable state in which input is interrelated (Kintsch, 1998), the more the surface structure facilitates processing, and the integration of information, the easier the achievement of coherence. Thus, despite the fact that the surface structure of a text does not guarantee the construction of a coherent mental representation, it can smooth the evolution of this process, facilitating the achievement of coherence, and thus, comprehension.

As another claim, it was also discussed that linearity in text may facilitate the processing of information, mainly considering the limitations of working memory for processing new information. In hypertexts, information is presented in different nodes and readers have to link them properly to construct the gist. However, considering individual differences in working memory capacities, locating and integrating information such as contradictions, for example, may represent a burden to working memory, especially for low-spans L2 readers. Thus, perceiving contradictions could be more demanding in hypertexts than in linear texts due to the way information is conveyed.

This chapter also presented an overview of different models of text comprehension. Among these models, Kintsch and van Dijk's (1978), and Kintsch's (1988) propositional representation model was the one selected in this work as the tool

for investigating which information readers selected and encoded as the most relevant for constructing their mental representations in both the linear texts and the hypertexts. Finally, a discussion was provided on the “visible” and “invisible” aspects that may permeate L2 reading, and affect readers’ reading performance. In the next section, important issues related to hypertexts and linear texts are presented.

2.3 Research on Linear and Hypertexts

This section provides an overview of the most important aspects related to hypertexts and linear texts. Hence, the first sub-section describes the origin of hypertext, that is, how researchers have initially idealized ways of creating systems that could help readers to efficiently store and retrieve a large amount of data. The second sub-section compares hypertexts and linear texts, describing the most important aspects which may permeate these two types of text presentation. The third section is about navigation, starting with the cognitive aspect involved in navigation, and subsequently the navigational tools, and their effects for comprehension. The last sub-section concludes presenting important research in the area of hypertexts and linear texts, focusing on different research explaining comprehension in two different modes of text presentation.

2.3.1 The birth of hypertext

The geometrical increase of information occurring during the past century led researchers to envisage devices which could enable them to control it more efficiently,

that is, to store and to retrieve huge amounts of incoming data, coming from different sources, and places. Hence, as technology developed, devices such as indices and chapters, initially created by book makers as attempts to organize information and speed up reading, was not enough to fulfill readers' needs (Snyder, 1997). In addition, storing a huge amount of information on bookshelves was another problem that the modern world was facing.

According to Snyder (1997), three researchers are the most commonly recognized as antecedents of computerized hypertexts: Samuel Taylor Coleridge (1849), Vannevar Bush (1945), and Ted Nelson (1978). Hence, attempts to create mechanisms for facilitating the manipulation of written information can be traced back to a century ago, with Coleridge trying to organize information topically.

In 1849, a man called Samuel Coleridge was already concerned about finding methods for organizing, and storing information that could efficiently replace the simple hierarchical alphabetical order which ruled, and governed the organization of information at that time. Coleridge's work was mainly based on the topical arrangement of ideas, that is, he categorized knowledge hierarchically because he wanted to explain how each notion is subordinated to a "preconceived *universa*l idea" (Coleridge, 1849, in Snyder, 1997, p. 21) (original stress). The consequence of such attempt was the creation of the Treatise on Method, considered to represent the basis for organizing human knowledge. Coleridge intended his Treatise on Method to be the introduction to a proposed encyclopedia called the Encyclopedia Metropolitana.

Despite earlier contributions, such as Coleridge's, it was Bush's ideas which provided some of the conceptual framework for the development of hypertexts. In 1945, Vannevar Bush idealized a machine called "Memex", which, according to him, would resemble the properties of human memories for storing and retrieving information,

however, with a greater capacity for executing these tasks (Bush, 1945). Memex would operate by associations, that is, information would have associative links enabling users to choose and interconnect them more easily. Thus, readers would have a new form of reading, and writers a new form of writing. These aspects, according to Bush (1945), would create a new form of textuality.

According to Snyder (1997), Bush's notion of textuality presented three new fundamentals: (1) associative links (2) trails of such links, and (3) a net of such links. These characteristics would make texts open, that is, they would not have a pre-established sequence for reading, making reading flexible and unsystematic. Another important characteristic of the Memex was that it would permit users to interact with it, that is, readers would be able to write their own comments and notes within the text. Despite all the innovations idealized by Bush, it was the idea of associative links, which is considered the most important legacy in Bush's framework (Landow, 1992).

Years later, extending what was first idealized by Coleridge (1849), and Bush (1945), Ted Nelson (1960; 1970) proposed a system which could be able to hold interconnected documents, and called it a Docuverse- "all the world's literature" (Snyder, 1997, p. 24), and all these documents would be linked in a vast matrix. Nelson called this project Xanadu.

The Xanadu project presented two essentials facets- the first one, already idealized by Bush, would work resembling the principles believed to underlie human memories, that is, by associative links, and the second one, information would be presented in a nonlinear way, that is, as hypertexts. Nelson coined the term hypertext during the 60s, referring to texts with a "non-sequential writing" (Nelson, 1992, p. 02). Trying to explain the idea underlying hypertexts, Nelson (1992) claims that:

> *Hypertex*t was an audacious choice: *hyper*-has a bad odor in some fields and can suggest agitation and pathology, as it does in medicine and psychology. But in other sciences *hyper*-connotes extension and generality, as in the mathematical hyperspace, and this was the connotation I wanted to give the idea (Nelson, 1992, p.49) (original stress).

According to Snyder (1997), "Nelson's hypertext encompasses texts that are *minimally or maximally non-linear* and tightly or loosely structured" (p.24) (stress added).

It is extension and generality that may give hypertexts one of their most important characteristic- the freedom for writing, and accessing information. Thus, differently from traditional texts, hypertexts, as proposed by Nelson, provide a new system for organizing, and retrieving information, by offering a multiplicity of paths for selecting and reading. In this sense, hypertexts dissolve the traditional centrality of texts, that is, they present readers with multiple ideas, generally with equal power, which can be spread within different nodes on a computer screen (Landow, 1992).

However, despite all the initial attempts for creating hypertexts, they only became reality when a researcher called Engelbart developed the NLS-oNLineSystem, later renamed as Augment (Snyder, 1997). According to Joyce (1995), Engelbart also "invented or first put to serious use fundamentals of computer interaction, writing, and networking, including word processing, outlining, windows, electronic mails, computer conferencing, collaborative authorship, and –not last-the mouse" (p. 25).

When explaining hypertext evolution, there is no doubt that one of the main reasons for its progress was the emergence of the Internet's World Wide Web, which is at present the biggest hypertext in the world, and much bigger than any previous system. However, it is important to bear in mind that hypertexts form a semantic network which may vary in length and complexity, serving different purposes- from academic to daily news delivery. According to Conklin, (1987), in hypertexts, a semantic network is "a knowledge representation schema consisting of a direct graph in

which concepts are represented as nodes, and the relationship between concepts are represented as the links between them “ (p. 37). The more the related concepts are clustered together, the easier it is for processing and understanding.

Thus, hypertexts create open texts that offer readers novel approaches to the traditional computer-based information usage, and also to the act of reading itself. However, if, on the one hand, hypertexts offer a new and more interesting form of reading, on the other hand, they may also cause processing constraints for different reasons such as (1) the organization of information within the nodes (2) the amount of information available in each node, (3) the way nodes are semantically interconnected, (4) the number of links provided, (5) the design of the navigational tools provided, and (6) the slow or awkward response to user control inputs (McKnight, Dillon, & Richardson, 1993; Rouet & Levonen, 1996; Conklin, 1987). All these factors interplay and directly interfere, at different levels, in the way processing might occur.

Hence, considering that hypertext comprehension can be affected by different variables, researchers in this field have tried to investigate which aspects might be crucial for processing hypertexts, in addition to the ones which are related to traditional texts such as background knowledge, goals, and motivation, which are readers’ inherent characteristics. Among these factors, and still very controversial, researchers have tried to observe the effects of linearity (nonlinearity) for processing, and comprehension (Dee-Lucas & Larkin, 1992; Foltz, 1996; Liestal, 1994; McKnight, Dillon & Richardson, 1991, among others). This subject is discussed in the next section.

2.3.2 Defining linearity and nonlinearity in texts

It has already been claimed here that comprehension is essential for people to interact suitably with the environment. It was also stated previously that coherence is essential for comprehension, and coherence leads to a stable mental representation. Stability, in turn, seems to be achieved when information is organized logically, that is, in a linear sequence where each fact or event shows consistent dependability between them.

Despite the fact that information in the surrounding environment is provided in a chaotic way, which leaves to peoples' brain the work of organizing it, written information is usually conveyed in a linear manner. But what is linearity? What effect does it have for processing? Theorists on reading and text comprehension bring different perspectives on the meaning of linearity and what it encompasses. Thus, according to some researchers, linear texts are the ones presenting words, sentences, and paragraphs following a straight semantic relation. In addition, processing should also occur in the sequential order established by the text (Goldman, 1996; Foltz, 1996; Charney, 1994). Thus, what seems to be a common sense view of linearity is described by Nielsen (1995) when he explains: "All traditional text…is sequential, meaning that there is a single linear sequence *defining the order in which it is to be read*. First you read page one. Then you read page two. Then you read page three…" (p.1) (Stress added). Hence, linearity, in this perspective, is related to the chronological sequence of information presentation, and the way this information should be read. However, when scrutinizing about linearity, it is possible to notice that it has some intrinsic aspect that goes beyond the simple aspects of sentence construction or the way sentences should be

read, making researchers bring divergent perspectives describing what linear/nonlinear texts represent.

Therefore, according to Aaserth (1994), for example, what characterizes a linear text is not the linear sequence of letters, words or sentences but the way readers approach it considering aspects such as the shape, the conventions, or the mechanisms of the text. Hence, in Aaserth's view, different variables influence and establish linearity in a text. Opposing the previous standpoint, Liestal (1994) explains that "reading and writing are *linear phenomena*; they are sequential and chronological, conditioned by the durative ordering of time, although their positions as stored and in space may have a nonlinear organization" (p. 106) (stress added). In other words, when words are extracted from texts they have to be placed again in a chronologically established sequence of events, in order to facilitate processing, and generate the 'appropriate' meaning.

A more radical perspective is given by Coscarelli (2004), when she claims that "there is no linear text" and "there is no linear reading" (p. 1) (my translation), because different dimensions such as: the lexical, the morpho-syntactic, the semantic, the textual, the pragmatic, and the discursive are intertwined and influence the reading process. Examining the different perspectives aforementioned, it can be noticed that researchers have different standpoints for defining linear texts, mostly when considering the cognitive aspect of reading them.

Notwithstanding the fact that researchers do not agree in conceptualizing linearity, hypertexts are "conventionally described as *non-linear"* (Whalley, 1993, p. 7) (stress added), for the reason that they are fragmented in nature, that is, information is nonsequential, and encapsulated in nodes. The nodes might present different levels of interwoven semantic structures.

Hence, nodes (or chunks) embody information, and they may vary in length from a little piece of text to a complete chapter. They may also be presented on consecutive screens, which are interconnected by links. However, the access to these links is arbitrary, for this reason, reading has no single predetermined order (Dillon, 1996; Foltz, 1996; McKnight, 1996, among others). In other words, hypertexts, differently from linear texts, are written to be read in a nonlinear sequence, and the degree of nonlinearity may vary according to the way they are written and designed.

The growth in the use of hypertexts brought researchers to question their disruptive nature as possible constraint for processing and comprehension, in contrast to the linear organization of traditional texts (Foltz, 1996; Oostendorp & Mul, 1996; Leu & Reinking, 1996; McKnight, 1996, McKnight, Dillon & Richardson, 1991, among others). In other words, considering that the local organization of texts may lead to a smoother establishment of the semantic relations, facilitating processing, researchers started to question the effects of the fragmented nature of hypertext for reaching comprehension. Among the findings, investigation on hypertexts show that different variables may affect understanding, among them, navigation is pointed as one of the crucial factors, according to some researchers. The next sub-sections provide an overview on hypertext navigation, starting with navigation through a cognitive perspective.

2.3.3 Navigation as a cognitive representation

Several definitions have been proposed to the term navigation, for instance, navigation is “a spatial metaphor for the activity of steering a course through hypermedia moving from one node to another” (Norman, 1994, p. 23). Navigation is

also seen as “a process whereby people determine where they are in relation to their surrounding, and how to get to particular objects or places given that location in space” (Chen & Czerwinsky, 1997, p. 25). As it can be noticed by these definitions, the same expression, “navigation”, is used for referring to both- moving in geographic and electronic spaces. Nevertheless, navigation in these two worlds has similarities and differences.

In order to navigate properly, people need to have a mental representation of the environment to be able to localize and move across different target points. Thus, people need a schema for the geographical environment to be able to be oriented. The geographic schema, differently from the one built for navigating in electronic spaces, is constructed relying mostly on the stable and permanent spatial relation between objects, that is, in some fixed geographical points (Dallback, 2003). In hypertext spaces, the relationship between nodes, such as close/distant, are blurred because a multiplicity of new links can be constantly and arbitrarily created, disrupting their fixed arrangement.

The internal representation of the geographic navigation can be acquired through experience, and it undergoes three levels of knowledge (a) landmark, (b) route, and (c) survey (Wickens, 1984). Landmark knowledge is the stage where people orient themselves by using highly salient visual landmarks, such as statues, and buildings, among others. According to Anderson (1979), landmarks provide the “skeletal frame of reference around which to build the two subsequent phases of learning: route knowledge and survey knowledge” (Anderson, 1979, as cited in Wickens, 1984, p. 184).

The next step in geographic navigation is route knowledge. Route knowledge means being able to go, for example, from point A to point B, using either landmarks or other form of visual feature to orient decisions. The frame of reference at this stage is

peoples' own positions in the world, that is, an inside-out perspective. Route knowledge leads to survey knowledge or to the construction of a "cognitive map" (Tolman, 1948, as cited in Wickens, 1984, p. 184). Survey knowledge is a context-free representation, and contrary to route knowledge, is an outside-in representation. Acquiring survey knowledge enables readers to visualize the space as an external map, making them able to identify alternative routes for navigating (Padovani, 2001; Wickens, 1984).

Considering hypertext navigation, landmarks are the graphic or textual cues that either the hypertext author or the hypertext user adds to certain screens or information nodes to emphasize them because of their location, or importance (Dahlback, 2003; McKnight, Dillon, & Richardson, 1991). Readers use landmarks to recognize their position in the hypertexts, and it can be considered the first step towards the acquisition of procedural knowledge (Padovani, 2001)- procedural knowledge is that acquired incidentally, not consciously (Kintsch, 1998).

The second level of representation is called route knowledge and it represents the ability to navigate from one point to another (A-B), using any landmark knowledge acquired, which may lead to readers' actions. Finally, survey or cognitive map is the fourth level of spatial knowledge representation, as the name suggests, a hypertext map, or survey, which enables readers to plan their moves along nodes not visited previously.

Despite the fact that the same terminology is applied to explain the different levels of knowledge development for navigating in geographic environments, and in hypertext spaces, researchers have arrived at different conclusions about their relationship. That is, many researchers do not take for granted the assumption that the ability a person might have to navigate in the real world is transferred to navigation in the information spaces (Dahlback, 2003). The next section describes some important studies relating investigation on readers' cognitive abilities and navigation in hypertexts.

2.3.4 The cognitive aspects involved in navigating in hypertexts

It was discussed in the first chapter that working memory is a system limited in capacity, varying among individuals, and responsible for on-line processing. Due to these characteristics, very little information can be processed and stored at one time, varying according to individuals.

Hypertexts, differently from linear texts, can present innumerous navigational support devices on the same screen, suggesting that each of them will take the readers to different nodes. Readers must select which nodes are the most appropriate for linking, and for constructing a coherent mental representation in long-term memory. Bearing these facts in mind, a question arises: How do readers cope with the limitations of their working memory having to execute many cognitive functions simultaneously? Although this question seems not to have been fully answered yet, researchers have been trying to understand how readers comprehend different types of texts, such as hypertexts, and cope with a variety of activities which could visibly exceed their working memory capacities.

Among the studies on working memory, Ericsson and Kintsch's (1995) theory on the LT-WM (long-term working memory) may offer some plausible explanations for questions such as the previous one. Hence, according to them, working memory is called "short-term memory, the focus of attention, and consciousness" (Kintsch, 1998, p. 217), and it is the active part of long-term memory. Short-term memory is a capacity limited system, and the items available in it serve as retrieval cues for those parts of long-term memory that are connected to them (Puntambekar, Stylianou, & Hubscher, 2003). Retrieval cues, according to Tardieu and Gyselink (2003), are the mental representations constructed during comprehension, which serve as retrieval structures for the

information already stored in long-term memory. In other words, and as Tardieu and Gyselink (2003) explain, the "micropropositions derived from the text form a network which is connected in a hierarchical macrostructure and linked with the structures of LTM (such as schema, script, frame, or knowledge-based associations" (p. 20).

Thus, according to Ericsson and Kintsch (1995), the amount of information processed in working memory consists of both (a) the items already stored in short-term working memory, and (b) the items retrievable from long-term working memory by the retrievable structures. Differently from the short-term working memory, which is a capacity-limited system, "long-term working memory is only constrained by the extent and nature of the retrieval structures that can be accessed by means of the contents of short-term memory" (Kintsch, 1998, p. 219). In this case, the amount of information processed simultaneously could be extended, enabling readers to cope with a larger set of stimuli.

Corroborating Ericsson and Kintsch's view, Zwaan and Radvansky (1998) explain that readers are better able to remember the most important information that form the causal chain of events, and which they call "backbone" (p.179). These events, according to the researchers above, are not only available in working memory but they are also reactivated from long-term working memory at later points in reading, for providing causal coherence. This assumption is supported by the slower response time to the target words obtained in five experiments in which the researchers tried to observe whether locations of objects were encoded and available to the reader at different points in a narrative, depending on their causal relevance (Sundermeier, van den Broek & Zwaan, 2005), In other words, in case the expected information was only available in working memory, response time for the target words should have been faster.

Attempting to explain the amount of information processed by a limited system, Baddeley (2000) devised a fourth component for working memory called the episodic buffer, extending Baddeley and Hitch's (1974) original model. According to Baddeley (2000), this buffer is considered to be a "temporary storage system that binds together information from the phonological and the visuo-spatial subsystems of WM with information from LTM" (p. 07), creating an episodic representation. An episodic representation is a declarative global event representation of experience, which may guide acts and actions (Kintsch, 1998).

Thus, by bridging information from different sources, the semantic buffer would help working memory to exceed its limited capacity for processing. The previous standpoints might explain how hypertext readers, mainly high span readers, are able to navigate through different nodes, selecting and linking them appropriately without having coherence breaks.

Considering the limitations of working memory, researchers in the instructional field have tried to investigate how learning could be affected, and also be more effective using digital mediums. Among the results obtained, Tardieu and Gyselinck (2003) concluded: "presentation of verbal and visual information when the material is combined into *unitary sources of information* is beneficial" (p.17) (stress added). This aspect might be more positive for low-span individuals who have less attentional resources for accomplishing their tasks. Attentional resources are those continuously allocated for processing and executing a task in WM (Wickins, 1981). In another experiment, when investigating reader's performance in hypertexts, Gyselink and Tardieu (1999) concluded that redundancy of verbal and pictorial information, as well as the concurrent presentation of input lead to the enhancement of participants' performance.

However, in another study, Chandler, and Sweller, (1991), and Bobis, Sweller, and Cooper, (1993) concluded that the presentation of redundant material brought negative effects on participants' performance. Different variables might have contributed to these divergent results, among them the individuals' working memory capacities, motivation, background knowledge, goals, design, and materials used.

Participants' performance has also been investigated taking into account their prior knowledge (stored in long-term memory). Among the results obtained, McDonald and Stevenson (1998) concluded that domain knowledge affects the way readers collect information and navigate through a hypertext medium. In other words, the more knowledge readers had on the subject presented, the better they perceived the appropriate information to be linked. Chen and Cerwinksy (1997) observed participants' performance in hypertexts considering the aspect of background knowledge, and disorientation. According to their results, there was a straight relationship between knowledge and performance, in the sense that background knowledge allowed some participants to understand the conceptual organization of the subject matter, preventing them from disorientation.

The results presented above seem to corroborate the hypothesis that in order to comprehend a hypertext, readers have equally (a) to establish the semantic relations among the nodes, in order to construct a mental representation of the text, as well as (b) to generate a mental representation (or cognitive map) for the spatial location of the nodes, in order to avoid disorientation, and link information coherently. However, as Padovani (2001) explains, the "semantic structure *imposed* by the hypertext designer does not always correspond to the organization expected by the hypertext users" (p. 28) (stress added). In other words, although semantic relations occur at the conceptual level and not spatial, in hypertexts these relations are, in part, spatially provided, that is, in

different nodes. Hence, well-designed semantic interconnections within the nodes, in addition to comprehensible node-link accessibility can facilitate hypertext comprehension.

Hence, computers may represent, at different levels, a constraint for processing (Kintsch, 1998), that is, computers are not familiar environments for many readers, thus, some tasks have to be done consciously and semi-automatically. This aspect may cause an extra burden on working memory capacity, which has to share the attentional resources between the processing of the written information, and the navigation process itself.

Considering the aspect of unfamiliarity related to the computer environment, Kintsch (1998) points to the fact that working with computers requires readers to generate three types of nodes in the long-term memory network (1) general knowledge about computers, (2) general knowledge about the task to be performed and, finally, (3) specific action plans, or planing elements, understood as the commands necessary for task performance. Thus, in addition to the own act of reading, hypertext readers have to constantly make decisions about where they are, where they want to go, and which information is the most appropriate to be linked while navigating. Bearing these aspects in mind it could be said that navigation requires readers to build a mental representation for the network structure in order to locate themselves in the system, and to make decisions; long and complex hypertexts demand more navigational knowledge to avoid readers' disorientation.

In order to facilitate navigation, designers have proposed the use of navigational support to help readers in their decision-making while jumping from different nodes, selecting and integrating information, because navigation cannot be arbitrary moves if

readers want to achieve meaning coherently. It is in this sense that navigation can become a crucial aspect for reading.

In order to navigate properly, that is, to be able to select the appropriate nodes for linking, readers: (a) must have the orientation of where they are in relation to the target location; (b) need to choose a route that will take them to destination; (c) have to monitor the route in order to certify that the move is correct, and (d) necessitate to recognize that the destination reached is the right one (Padovani, 2001). Each of these steps is working memory resources consuming, varying their load according to some aspects such as (a) readers' expertise with computer interaction, (b) background knowledge on the subject presented, and (c) the navigation tools available. While the first two are related to readers' inherent characteristics, the last aspect, navigation tools, depends on the writer's expertise to provide efficient resources to avoid readers' disorientation.

Disorientation, according to Edward and Hardman (1989), may be due to three different problems: (1) readers do not know where to go next; (b) readers may know where to go next but they do not know how to get there; (3) readers do not know where they are in relation to the overall structure of the document. Also, according to Foss (1989), disorientation involves:

> - Arriving at a point in a document and forgetting what has to be done there
> - Neglecting to either return from digressions or to pursue digressions planned
> - Not knowing if there are any other relevant information nodes in the document
> - Forgetting which sections have been visited or altered
> - Difficulty summarizing which information nodes have been examined or altered after hours navigating (Foss, 1989, as cited in Padovani, 2001, p. 26)

Among the navigation aids to support location of information, it is possible to find searching tools such as (a) maps (b) indexes, (c) lists of contents, (d) searching engines,

and (e) overviews. Maps are bi-dimensional representation of the node-link structure of the hypertext. Information presented in maps provides direct access to the corresponding hypertext screen. Maps help readers to know their precise location within the hypertext due to the fact they provide a spatial and conceptual overview of the hypertext structure. An index consists of a list of hypertext information nodes, topics or words organized in alphabetical order. The aim of an index is to facilitate the retrieval of specific information. The list of content is a tool of a hierarchical list of the hypertext information nodes. This tool helps readers to attain familiarity with the system by providing them with a relational structure of the hypertext contents (Calvi, 1997). The search engine consists of an entry where readers may type keywords or phrases, and activate the system to look for some specific information. The searching engine helps readers to speed their navigation by showing a list of information nodes directly related to their entry. Overviews, as the name suggest, provide a visual access of the hypertext network. They assist readers in comprehending the organization of information, and in turn, they may help navigation (Puntambekar, Stylianou & Hubscher, 2003; Dee-Lucas, 1995; McKnight, Dillon & Richardson, 1991).

Despite designers' attempt to create navigational aids that could, by some means, facilitate readers selecting and retrieving the appropriate information in non-linear information spaces, researchers have reached different conclusions about the effectiveness of such tools (Calvi, 1997; Hornback & Frokjar, 1999; Chou & Lins, 1998; McDonald & Stevenson 1998; Dillon, McKnight & Richardson, 1993, among others). Hence, as Park and Kim (2000) explain, navigational aids significantly improve navigation, regardless of the type of Web site. Puntambekar, Stylianou and Hubscher (2003) concluded that maps helped students in staying focused on their goals, enhancing their performance in the activities proposed. In another experiment 85% of the readers

preferred to use lists of contents instead of thematic maps in a free navigation task to help them navigate (Calvi, 1997). However, in the experiment conducted by Dee-Lucas and Larking (1995), they concluded that hierarchies of subjects presented, and overviews of materials discussed have not necessarily led to better learning (Dee-Lucas & Larking, 1995). Also, according to McDonald and Stevenson, (1999) maps were found to foster efficient navigation, however, they did not guarantee effective learning.

Notwithstanding the fact that readers can use the navigation tools to help their readings, Beasley and Waugh (1997) found out that readers tended to employ a systematic top-down, left-to-right navigation strategy to ensure complete reading (Beasley & Waugh, 1997), meaning that they have approached the hypertext in a linear manner to ensure comprehension.

In an experiment observing users' orientation capacity when navigating in hypertexts- spatial ability, and search performance in 3D environments, Chen and Czerwinsky (1997) concluded that recall was positively correlated with individuals' spatial ability. That is, individuals who had a larger capacity for constructing a mental map for navigating in the hypertexts prevented themselves from disorientation, and were better able to encode where the proper information was located. Nevertheless Dahlback (2003) in two different studies: (1) comparing two kinds of navigation support- one that was verbal and list based versus a graphical and visuo-spatial one, and (2) investigating whether there was a correlation between spatial cognition and ability to navigate in hypermedia, concluded that navigating in information spaces is largely different from navigating in geographic environments, cognitively speaking.

Haw and Wang (1999) established significant different strategies readers use when exploring navigation and problem-solving strategies readers use when interacting with WWW resources such as: (a) surveying, that is, scanning the whole page before

moving to a solution path, (b) backtracking, to keep orientation (c) double-checking, (4) exploring, (5) short-cut seeking, and (6) meta-searching, that is, trying to guess possible links to join information appropriately. However, expert computer users mostly use these strategies. Less experienced users might be unable to benefit from the sophisticated web searching tools, and in addition, they may also be cognitively constrained by them.

Results as the ones discussed above have led researchers to have different standpoints about the effects of navigation for comprehension. Thus, if on the one hand, it is possible to read an expert in the area claiming that the major problem users of hypertext face while navigating is getting lost while linking different nodes (Nielsen, 1990), on the other, it is possible to see that evidence corroborating the discussion on the disorientation problems is not sufficient to reach any strong conclusion (Bernstein, 1991). How should the heterogeneity of the experimental data previously brought and these different standpoints be interpreted?

Considering (a) the possible diversity of the experimental design used in the investigations discussed, as well as the variables affecting the results, and in addition, (b) as Chen and Rada (1996) explain, taking into account “the absence of a taxonomy of tasks for analyzing and comparing hypertext usability across studies, and the weaknesses of the connections between abstract hypertext reference models and specific hypertext systems” (p. 126), so far, it seems difficult to raise any axiomatic statement about any of the results discussed previously. However, they appear to point to some crucial facets necessary for readers’ achievement of comprehension in a non-linear medium, such as the importance of well-designed navigational tools.

Despite the usefulness of navigational tools in helping readers’ orientation while jumping from different nodes, not all hypertexts are properly designed, tending to

obscure its global structure. In addition, besides the problems which may derive from a deficient design, and a less structured hypertext, another aspect which might be crucial for comprehension is that hypertext readers have access to only one node of information structure at a time. This aspect, as Padovani (2001) explains, can affect readers' ability to navigate efficiently through the system, considering that they just have part of the information presented available at one time on the screen.

Thus, considering that local coherence derives from the interconnection of words, sentences, and paragraphs in a consistent manner, and that global coherence results from the logical flow of sections, it might be expected that in a medium such as a hypertext, where information is not sequential and readers have to jump from different nodes to link them, achieving coherence might be a cognitively demanding task.

So far it has been claimed that, in order to comprehend a hypertext readers have equally to generate a mental representation of the text itself, as well as to construct a mental representation, or a cognitive mapping, for the location they are at, and the location they need to go to, in order to avoid disorientation problems, and to disrupt reading. Cognitive mapping is a process by which individuals "acquire codes, store, recall and encode information about their locations and attributes of phenomena in everyday spatial environment" (Padovani, 2001, p. 39). Long and complex hypertexts can increase the burden on working memory for processing, because they require more control over the navigation process. This aspect can be even more critical for L2 readers, who are non-expert computer users, because, in addition to possible navigation problems, they may also present some language constraints, which can affect comprehension. In the next section, a discussion on the cognitive aspect of navigation is presented.

2.3.5 Studies on hypertexts, linear texts and the effects of linearity for comprehension

There is no consensus in the literature when the subject is the effect of linearity for processing, and comprehension of written texts, mostly in relation to hypertexts. Thus, at the same time that a researcher claims that hypertexts "change fundamentally how we write, how we read, how we teach these skills, and even how we conceive of texts" (Charney, 1998, p. 239), it is also possible to find views advocating that "hypertext is not a new form of text. It is not an evolutionary advance. It forces no reconsideration. It has no potential for fundamental change in how we write or read" (Dobrin, 1998 p. 308). An additional standpoint claims that the difference between a hypertext and a linear text resides in "the *attitude* that readers bring to hypertext and other electronic texts than in any difference in the text itself" (Patterson, 2000, as cited in Oliveira, 2002, p.28) (stress added). Finally, it is also possible to read that "hypertext disturbs our linear notion of texts by disrupting conventional structures and expectations associated with the medium of print" (Snyder, 1997, p. 17). Why do we find such antagonistic views about the same subject? What are the contrasting features between a hypertext and a linear text, and which are the consequences for processing/comprehension?

Trying to establish some possible differences between hypertexts and linear texts, Oliveira (2002) explains that, among other contrasting characteristics, *hypertexts* (a) have multiple authorship- they are the property of authors and co-authors, (b) they are not formed by one single text, but by several embedded texts, and (c) they are texts with a non-sequential order, that is, nonlinear.

Hypertexts have multiple authorships (Oliveira, 2002) in the sense that, in their openness readers can also interact with the texts, and the author becomes dispersed. Thus, hypertexts can present not only their author, but also co-authors, and the centrality of ideas, inherent to linear texts, can be replaced by a multiplicity of ideas, which may be located in different nodes on a computer screen, resulting in the disruption of linearity.

Nonlinearity, as Aarseth (1994) explains, results from a work "that does not present its scriptons[2] in one fixed sequence, whether temporal or spatial" (p. 61). Thus, according to Aarseth's view, a nonlinear text would be characterized only by the way information is organized. On the other hand, Espéret (1996) explains that linearity embraces three aspects- "the organization of lower level language units, the way information is stored in a given medium (book, tape, hypertext, etc); and the way the reader controls the process of accessing a piece of information" (p. 150). Thus, differently from Aarseth, Espéret includes the readers as sources for establishing linearity.

Whalley (1993) stresses the importance of linearity by claiming that "a direct consequence of the fragmentation effect in hypertext is that it is likely to make it more difficult for the learner to perceive the author's intended argument structure– unless certain *linearity constraints are imposed on the hypertext form*" (p. 11) (stress added). Following this same line of argument, Padovani (2001) explains that the use of very strictly structured topologies for information networks have been used as attempts to provide the linear form readers are used to when reading, despite the fact that they have the freedom for choosing paths, and link information randomly. McNamara, Hardy and Hirtle (1989) also point out that even when a hypertext is not well organized, readers

[2] According to the researcher, scripton refers to text contents (Aarseth, 1994)

tend to impose a hierarchical structure on it to make sense of the content. Hence, according to the argumentation provided so far, it could be concluded that linearity may help processing by providing a natural pattern readers are used to when constructing their mental representation.

However, as already stated, hypertexts are traditionally described as nonlinear (McKnight, Dillon, Richardson, 1991; Walley, 1993), that is, information is nonsequential, requiring readers to search for associative connections to link them. Writers may help readers in their meaning construction process by signaling the best paths to follow when reading. However, readers have to be able to perceive which links will lead them to the construction of the appropriate semantic network, leading to comprehension.

The production of a semantic network may also be compromised when the hypertext lacks explicit organizational devices, or structural cues, showing readers how the hypertexts should ideally be read. In this case, the search for appropriate connections may impose a load on the reader's cognitive capacity, causing coherence break, and thus, compromise comprehension.

Linear texts, differently from hypertexts, have a straight sequential order of information presentation, and even though readers can access them out of order, the printed sequence of information is indicative, and may be controlling. Thus, linear texts may guide readers to a faster integration of the text contents, enabling them to determine the main propositions more easily. Accordingly, it could be possible to hypothesize that linear texts are less restraining than hypertexts for processing, especially for some L2 readers who might have to cope with language deficits, or low-span readers who have a limited capacity for processing.

Attempting to establish possible differences between the reading of hypertexts and the effect of linearity for processing, Britt, Rouet and Perfetti (1996) describe the results of two studies- Gordon, Gustavel, Moore and Hankey (1988), and Dee-Lucas and Larkin's (1992)- explaining that, when comparing the same materials presented in hypertext and linear text versions, the research findings have been inconsistent. Thus, for Gordon et al., linearity resulted in better comprehension and recall of main ideas, when compared to the organization of hypertexts. In other words, processing seemed to be less constrained when information was presented sequentially. On the other hand, Dee-Lucas and Larkin (1992) found that hierarchical hypertext may represent advantages over linear texts, both in recall and memory, that is, hypertext facilitated processing and thus the retrieval of information.

Nevertheless, it is important to emphasize that, generally, hypertexts do not present ideas in a conceptual hierarchy, rather, ideas are constructed as nodes, which have to be coherently selected and linked. Experts in reading hypertexts may have no problem in choosing the right links to perform the activity satisfactorily; nevertheless, novices, with little familiarity with the process, might choose wrong nodes for integration, disrupting the flow of processing and thus, comprehension. Nonetheless, according to Dee-Lucas and Larking (1992), this aspect would not represent a problem because, in their research, they also concluded that reading instruction could help readers to overcome many of the problems encountered while reading hypertexts.

Explaining that hypertexts are nonlinear only because they can be read in different sequential orders may be considered, by some researchers, a naïve assumption taking into consideration that linear texts can also be accessed in many forms, as for example, following indexes and tables of contents. Such a view raises a question here. Does reading a linear text in a nonlinear approach make this text nonlinear?

Usually, linear texts, mainly narratives, present information in a logical and chronological order, with a centrality of voice and ideas, which are meant to be read in a linear manner. Readers can approach linear texts in different manners, that is, in a nonlinear manner; nonetheless, this does not make the texts nonlinear.

Information in any language seems to be more easily processed and comprehended when organized in some "kind of pattern and order" (Liestal, 1994, p. 103). In other words, thoughts that are written as organized sequences of events, and follow a chronological order of actions may be easier for maintaining coherence. Comparing both hypertexts and linear texts, it could be said that, at the lower level, that is, at the surface language level, both types of texts should present a clear structural basis signaling the connections within words, sentences, and paragraphs given that such organization might facilitate reading (and learning) (Charney, 1994). However, at the same time that both types of text use cohesive devices and common referents to assist in the integration of words, sentences and paragraphs, they are less used in hypertexts (Goldman, 1996, Dillon, McKnight & Richardson, 1988). The reason for the low frequency of such features (numerals, and logical connectives, for example) is that hypertext writers do not know which paths readers will take for integrating ideas and concepts.

In linear texts writers organize the propositions in a hierarchical order and signal the relationship among the items using, for example, cohesive ties such as conjunctions, and reference. In hypertexts, cohesive ties can be used within each node, but not between nodes, linking them together. Hence the organization of hypertexts is provided "external to the units of the text proper" (Dee-Lucas, 1994, p. 74). As already discussed, in hypertexts the writers have to try to establish the relevance of connections among the nodes, indicating the best ones for integrating information. Thus, hypertext writers have

to strategically design or create access facilities, which indicate and determine how readers are supposed to understand and follow the contents of the text. Therefore, a well-elaborated access facility may be crucial for the selection and integration of information (Dee-Lucas, 1994), because when readers do not detect such relevance, they may get lost. Thus, at the same time that a hypertext may give more flexibility and freedom to the readers, who may quickly access only the main parts of a document, for example, it may also overload working memory being more cognitively demanding.

Another issue raised when comparing hypertexts and linear texts is that while in traditional texts readers have "direct access to the physical storage of information" (Espéret, 1996, p.151), that is, they can physically manipulate volumes and pages, in hypertexts the information is retrieved and displayed by the computer. Such an aspect, as Espéret (1996) explains, becomes a significant advantage of hypertexts in the sense that "the reader is relieved from the burden of physically manipulating the stored information" (p.151). Nevertheless, such advantage becomes insignificant when considering that linking content from different sources requires readers to be more skillful and strategic because, as Goldman (1996) claims, external supports, such as maps, graphs and charts, may increase cognitive demands, making processing more difficult. Such cognitive requirement, then, could be considered one of the major aspects when distinguishing linear texts from hypertexts, mainly if taking into account that "comprehension is a continuous process" (Dee-Lucas & Larking, 1992, as cited in Rouet & Levonen, 1996, p. 15), that is, it has to be constantly and coherently updated. Nevertheless, once again, it could be claimed that nonlinear reading can occur in any type of text, the important aspect, then, would be to investigate, and try to explain in which type of text (a linear text or a hypertext) memory would be more constrained, thus affecting comprehension.

In a recent study conducted by Tomitch, Newman, Carpenter and Just (submitted) investigating brain activity while subjects had to identify main ideas presented in first, as opposed to last position in texts, the researchers found that, among other things, coherence gaps presented in sentences increases the load for processing. Although the aim of their study was not to investigate the effect of text organization proper on processing, results seem to indicate this straight relation.

Hence, taking into account the fragmented nature of hypertexts, the gaps readers may face while trying to access different nodes, it could be sound to think that hypertexts, mainly the ones with several nodes, may be more susceptible to cause coherence breaks, overloading working memory more easily, and compromising comprehension, mainly for L2 readers who may have to cope with vocabulary and grammar deficits.

Although there are some aspects which seem to be crucial for the processing of these two types of texts, as I have already discussed, it is not clear yet, to what extent these points could be considered essential for establishing boundaries for differentiating the processing of linear texts and hypertexts. Nevertheless, among many aspects that can contribute for an effective, or ineffective processing, individuals' cognitive characteristics may be considered paramount, and working memory capacity might be one of them.

This section started presenting the history of hypertext- how the necessity of creating devices for storing and retrieving information led researchers to idealize and develop hypertexts, and why, as an information medium, it became the concern of many researchers. It was also pointed out here why linearity, and its effect for processing/comprehension have contradictory standpoints among researchers in the area of reading. In the same vein, it was shown why navigation is still a divisive issue among

researchers. In addition, an overview of several important research related to the cognitive aspect of hypertext navigation, and its effect on comprehension was offered, showing that further investigation is needed to shed new light to the debatable issues raised. Thus, this study aims at investigating if processing hypertexts might be more cognitively demanding, affecting processing and the construction of a coherent mental representation.

CHAPTER 3

METHOD

The overall purpose of the experimental study herein described is to investigate L2 reading comprehension of texts presented in two different modes, as a hypertext and as a linear text, to verify any possible dissimilarity in the resulting comprehension. In order to achieve the aim proposed, two hypertexts and two linear texts were designed. Besides the texts applied, participants' working memory capacities were also investigated as additional resources to explain the results obtained, taking into account that working memory capacity can also be considered a critical factor for achieving comprehension in reading.

The reason for choosing a linear text and a hypertext as stimuli in this study was due to previous experimental research showing different conclusions about the effects of linearity for processing, and hence, for comprehension. Therefore, this investigation also attempted to shed new light to questions that still seem to remain unanswered in relation to this subject, as previously explained.

This chapter delineates the methodological steps that were taken to carry out the current study, including criteria for selecting the potential participants, description of instruments for data collection, data analysis, the pilot study, and finally the procedures for data collection.

3.1 Participants

Forty-two students served as participants; seventeen males and twenty-five females, and their recruitment was done in two different countries; in Brazil and in the United Kingdom. In Brazil, fifteen were from the Federal University of Santa Catarina (UFSC), and six were from a language institute (ILG), from the State University of Maringá (UEM), in Paraná. All the participants from UFSC were students taking their M.A in 'Letras' (English). Participants from ILG were all English teachers, three of them with M.A. degrees, also in 'Letras' (English). This entire group was made up of Brazilian; English was their second language. They were all recruited personally, with this researcher explaining the significance of the study, and the importance of their contribution.

Volunteers from the United Kingdom were all Chinese, EFL speakers as well, and students from Loughborough University. This population was recruited by e-mail (see Appendix 1), which explained the aim of study, and the significance of their involvement. These participants were also taking their M.A; six were from the Information Science Department, and fifteen from the Business Department, totalizing 21 participants in this group. After taking the tests, these participants received 15 pounds each, as book tokens; the Information Science Department from Loughborough University provided the funding.

Some of the participants' main characteristics were the following: in the Brazilian group, the majority of the participants were females, totalizing 76.14%, while in the Chinese group they were male, totalizing 54.14%. Age average among the Brazilian group was around 33 years, and in the in the Chinese group it was around 24 years. In order to ensure participants' privacy, they were called according to their order of

participation as Participant 1, Participant 2, and so on. Participants from 01 to 21 were all from Brazil, and from 22 to 42 were from China (see Table 1).

Table 1
Participants' Background

Participant	Gender	Nationality	Age
1	Male	Brazilian	27
2	Female	Brazilian	31
3	Female	Brazilian	43
4	Female	Brazilian	51
5	Male	Brazilian	43
6	Female	Brazilian	44
7	Female	Brazilian	29
8	Female	Brazilian	34
9	Female	Brazilian	37
10	Male	Brazilian	24
11	Female	Brazilian	29
12	Male	Brazilian	37
13	Female	Brazilian	31
14	Female	Brazilian	25
15	Female	Brazilian	22
16	Female	Brazilian	29
17	Female	Brazilian	25
18	Female	Brazilian	37
19	Female	Brazilian	39
20	Male	Brazilian	30
21	Female	Brazilian	27
22	Female	Chinese	21
23	Male	Chinese	27
24	Female	Chinese	23
25	Female	Chinese	20
26	Female	Chinese	48
27	Male	Chinese	23
28	Female	Chinese	28
29	Female	Chinese	23
30	Female	Chinese	26
31	Male	Chinese	21
32	Male	Chinese	22
33	Male	Chinese	28
34	Male	Chinese	27
35	Male	Chinese	26
36	Male	Chinese	22
37	Male	Chinese	27
38	Male	Chinese	22
39	Male	Chinese	23
40	Female	Chinese	22
41	Male	Chinese	23
42	Male	Chinese	22

3.2 Materials

This research comprised three instruments used to measure participants' performance: a multiple- choice questionnaire, main proposition recalls, and contradictions. A retrospective questionnaire (self awareness questionnaire) was also used to verify participants' perception of their comprehension; therefore, this questionnaire was not scored. Independent variables were also used: (1) the two texts, which were presented in two different modes (as hypertexts, and as linear text), (2) the working memory span test, (3) and the nationalities involved (Brazilian and Chinese). Independent variables are the ones manipulated by the experimenter; it is the input given by the researcher (Robson, 1973). Different tests were applied taking into account that a good reading test should include more than one instrument for testing participants' comprehension (Alderson, 2000; Alderson, Clapham & Wall, 1995).

Additionally to the instruments mentioned above, for those participants who did not have the IELTS certificate, an English test was also applied for measuring their proficiency in the English language. These instruments are fully described in the next sections.

3.2.1 The texts

3.2.1.1 The linear texts and the hypertexts

In the present study, information from two expository articles was adapted for the creation of two new texts. The first original article called “Why are we so fat” was taken from the National Geographic Magazine (August, 2004), and the second called Gastrointestinal Surgery for Severe Obesity” was taken from the website (Http://www.niddk.nih.gov/health/nutrit/pubs/gastri/gastricsurgery.htm). These two original articles are about obesity and eating disorders; their causes and consequences, and they explain what can be done to control and prevent such conditions.

The criteria for selecting the articles were the following: (1) the subject matter was considered to be of general interest for the potential participants, (2) the two texts shared similar subjects (3) they were authentic passages, (4) they did not require specific background knowledge on the subject to understand their contents, (5) both texts were considered to have interesting explanatory arguments, and finally (6) they were expository texts. The adaptations of the texts applied consisted of the preservation of some important information provided by the two original articles, and additionally, the creation of fictional characters, places and events specially idealized for the purpose of this investigation (see Appendices 2 and 3 for the adaptations elaborated).

The choice of the subjects for the two texts was a crucial procedure considering that at the same time that the activity necessitated different texts, it was imperative to try to have the text contents raising similar levels of interest; in other words, the topics should be likely appealing to the participants. The way found to overcome this problem was to present texts discussing similar subjects.

The selection of the topics in the two texts also required special control in relation to the level of background knowledge necessary for understanding them. In other words, the subjects discussed in the articles should be interesting enough to motivate the participants; yet, they should not compromise participants' comprehension in case their familiarity with the content was limited, or completely unknown.

Expository texts seem to be more cognitively challenging for comprehension considering that, for narratives, readers tend to possess adequate strategies guiding them in selecting, and organizing information into an episodic sequence (Mayer, 1984; Graesser, 1981). Hence, investigating comprehension deriving from expository texts was considered more suitable, and motivating for this study.

The two texts adapted were called Text 1 and Text 2, and each of them was designed to be presented as a hypertext and as a linear text. In both texts, the general main idea was provided in the first paragraph, followed by some details about the topic. This feature can make reading smoother once it helps readers to link the text segments more easily, which in turn may facilitate the construction of the macrostructure (van Dijk, 1997; Aebersold & Field, 1997).

Text 1 was about eating disorders, their possible causes and treatments. As a linear text it comprised the following characteristics: 911 words , with one introduction and 9 related subjects: (1) Anorexia, (2) Bulimia, (3) Binge, (4) Eating Disorders and Scientific Research, (5) Neuroendocrine System, (6) Treatment to Eating Disorder, (7) Mary, (8) Jane, (9) Support for Eating Disorders (see Appendix 2).

Despite the fact that the text had subtitles, it did not have a title considering that participants would have to provide its main idea after reading it. Thus, giving a title to the text could guide participants in their attempt to choose an appropriate topic. However, the subtitles were essential features for the texts due to the fact that (a) in the

hypertext, they should be converted into nodes, and (b) the linear version and the hypertext version needed to have similar characteristics.

As a hypertext, Text 1 also comprised an introductory paragraph, which was designed to be located on the first page of a computer screen, and nine nodes: (1) Anorexia, (2) Bulimia, (3) Binge, (4) Eating Disorders and Scientific Research, (5) The neuroendocrine System, (6) Treatment to Eating Disorders, (7) Mary, (8) Jane, and (9) Support for Eating Disorders (see Appendix 4). The nodes were planned to be accessed in two different ways: by clicking the words in the menu, which was located on the left side of the computer screen, or by clicking the red words written within each node, as it can be seen in Figure 1 below (See CD-ROM for the actual hypertext presented).

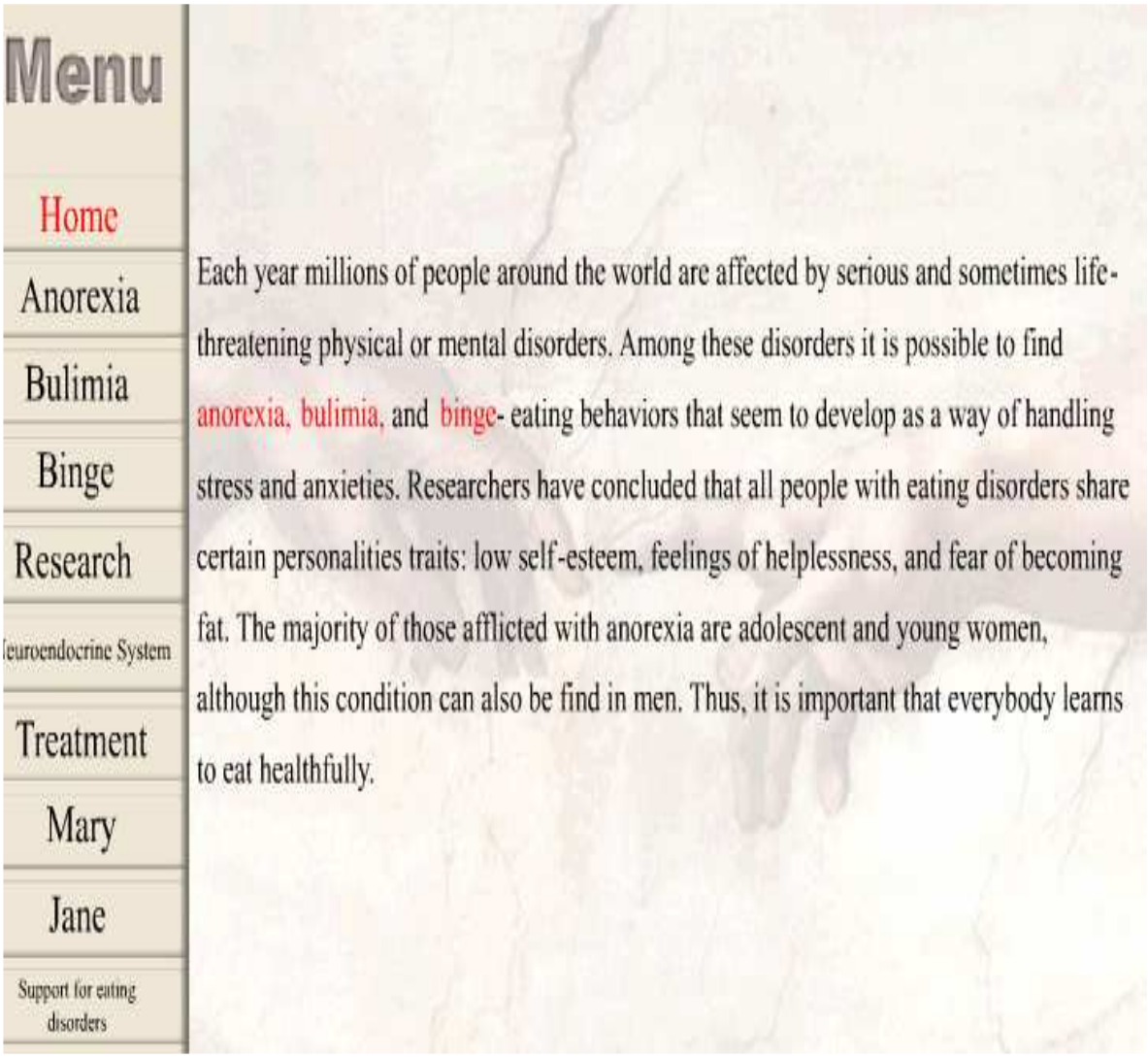


Figure 1. Initial page of hypertext 1.

Text 2, as a linear text, was about obesity, possible causes and possible treatments. It comprised nine hundred and fifty-two words (952), with an introduction, and ten (10) subtitles: (1) Avoiding Stress, (2) Compulsive Eating, (3) Obesity, (4) BMI, (5) Gastric Surgery, (6) Gastric Bypass Surgery, (7) A Patient, (8) Physical Activities, (9) The Pyramid, and (10) Avoiding Obesity (see Appendix 3). As in Text 1, despite the fact that the text had subtitles, it did not have a title considering that participants would have to provide its main idea after reading it.

As a hypertext, Text 2 had the following characteristics: An Introduction, which was located on the first page of the computer screen. The same ten subtitles presented in the linear version were transformed into ten nodes: (1) Avoiding Stress, (2) Compulsive Eating, (3) Obesity, (4) BMI, (5) Gastric Surgery, (6) Gastric Bypass Surgery, (7) A Patient, (8) Physical Activities, (9) The Pyramid, (10) and Avoiding Obesity (see Appendix 5). The nodes could be accessed in two different ways- by navigating through the menu, placed on the left side of the computer screen, or by clicking on the red words located within each node. All the links within the texts were written in red color, as it can be seen in Figure 2 below. (See CD-ROM for the actual hypertext presented.)

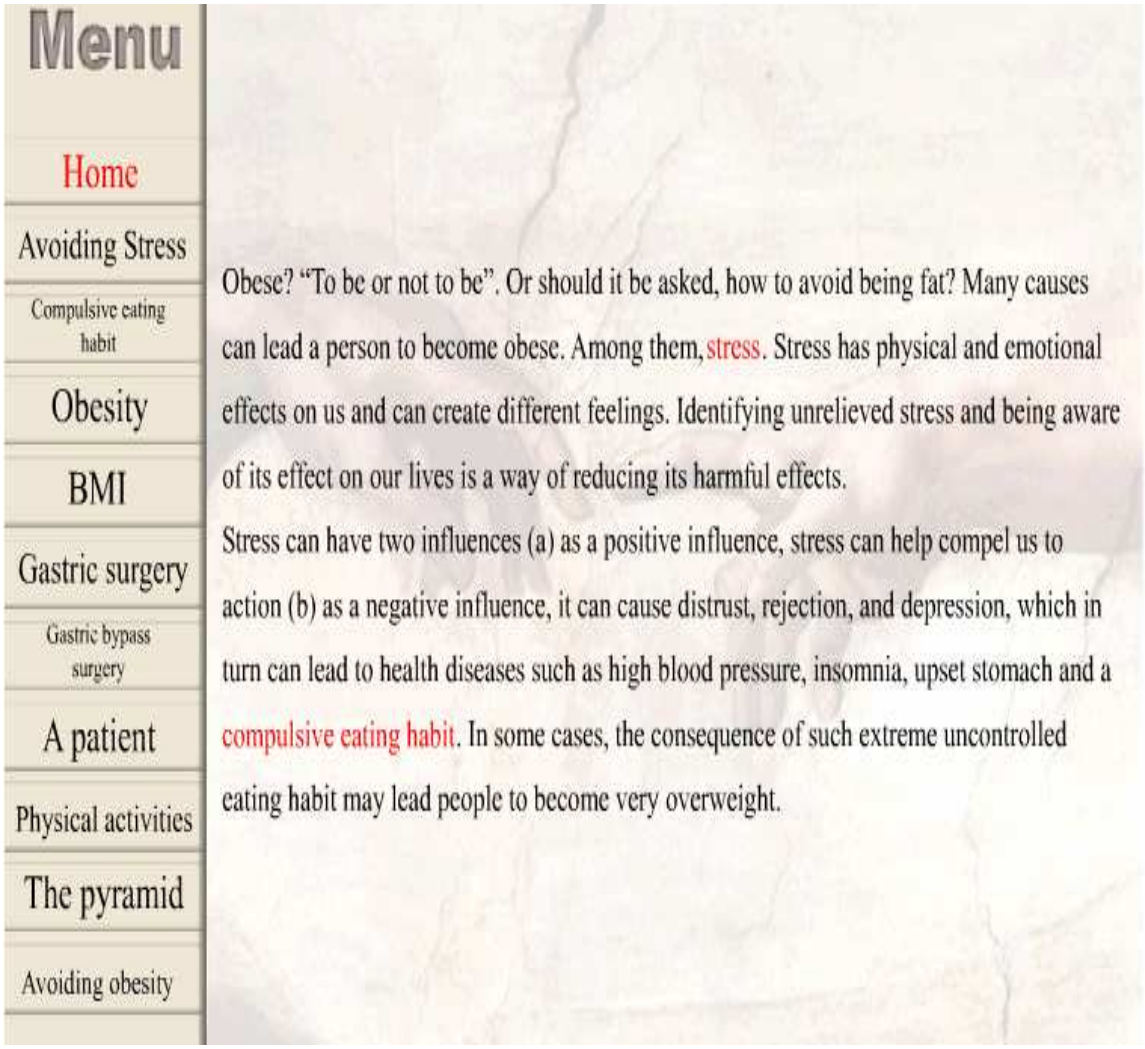


Figure 2. Initial page of hypertext 2.

Considering that the two texts had to be reasonably related, as already explained, the number of words, and the number of nodes of each text had to be carefully controlled. For these reasons, the texts were tested before the final versions were considered suitable. Despite the fact that there were small differences in the two texts (the number of propositions and the number of words), these differences did not compromise the results, as it was verified, and as it will be discussed in the next chapter.

Hypertexts can vary in size and complexity, having a small or a large number of nodes on the same page. Each of these nodes can take the readers to few, or several different locations, on different pages. In this study, the hypertexts were not long, presenting few links within the nodes; the maximum number was three, due to the characteristic of the experiment, that is, participants were allowed to read the hypertext only once, and then they had to perform the activities proposed. However, the two hypertexts were designed to present at least one link within each node. This characteristic allowed participants to navigate within the pages, without the need to recur to the menu to select a new subject. Moreover, at the same time that each node encapsulated complete ideas, related nodes were also interconnected by their semantic relationships. Hence, there was a network of meaning connecting the nodes. In this way, the fundamental characteristic of a hypertext was preserved.

The creation of the hypertext followed the guidance of a PhD professor, an expert in the area of hypertext, and hypermedia from the Information Science Department of Loughborough University. Thus, the layout of the two hypertexts were developed having in mind that they should be motivating and attractive, but above all, they had to be readable, and they should preserve the essential hypertext characteristics (as explained above). Accordingly, a selection of drawings was, in addition, carefully

chosen to compose the back of all screens; the original colors of the pictures were softened to facilitate the visualization of the letters.

The assistance of a professional web designer was also needed in order to optimize some of the general designing principles that are used for hypertexts documents. Consequently, (a) the interface and terminology were consistent from screen to screen, (b) the layout of each screen made good use of space, (c) the legibility and the readability were considered appropriate, and (d) the software made good use of contrasts (Leshin, Pollock & Reigeluth, 1992). Both hypertexts were developed with the Flash MX (2004) program, but the document can also be opened with other programs such as “Fireworks”.

3.2.2 Tests

3.2.2.1 Reading ability measures

In order to qualify for this study, participants were required to have good knowledge of the English language in relation to reading, that is, their English should not represent any constraint for understanding the texts proposed. Hence, it was essential for all participants to provide evidence of their ability in reading, and understanding English written texts. In other words, they should demonstrate that they were able to recognize a great variety of verbs, vocabulary and grammatical forms being able to deal with reading different types of text.

In order to control for this variable, the following criterion was established: participants should have the IELTS certificate, or take an English test prepared by this

researcher. This procedure was done taking into account that participants who did not have the IELTS would have to pay for it, which could represent a restraining factor for the recruitment of volunteers.

In both proficiency tests accepted, the minimum score established was 6,5 (six and a half). According to the IELTS, this score reflects an intermediate level of proficiency in English, that is, it reflects subjects' adequate vocabulary and grammatical knowledge at both local and global levels in texts.

The English test designed for this experiment had the following characteristics: (a) the activities were taken from some of the IELTS exams, and were slightly modified, and (b) considering that this investigation was in L2 reading comprehension, the English exam applied intended to verify participants' performance mostly in this subject matter (see Appendix 6).

The first part of the test consisted of a cloze test: a reading passage, with sentences containing some missing words, which had to be filled in by the participants. For each missing word, four different ones were given as alternatives, and participants should select the most suitable one. The inclusion of four alternatives is considered to reduce the possibility of guessing to only 25% (Alderson 1995; Heaton, 1988). This text comprised 173 words, discussing about a place called Albany, in Western Australia. The aim intended here was to measure reading skills by means of accessing, mostly, participants' vocabulary knowledge. The test was designed to last around ten minutes.

The second part of the test also consisted of a reading passage. This text had five paragraphs (A to E), with 436 words, discussing about different jobs. Participants were expected to read it carefully and to choose, from a set of sentences provided, which one best described the subject of each paragraph, writing the appropriate letter (A to E) in a box. This second part of the test tried to verify the following skills: reading details,

identifying paragraph main ideas and gist, as well as to verify vocabulary knowledge. Participants had about twenty minutes to perform this activity.

As it could be noticed, the two activities described above tried to measure participants' capability in understanding the meanings, and use of words in written English, as well as to verify their reading comprehension in different subjects. Participants' selection took place prior to the experiment session itself, and their scores were a sine-qua-non condition for their acceptance in the experiment.

The English test applied to those who did not have the IELTS was planned to last around thirty minutes. It was taken individually, and in a silent room. There was no participant scoring under the 6,5 score required. From the initial 45 volunteers, only three participants had to be dismissed due to technical problems with the recording of their recalls.

3.2.2.2 Recall

Scores from the main propositions recalled in both the hypertext and the linear text were used as means to investigate participants' comprehension. Thus, initially, the main propositions of the two original texts proposed were classified. Accordingly, text 1 had seventy-four (74) main propositions, and Text 2 had sixty-nine (69) main propositions. Bearing in mind that the classification of propositions can be individual, that is, it can vary according to the reader, as already discussed in Chapter II, a panel of two PhD professors, from the Federal University of Santa Catarina (USFC) assisted this researcher in this task. This procedure helped in the validation of this instrument used for data collection. These professors received a formal letter asking for any suggestions

that could improve the quality of the activity proposed, as well as explaining the significance of their contribution (see Appendix 7).

The scores were investigated using an adapted version of van Dijk and Kintsch's propositional scoring method (1983), developed by Tomitch (2003), and tested at the Reading Laboratory at UFSC. Hence, as Tomitch (1995) explains, when using this method the "first step is to identify the central proposition or propositions in each sentence, and then the modifiers or attributes which modify the central proposition" (p. 55). Thus, in each sentence, parentheses are placed in front of the words, and the main propositions are signaled, using the "x" sign, as the paragraph below illustrates. Participants' recalls are scored according to the reference patterns (see Appendixes 8 and 9 for all propositional reference patterns).

> (x) Gastric (x) bypass (x) surgery (x) reduces (x) the stomach, ( ) by, ( ) for example, ( ) placing ( ) a hollow ( ) band ( ) made ( ) of ( ) special ( ) material ( ) around ( ) the stomach ( ) near ( ) its ( ) upper ( ) end, ( ) creating ( ) a small ( ) pouch ( ) and ( ) a ( ) narrow ( ) passage ( ) into ( ) the ( ) larger ( ) remainder ( ) of the ( ) stomach. (x). After (x) the surgery (x) a patient (x) cannot (x) eat (x) as (x) much (x) as he/she (x) used to; (x) sugar (x) or (x) fatty (x) food (x) provokes (x) a dumping (x) syndrome ( ) that (x) causes (x) flushing, (x) nausea, (x) and (x) sweating (x) in bypass (x) patients.

Investigating the propositions recalled enabled this researcher (a) to scrutinize the meaning constructed and stored in long-term memory as well as (b) to make the relation between the amount of information stored and participants' working memory capacity. In addition, as Kintsch (1998) explains, propositions "make explicit those aspects of the meaning of a text that are considered most directly relevant to how people understand a text" (p.49). Hence, this was an important aspect in the investigation to verify comprehension.

3.2.2.3 Multiple-choice questionnaire

The second comprehension activity applied in relation to the hypertext and the linear text comprised a comprehension questionnaire, which consisted of ten multiple-choice questions. The questions proposed tried to explore, mostly, literal comprehension questions, also including questions that required only the reorganization of information explicitly stated in the text, and some inferential comprehension, that is, questions requiring reading between the lines for the construction of the situation model. The questions comprised four different alternatives, with only one correct answer. For each correct answer participants received one point. The maximum they could score was ten (10). As already explained, four alternatives minimize guessing to 25%. An example of this activity is provided next (see Appendixes 10 and 11 for the entire questionnaire).

Choose the right alternative below according to the text (only alternative one is correct).

1) Anorexia, bulimia and Binge seem to develop:
(a) As a way of handling stress and anxieties
(b) From uncontrolled depression and overweight
(c) From exaggerating in the amount of food ingested
(d) From problems in the central system

Additionally, in order to investigate participants' overall comprehension, the following question was asked: "What is the main idea of the text?" A correct answer to this question could encapsulate, or synthesize, the entire passage into its gist, showing participants' understanding.

A consulting expert, a professor with PhD in the testing area from the Federal University of Santa Catarina (UFSC) assisted this researcher in the activities previously proposed. He analyzed and gave feedback in relation to the design of the questions

proposed to ensure their appropriateness. In order to have his comments, and support the validation of this activity, he was asked to complete the following worksheet, evaluating the activities designed:

1. The language (vocabulary/grammar) used in the tests is at the desired difficulty for intermediate ESL participants ( ).
2. The tests are doing an adequate job of evaluating their reading comprehension ( ).
3. The length of the test as a whole is adequate ( ).
4. One aspect of the test is being tested more than others ( ).
5. The correct answer is genuinely correct ( ).
6. Each wrong alternative in the multiple-choice test is attractive ( ).

(see Appendix 12 for complete activity).

His evaluations were expressed by one of the subsequent alternatives: **(**1) Strongly agree, (2) Agree, (3) Do not agree, (4) strongly disagree, and Neutral (5). His evaluation was later discussed in a meeting, and the test was improved according to his suggestions, attempting to be as clear and objective as possible in terms of vocabulary and questions.

3.2.2.4 Contradictions

Taking into consideration that comprehension would be investigated through different activities, six explicitly stated contradictions were also created, in each text, for this purpose (see Appendix 13). Contradictions were used taking into account that the process of detecting them is very challenging for working memory given that they require processing beyond sentence and word levels for the integration of the information as a whole (Kamas & Reder, 1995). Besides, as Kamas and Reder (1995) explain “in order to detect a contradiction within a passage, both of the contradictory

propositions must be part of working memory at the same time" (p. 186). Thus, in this experiment, the contradictions were also created as possible means to verify not only the correlations between participants' working memory capacity and their ability to retain important information necessary to form a coherent mental representation, but moreover, to observe their comprehension in relation to specific text contents. The following contradictions were produced for Text 1:

> * The majority of those afflicted with anorexia are adolescents and young women.
> (Contradiction) Although most victims of anorexia and bulimia are men, these illnesses can also strike adolescents and young women.
> (Contradiction) One reason that men represent the greatest number in the group of people with eating disorders…
>
> * People with bulimia consume large amounts of food.
> (Contradiction) Mary developed bulimia when she was twenty years old. … she began to diet obstinately, restricting all kinds of food, particularly carbohydrates.
>
> *Anorexia is a dangerous condition in which people can literally starve themselves to death.
> (Contradiction) Jane developed anorexia. She is an attractive woman but considerably overweight…
> (Contradiction) She regularly ate a huge amount of food.
> * People with anorexia tend to be "too good to be true" … tend to be perfectionist, good students…
> (Contradiction) Like most people with anorexia, Jane is disorganized, and a bad student…

For Text 2, the following contradictions were created:

> * Severe obesity is a condition that is difficult to treat by traditional means such as diets or everyday exercises.
> (Contradiction) Everybody knows that careful diet or everyday exercises can easily treat severe obesity.
>
> * Gastric bypass surgery for obesity reduces the stomach … after the surgery a patient cannot eat as much as he/she used to.
> (Contradiction) The gastric bypass surgery is fantastic, and I am very happy to have done it because now I can eat as much as I used to without getting fat.
>
> * The surgery is risky
> (Contradiction) The surgery is safe.
>
> * (The surgery) It brings great benefits to almost eight percent of the patients.
> (Contradiction) It can be considered a complete success in all cases.

* Obesity is becoming a familiar headline… (in the USA).
(Contradiction) The reduction of fat as a percentage of total calories is real in the USA.

* Fruit and vegetables are out of the tables in the USA.
(Contradiction) People in America are eating more vegetables and fruit as the USDA's Food Guide Pyramid advised…

3.2.2.5 Reading span test

In this experiment, a modified version of the original reading span test (Daneman & Carpenter, 1980) was applied to access participants' working memory capacity. The adaptation was created and tested by Torres (2003), and it was used to avoid floor effect, considering that participants were Portuguese and Chinese speakers, and that English was their foreign language.

Thus, according to Torres's design, the test consisted of forty-two sentences, divided in five sets; each set started with two sentences ranging to five, in three different successions, as exemplified below (see Appendix 14 for complete test).

He played all day at the park and got a sore arm
I saw a child and her father near the river playing ball
? ?

His younger brother roll and rock a in guitar played bandSuddenly the taxi opened its door in front of the bankThe last thing he hot nice a take to was did take bath
? ? ?

Her best memory of England was the Tower of London bell.
At the very top of the tree sat a small bird.
She took rusty the into reached and breath deep a boxThe state of Wisconsin is famous for its butter and cheese**? ? ? ?**
He overslept economics morning the of all missed and class.
The first thing golf a swing is morning every does he clubPopular foods in the summer are watermelon and sweet corn.
The boy was surprised to know that milk came from a cow.
The only thing left broken a was cupboard kitchen the in cup
? ? ? ? ?

As Torres (2003) explains, the sentences designed were shorter and syntactically simpler than the original reading span test, taking into account that the test was idealized for L2 speakers of English. In order to control for the processing aspect of the test, Torres (2003) included a grammatical judgment (right/wrong) task for each sentence, following the methodology used by some researchers such as Fortkamp (2000), Turner and Engle (1989), and Harrington and Sawyer (1992).

Scores were calculated as follows: for correctly answering the three sets of two sentences, participants received “2”. For correctly answering the three sets of three sentences, participants received “3”, and so forth. It is important to remember that the sentences were presented in three sets, one at a time, starting with two sentences, reaching five. However, in case only two sets of sentences, out of the three, were correct participants only received 0,5. Participants were classified in three groups: (a) low-spans, with scores ranging from 0, 5 to 2, 0, (b) medium-spans, with scores of 2, 5, and high-spans with results ranging from 3, 0 to 5, 0.

In the test, each sentence was designed to be presented centralized on a computer screen. In order to facilitate the visualization, all the words were written in black color, on a white background, and written in twenty-four font size letters, which allowed better visualization.

The interval calculated for each sentence was of nine (9) seconds, as proposed by Torres (2003). Despite the fact that nine seconds were considered enough for reading the sentences, they did not allow rehearsal of the final words, preventing practice, and therefore, the enhancement of performance due to strategic behavior and not to WM capacity.

The working memory span test was applied in order to measure participants’ residual memory capacity for storing information, after processing it, thus showing their

memory spans. Considering that participants' performance was also correlated with their memory capacity to investigate their reading comprehension, the working memory span test was considered a significant procedure in this investigation.

3.2.3 Retrospective questionnaire

The retrospective questions comprised two activities: (a) ten statements, and (b) a question asking about the topic of the texts. The ten statements aimed at two different purposes (1) to scrutinize participants' awareness of their own reading process, and (2) to investigate weather participants had noticed the contradictions without directly asking them so. The following sentences were designed for achieving the first purpose above mentioned: "The article was easy to understand", "The article was easy to follow", "The story was easy to read" "The article was easy to remember" "The article required a lot of effort from the readers' part", and "The vocabulary was easy". These were self-evaluation sentences, and participants were asked to rate them, subjectively, using the following scale: (1) strongly disagree; (2) disagree; (3) neutral; (4) agree; (5) strongly agree (see Appendices 10 and 11- first part).

In order to verify participants' awareness in relation to the contradictions (the second purpose), the following statements were provided: "The article had a logical flow of ideas", "The article seemed awkward in certain places", "The article gave all the information needed to understand the text", and "The information in the article was well organized in general terms". The alternatives which could be selected were also (1) strongly disagree; (2) disagree; (3) neutral; (4) agree; (5) strongly agree. The answers provided could enable this researcher to examine how participants perceived their own

reading process, as well as to explain some unexpected finding in relation to their performance.

The question related to the topic of the text (What is the main idea of the text?) tried to verify if participants were able to construct the main idea in both the hypertext and the linear text with the same accuracy.

3.3 Data analysis

In order to achieve the objective proposed here, this study utilized quantitative measurements, and qualitative techniques. Both of these research approaches were employed in order to obtain data that could not have been captured using a single method, thus allowing a more in-depth examination.

The quantitative measures planned to observe participants' reading comprehension were the following: the scores on multiple-choice questionnaire, the scores on the recalls, and the scores on the number of contradictions detected in the texts. The method utilized to observe the relationship between participants' performance and their working memory spans was the adapted version of the original Daneman and Carpenter, 1980, designed by Torres (2003), as already explained.

The main analytic technique used to score the variables investigated was Pearson's correlation coefficient. The Student t-test was applied to verify the level of significance of the mean scores obtained on the activities proposed. The t-test was used taking into account the following aspects: (a) it looked at possible differences between means of two groups, which seemed to be the appropriate comparison for investigating the data obtained, (b) interval level measurement was assumed here, which also seemed

to be appropriate for most of the scales. In addition, (c) the t-test is considered robust with respect to violations of its assumptions, that is, it can be considered accurate in relation to the data provided, and have great power efficiency (Howit & Cramer, 2005).

3.4 The pilot study

In August 2005, at the Federal University of Santa Catarina (UFSC) a pilot study was applied to ensure the appropriateness of the instruments that were designed for this data collection. Six students volunteered for this purpose; all of them were taking their Master's Degree in 'Letras' (English). The experiment took place in one single section. The results obtained helped on the improvement of this study, pointing to the following aspects:

a) The reading span test correlated with participants' performance showing that it could be a reliable instrument for the purposes of this investigation.

b) It would be feasible to transcribe the words participants provided in the working memory span tests, at the same time that they were being recorded. This was an important conclusion for two main reasons (1) according to the results obtained, the distribution of the texts could be balanced, that is, specific texts could be designated to each participant immediately after they had finished taking the reading span test. This was done in order to avoid one of the texts being read more times than the others, and (2) it enabled data collection in one single session.

c) The hypertexts designed should be improved, that is, they should have more nodes and links than in the pilot study. However, considering the specificity of this study in which the texts presented were allowed to be read only once, the hypertexts should not

be too extensive, and thus, exceedingly demanding. Bearing these facts in mind, the modifications required were done, and submitted to an expert in the area of testing, as already explained.

d) Some of the multiple-choice questions were reformulated to enable more access to participants' literal comprehension, considering that one of the objectives of this study was to observe the retention of information *explicitly stated* in the texts. The questions reformulated were also submitted to an expert in testing.

Thus, the pilot study achieved its main objective, providing the crucial information necessary to observe the feasibility of the activities proposed in this investigation, as well as to improve the instruments for data collection.

3.5 Procedures

The experimental procedures consisted of two main parts, which were undertaken over the course of one meeting. Data collection lasted around one hour and twenty minutes for those participants who had the IELTS, and around two hours for those who had to take the English test elaborated by this researcher. The first part intended to assess participants' working memory capacity by means of a modified version of the reading span test (Daneman & Carpenter, 1980) designed by Torres (2003). This first part included a training session to acquaint the participants with the reading span test procedures.

The second part aimed at investigating participants' reading comprehension resulting from the linear texts and the hypertexts, by means of their recalls, and of the written questionnaires. The next sections will describe how the data was collected,

starting with the reading ability measures, the tests applied for investigating reading comprehension- the recalls, and the multiple-choice questionnaires. Following, the procedures taken for the application of the reading span test and the retrospective questionnaire are explained.

3.5.1 The tests

3.5.1.1 Reading ability measures

The English language proficiency test, for those participants who did not have an IELTS score, was taken individually, in a silent room, lasting around forty minutes. Before the test itself, each participant was informed about the general purpose of the study. After that, she/he received the instructions about the test, and he/she was asked to start the activity. Before initiating the activities proposed for this study, an interval of ten minutes was given. In the interim, this researcher calculated the participant's scores, in order to verify his/her level of proficiency.

3.5.1.2 Recalls

The steps for this assignment were as follows: individually, participants were asked to read the first of the two texts designated for him/her; it could be Text 1 or 2, either presented as a linear text or as a hypertext. The text should be read silently, at his/her own pace, however, she/he was asked to read only once. Participants were also advised to read the texts carefully and attentively. After reading, when participants signaled that they were ready to start the next step, they were asked to recall, in English, everything they could remember from the texts they read. Their recall was tape-recorded for later analysis. The same procedures were done with the second text.

3.5.1.3 Multiple-choice questionnaires

This activity was taken after participants had made their recalls, as explained above. It was also done individually, and subsequent to this researcher explaining the instructions. Silently, and at their own pace, participants were asked to read the first text- Text 1 or Text 2, as a linear text or as a hypertext. After finishing reading, they started answering the questions, without recurring back to the reading passage, either to confirm or to check their answers. Subsequent to answering the first questionnaire, they were asked to read the second text, and the same procedures were taken.

3.5.1.4 Contradictions

After reading the texts, participants who noticed the contradictions acknowledged them while recalling the texts, or answering the retrospective questionnaires. Hence, the contradictions were scored after tape transcriptions, or during the analysis of the retrospective questionnaires.

3.5.1.5 The reading span test

This section lasted around twenty-five minutes, and it was performed individually, in a quiet room provided by the university department. Before initiating the test, the procedures for doing the reading span test were carefully explained, and participants performed a training session in order to be familiarized with the procedures. For this purpose, extra sentences were created in the reading span test. The test only started when participants were confident enough about what they were supposed to do in the test.

The set of the sentences started with two, reaching five sets, in three different successions. After reading each sentence in the set, participants had to verbalize whether the sentence was correct or wrong. As already explained, the working memory span test requires processing and storing information at the same time. Hence, in order to control the processing aspect of the test, a grammatical judgment (correct or incorrect) was added to ensure processing (Torres, 2003; Fortkamp, 2000; Turner & Engle, 1989, among others). Thus, when question marks appeared on the screen, participants were asked to recall the final words, of all sets of sentences, in the same order as they had appeared on the screen.

Taking into account that immediately after reading each text, either the linear text or the hypertext should be designated to each participant, at the same time that the answers provided by the participants were tape recorded, this researcher was simultaneously taking notes of the words recalled, in order to score their spans, avoiding the long interruptions that listening to the tapes would require. Nevertheless, the recordings were used as means to solve doubts in relation to the answers provided.

3.5.1.6 Retrospective questionnaire

The aim of this activity was to verify participants' awareness of their own reading processes. The steps used for taking this second activity were as follows. After having read one of the two text designated (Text 1 or Text 2, either as a linear text or a hypertext), and having recalled all the propositions they could from the texts, participants received some worksheets, and were asked to do the activities proposed.

On the first sheet, participants had the retrospective questionnaire, and also the question asking for the "topic" of the text they had just read. When participants had finished completing the test, the researcher examined the answers related to the self-awareness statements to verify if they had written any comments worth further investigation. For example, in case the option selected was "disagree", or "strongly disagree" for the sentence "The article had logical flow of ideas", this researcher tried to scrutinize their reasons for selecting one of those scales, taking notes of their answers.

This chapter described how this investigation was structured, and the way the activities projected were carried out with all participants. In the next Chapter, the outcomes will be presented, and the research questions will be answered.

CHAPTER 4

RESULTS AND DISCUSSION

Preliminaries

The purpose of this study was to investigate L2 reading comprehension resulting from different modes of text presentation, specifically, as a hypertext, and as a linear text. Attempting to better understand and explain the variables which could influence reading comprehension, participants' working memory capacity was also investigated, considering that there seems to be a straight relationship between individuals' working memory spans and their performance in the activities executed.

Initially, this chapter presents the results obtained in all the activities planned: the working memory span test, the recalls, the comprehension questions, the contradictions, and the retrospective questionnaires. After presenting the results, the data obtained will be discussed, answering the research questions, and elucidating the hypotheses that framed this study.

4.1 Working memory span test results

Results from the reading span tests, among all participants, showed a variation ranging from 0,5 to 4,0, hence indicating a considerable dissimilarity among participants' working memory spans, as can be seen in Table 2.

Table 2
Results from the Working Memory Span Test

Participant	Score
1	2.0
2	2.5
3	2.5
4	2.0
5	2.0
6	3.0
7	3.5
8	4.0
9	2.0
10	3.5
11	3.0
12	2.5
13	3.0
14	4.0
15	2.0
16	2.0
17	2.0
18	2.0
19	4.0
20	3.5
21	3.5
22	0.5
23	2.0
24	3.0
25	3.5
26	2.5
27	3.5
28	4.5
29	1.0
30	1.0
31	3.5
32	3.0
33	2.5
34	2.5
35	2.0
36	1.0
37	0.5
38	0.5
39	2.0
40	2.5
41	0.5
42	2.0

Figure 3 shows the results in the WM span tests, considering the percentage of participants with high, medium, and low memory capacity. As it can be noticed, 45% of the group, among Brazilians and Chinese, presented low memory spans.

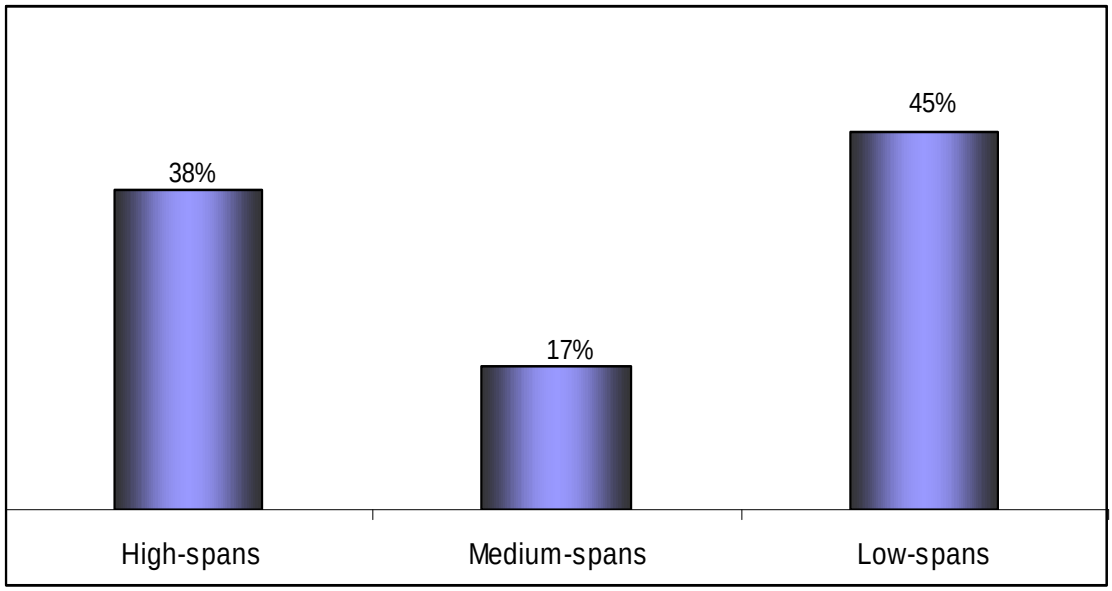


Figure 3. Percentage of high, medium and low WM span participants.

Taking into account each nationality, the results obtained on the WM span test showed that in the Brazilian group ten participants presented high memory spans (24%), three medium, and eight participants presented low memory spans (19%). In the Chinese group six participants presented high memory spans (14%), four medium, and eleven participants presented low memory spans (26%). Hence, the Brazilian group showed a better performance in the WM span test, as Figure 4 illustrates.

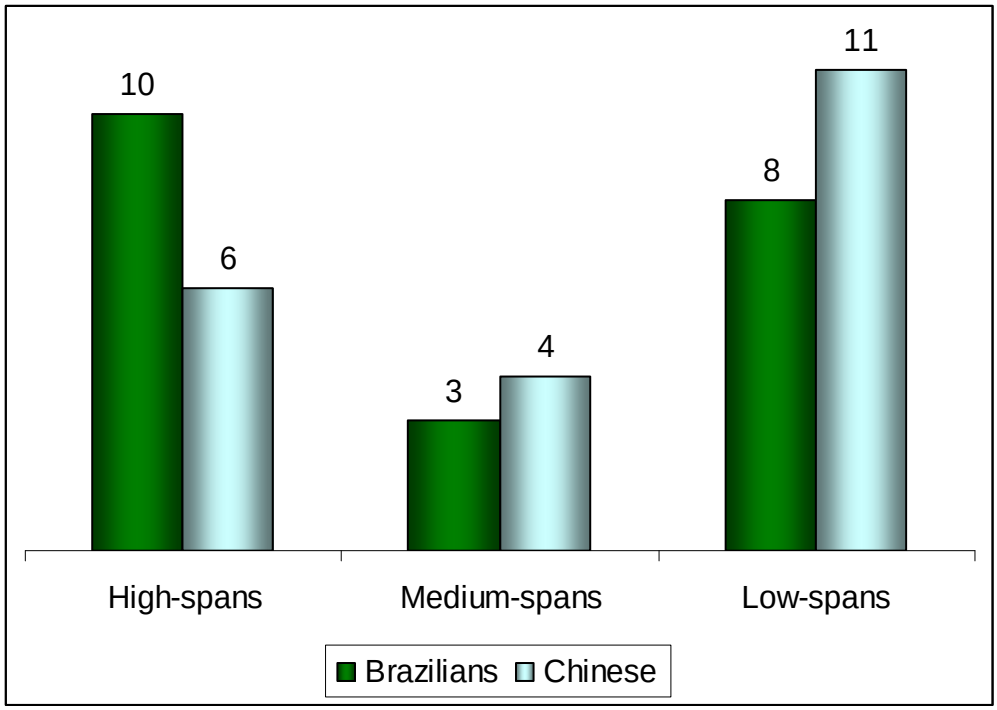


Figure 4. Number of participants from each nationality according to WM results.

The next sub-sections (4.1.1 to 4.1.6) describe different correlations using the Pearson correlation coefficient, considering that this test is appropriate to describe the correlation between two quantitative variables.

4.1.1 Results from all the participants on the correlations between the WM span tests and the recalls

In order to investigate the relationship between the variables analyzed in this experiment the Pearson correlation was applied, considering that this coefficient is used for score variables. All the correlations discussed from now on are linear.

The first correlation investigated was between the WM span test, and the recall of propositions from the linear text (also called here linear prop), among all participants.

The results showed that r=0.58, p< 0.05, thus indicating that at the 5% level of significance there is evidence of a moderate positive correlation, as can be seen in Figure 5 below.

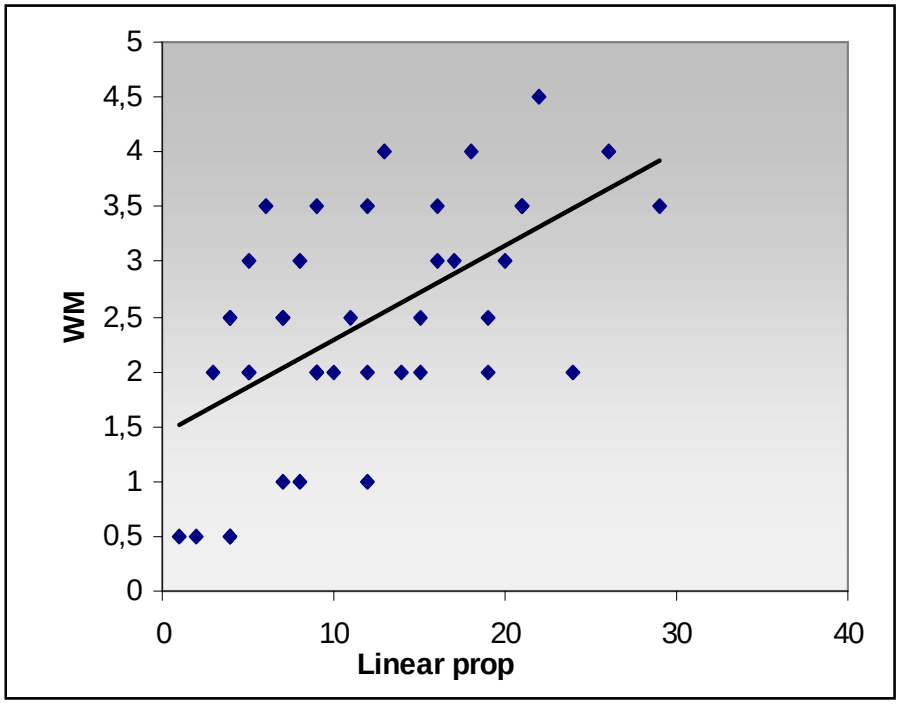


Figure 5. Correlation between the WM span tests, and the linear prop among all participants.

Figure 6 below illustrates the correlation between the scores on the WM span test and the ones obtained on the recall of the hypertext propositions. The outcome showed that r= 0.65, p< 0.05, signaling to the fact that at the 5% level of significance there is evidence of a moderate positive correlation.

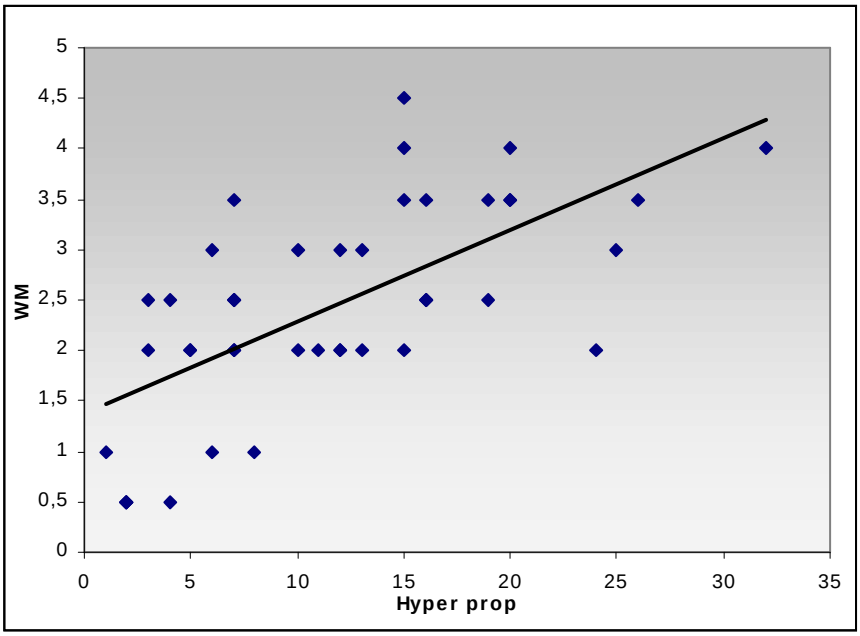


Figure 6. Correlation between the WM span tests and the hypertext propositions.

4.1.2 Results from all participants on the correlation between the WM span tests and the comprehension questions

Correlation between the WM span tests and the scores obtained on the comprehension questions from the linear texts (multiple-choice questionnaire, from now on also called linear written) show that r=0.37, p> 0.05, indicating that at the 5% level of significance there is *no* evidence of a correlation between these variables, as it is illustrated in Figure 7.

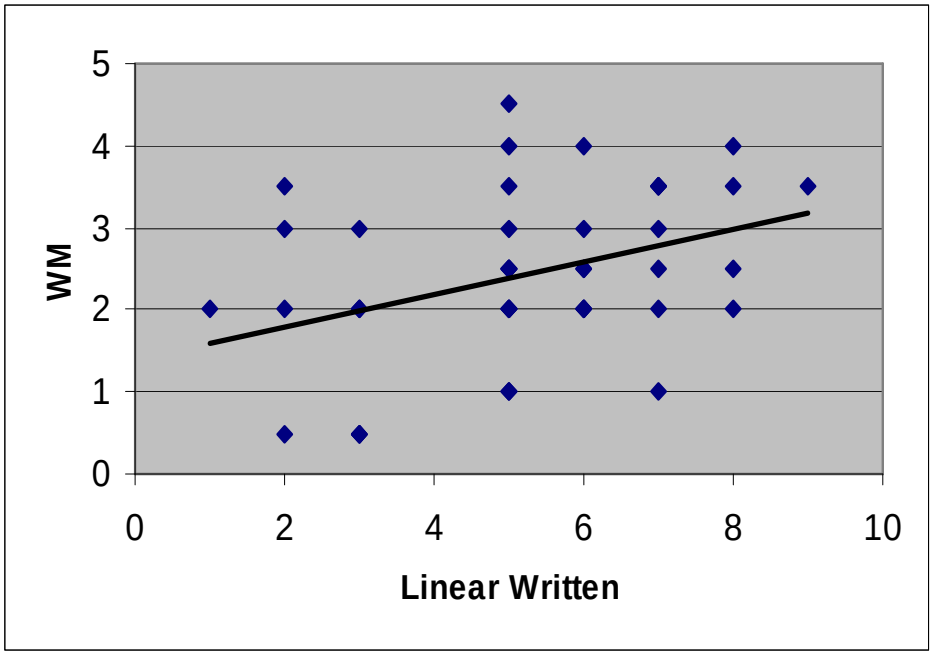


Figure 7. Correlation between WM span tests and the linear written scores.

The correlation between participants' scores obtained on the comprehension question from the hypertexts (multiple-choice questionnaire, from now on also called hyper written), and the ones on the WM span test was $r=0.56$, $p<0.05$. Thus, at the 5% level of significance there is evidence of a moderate positive correlation between these two variables. Figure 8 shows the findings.

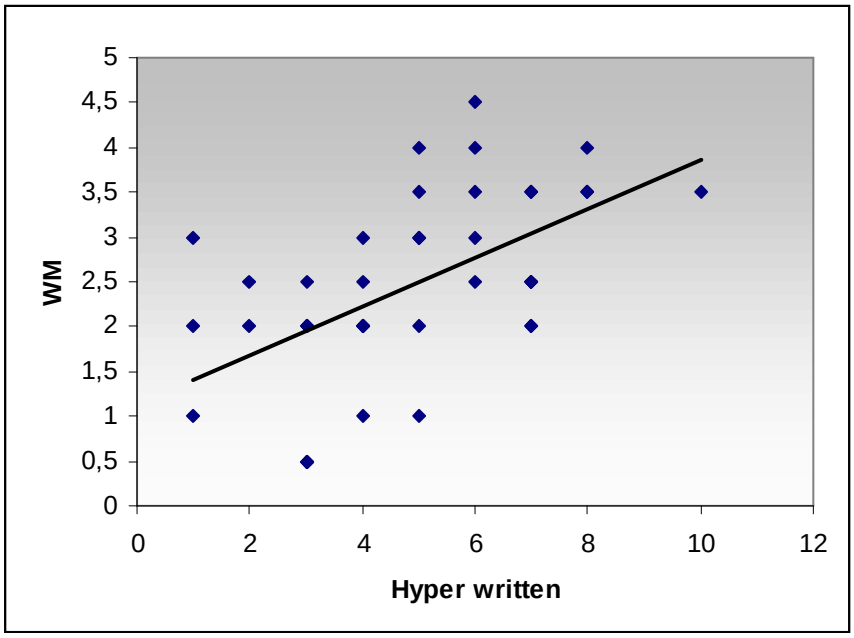


Figure 8. Correlation between WM span tests and participants' scores on the hyper written.

In view that participants from two different nationalities participated in this research, and taking into account that a significant statistical difference in performance on the working memory span tests was found between the two groups, which was an unexpected finding, participants' nationalities were also considered on the investigation. The results are next presented.

4.1.3 Results from the Brazilian group on the correlation between the WM span tests and the recalls

In the Brazilian group, the correlation between WM scores and the linear propositions scores was $r=0.50$, $p<0.05$. Hence, considering the 5% level of significance, there is evidence of a moderate positive correlation between these two variables, as it can be seen in Figure 9.

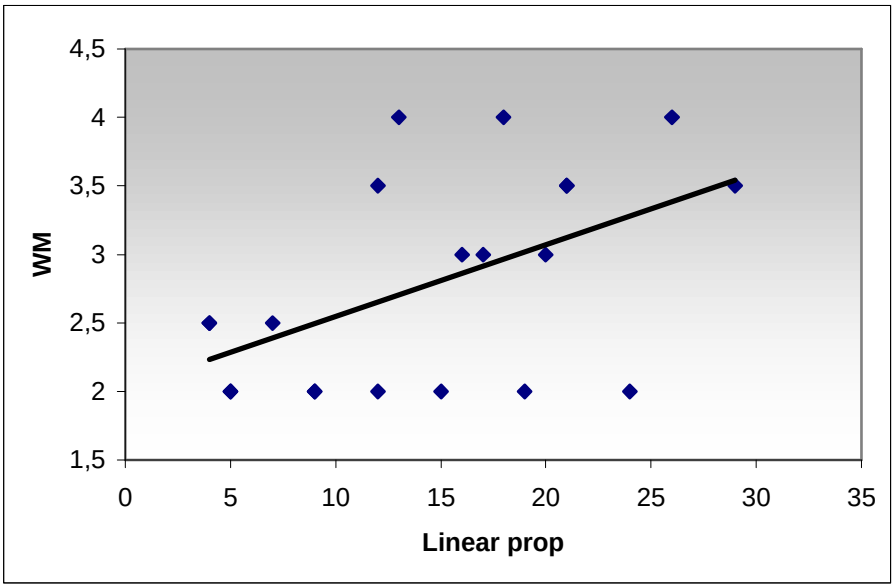


Figure 9. Correlation between participants' WM span tests and the scores on the recall of linear propositions- Brazilian group.

The next correlation considered the scores of the WM span test and the ones of the hypertext propositions, in the Brazilian group. The outcome was r=0.57, p<0.05. Therefore, at the 5% level of significance there is evidence of a moderate positive correlation. Figure 10 illustrates the findings.

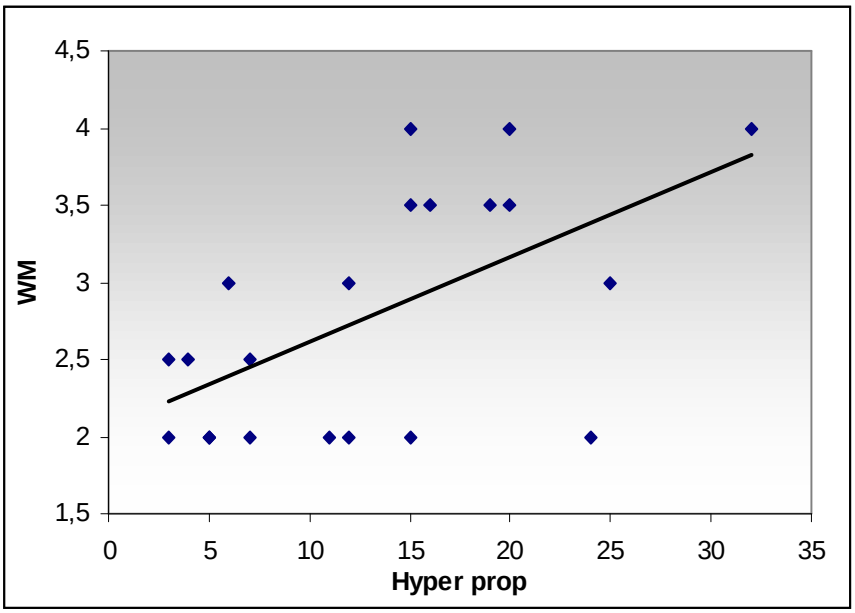


Figure 10. Correlation between WM results and the ones obtained on the hypertext propositions- Brazilian group.

4.1.4 Results from the Brazilian group on the correlation between the WM span tests and the comprehension questions

The next correlation investigated was between the scores of the WM span test, and the ones of the comprehension questions from the linear texts (linear written). Results obtained established a correlation of r=0.18, p>0.05. Considering the 5% level of significance, it can be stated that there is *no* evidence of a correlation between these two variables (see Figure 11).

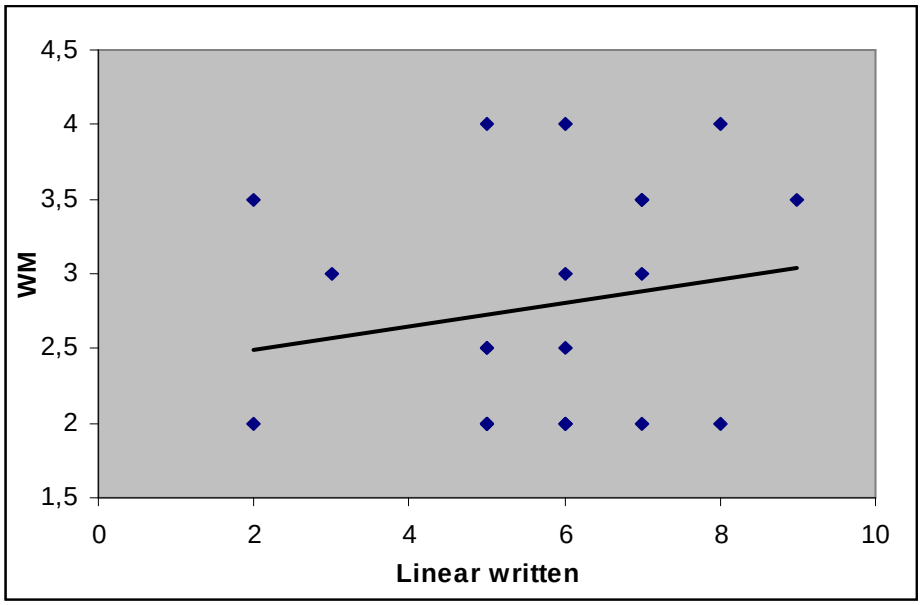


Figure 11. Correlation between WM tests and the scores on the linear written-Brazilian group.

The correlation between WM scores and the ones on the comprehension questions from the hypertexts (hyper written) was r=0.59, p<0.05, indicating that, at the 5% level of significance there is evidence of a moderate positive correlation between these variables investigated, as illustrated in Figure 12 below.

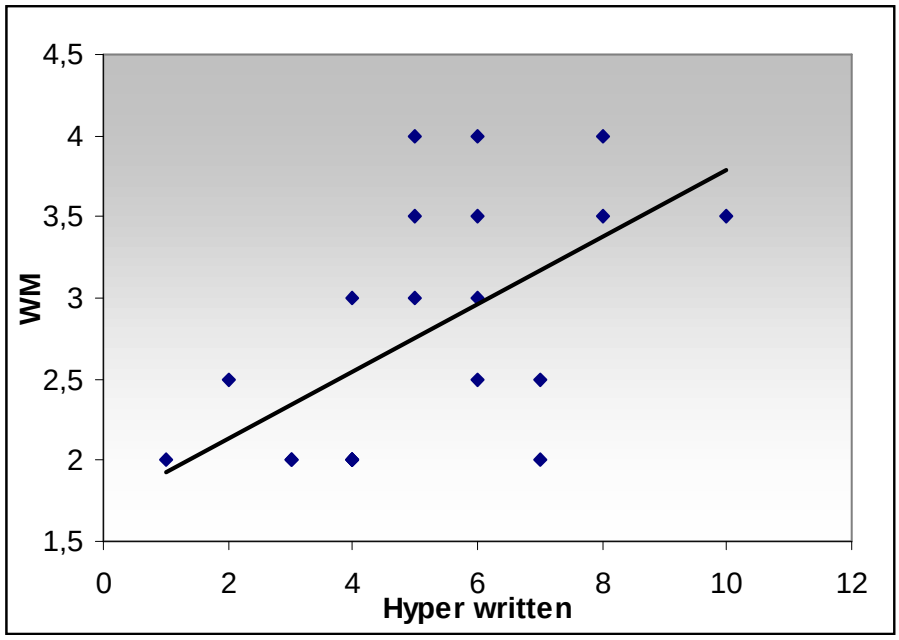


Figure 12. Correlation between the scores obtained on the WM span tests and the ones obtained on hyper written-Brazilian group.

As it could be observed, there was a correlation between WM capacity and performance in the recalls of the linear texts (r=0.50), and hypertext (r=57); however, this correlation was a little higher in relation to WM and performance in the recalls of hypertext propositions. In addition, while there was *no* evidence of a correlation between the WM scores and the ones obtained on the linear written (r=0.18), there was indication of a moderate positive correlation between the WM scores and the ones obtained in the hyper written (r=0.59), in the Brazilian group.

4.1.5 Results from the Chinese group on the correlation between the WM span tests and the recalls

The next investigations considered the Chinese group. The first variables observed were the correlations between WM scores and the ones obtained on the recall

of linear propositions. Results demonstrated that r=0.59, p<0.05. Taking into account the 5% level of significance, there is evidence of a moderate positive correlation between these two variables, as it is illustrated in Figure 13.

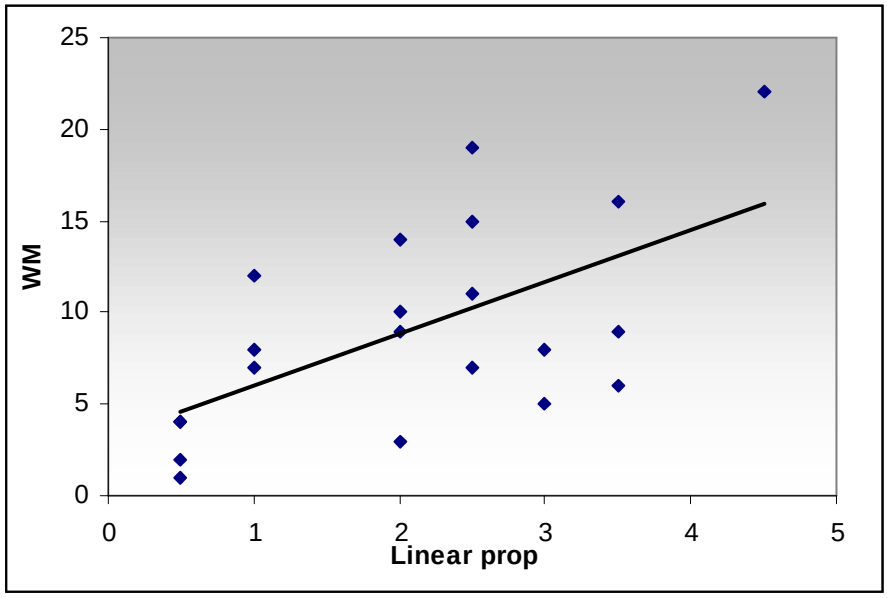


Figure 13. Correlation between the scores on the WM span tests and the ones obtained on linear propositions- Chinese group.

Correlating participants' WM scores with the ones obtained on the recall of hypertext propositions, the result was r =0.74, p<0.05. Thus, there is evidence of a high positive correlation at the 5% level of significance, as it can be observed in Figure 14.

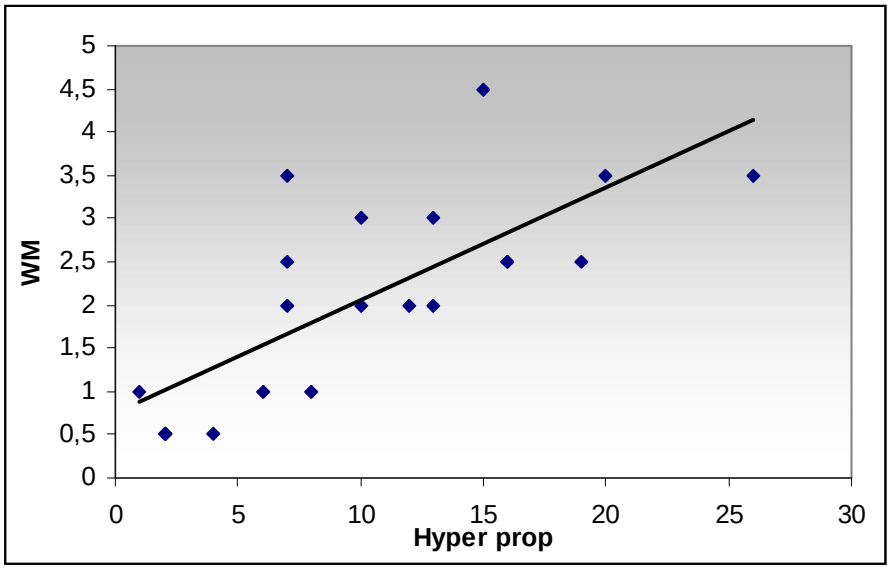


Figure 14. Correlation between the scores obtained on the WM span tests and the ones obtained on hypertext propositions- Chinese group.

As it could be noticed from the two results above, there was evidence of correlations between participants' working memory capacity and their performance in the recalls; even so, the correlation was much higher in relation to performance in the recalls of hypertext proposition.

4.1.6 Results from the Chinese group on the correlation between the WM span tests and the comprehension questions

The correlation between participants' WM scores, and the ones obtained on the comprehension questions from the linear texts (linear written) established that $r=0.40$, $p>0.05$. This outcome shows that at the 5% level of significance there is *no* correlation between the variables investigated. Figure 15 illustrates the findings.

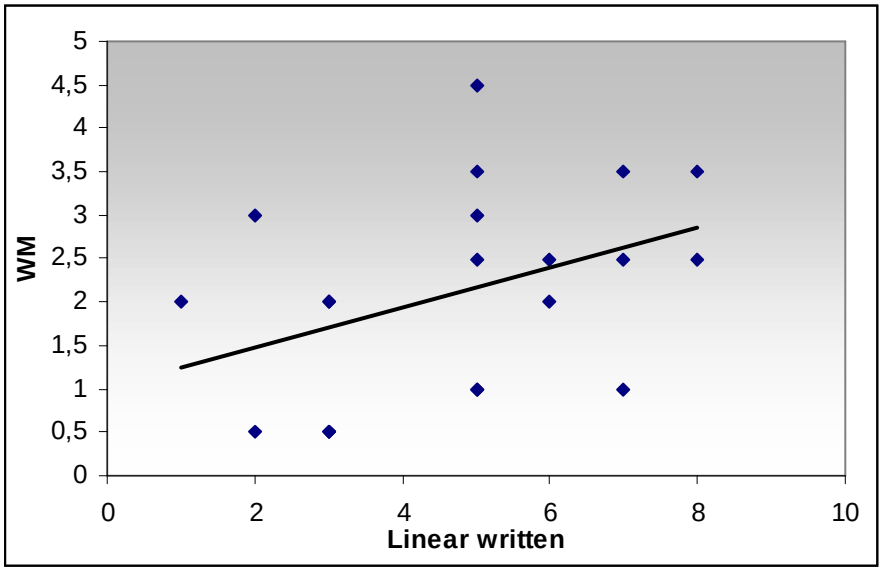


Figure 15. Correlation between the scores obtained on the WM span tests and the ones obtained on the linear written-Chinese group.

Correlation between the results obtained on the comprehension question from the hypertexts (hyper written), and participants' working memory capacity was $r=0.54$, $p<0.05$. Thus, taking into account the 5% level of statistical significance, there is evidence of a moderate positive correlation between these variables (see Figure 16).

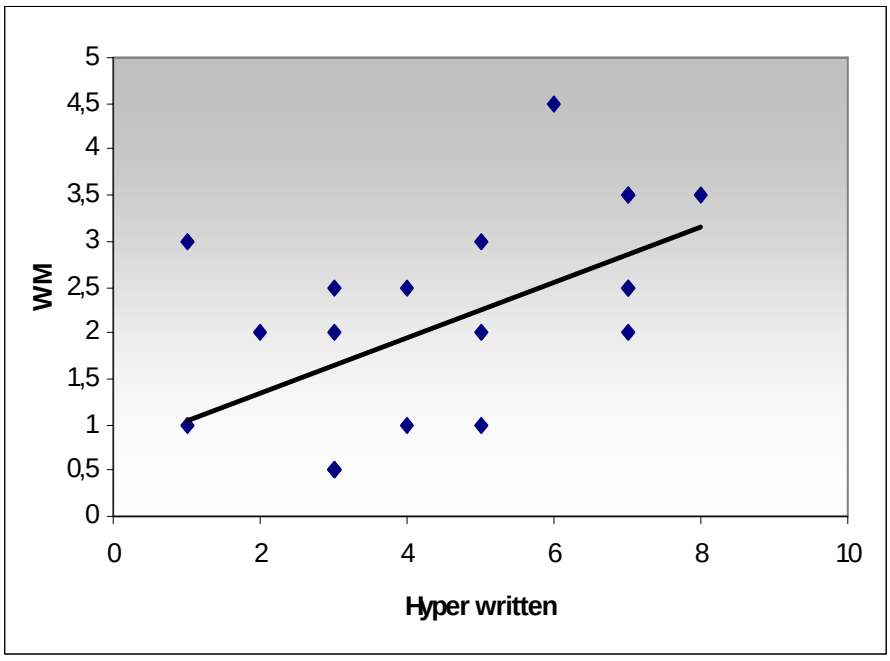


Figure 16. Correlation between scores obtained on the WM span test and the ones obtained on the hyper written, in the Chinese group.

Analyzing these two results presented above, it could be noticed that while there was no evidence of a correlation between the scores of the WM tests, and the ones of the linear written (r=0.40), there was a correlation in relation to the hyper written (r=0.54) (comprehension questions from the hypertexts).

Comparing the two groups (Brazilian and Chinese), the results show that there was a correlation between all participants' working memory capacity and their performance in the recalls; however, this correlation was stronger between WM scores and the ones obtained in the recalls of hypertext propositions.

The results correlating the WM span tests and the scores obtained in the comprehension questions demonstrate that while there was *no* correlation between WM scores and the ones in the linear written, there was a correlation between the WM scores and the ones on the hyper written. This outcome signals to the fact that whilst there was not a straight relationship between participants' working memory capacity and their performance in the linear written, there was a connection between WM capacity and the hyper written, in the two groups (Brazilians and Chinese).

4.2 Results of the analysis of the scores obtained on the recalls and comprehension questions among all participants (Brazilians and Chinese)

Besides the Pearson correlation coefficient, the Student t-test was also used here to analyze the data obtained. The first one was used to describe the correlation between the scores, and the second one was used to explain the relationship between the means. Results correlating the recalls of linear propositions and hypertext propositions was $r=0.62$, $p<0.05$, hence pointing to a moderate correlation.

In order to investigate the mean scores obtained, the 'null' and the 'alternative' hypotheses were used. The statistical reason for using them is that they provide clear information about the relationship of the variables being tested.

H_0: The mean scores on the linear propositions would be the same as those on the hypertext propositions.

H_1: The mean scores on the linear propositions would be higher compared to the hypertext propositions.

The outcome using the t-test showed that p=0.88 >0.05, thus, indicating that despite the perceptible difference noticed in the mean scores, favoring the linear prop, this difference was not statistically significance at the 5% level. In this case, hypothesis **H_0** was not rejected. Table 3 below illustrates the findings.

Table 3
Results of the Scores between the Linear Texts and the Hypertext Propositions – All Participants

	Mean	Std.Dv.	N	t	df	p
Linear prop	11.85714	7.083376				
Hyper prop	11.71429	7.510272	42	0.145979	41	0.884654

The next correlation investigated was between the linear written and the hypertext written among all participants. The outcome was r=0.54, p=<0.05, consequently indicating a moderate correlation. The hypotheses below were used to verify the mean scores obtained:

H_0: The mean scores from the linear written would be the same in both modes of texts presentation among all participants.

H_1: The mean scores from the linear written would be higher compared to those from the hypertext written, among all participants.

Results from the t-test showed that p=0.18 >0.05. Hence the difference noticed between these two variables was not significant at the 5% level, in spite of the small difference favoring the linear written. Hence hypothesis **H_0** was not rejected. Table 4 below shows the statistical results.

Table 4
Results of the Scores in the Comprehension Questions in the Linear Written and Hypertext Written Among All Participants

	Mean	Std.Dv.	N	t	df	p
Linear written	5.214286	1.982062				
Hypertext written	4.809524	2.144057	42	1.335747	41	0.189000

In order to extend this investigation, performance between the two groups (Brazilian and Chinese) was also compared. The results are discussed in the next sub-sections.

4.3 Analysis of the scores obtained by the Brazilian and the Chinese group

The Student t-test was applied here to compare the scores obtained by the two groups. The following variables were observed: (A) the scores on working memory, (B) the scores on the linear propositions recalled, (C) the scores on the hypertext propositions recalled, (D) the scores from the comprehension questions- linear written, and (E) the scores from the comprehension questions-hyper written.

A) Analysis of the scores obtained on the working memory span tests

In order to verify the mean scores obtained by the two groups, the following hypotheses were tested:

H_0: The mean scores obtained on the WM span tests would be the same for the two groups.

H_1: The mean scores obtained by the Brazilian participants on the WM span tests would be higher than those obtained by the Chinese group.

Considering that t= 2,24, df=40, p=0.03 < 0.05, it was possible to conclude that **H_0** was rejected, that is, comparing the mean scores between the two groups it is possible to state that there was a significant statistical evidence supporting the hypothesis that the mean scores obtained by the Brazilian group, in the WM test, were higher than those obtained by the Chinese group. Table 5 shows the findings.

Table 5
Results of the Scores on the Working Memory Span Tests by the Brazilians and the Chinese Group

WM span test	Mean	Std dev	F –ratio variance	p variance	t	df	p
WM – Brazilian	2.7857	0.7676					
WM – Chinese	2.0952	1.1792	2.3596	0.0617	2.2488	40	0.030101

B) Analysis of the scores obtained in the linear proposition recalls

The following hypothesis were used to test the mean scores obtained by the two groups:

H_0: There would be no statistically significant difference (higher or lower) between the mean scores obtained on the linear proposition recalls by the two groups.

H_1: There would be a significant statistical difference between the mean scores obtained on the linear proposition recalls in the two groups, favoring the Brazilian group.

Considering the difference in means by the two groups results show that the t=2.66, df=40, p=0.01 < 0.05. Hence, it was possible to state that a significant statistical difference was found between the mean scores obtained in the linear text recalls, favoring the Brazilian group, compared to the Chinese group (see Table 6).

Table 6
Results of the Scores in the Recalls by the Brazilian and Chinese Groups

Linear propositions recalled	Mean	Std dev	F –ratio variance	p variance	t	df	p
Linear prop – Brazilians	14.5714	7.1429					
Linear prop – Chinese	9.1429	5.5972	1.7893	0.2019	2.6612	40	0.011155

C) Analysis of the scores obtained in the recall of hypertext propositions

In order to test the mean scores obtained by the two groups the following hypotheses were tested:

H_0: The mean scores obtained on the recall of hypertext propositions in the Brazilian group would be the same as for the Chinese group.

H_1: The mean scores obtained on the recall of hypertext propositions would be higher for the Brazilian group compared to the Chinese group.

Taking into account that t=1.24, df=40, p=0.22 > 0.05, at the 5% level of significance, it is possible to say that the null hypothesis was not rejected, that is, there is evidence that the mean scores in the two groups is similar, in spite of the observable difference favoring the Brazilian group (Brazilian and Chinese). Table 7 illustrates the findings.

Table 7
Results of the Scores in the Recall of Hypertext Propositions by Brazilians and Chinese

Hypertext propositions recalled	Mean	Std dev	F –ratio variance	p variance	t	df	p
Hyper prop – Brazilians	13.1429	8.1135					
Hyper prop – Chinese	10.2857	6.7464	1.4463	0.4164	1.2408	40	0.2219

D) Analysis of the scores obtained in the comprehension questions (linear written).

The hypotheses below were used to test the mean scores obtained by the two groups:

H_0: The mean scores in the comprehension questions from the linear texts would be the same for the two nationalities.

H_1: The mean scores in the comprehension question from the linear texts would be higher for the Brazilian group compared to the Chinese group.

Considering that t= 1.67, df=40, p=0.10 > 0.05, the null hypothesis was not rejected, that is, at the 5% level, there was no statistically significant evidence that the mean scores in the comprehension questions from the linear texts would vary in the two nationalities, despite the observable difference detected favoring the Brazilian group (see Table 8).

Table 8
Results of the Scores in the Linear Written by Brazilians and Chinese

Linear written	Mean	Std dev	F –ratio variance	p variance	t	df	p
Linear written Brazilians	5.7143	1.8205					
Linear written Chinese	4.7143	2.0529	1.2716	0.5962	1.6701	40	0.1027

E) Analysis of the scores obtained in the comprehension questions (hypertext written)

The following hypotheses were used to test the mean scores obtained by the two groups:

H_0: The mean scores obtained of the comprehension questions (hyper written) would be the same in the two nationalities.

H_1: The mean scores of the hyper written in the Brazilian group would be higher compared to the Chinese group.

Considering that t=1.00, df=40, p =0.31 > 0.05, at the 5% level of significance, it can be said that the difference detected in the mean scores, in these two groups, did not present statistical significance, despite the results favoring the Brazilian group. Thus hypothesis **H_0** is supported. Table 9 illustrates the findings.

Table 9
Results of the Scores in the Hypertext Written by Brazilians and Chinese

Hyper Written	Mean	Std dev	F –ratio variance	p variance	t	df	p
Hyper written – Brazilians	5.1429	2.1514					
Hyper written – Chinese	4.4762	2.1359	1.014	0.9744	1.0077	40	0.3196

4.4 Analysis of the results obtained on the recalls and comprehension questions between all high and low span participants

An additional investigation was also carried out, this time comparing performance between all high and low-pan participants. The Student t-test was also applied for analyzing the scores obtained.

The first investigation was in relation to the recalls on the linear texts. Results comparing the mean scores obtained between these two groups showed $p=0.00 < 0.05$. Hence, taking into consideration the 5% degree of significance, it is possible to state that there is significant statistical evidence that low-span participants' mean scores in the recall of linear propositions are significantly lower than those of high-span participants'. Table 10 below illustrates the findings.

Table 10
Results of the Scores in the Recall of Linear Propositions Between High and Low-Span Participants

Linear propositions recalled	Mean	Std dev	F –ratio variance	p variance	t	df	p
High-spans	16.1875	6.99732					
Low-spans	9.05263	5.96726	1.37504	0.51486	3.25712	33	0.001304

The next investigation was related to the recalls on the hypertexts. Analysis of the means between the two group showed $p=0.00 < 0.05$, thus indicating a significant statistical difference between the means in two groups. That is, low-span participants

scored significantly less on the recall of hypertext propositions compared to high-span participants. Results are displayed in Table 11.

Table 11
Results of the Recalls in the Hypertexts Between High and Low-Span Participants

Hyper propositions recalled	Mean	Std dev	F –ratio variance	p variance	t	df	p
High-spans	16.93750	6.95192					
Low-spans	7.84211	1.45832	1.45832	0.44202	4.23598	33	0,000087

It is interesting to notice that comparing the means obtained in the recalls of linear and hypertext propositions, between high and low-span participants, the difference was even more significant in relation to the recalls of hypertext propositions (Linear prop=0.001304 and hyper prop=0,000087)

The next investigation was related to the scores obtained on the linear written. Results comparing the means between the two groups showed that $p=0.03 < 0.05$, therefore, at the 5% level it can be said that the mean scores obtained by low-span participants was much inferior compared to those obtained by high-span participants in the linear written. Table 12 illustrates the results.

Table 12
Results of the Scores in the Linear Written Between High and Low-Span Participants

Linear written	Mean	Std dev	F –ratio variances	p variance	t	df	p
High-spans	5.75325	2.08176					
Low-spans	4.47368	1.94525	1.13476	0.78919	1.8685	33	0.035296

Moving to the analysis on the scores of the hyper written, the results comparing means between the two groups showed that $p=0.00 < 0.05$, confirming that the mean obtained by low-span participants on the hyper written was significantly lower compared to the ones obtained by high-span participants. Table 13 illustrates the findings.

Table 13
Results of the Scores in the Hyper Written Between Low and High-Span Participants

Hyper Written	Mean	Std dev	F –ratio variances	p variances	t	df	p
high-spans	6.06250	2.04837					
Low-spans	3.63158	1.60591	1.62696	0.32359	3.93554	33	0.000202

Comparing the performance between high and low-span participants, the following results should be highlighted: there was a significant difference in performance between high and low-span participants, as expected; nonetheless, the difference was more critical in relation to low-span participants' performance in the comprehension questions from the hypertexts (hyper written), as it can be observed in Table 14 below.

Table 14
Results of the Scores of High and Low-Span Participants in the Recalls and Comprehension Questions in All Activities

	High –span participants	Low-span participants
Linear prop	16.1875	*9.05263*
Hyper prop	*16.9375*	7.84211
Linear written	5.7500	4.47368
Hyper written	*6.0625*	*3.63158*

It is also important to notice, from the results above, that while the organization of the hypertexts seemed to have favored performance of the high-span participants, with their scores being slightly improved, performance of low-span participants enhanced in the linear texts. However, further research is needed to corroborate these assumptions.

In order to have more subsides to understand and explain reading deriving from linear texts and hypertexts, and additionally, in order to expand the investigation between working memory and performance, the next sub-sections will focus on the performance among all high-span participants, as well as among all low-span participants.

4.5 Analysis of the results obtained in the recalls and comprehension questions- high and low-span participants

It is important to emphasize, once more, that participants were classified in three groups: (a) low-spans, with scores ranging from 0, 5 to 2, 0, (b) medium-spans, with scores of 2, 5, and high-spans with results ranging from 3, 0 to 5, 0. The data obtained

from the medium-span participants were not taken into account, assuming that the variation in performance could be better observed in the two extreme groups, that is, between the high and low-span participants.

Hence, disregarding the results of the medium-span participants, 18 individuals formed the Brazilian group; 10 classified as high spans, and 8 classified as low-span participants. Among the Chinese population, 6 were classified as high-spans, and 11 as low-span participants, as it can be seen in Figure 17.

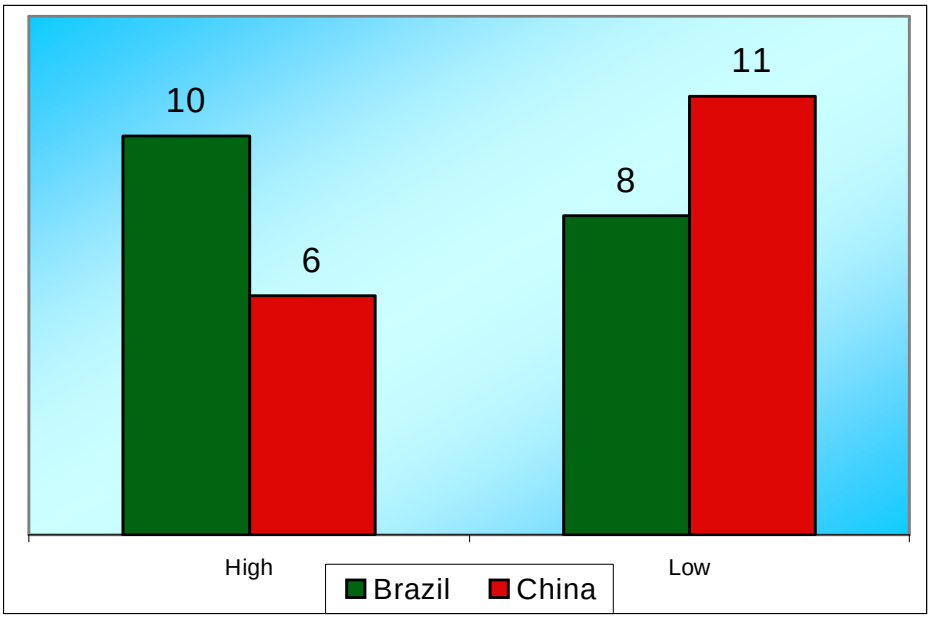


Figure 17. Number of high and low-span participants- Brazilian and Chinese groups.

Therefore, according to the data obtained, 57.89% of the low-span participants were Chinese and 62% of the high-spans were Brazilians. Analysis of performance was initially carried out among all low-span participants.

4.5.1 Analysis of results obtained from the low-span participants

The Pearson correlation coefficient and the Student t-test were also used for investigating the low-span participants' performance. The correlation between the propositions recalled in the linear texts and hypertexts was $r=0.71$, $p<0.05$. Accordingly, at the 5% level of significance a high positive correlation was found between these two variables. Figure 18 displays the findings.

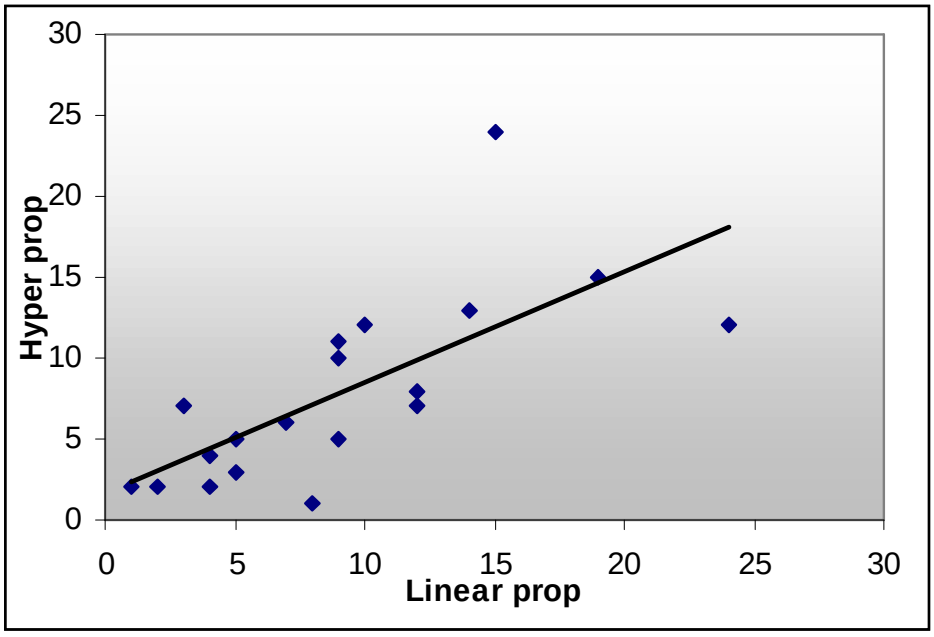


Figure 18. Correlation between linear text and hypertext propositions from low-span participants.

Comparing the means obtained in the linear prop and hyper prop using the t-test, the result was $p=0.12 > 0.05$. Hence, at the 5% level, the difference in the mean scores noticed, favoring the recalls on the linear texts, was not statistically significant. That is, the scores in the recalls were similar between these two modes of text presentation. Hence, for low-span participants performance was equivalent in the two modes of text presentation. Table 15 illustrates the findings.

Table 15
Results of the Scores in the Recalls of the Linear Texts and Hypertexts Within Low-Span Participants (Brazilians and Chinese)

Low-spans	Mean	Std dev	T	df	p
Linear prop	9.05263	5.96726			
Hyper prop	7.84211	5.75677	1.18789	18	0.12518

The next correlation was between the linear written, and hypertext written (comprehension questions), among all low-span participants. Comparing these two variables, the results showed that r=0.11, p>0.05. Thus, at the 5% level of significance *no evidence* of a correlation was found between these two variables. Figure 19 displays the findings.

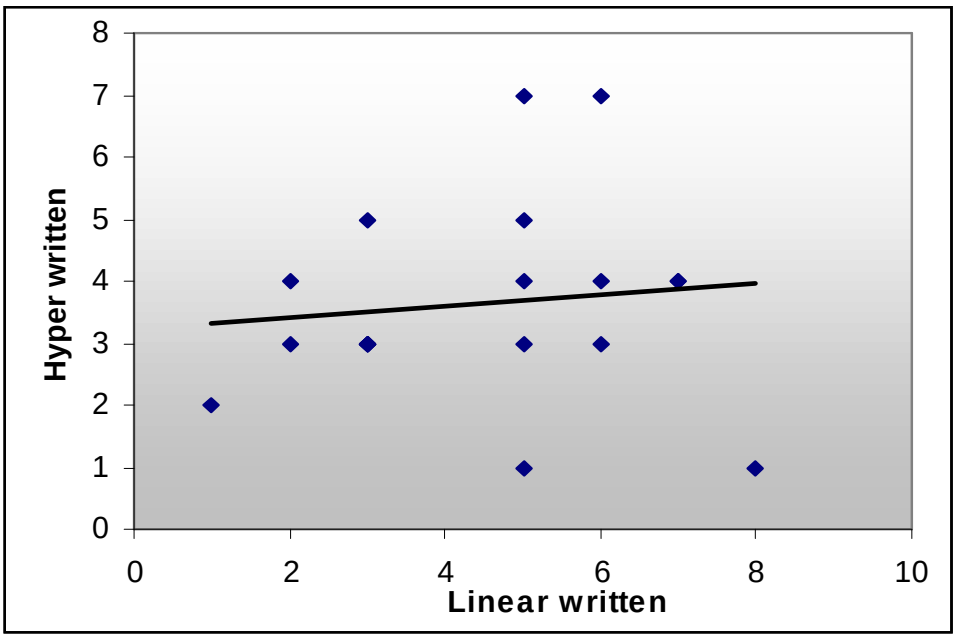


Figure 19. Correlation between the scores obtained on comprehension questions- linear texts and hypertexts among low-span participants.

Results comparing the mean scores obtained showed that p=0.07 > 0.05, pointing to the aspect that at the 5% level, no significant statistical difference was found, despite the observable difference favoring the linear written. Nevertheless, taking into account (a) the p=0.07 being in the vicinity of the 5% level of significance, and additionally, (b) considering that no evidence of a linear correlation was found between these two variables (linear written and hyper written), this outcome might also signal to possible differences in performance deriving from these two modes of texts presentation. In other words, one might conjecture that for accessing information, mostly the textual explicit ones, the mode of text presentation might interfere in low-span readers' performance. However, further investigation is needed to replicate this finding. Results are displayed in Table 16.

Table 16
Results of the Scores in the Linear and Hyper Written – Low Span Participants (Brazilians and Chinese)

Low-spans	Mean	Std dev	t	df	p value
Linear written	4.47368	1.95415			
Hyper written	3.63158	1.60591	1.538019	18	0.070719

4.5.2 Analysis of results obtained from the high-span participants.

Moving to the high-span participants, the correlation between their scores on the recall of linear texts and hypertexts propositions showed that r=0.16, p>0.05. Thus, at the 5% level of significance *no* linear correlation was evidenced. Figure 20 illustrates the outcomes.

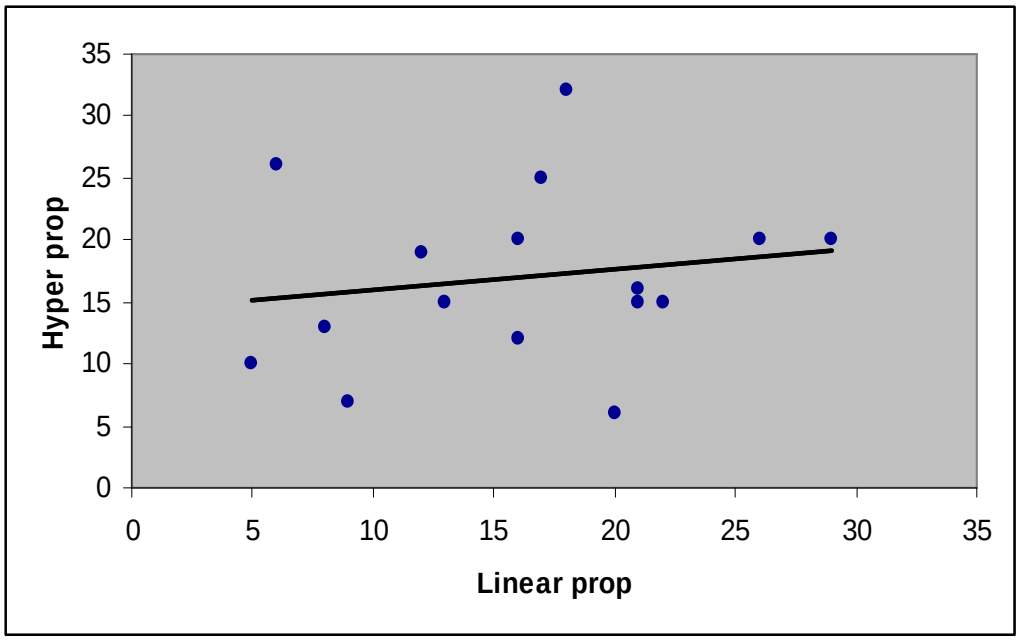


Figure 20. Correlation between recalls- linear texts and hypertexts among high-span participants.

Investigation in the mean scores using the t-test showed that, notwithstanding the slight difference observed in the recalls, favoring the hypertexts, this disparity was not statistically significant at the 5% level, considering that p=0.74 > 0.05. Hence, scores were similar, thus, signaling to the fact that the mode of text presentation did not interfere in the construction of main ideas for high span-participants. Table 17 illustrates the findings.

Table 17
Results of the Scores for the Recalls in the Linear Texts and Hypertexts for All High-Span Participants (Brazilians and Chinese)

High-spans	Mean	Std dev	t	df	p
Linear prop	16.1875	6.99732			
Hyper prop	16.9375	6.95192	-0.33608	15	0.74329

The correlation between the comprehension questions- linear and hyper written among all high-span participants, indicated that r=0.81, p<0.05. Therefore, at the 5% level of statistical significance a high positive correlation was observed. Figure 21 illustrates the outcome.

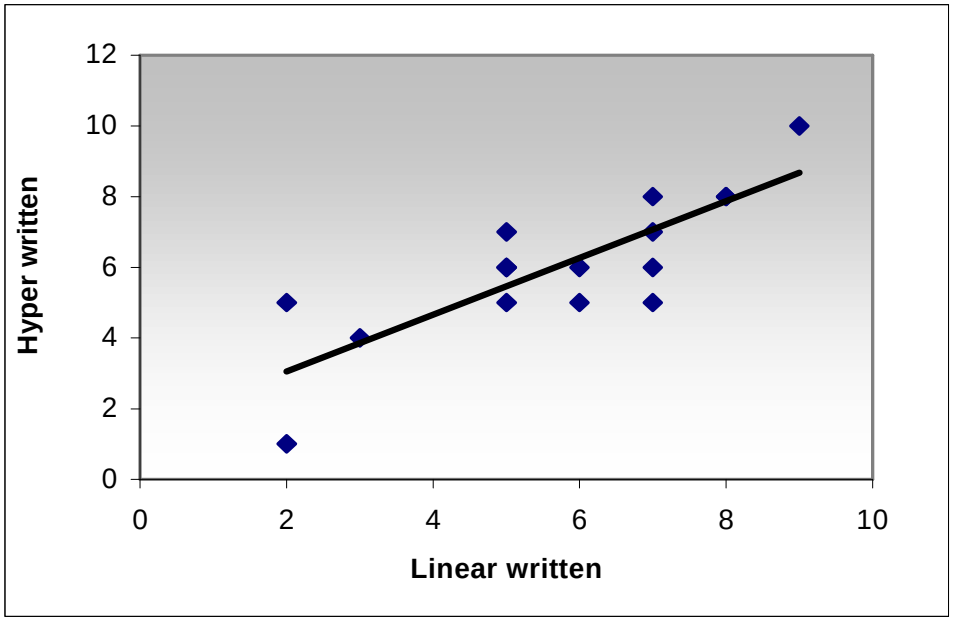


Figure 21. Correlation between the linear written and hyper written-high-span participants.

Results from the t-test considering the apparent differences noticed in the mean scores obtained in the comprehension questions, favoring the hypertext written, showed that p=0.16 > 0.05. Thus, it can be said that at the 5% level, the results observed were not statistically significant. That is, scores obtained on the linear and hyper written were similar for all high-span participants. Table 18 displays the findings.

Table 18
Results of the Scores in the Linear Written and Hypertext Written – All High-Span Participants (Brazilians and Chinese)

High-spans	Mean	Std dev	t	df	p
Linear written	5.7500	2.08167			
Hyper written	6.0625	2.04837	-1.00000	15	0.166585

As can be observed from the results on the recalls and comprehension questions above, the performance of high-span participants was slightly better in the hypertext activities.

4.6 Results from the retrospective questionnaires Chinese group (low and high-span participants)

It is important to emphasize here that the results from the retrospective questions (the self-awareness questions) did not have a regular pattern, considering that the alternatives selected were according to participants' evaluation of their own reading process, in each of the ten question formulated. Thus, the outcomes next presented will only describe the tendencies of the entire group for selecting some of the alternatives. The discussion of the relevant findings related to the retrospective questionnaire will be provided in the next sections, as already explained.

The first answers investigated were those from the linear texts, in the low-span Chinese group. Considering all the answers from the linear texts, there was a propensity for the group to select the alternative 'agree' (43 times), followed by 'neutral' (40 times) to the different questions proposed. No participant selected the alternative

‘strongly disagree’ for any of the questions. In the hypertexts, the alternative ‘agree’ was also the most selected (47 times), followed by ‘neutral’ (45 times).

For statement 1- “The information in the articles was well organized”- the alternative ‘neutral’ was selected 4 times, and ‘agree’ was also selected 4 times. In the hypertexts, the same statement had the alternative ‘neutral’ selected 4 times and ‘agree’ 4 times. For Statement 2- “The article was easy to understand”- the alternative ‘neutral’ was selected 5 times in the linear texts, and in the hypertext the alternative ‘agree’ was selected 6 times. Statement 3- “The article was easy to follow” had ‘neutral’ selected 6 times and ‘agree’ selected 7 times. In the hypertexts, the same statement had the option ‘agree’ selected 8 times. Statement 4- “The story was easy to remember”- had the option ‘agree’ selected 5 times, while in the hypertexts ‘agree’ was selected 4 times. Statement 5- “The article had a logical fashion” had ‘neutral’ selected 4 times and ‘agree’ 4 times. In the hypertext, the option ‘neutral’ was selected five times. Statement 6- “The article seemed awkward in certain places”- had ‘neutral’, and ‘agree’ selected 4 times each in the linear texts. In the hypertexts, ‘neutral’ and ‘agree’ were selected 5 times each. Statement 7- “The article was easy to remember”- the option ‘disagree’ was selected 4 times and ‘agree’ times. In the hypertexts, ‘neutral’ was selected 5 times and ‘agree’ 4 times. Statement 8- “The story required a lot of effort on the reader’s part”- ‘agree’ was selected 6 times, while in the hypertexts ‘neutral’ was selected 6 times. Statement 9-“The vocabulary was easy”- ‘disagree’ was selected 5 times, while in the hypertexts ‘neutral’ was selected 7 times. Statement 10- “The article gave all the information the reader needed to understand the text”- ‘disagree’ was selected 5 times in the linear texts, and the option ‘neutral’ 7 times. Hence, considering all the results, in both the linear text, and the hypertexts the option ‘agree’ was the most selected one by the Chinese low-span participants. Taking into account that ‘agree’ was used for

different statements, this outcome signal to the fact that these participants assumed a standpoint in relation to these statements. Table 19 illustrates the findings (the numbers in bold are the most selected ones).

Table 19
Results from the Self-Evaluation Questions – Chinese Group – Low-Span Participants

Statements	Linear Text Alternatives					Hypertext Alternatives				
	1	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
1			**4**	**4**	3			4	**7**	
2		2	**5**	2	2		1	2	**6**	2
3		1	6	**7**	1			3	**8**	
4		1	3	**5**	2		1	2	4	2
5		1	**5**	4			2	**5**	3	1
6			4	4			1	**5**	**5**	
7		**4**	3	**4**			1	**5**	4	1
8		2	3	**6**				**6**	5	
9		3	3	**6**				**6**	3	2
10		**5**	3	2			1	**7**	2	1
Total selected	0	19	**40**	**43**	8	0	7	**45**	**47**	9

The most selected alternatives for the high-span participants, in the Chinese group, were: ‘neutral’ (22 times) followed by ‘agree’ (15 times) in the linear texts, and ‘neutral’ (21 times) followed by ‘agree’ (18 times) in the hypertexts.

Considering each statement, the most selected ones were the following: for statement 1-“The information in the article was well organized”- the options ‘agree’ and ‘strongly agree’ was selected twice in the linear texts, and ‘neutral’ twice in the hypertexts. Statement 2-“The article was easy to understand”- had ‘strongly agree’ selected 3 times in both the linear texts and the hypertexts. Statement 3- “”The article was easy to follow”- had the options ‘neutral’, ‘agree’ and ‘strongly agree’ selected twice each in the linear texts, and ‘strongly agree’ selected 3 times in the hypertexts. Statement 4- “ The story was easy to read”- had the option ‘strongly agree’ selected 3

times in both the linear texts and the hypertexts. Statement 5- “The article had logical fashion”- had the option ‘neutral’ selected 3 times in both the hypertexts and the linear texts. Statement 6- “The article seemed awkward in certain places”- had ‘disagree’ and ‘neutral’ selected 3 times each in the linear texts, and ‘agree’ selected 3 times in the hypertexts. Statement 7 “The article was easy to remember”- had the option ‘neutral’ selected 3 times in both the linear texts and the hypertexts. Statement 8- “The story required a lot of effort on the reader’s part”- had the same answers in both the linear texts and the hypertexts- ‘disagree’ twice, ‘neutral’ 2 times, ‘agree’ twice. Statement 9- “The vocabulary was easy”- had the options ‘disagree’, ‘agree’ and ‘neutral’ selected twice each in the linear texts, and ‘neutral’ 4 times in the hypertexts. Finally, statement10- “The article gave all the information the reader needed to understand the text”- had ‘neutral’ selected 3 times in the linear texts and ‘disagree’, ‘neutral’ and ‘agree’ 2 times each in the hypertexts. Table 20 illustrates the findings.

Table 20
Results from the Self-Evaluation Sentences – Chinese Group – High-Span Participants

Statements	Linear Text Alternatives					Hypertext Alternatives				
	1	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
1	1	1		**2**	**2**	1	1	**2**	1	1
2			2	1	**3**				**3**	**3**
3			**2**	**2**	**2**			1	2	**3**
4			2	1	**3**			2	1	3
5		1	**3**	1	1			**3**	2	1
6		**3**	**3**			1		2	**3**	
7		2	**3**	2				**3**	2	
8		**2**	**2**	**2**			**2**	**2**	**2**	
9		**2**	**2**	**2**			2	**4**		
10		1	**3**	2			**2**	**2**	**2**	
Total selected	1	12	**22**	**15**	11	2	7	**21**	**18**	11

Comparing the results from the low and high-span participants it is possible to notice that in the two groups alternatives 3 ‘neutral’ followed by alternative 4 ‘agree’ were the two most selected ones, signaling to the fact that the majority of the participants in these two groups (high and low-spans) did not assume a position in relation to the information provided, for different reasons such as: they did not understand the question, they were not committed to their readings, or they did not have an opinion about the statement they read.

4.7 Results from the retrospective questionnaires for the Brazilian group (low and high-span participants)

Results from the Brazilian group, low-span participants were the following: considering all the answers from the linear texts, the alternative ‘agree’ (40 times) was the most selected one for answering the questions, followed by ‘neutral’ (19 times). In the hypertexts, the alternative ‘strongly agree’ was the most selected one (31 times), followed by ‘agree’ (27 times), among low-span Brazilian participants. The option ‘strongly disagree’ was not selected in the hypertexts.

The most selected alternatives were the following among the group in the linear texts were: for statement 1-“The information in the article was well organized”- the option ‘agree’ was selected 5 times in both the linear texts and the hypertexts. Statement 2 –“The article was easy to understand- had the option ‘agree’ selected 5 times in the linear texts and 6 times in the hypertexts. Statement 3- “The article was easy to follow” -had the option ‘agree’ selected 4 times in the linear texts and 6 times in the hypertexts. Statement 4- “The story was easy to read”- had ‘agree’ selected 5 times

in the linear texts and 6 times in the hypertexts. Statement 5- “The article had a logical fashion”- had ‘neutral’ selected 4 times in the linear texts and ‘agree’ and ‘strongly agree’ selected 3 times each in the hypertexts. Statement 6- “The article seemed awkward in certain places”- had the options ‘strongly disagree’, ‘disagree’ and ‘neutral’ selected twice each in the linear texts and ‘disagree’ and ‘neutral’ selected 4 times each in the hypertexts. Statement 7- “The article was easy to remember”-had the option ‘agree’ selected 5 times in the linear texts and 7 times in the hypertexts. Statement 8- “The story required a lot of effort on the reader’s part”- had ‘neutral’ selected 3 times in the linear texts and ‘disagree’ selected 5 times in the hypertexts. Statement 9- “The vocabulary was easy”- had ‘agree’ selected 5 times in both the linear texts and the hypertexts. Finally, statement 10- “The article gave all the information the reader needed to understand the text”-had ‘agree’ selected 4 times and ‘agree’ and ‘strongly agree’ selected 3 times each in the hypertexts. Table 21 illustrates the findings.

Table 21
Results from the Self-Evaluation Questions – Brazilian Group – Low-Span Participants

Statements	Linear Text Alternatives					Hypertext Alternatives				
	1	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
1			1	**5**	2				**5**	3
2			1	**5**	2			1	1	**6**
3			3	4	1			1	1	**6**
4			2	**5**	1				2	**6**
5		1	1	**4**	2			2	3	3
6	**2**	**2**	**2**	1	1		**4**	**4**		
7		1	2	**5**					**7**	1
8	1	2	**3**	2			**5**	1		
9			1	**5**	2				**5**	3
10		2	3	**4**	1			2	**3**	**3**
Total selected	1	8	19	40	12	0	9	11	27	31

Taking into consideration the results between the Brazilian and the Chinese low-span participants, it is interesting to notice the following aspects: while in the Chinese group (low-span participants) the option ‘neutral’ was selected 40 times in the linear texts and 45 in the hypertexts, in the Brazilian group the same alternative (neutral) was only selected 19 times and 11 times respectively. On the other hand, while the Brazilian group selected the option ‘strongly agree’ 31 times in the hypertexts, the Chinese participants only selected it 11 times. While the alternative ‘neutral’ point to the fact that the participants did not have a point of view in relation to the statements provided, ‘strongly agree’ shows a firm conviction in relation to them. These results demonstrate that participants had a divergent perception in relation to their own reading, thus, pointing to the fact that different factors may influence and affect reading, and thus, comprehension.

Results from the retrospective questions among the high-span participants presented the following results: the most selected alternative was ‘agree’ (42 times), followed by ‘strongly agree’ (31 times) in the linear texts, and ‘agree’ (37 times), followed by ‘strongly agree’ (23 times) in the hypertexts. As already discussed, both options ‘agree’ and ‘strongly agree’ signal to participants’ clear standpoints in relation to the information provided, and in a certain way, also pointing to a stronger commitment in relation to their reading.

Considering each question, the most selected ones were: for statement 1- “The information in the article was well organized”- had the option ‘agree’ selected 5 times in the linear texts, and ‘neutral’ and ‘agree’ 4 times in the hypertexts. Statement 2- “The article was easy to understand”- had the option ‘strongly agree’ selected 5 times in the linear texts, and ‘agree’, and ‘strongly agree’ 5 times each in the hypertexts. Statement 3-“The article was easy to follow”- had the option ‘agree’ selected 5 times in both the

linear texts and the hypertexts. Statement 4- “The story was easy to read”- had the option ‘strongly agree’ selected 5 times in the linear texts, and ‘agree’ 6 times in the hypertexts. Statement 5- “The article had a logical fashion”- had the option ‘strongly agree’ selected 5 times in the linear texts and ‘neutral’, and ‘strongly agree’ selected 3 times each in the hypertexts. Statement 6-“The article seemed awkward in certain places”- had the option (agree) selected 4 times in the linear texts, and 5 times in the hypertexts. Statement 7-“The article was easy to remember”- had ‘agree’ selected 4 times in the linear texts, and ‘disagree’ selected 6 times in the hypertexts. Statement 8- “The story required a lot of effort on the reader’s part”- had the options ‘disagree’, ‘neutral’ and ‘agree’ selected 3 times each in the linear texts, and ‘disagree’ selected 6 times in the hypertexts. Statement 9- “The vocabulary was easy”- had the option ‘neutral’ selected 5 times in the linear texts, and ‘disagree’ selected 6 times in the hypertexts. Finally, statement 10- “The article gave all the information the reader needed to understand the text”- had the option ‘agree’ selected 7 times in the linear texts, and ‘neutral’ and ‘agree’ selected 4 times each in the hypertexts. Table 22 illustrates the findings.

Table 22
Results of the Self-Evaluation Questions – Brazilian Group – High-Span Participants

Statements	Linear Text Alternatives					Hypertext Alternatives				
	1	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
1		1	1	**5**	4			**4**	**4**	3
2		1	1	4	**5**			1	**5**	**5**
3			3	**5**	3			2	**5**	4
4			3	3	**5**			2	**6**	3
5			3	3	**5**	3		**3**	2	**3**
6		3	2	**4**	2		3	1	**5**	2
7	1		3	**4**	3	2	**6**	1	2	
8	1	3	3	3	1	2	**6**	1	2	
9		1	**5**	4	1	2	**6**	1	2	
10		1	1	**7**	2			**4**	**4**	3
Total selected	2	10	25	42	31	9	21	20	37	23

Comparing the results between the high-span participants (Brazilian and Chinese), the following aspects were evidenced: while the most selected option in the Brazilian group was ‘agree’ for both the linear texts and the hypertexts, in the Chinese group it was the option ‘neutral’ (considering that the number of participants were different the results are not stated in terms of time the item was selected). Thus, these results also signal to the fact that different factors interfere in reading comprehension.

Results from the question: “What is the main idea of the text” showed that all participants, high and low spans, were able to appropriately construct their mental representation, answering, in different ways, that the first text was about “eating disorders”, and the second was about “obesity”.

Despite the fact that the retrospective questionnaire involved subjective evaluations, some of the alternatives were more selected, representing, to a certain degree, a commonsensical view among some of the participants, in relation to statements such as ‘the texts were easy to read’, ‘the texts provided all the information necessary to understand them’, ‘the vocabulary was easy to follow’. As already explained, these retrospective questions were not scored, and they were designed (a) as an alternative for explaining unexpected finding, (b) to verify participants awareness in relation to the contradictions, or the lack of local coherence provided in the texts they read, in case they did not acknowledge them in their recalls. Thus, in the next section, the outcomes presented so far will be discussed, and the research questions, and hypotheses initially proposed will be answered.

4.8 Discussion

This section integrates the findings and discusses the results obtained. The central question asked in this work was whether an L2 text presented in two different modes, in this specific case as a hypertext and as a linear text, could affect participants' comprehension, consequently, showing different levels of performance in the activities planned. Three important steps, prior to the application of the experiment were vital to it, and thus, worth reinstating.

Initially, in order to minimize possible text effects that could directly compromise comprehension, and therefore performance, the designs of the two texts used were controlled. Hence, in order to validate these instruments, the Student t-test was used *comparing the propositions recalled between Text 1 and Text 2, in the linear mode of presentation*. Taking into account that $p=0.01< 0.05$, thus, establishing significant similar samples, this result signaled to the fact that the outcomes obtained would not suffer interference from the texts applied.

The second procedure to validate the instruments of data collection was related to the design of the comprehension questions. A professor from the Federal University of Santa Catarina (Letras), with a PhD in the area of testing, helped this researcher to guarantee the appropriateness of this instrument. Finally, participants' knowledge in the English language was also verified, through proficiency tests, to ensure the level (upper-intermediate) required for taking part in this experiment. As already explained, the necessary level was the one that could guarantee participants' ability to effectively understand a diversity of vocabulary, and sentence structures used in different reading activities.

Four specific questions were formulated to achieve the aim here proposed, and these four questions were restated into four specific statistical hypotheses; they will be discussed in the next sections.

4.8.1 The first research question and hypothesis

The first question proposed tried to explore in which mode of text presentation, hypertext or linear text, participants recalled more main propositions. The hypothesis stated that the scores on the recall of propositions would be higher for the linear texts than for the hypertexts, in view that linear texts present information in a sequence, which is, mostly, logically and chronologically organized. Thus, information could be more promptly integrated, and coherence could be more easily achieved. Additionally, readers are more familiar with this type of text presentation, which, in turn, should benefit comprehension, and hence, performance. For all the discussion reported hereafter, the alpha level was set at .05, according to what is normally accepted in this area of research.

In order to answer the question above, the following variables were analyzed (a) differences in the scores obtained in the recalls- linear texts versus hypertexts among all participants, and (b) differences in the scores between the two nationalities, in view of the results observed.

Considering *all participants*, inspection of the results obtained in the recalls of the linear and the hypertext propositions suggests that the mode of text presentation did not hinder the construction of main ideas, taking into account that the results from the Student t-test showed $p=0.88 > 0.05$, indicating similar means. Therefore, in the two

modes of text presentation performance was equivalent, despite the slight difference noticed in the mean scores favoring the recalls in the linear texts. The correlation obtained was r=0.06, p< 0.05, signaling to a moderate positive correlation, hence, also pointing to the fact that performance in these two modes of text presentation could be considered alike among all participants.

Examination considering the linear text recalls *between* the Brazilian and Chinese group, showed that there was a significant statistical difference in means between these two groups in the recall of linear propositions, favoring the Brazilian group (t=2.66, p=0.01 < 0.05). Taking into account that these two groups had the same English level required, and in addition, considering that the majority of the participants acknowledged, in the retrospective questionnaire (self-evaluation questions), that the texts presented all information necessary to understand their contents, a possible explanation for the difference in performance, in both modes of text presentation, was that the Chinese language might have interfered in their L2 reading. That is, Chinese sentences are mostly read from the right to the left, hence, presenting different constructions compared to Portuguese and English. Accordingly, it is possible to hypothesize that for the Chinese group, reading only once was not enough for allowing them to capture, process and retain as much information as the Brazilian participants did, which in turn, limited their construction of main propositions (Kintsch, 1998). This outcome may also corroborate Brown and Hymes (1985) assumption stating that the literacy background affects visual and orthographic processing, which, in turn, may constrain comprehension.

Comparing the two groups, and their performance in the hypertext recalls, the outcomes showed that the apparent difference observed, favoring the Brazilian group, was not statistically significance (t=1.24, p=0.22 > 0.05). An interesting aspect to

notice with the results in the hypertext recalls is that, while the Chinese group seemed to have benefited from the hypertexts to construct the main ideas, slightly increasing their performance (linear prop: 9.14, and hyper prop: 10.28), the Brazilian group did not, presenting a little decrease (linear prop: 14.57, and hyper prop: 13.14). The possible explanation, again, is the interference of their first language which is read in different ways. Nevertheless, taking into account that the results did not reach statistical significance, further research would be needed to support this finding.

Answering the first question proposed here, in which mode of text presentation participants recalled more main propositions, the results presented so far, considering the variables investigated, pointed to different answers. Thus, taking into account all participants and their recalls in linear texts and hypertexts, no difference in means was found, at the 5% level of statistical significance, between these two modes of text presentation, despite the small variation favoring the recalls in the linear texts. Nonetheless, when comparing performance between the two nationalities, results pointed to the fact that the mode of text presentation influenced the recalls, especially the linear recalls, with the Brazilian group showing much better performance in constructing the main ideas, compared to the Chinese participants, with results reaching the 5% level of statistical significance. These results may corroborate other findings already existing in the literature suggesting that: (a) “performance in linear texts can be more accurate” (McKnight, Dillon, Richardson, 1990, p. 16); and (b) linear texts are “less disruptive during information acquisition” (Benest, 1990, p. 63).

Results also demonstrated that, contrary to the Brazilian group, the Chinese group slightly improved their performance in the hypertext recalls, compared to the linear ones. Hence, investigating different nationalities, the conclusion arrived from the data obtained in this experiment is that different variables, such as readers’ first language,

may interfere in processing and constructing the main propositions in L2 texts, and the mode of text presentation might interfere in this process in particular ways.

4.8.2 The second research question and hypothesis

The second research question tried to inspect in which mode of text presentation, hypertexts or linear texts, participants showed higher performance in the comprehension questions. The hypothesis raised was that in linear texts information seems to be more readily available for processing, integrating, and constructing both the micro (local structure), and macro structure (global structure) of texts (van Dijk, 1980, Kintsch, 1998). Thus, scores in the comprehensions questions should be higher in linear texts. In order to answer the question above stated, the following variables were analyzed (a) difference in the scores obtained in the comprehension questions- linear written versus hyper written among all participants, and (b) also between the two nationalities, in view of the differences observed.

Taking into account *all participants*, results showed that the mode of text presentation did not interfere in performance for answering the comprehension questions in the linear texts and hypertexts, with results pointing to a moderate correlation ($r=0.54$, $p<0.05$), showing that in the two modes of text presentation performance was similar. In addition, the t-test demonstrated that no significant statistical difference in means was evidenced ($p=0.18 >0.05$), regardless of the small difference noticed favoring the linear texts. However, in view that, recurrently, a small difference in the results favoring the linear texts was noticed, more research, with a bigger group of participants, would be needed to better scrutinize the data obtained

here. Comparing the mean scores obtained between the two groups in the linear and hyper written, results showed no significant statistical difference, considering that for the linear written $p=0.10 > 0.05$, and for the hyper written $p=0.31 > 0.05$.

Retaking the second research question (In which mode of text presentation participants showed higher performance) it could be said that Brazilian and Chinese participants performed alike, that is, they were able to process and retain some of the specific information necessary for answering the comprehension questions from the linear texts and the hypertexts, with differences in the outcomes not reaching statistical significance, in spite of the small differences in means detected, favoring the linear written. Hence, more research, with a bigger group, would be recommended to corroborate the findings aforementioned.

4.8.3 Third research question

The third research question tried to investigate the relationship between participants' working memory capacity and their performance in the activities planned for the linear texts and the hypertexts. The hypothesis raised was that considering the straightforward relationship existing between working memory capacity and performance, and in addition, taking into account that hypertexts were assumed here to be more demanding for processing than linear texts, this correlation was expected to be stronger, hence more perceptible, in activities related to the hypertexts.

All the analyses were done considering the relationship of the scores obtained between the WM scores and the ones: (a) in the recalls (linear and hypertext propositions), among all participants, and between the two groups; (b) in the

comprehension questions (linear written and hyper written), among all participants, and also between the two groups; (c) in the recalls (linear and hypertext propositions) among all low-span and high-span participants, and finally (d) in the comprehension questions among all low-span and high-span participants.

As already justified, working memory was correlated with participants' performance considering that, according to the literature, there is a straight relationship between WM capacity and individuals' performance in the activities they execute (Miyake & Shah, 1999; Just & Carpenter, 1992; Daneman & Carpenter, 1980, among others). Therefore, this type of investigation was considered crucial, and it was expected to elucidate some of the data obtained.

Correlations between WM scores and the recalls, among all participants, showed that for both linear texts and hypertexts there was a positive correlation signaling to the fact that performance in the two modes of text presentation was similar. Nevertheless, this correlation was higher for WM scores and the ones obtained in the hypertext recalls (linear texts $r=0.58$, $p<0.05$, and hypertexts $r=0.65$, $p<0.05$). Hence, this result demonstrates that there was a stronger relationship between working memory capacity and the construction of main ideas in the hypertext, compared to the linear texts.

Taking into account the assumption that the more demanding the activity, the more memory resources are needed for performing it (Tomitch, 2003; Just & Carpenter, 1992), it could be said that hypertexts demanded more cognitive resources for processing than linear texts did.

Correlations between WM scores and the ones in the linear, and hypertext written (comprehension questions), among all participants, showed that while *no* evidence of correlation was found between working memory scores and the ones obtained in the linear written ($r=0.37$, $p>0.05$), a moderate positive correlation was observed in relation

to the hyper written ($r=0.56$, $p<0.05$). In other words, while in hypertexts there was a straight relationship between participants' memory capacity and their performance for answering the comprehension questions, there was not for the same activity in the linear texts.

Therefore, the results on correlation described above show that, when considering all participants, the relationship between working memory capacity and performance was better established in activities related to hypertexts. These outcomes confirm the hypothesis proposed in this study that hypertexts required more attentional resources for executing the activities, thus, making the relationship between them stronger. In addition, these results also support Foltz's (1996) hypothesis that "hypertexts also cause an additional processing load" (p. 119).

Considering the two nationalities (Brazilian and Chinese), correlations between the WM scores and the ones obtained in the linear propositions demonstrated a moderate positive correlation in both groups (Brazilians $r=0.50$, $p<0.05$, and Chinese $r=0.59$, $p<0.05$). A positive correlation was also found between the WM scores and the ones obtained in the hypertext recalls; this result was higher in relation to the Chinese group compared to the Brazilian one (Chinese $r= 0.74$, $p=<0.05$, and Brazilians $r=0.57$, $p<0.05$). These results also indicate a stronger relationship between working memory capacity and performance (Engle, Kane, Tuholski, 1999; Just & Carpenter, 1992) in the Chinese group. Considering the hypothesis of the interference of the first language in the Chinese group, as already explained, this result was expected.

In relation to the comprehension questions (linear written and hypertext written), while *no* correlation was found between WM scores and the linear written, in the two groups, (Brazilians $r=0.18$, $p>0.05$, and Chinese $r=0.40$, $p>0.05$), a moderate positive correlation was found between WM scores and the ones obtained in the hyper written

(Brazilians $r=0.59$, $p<0.05$, and Chinese $r=0.54$, $p<0.05$). Thus, considering performance in the two groups (Brazilian and Chinese), these results seem also to indicate that whereas performance in the linear written was not related to the amount of memory resources each participant had available for processing information, performance in the hypertext was. Hence, it could be hypothesized here that working memory capacity is a crucial aspect for achieving comprehension in hypertexts. Therefore, all the previous results also corroborate the literature on WM demonstrating that the more complex the tasks, the more memory resources are needed for executing it (Tomitch, 2003, Engle, Kane & Tuholski, 1999, Just & Carpenter, 1992; Daneman & Carpenter, 1980, 1983; among others).

In order to improve scrutiny of the outcomes obtained above, the investigation was broadened, this time comparing results *between* all high and low-span participants (Brazilian and Chinese). The first analysis was on the recalls of linear and hypertext propositions.

As it was expected, all high-span participants recalled significantly more propositions from both modes of text presentation compared to low-span participants- for the recalls in the linear texts, $p=0.00 < 0.05$, and for the recalls in the hypertexts the $p=0.00 < 0.05$, with bigger differences in means related to the recalls in the hypertext propositions. The possible explanations are that: (a) low-span participants have less memory resources for processing incoming information, and (b) in hypertexts information come from different nodes, which have to be mentally organized for achieving comprehension, thus requiring more memory resources (Goldman, 1996). Therefore, this mode of text presentation seemed to have imposed more constraint for processing, compromising low-spans' performance compared to high-span participants.

Thus, as already stated, the more demanding the task the more visible the relation between memory capacity and performance (Tomitch, 2003).

Results comparing the means between low and high span participants in the comprehension questions established that for the linear written $p=0.03 < 0.05$, and for the hyper written $p=0.00 < 0.05$. As it can be observed, difference in the scores was more significant on the comprehension questions from the hypertexts. Hence, and as already justified, hypertexts might have demanded more attentional resources for selecting, linking and storing information, which could explain the inferior performance of the low-span participants, compared to the high-span ones. These results also corroborate the literature signaling to the fact that "reading hypertext is not just a reading process, but also a process of problem solving" (Foltz, 1996, p. 125), which, in turn, might require more memory capacity compared to linear texts.

In order to have more subsides to investigate weather comprehension can be affected by the mode of text presentation, the investigation was again deepened, this time focusing on the performance within each group of all *low* and *high*-span participants' (Brazilian and Chinese). The reason for such procedure was based on the assumption that if the mode of text presentation really interferes in comprehension, this interference would be more perceptible among low-span participants.

Thus, considering all low-span participants, analysis of the correlation between the recalls of the linear text and the hypertext propositions showed a strong positive correlation ($r=0.71$, $p<0.05$). Hence, in both modes of text presentation participants were able to select, retrieve and store important information necessary for the construction of the main propositions. As important information, it is here understood "those aspects of the meaning of a text that are most directly relevant to how people understand a text" (Kintsch, 1998, p. 65).

However, the same outcome was not observed in relation to the comprehension questions, that is, there was no evidence of a correlation between the linear written and the hyper written ($r=0.11$, $p>0.05$), that is, the mode of text presentation might have interfered in all low-span participants' performance. The reason for this result could be that the comprehension questions comprised mostly literal information, that is, those that are found in the text (Pearson & Johnson, 1978). Therefore, low-span participants must have been more constrained when selecting, linking and storing specific textbase information (Kintsch, 1998) necessary for answering the questions in the hypertexts, compared to the linear texts, in view that the mean scores where lower in the hyper written.

Analysis of the means between the recalls in the linear texts and hypertexts among all low-span participants showed that, despite the small difference noticed favoring the linear texts it was not significant at the 5% level ($p=0.12 > 0.05$). The same result was noticed in relation to the linear and hyper written ($p=0.07 > 0.05$). Nevertheless, taking into account the proximity of result ($p=0.07$) to the 5% level of significance, and in addition, in view that *no* correlation was found between the scores obtained in linear written and the hyper written, it could be speculated here that there was some difference in building comprehension from these two modes of text presentation, in the case of the low-span participants. These results may corroborate other findings already existing in the literature stating that readers may omit significant information while reading when they are free to select their own path, such as in hypertexts (Charney, 1994; Reinking & Schreiner, 1985; Kieras, 1980), especially when they have few memory resources for dealing with incoming information.

Taking into account high-span participants' performance, results indicated that there was *no* correlation between the recalls in the linear texts and hypertexts

(r=0.16> 0.05), signaling to the fact that recalls in these two modes of text presentation was not equivalent. Considering that the scores where slightly higher for the recalls in the hypertexts, a possible explanation was that the hypertext organization have benefited them, that is, in the hypertexts, the menu, for example, elucidated the way information was organized in the whole text. This aspect might have facilitated the integration of information, in the case of high-spans.

A high positive correlation was observed between the linear written and the hyper written (r=0.81, p< 0.05), that is, the mode of text presentation did not hinder the processing and retention of some specific information required for answering the comprehension questions, in the case of high-spans. Investigation on means did not prove any significant statistical difference between the recalls of the linear texts and the hypertexts (p=0.74 > 0.05), as well as the linear written and the hyper written (p=0.16 > 0.05). These results were expected considering that high-spans have more memory resources for dealing with incoming information, as already discussed.

Retaking the third research question (What is the relationship between participants' working memory capacity and their performance in the activities proposed in both the hypertexts and the linear text), all the results previously described corroborate the hypothesis raised here establishing that, in the case of this study, the relationship between WM scores and performance was more perceptible in the activity related to hypertexts, mainly when considering low-span participants' performance. Thus, it could be said that hypertexts, due to their peculiar characteristics, may demand more attentional resources for processing compared to linear texts. This finding may confirm the claims that hypertexts: (a) may cause disorientation problems in searching for information (McKnight, Dillon, & Richardson, 1996); (b) cause processing load (Foltz, 1996), and (c) represent a complex cognitive activity (Rouet & Levonen, 1996).

However, and as already discussed, all these findings require further investigation to be more conclusive.

4.8.4 Fourth research question

The last question aimed at investigating in which mode of text presentation, hypertext or linear text, participants would notice more contradictions. The hypothesis raised was that in hypertexts information comes from different nodes, which would make harder for readers to notice contradictory statements.

As already explained, in order to notice contradictory information, readers need to have the conflicting information available in their working memory (Kamas & Reder, 1995), while they are organizing the information captured from the text to form a coherent text representation (Kintsch & van Dijk, 1987). However, and as it was evidenced here, despite the fact that contradictions break the flow of coherence, which in turn, may disrupt comprehension, only few participants were able to notice them, as discussed below.

Results showed that there was a small difference in the number of contradictions perceived between the two modes of text presentation; five in the hypertexts and seven in the linear texts. Hence, in spite of the small difference obtained, it favored the linear texts. Additionally, the outcomes also pointed to the fact that only high-span participants were able to notice that local coherence was missing in certain parts of the texts. This fact corroborates the assumption that it is very cognitively demanding to detect contradiction in texts, as Kamas and Reder (1995) claimed. Hence, only few high-span participants were capable of keeping both contradictory statements in their

memory, noticing them as they broke the coherent mental representation they were trying to build while processing the macrostructure, that is, while selecting and integrating the text contents (Kintsch & van Dijk, 1987, Kintsch, 1998).

It is important to emphasize here that both high and low-span participants who did not notice the contradictions established coherence to the texts even when it should be broken, pointing to the fact that readers always try to bring coherence to what they read, no matter the way text contents are delivered (Bartlett, 2004; Tomitch, 2003; Whitney, Ritchie & Clark, 1991).

4.9 Retrospective questionnaire

In addition to the use of contradictions, retrospective questions (self-evaluation) were formulated as to examine both participants' awareness in relation to their own reading process, as well as to investigate their attentiveness in relation to the contents of the texts applied. Results from these questions showed that participants who did not explicitly acknowledge having perceived the contradictions, additionally, did not recognize that something was "strange" with the information being presented. Hence, statements such as (3) The article was easy to read, (6) The article seemed awkward in certain places, (8) The story required a lot of effort from the reader's part, which were meant to scrutinize whether participants had realized that something was incorrect with the information provided did not capture a positive answer from the majority of the participants. Only those participants who explicitly acknowledged them, also indicated it in the retrospective questionnaire.

The aspects abovementioned may lead to the conclusion that, “the effort after meaning” (Bartlett, 2004 p. 56), as already explained, may direct readers to supply global coherence to texts, even when local coherence is broken, and the information is contradictory, as in the case of the texts presented. This conclusion may also be corroborated by the fact that the majority of the participants chose the “agree” option for the following statements: the article was (2) easy to understand, (3) easy to follow, and (7) gave all the information the reader needed to understand the text, which shows that no problem was detected in the passages they read.

Another interesting result was related to statement 7- “The article was easy to remember”. While twenty low-span participants selected the option “agree” (9 in relation to the linear texts, and 11 in relation to the hypertexts), only ten high-span participants selected the same option (6 for the linear texts, and 4 for the hypertexts). Thus, it could be hypothesized here that’ high-span participants seemed to have more awareness in relation to the amount of information they were processing, and needed to retain in order to answer the questions, compared to low-span participants. Hence, high-span participants might have had more control over their cognitive mechanisms.

Finally, results of the alternatives selected by all participants to answer the retrospective questionnaire showing a very divergent awareness in relation to their own reading, also point to the fact that reading differs from people to people, and involves a variety of aspects, some visible and some invisible, as already discussed, which might influence processing, and hence, the construction of meaning.

CHAPTER 5

CONCLUSION, LIMITATIONS OF THE RESEARCH, AND PEDAGOGICAL IMPLICATIONS

As already explained, this investigation was an attempt to shed new light to the different standpoints found in the literature related to possible differences in comprehension, deriving from reading texts presented in different modes, in this specific case, L2 hypertexts and L2 liner texts. In order to attain the aim proposed here, four research questions, and hypotheses were developed, different instruments were used for data collection (comprehension questions, qualitative questions, recalls of propositions, and contradictions), and different statistical methods were used for data analysis.

In addition to the instruments abovementioned, investigation on the relationship between participants' working memory capacity and their performance was also brought to this study, especially, taking into account that: (a) to my knowledge, working memory spans had not been previously used for the purposes established here, and (b) the claim that individuals' working memory spans draw a parallel with their performance. As expected, making the relationship between these two variables enabled this researcher to understand and explain some of the data obtained. Consequently, it is hoped here that the findings derived from this study might bring some contributions to the field.

In the original design of this experiment, it was not planned to have participants divided according to their nationalities, however, and as already explained, considering

the results on the working memory span tests, which presented a significant statistical difference between their performance in the WM test, this researcher decided to extend the investigation also considering this aspect, that is, nationality as another aspect affecting L2 comprehension.

Thus, results comparing the outcomes between the two nationalities showed different levels of achievement, with some of them evidencing statistical significance, as already discussed. These were unexpected findings, taking into account that all participants had a similar level of knowledge in the English language, as well as in their education. The conclusion reached was that the Chinese first language might have interfered in processing, consequently restraining comprehension compared to the Brazilian group. Thus, readers' first language may also be an important aspect for constraining understanding in L2 hypertexts.

Interesting findings also derived from the investigation of the relationship between participants' working memory capacity and their performance, especially between high and low-span participants. Hence, comparing the activities executed by these two groups, performance of low-spans was much inferior, mostly in the hypertext activities. This outcome may signal to the fact that hypertexts are more cognitively demanding for processing and, therefore, for achieving comprehension, compared to linear texts. Thus, it is important to emphasize here that the freedom hypertexts may provide to the readers might as well constrain their comprehension, making them miss important information, especially considering low-span readers, and L2 hypertexts.

Exploration on the use of contradictions signaled to the fact, despite the fact that it is very challenging to detect contraction in texts, and especially in long ones, and mostly for low-span readers, coherence is fundamental for interacting with texts. Thus,

even when information is disrupted, readers struggle to bring global coherence to the reading passage, so that they can build the mental representation of text.

Finally, from the analysis of the retrospective questionnaire, as well as from all the data obtained in this study it could be stated here that L2 reading comprehension results from the interplay of many variables such as readers' working memory capacity, the mode of text presentations, and readers' first language among others. Each one of these factors may interfere in the achievement of comprehension in particular ways, and at dissimilar levels.

5.1 Limitations of the study

Despite some motivating results obtained from all the analysis carried out here, it is important to emphasize that a number of limitations were also present. First, the hypertexts had to be specially designed to make them feasible for participants to accomplish the activities proposed, considering that they were only allowed to read the texts once. For this reason, the hypertexts could not be lengthy, with several nodes and links, which are frequent hypertext characteristics. Long hypertexts, with several nodes, even when they are read more than once, can impose more constraints for processing, compared to short ones. Consequently, long and complex hypertexts could have produced different results from the ones here observed.

Second, this study also narrowed its scope, and did not examine aspects such as participants' ages as possible factors influencing working memory results, and thus, performance. Third, despite the attempt to design texts that could be appealing, and thus, attention-grabbing to all participants, it was not possible to control their

motivation in relation to their readings. In other words, for those participants who had more interest in the subjects presented, the approach to the texts could have been different; consequently, comprehension could have been facilitated. Nevertheless, this variable is complex to control, because it is a subjective issue. Additionally, in this kind of experiment, the subject matter of the texts has to be as novel as possible to all readers so that background knowledge will not influence performance.

Another important limitation of this investigation was the number of participants. As already explained, forty-two participants is considered a short number of participants in statistical terms. Hence, it was not possible to make assertive claims in relation to any of the results obtained here in view of the amount of data collected. Unfortunately, despite the effort made to recruit more participants, only forty-five volunteered (3 were excluded as already explained). Therefore, further research is necessary to corroborate some of the findings obtained here.

Finally, this study only examined expository texts, thus, it is not possible to know, or predict, the results in relation to other types of texts.

5.2 Suggestions for further research

This investigation attempted to empirically examine L2 comprehension deriving from texts presented in different modes. In view of the data obtained here, further research is needed to broaden the scope of the findings, and to better understand them. Thus, the replication of this study is recommended, using a larger number of participants taking into account that, statistically, the small size of the sample population (N=42) can raise doubt about the validity of the significance observed.

Considering the outcomes between the two nationalities observed here, another suggestion for further research is testing a sample of participants who use completely different script, like Arabic, for example. This procedure could shed some light on the China/Brazil difference, showing the extent to which the mode of text presentation was the real cause of processing constraint, and not participants' first language.

It would also be very interesting to apply longer and more complex hypertexts, allowing more readings to verify performance. In addition, considering that the assessment of comprehension was done with multiple-choice questions, recall of propositions, and detection of contradictions, other forms of evaluation could be used to replicate the findings obtained here. Hence, delayed testing, and think-aloud techniques could be used to reveal other aspects that were not evidenced in this investigation.

Finally, it would be interesting to observe the effect of pre-defined goals or tasks for comprehension, using a hypertext and a linear text. That is, it would be important to examine if having specific reading objectives in mind would help students to select and link information in hypertext, facilitating navigation, and therefore, enhancing their performance.

5.3 Pedagogical implications

It is well known that over the past few years, computer technology has become part of the educational system, including second language (L2) teaching, and learning environments. Hence, reading academic materials from computers has become part of the students' everyday lives. Considering the characteristics of computers, it is possible to state that readers have an unlimited universe of different information available,

which can be accessed simply by clicking some buttons; reading can be done with no predefined path, with innumerous possible directions.

However, these aspects aforementioned, at the same time that increase the scope of reading may also enlarge the cognitive cost for performing this activity, that is, in having a great universe of information available, and a limited memory capacity for processing it, students may be constrained by the medium, and important information necessary for comprehension may be lost, especially, in cases such as that of examinations delivered as hypertexts.

Thus, the results of this study demonstrated that hypertexts have to be carefully planned, with explicit organizational devices, for example, to facilitate reading and to assist students in the process of capturing and processing information. In addition, research in the area of reading has demonstrated that some elements may promote comprehension, for example, consistent vocabulary, reducing the number of information units, theme highlight, restating information, among others (Kintsch 1998; Jonassen, 1982; Kintsch & Van Dijk, 1978). Thus, these aspects could help in the design of a hypertext. Another crucial aspect, is to teach students about the nature of hypertexts, that is, how they present information, and how they should be better navigated and explored.

These aspects discussed above should be especially taken into account in L2 hypertexts used for examinations, or long-distance teaching, bearing in mind that not only the content of the hypertexts will have a straight relationship to students' performance, but the hypertext design can also be a decisive factor, directly influencing reading, and consequently, students' comprehension, and thus, their performance.

REFERENCES

Aarseth, E. (1994). Nonlinearity and literary theory. In G. P. Landow (Ed.), *Hyper/Text/ Theory* (pp. 51-86). Baltimore: The Johns Hopkins University Press.

Anderson, J. R. (1990). *Cognitive psychology and its implications*. New York: Freeman.

Andrade, J. (2001). *Working memory in perspective*. British Library Cataloguing in Publication Data.

Ashcraft, M. (1994). Human Memory and Cognition. Mahwah, NJ:Lawrence Erlbaum Associates Inc.

Atkinson, R. C., & Shiffrin, R. M. (1971). The control of short-term memory. *Scientific American, 225*(2), 82-90.

Baddeley, A. (1981). The concept of working memory: A view of its current state and probable future development. *Cognition, 10*, 17-23.

Baddeley, A. (1999). *Essentials of human memory*. Hove: Psychology Press Ltd, Publishers.

Baddeley, A. (2000). The episodic buffer: A new component of working memory? *Trends in Cognitive Science, 4*, 417-423.

Baddeley, A. (1992). Working memory. In L. R. Squire (Ed.), *The encyclopedia of learning and memory* (pp.125-154). New York: Macmillan.

Baddeley, A. D., & Hitch, G. (1974). Working memory. In G. H. Bower (Ed.), *The psychology of learning and motivation: Advances in research and theory* (pp. 47-89). New York: Academic Press.

Baddeley, A., & Logie, R. (1999). Working memory: The multiple-component model. In P. Shah, & A. Miyake (Eds.), *Models of working memory: Mechanisms of active maintenance and executive control* (pp. 28-61). Cambridge: Cambridge University Press.

Bartlett, F.C. (2004). Remembering. Cambridge: Cambridge University Press.

Beasley, R. E., & Waugh, M. L. (1997). Predominant initial and review patterns of navigations in a fully constrained hypermedia hierarchy: An empirical study. *Journal of Educational Multimedia and Hypermedia, 6*(2), 155-172.

Beaugrande, R. A. (1980). *Text, discourse and process*. Norwood, NJ: Ablex.

Benest, I. (1990). A Hypertext System with Controlled Hype. In R. McAleese & C. Green (Eds), *Hypertext state of atr (pp52-63)*. British Cataloguing in Publication data.

Berquist, B. (1997). Individual differences in working memory span and L2 proficiency: Capacity or processing efficiency. In A. Sorace, C. Heycock, & R. Shillcock (Eds.), *Proceedings of GALA '97 conference on language acquisition* (pp. 468-473). Edinburgh: Human Communication Research Centre, University of Edinburgh.

Britt, M. A., Rouet, J., Perfetti, C. (1996). Using Hypertext to Study and Reason About Historical Evidence (pp. 43- 72). In J. Rouet, J. J. Levonem, A. Dillon, R. Spiro (Eds), *Hypertext and Cognition.* USA: Lawrence Erlbaum Associates.

Broek, van P., Young, M. & Tzeng, Y. (1999) The landscape model of reading: Inferences and online construction of a memory representation. In H. van Oostendorp, & S. R Goldman (Eds), *The construction of mental representations during reading* (pp. 71-97). New Jersey, USA: LEA.

Bublitz, W., Lenk, U., & Ventola, E. (1997). *Coherence in spoken and written discourse*. Amsterdam: John Benjamins Publishing Company.

Bush, V. (1945). As we think. *Atlantic Montly*, *176*(1), 101-108.

Calvi, L. (1997). Navigation and disorientation: A case study. *Journal of Educational Multimedia and Hypermedia, 6* (3/4), 305-320.

Charney, D. (1994). The effect of hypertext on processes of reading and writing. In C. Self, & S. Hilligoss (Eds.), *Literacy and computers* (pp. 238-263). New York: The Modern Association of America.

Chen, C., & Czerwinsky, M. (1997). Spatial ability and visual navigation: An empirical study. *The New Review of Hypermedia and Multimedia, 3*, 67-89.

Chen, C. & Rada, R. (1996). Interacting with hypertext: A meta-analysis of experimental studies. *Human-Computer Interaction, 11*, 125-156.

Coscarelli, C. V. (2004). Lendo hipertextos. Paper presented at the *II Conference of Linguistics and Cognition*, Juiz de Fora, UFJF.

Cowan, N. (1995*). Attention and memory: An integrated framework.* Oxford, England: Oxford University Press.

Daneman, M. (1991). Individual differences in reading skills. In R. Barr, M. Kamil, P. Monsenthal, & D. David (Eds.), *Handbook of reading research* (pp. 512-538). New York: Longman.

Daneman, M., & Carpenter, P. A. (1980). Individual differences in working memory and reading. *Journal of Verbal Learning and Behavior, 19*, 450-466.

Dee-Lucas, D. (1996). Effects of overview on study strategies and text representation for intructional hypertext. In J. Rouet, J. Levonen, A. Dillon, & R. Spiro (Eds.), *Hypertext and cognition* (pp. 73-108). New Jersey: LEA.

Dobrin, D. (1994). Hype and hypertext. In C. Self, & S. Hilligoss (Eds.), *Literacy and computers* (pp. 305-318). New York: The Modern Association of America.

Dopkins, S., & Nordie, J. (1995). Processes of anaphor resolution. In R. Lorch, & E. Brien (Eds.), *Sources of coherence in reading* (pp. 145-158). New Jersey: LEA.

Engle R., Kane, M., & Tuholski, S. (1999). Individual differences in working memory capacity and what they tell us about controlled attention, general fluid intelligence, and functions of the prefrontal cortex. In A. Miyake, & P. Shah (Eds.), *Models of working memory: Mechanisms of active maintenance and executive control* (pp. 102-134). Cambridge: Cambridge University Press.

Engle, R., Laughlin, J., Tuholski, S., & Conway, A. (1999). Working memory, short-term memory, and general fluid intelligence: A latent-variable approach. *Journal of Experimental Psychology,128*(3), 309-331.

Ericsson, K., & Delaney, P. (1999). Long-term working memory as an alternative to capacity models of working memory in everyday skilled performance. In A. Miyake, & P. Shah (Eds.), *Models of working memory: Mechanisms of active maintenance and executive control* (pp. 257-297). Cambridge: Cambridge University Press.

Ericsson, K. A., & Kintsch, W. (1995). Long-term working memory. *Psychological Review, 102*, 211-245.

Ericsson, K., & Simon, H. (1999). *Protocol analysis*. Massachusetts: Massachusetts Institute of Technology.

Foltz, P. (1996). Comprehension, coherence and strategies in hypertext and linear text. In J. Rouet, J. Levonen, A. P. Dillon, & R. J. Spiro (Eds.), *Hypertext and cognition* (pp. 109-136). Hillsdale, N.J: Lawrence Erlbaum Associates.

Fortkamp, M. B. M. (2000). *Working memory capacity and L2 speech production: An exploratory study*. Unpublished doctoral dissertation, Universidade Federal de Santa Catarina, Florianópolis.

Givón, T. (1990). *Syntax: A functional typological introduction*. Amsterdam: Library of Congress Cataloguing in Publication Data.

Goldman, S. (1996). Reading, writing, and learning in hypermedia environments. In H. van Oostendorp, & S. de Mul (Eds.), *Cognitive aspects of electronic text processing* (pp. 01-06). New Jersey: Ablex Publishing Corporation.

Graesser, C. (1981). Prose comprehension beyond the word. New York: Springer-Verlag.

Grasser, A., Golding, J., & Long, D. (1991). Narrative representation and comprehension. In R. Barr, M. Kamil, P. Mosenthal, & D. Pearson (Eds.), *Handbook of reading research* (pp. 171-201). New York: Longman.

Haw, W. B., & Wang, P. (1999). User's interaction with the world wide web: Problems-solving. In *Procedings of the 62nd Annual Meeting of the American Society for Information Science* (pp. 256-270). New Jersey: ASIS.

Hoey, M. (1991). *Patterns of lexis in text*. Oxford: Oxford University Press.

Jones, C. (1995). Construction of a mental model. In R. Lorch, & E. O'Brien (Eds.), *Sources of coherence in reading* (pp. 335-352). New Jersey: LEA.

Joyce, M. (1995). Hypertext and hypermedia. *Of Two Minds*, 19-29. Retrieved November 1, 2005, from http://wwwof2minds.org/ot.

Kamas, E., & Reder, L. (1995). The role of familiarity in cognitive processing. In R. Lorch, & E. O'Brien (Eds.), *Sources of coherence in reading* (pp. 177-202). New Jersey: LEA.

Keenan, J. M., & Kintsch, W. (1974). The identification of explicitly and implicitly presented information. In W. Kintsch (Ed.), *The representation of meaning in memory* (pp. 153-166). Hillsdale, NJ: Lawrence Erlbaum Associates.

Kintsch, W. (1998). *Comprehension: A paradigm for cognition*. Cambridge: Cambridge University Press.

Kintsch, T., Healey, A. F., Hegarty, M., Pennington, B. E., & Salthouse, T. A. (1999). Models of working memory: Eight questions and some general issues. In A. Miyake, & P. Shah (Eds.), *Models of working memory: Mechanisms of active maintenance and executive control* (pp. 412- 442). Cambridge: Cambridge University Press.

Kintsch, W., & van Dijk, T. (1978). Towards a model of text comprehension and production. *Psychology Review*, *85*, 363-94.

Kintsch, W., & Yarborough, J. J. (1982). The role of rhetorical structure in text comprehension. *Journal of Education Psychology*, *74*, 828-34.

Lacroix, N. (1999). Macrostructure construction and organization in the processing of multiple text passage. *Instructional Science*, *27* (3/4), 221-233.

Liestal, G. (1994). Wittgenstein, Genette, and reader's narrative in hypertext. In G. P. Landow (Ed.), *Hyper/Text/Theory* (pp. 87-120). London: The Johns Hopkins University Press.

Lorch, R., Klusewitz, M., & Lorch, E. (1995). Distinction of strategy in reading research. In R. Lorch, M. Klusewitz, & E. Lorch (Eds.), *Sources of coherence in reading* (pp. 375-398). New Jersey: LEA.

McDonald, S., & Stevenson, R. J. (1996). Disorientation in hypertext: The effects of three structures on navigation performance. *Applied Ergonomics*, *27*, 61-68.

McKnight, C. (1996). What makes a good hypertext? In H. van Oostendorp, & S. de Mul (Eds.), *Cognitive aspects of eletronic text processing* (pp. 213-238). Norwood, NJ: Ablex.

McKnight, C., Dillon, A., & Richardson, J. (1991). *Hypertext in context*. Cambridge: Cambridge University Press.

McKnight, C., Dillon, A., & Richardson, J. (1993). *Hypertext: A psychological perspective*. England: Ellis Horwood Limited.

McNamara, T. P., Hardy, J. K., & Hirtle, S. C. (1989). Subjective hierarchies in spatial memory. *Journal of Experimental Psychology: Learning, Memory and Cognition, 15*, 211-227.

Meyer, B., (1984). Aids to text comprehension. *Educational Psychologist, 9, 30-42.*

Mishra, P., Spiro, R., & Feltovich, P. (1996). Technology, representation, and cognition: The prefiguring of knowledge in cognitive flexibility hypertexts. In H. van Oostendorp, & S. Mul (Eds.), *Cognitive aspects of electronic text processing* (pp. 278-306). New Jersey: Library of Congress Cataloging-in-Publication Data.

Miyake, A., & Shah, P. (1999). *Models of working memory: Mechanisms of active maintenance and executive control*. Melbourne: Cambridge University Press.

Moulthrop, S., & Kaplan, N. (1994). The effect of hypertext on processes of reading and writing. In C. L. Selfe, & S. Hilligoss (Eds.), *Literacy and computers*: *The complications of teaching and learning with technology* (pp. 110-135). New York, New York: Library of Congress Cataloguing-in-Publication Data.

Murray, J. (1995). Logical connectives and logical coherence. In R. Lorch, & E. O'Brien, (Eds.), *Sources of coherence in reading* (pp. 107-126). New Jersey: LEA.

Muter, P. (1996). Interface design and optimization of reading continuous texts. In H. van Oostendorp, & S. Mul (Eds.), *Cognitive aspects of electronic text processing* (pp. 161-180). New Jersey: Library of Congress Cataloging-in-Publication Data.

Nelson, T. H. (1992). *Computer lib/dream machines*. South Bend, Indiana: The Distributors.

Newman, C. (2004). Why are we so fat? *National Geographic, 206*, 48-61.

Nielsen, J. (1995). *Multimedia and hypertext: The internet and beyond*. Cambridge, MA: AP professional.

Norman, D. A. (1976). *Memory and attention: An introduction to human information processing*. New York: John Wiley & Sons, Inc.

Norman, K. L. (1994). Navigating the educational space with Hypercourseware. *Hypermedia, 6*(1), 35-60.

Norman, D.A., & Shallice, T. (1980). Attention to action: Willed and automatic control of behavior. Technical report, University of California, San Diego. C.A.

O'Brien, E. (1995). Automatic components of discourse comprehension. In R. Lorch, & E. J. O'Brien (Eds.), *Sources of coherence in reading* (pp. 159-176). New Jersey: LEA.

Oliveira, S. (2002). *Mapping strategies in an eletronic EFL learning environment*. Unpublished doctoral dissertation. Universidade Federal de Santa Catarina.

Oostendorp, H. van (1996). Studying and annotating electronic text. In J. Rouet, J. Levonen, A. Dillon, & R. Spiro (Eds.), *Hypertext and cognition* (pp. 137-148). New Jersey: LEA.

Padovani, S. (2001). *The effect of navigational aids on user's navigation strategies in hypertext systems*. Unpublished doctoral dissertation. Loughborough University. Loughborough, UK.

Paris, S., Wasik, B., & Turner, J. (1991). The development of strategic readers. In R. Barr, M. Kamil, P. Mosenthal, & D. Pearson (Eds.), *Handbook of reading research* (pp. 609-635). New York: Longman.

Pearson, P. D., & Johnson, D. (1978). *Teaching reading comprehension*. New York, N.Y: Holt, Rinehart and Wiston.

Perfetti, C. (1996). Text and hypertext. In J. Rouet, J. Levonen, A. Dillon, & R. Spiro (Eds.), *Hypertext and cognition* (pp.157-162). New Jersey: LEA.

Richardson, J. T. E. (1996). Evolving concepts of working memory. In J. T. E. Richardson, R. D. Engle, L. Hasher, R. H. Logie, E. R. Stoltzfus, & R. T. Zacks (Eds.), *Working memory and human cognition* (pp. 03-30). New York: Oxford University Press.

Rouet, J., & Levonen, J. (1996). Studying and learning with hypertext: Empirical studies and their implications. In J. Rouet, J. Levonen, A. Dillon, & R. Spiro (Eds.), *Hypertext and cognition* (pp. 09-24). New Jersey: LEA.

Sealerman, A., & Herrman, D. (1994). *Memory from a broader perspective*. USA: McGrow Hill.

Segalowitz, N. & Frenkiel-Fishman, S. (2005). Attention control and ability level in a complex cognitive skill: Attention shifting and second-language proficiency. *Memory & Cognition, 33 (4), 644-653.*

Smith, C. (1994). Hypertextual thinking. In C. Self, & S. Hilligoss (Eds.), *Literacy and computers* (pp. 264-281). New York: The Modern Association of America.

Snyder, I. (1997). *Hypertext: The electronic labyrinth*. New York: New York University Press.

Tardieu, H., & Gyselinck, V. (2003). Improving navigation and learning in hypertext environments with navigable concepts maps. *Human-Computer Interaction, 2003*, 395-428.

Tomitch, L. M. B. (1996). Individual differences in text organization perception and working memory capacity. *Revista da ANPOLL*, *2*, 73-93.

Tomitch, L. M. B. (2002). The teacher's role in reading instruction in EFL. Paper presented at the *I Congresso Internacional das Linguagens*, URI - Erechim, in the round table "English Language Teaching".

Tomitch, L. M. B. (2003). Reading: Text organization perception and working memory capacity. *Advanced Research in English Series*, *7*. Florianópolis: UFSC.

Torres, A. C. G. (2003). *Capacidade de memória de trabalho e desempenho de leitores na construção de idéias principais em L1 e L2*. Unpublished doctoral dissertation, Universidade Federal de Santa Catarina, Florianópolis.

Turner, M., & Engle, R. W. (1989). Is working memory capacity task dependent? *Journal of Memory and Language, 28*, 127-154.

Urquhart, S., & Weir, C. (1998). *Reading in a second language: Process, product, and practice.* New York, USA: Longman.

van Dijk, T. (1980). Macrostructure. *Hillsdale,* New Jersey: Lawrence Erlbaum Associates Ltd.

van Dijk, T. (1997). *Discourse as structure and process*. London: SAGE Publications Ltd.

van Dijk, T., & Kintsch, W. (1983). *Strategies of discourse comprehension*. New York: Academic Press.

Waller, R. (1991). Typography and discourse. In R. Barr, M. L. Kamil, P. B, Mosenthal, & P. D. Pearson (Eds.), *Handbook of reading research* (pp. 341-351). New York: Longman.

Weaver, C., & Kintsch, W. (1991). Expository texts. In R. Barr, M. Kamil, P. Mosenthal, & D. Pearson (Eds.), *Handbook of reading research* (pp. 230-243). New York: Longman.

Webb, J. M., & Kramer, A. F. (1990). Maps or analogies? A comparison of instructional aids for menu navigation. *Human Factor, 33*(3), 251-266.

Whalley, P. (1993). An alternative rhetoric for hypertext. In C. McKnight, A. Dillon, & J. Richardson (Eds.), *Hypertext: A psychological perspective* (pp. 07-17). England: Ellis Horwood Limited.

Whitney, P. Ritchie, B.G. & Clark, M.B (1991). Working Memory Capacity and the Use of Elaborative Inferences in Text Comprehension. *Discourse Processes*.14, 133-145

Wickens, C. (1984). Engineering Psychology and Human Performance. Columbus: Charles Merrill.

APPENDICES

Appendix 1

Dear students,

I'm looking for Chinese people to participate in a study that I'm doing on memory and reading English. More specifically, I'm looking for Chinese people for whom English is NOT their first language but who have an IELTS score of at least 6.5.

The session lasts about 75 minutes and involves reading and a measure of memory. It will take place in the Department at a time suitable to you.

If you would like to help me, please reply to (ingrid@cce.ufsc.br) with some possible dates and times over the next week or so when you would be available.

YOU WILL RECEIVE A 15 POUNDS BOOK TOKEN FOR YOUR HELP.

Best regards
Ingrid Fontanini

Appendix 2

TEXT 1

Each year millions of people around the world are affected by serious and sometimes life-threatening physical or mental disorders. Among these disorders it is possible to find anorexia, bulimia, and binge- eating behaviors that seem to develop as a way of handling stress and anxieties. Researchers have concluded that all people with eating disorders share certain personality traits: low self-esteem, feelings of helplessness, and fear of becoming fat. The majority of those afflicted with anorexia are adolescent and young women, although this condition can also be found in men. Thus, it is important that everybody learns to eat healthfully.

ANOREXIA

Anorexia is a dangerous condition in which people can literally starve themselves to death, but continue to think they are overweight. People with anorexia tend to be “too good to be true”. They rarely disobey, keep their feelings to themselves, and tend to be perfectionist, good students, and excellent athletes. Some researchers believe that people with anorexia restrict food- particularly carbohydrates- to gain a sense of control in some area of their lives. Having followed the wishes of others for the most part, they have not learned to cope with the problems typical of adolescence, growing up, and becoming independent. Millions of people are also affected by bulimia and binge, which are also serious eating disorders.

BULIMIA

Bulimia is another eating disorder. People with bulimia consume large amounts of food and then rid their bodies of the excess calories by vomiting, abusing laxatives or diuretics and exercising obsessively. Some use a combination of all these forms of exclusion. Many people with bulimia maintain normal or above body weight, successfully hiding their problem from others for years.

BINGE

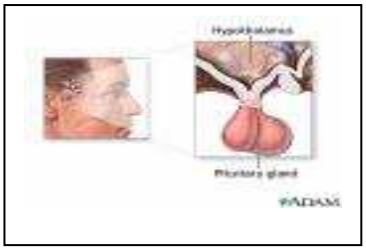
Binge is the third type of eating disorder. The disorder is characterized by episodes of uncontrolled eating, however, its suffers do not eliminate their bodies of excess food. Individuals with binge eating disorder feel that they lose control of themselves when eating. They eat large quantities of food and do not stop until they are uncomfortably full. Usually, they have more difficulties losing weight and keeping it off than people with other serious weight problems.

EATING DISORDERS AND SCIENTIFIC RESEARCH

In an attempt to understand eating disorders, scientists have studied biochemical functions of people with illnesses to find a treatment for eating disorders. Thus, they have focused recently on the neuroendocrine system- a combination of the central nervous and hormonal systems. Through complex

but carefully balanced feedback mechanisms, the neuroendrocrine system regulates sexual function, physical growth and development, appetite and digestion, sleep, heart and kidney functions, emotions, thinking, and memory- in other words, multiple functions of the mind and body. Many of these mechanisms are seriously disturbed in people with eating disorders. Thus, medical treatment is vital to help people overcome their problems.

NEUROENDOCRINE SYSTEM



The neuroendocrine system is a network of glands that produce and secrete hormones into the bloodstream. Hormones are chemical substances that regulate such specific body functions as metabolism, growth, and reproduction.

TREATMENT TO EATING DISORDERS

Eating disorders are most successfully treated early. Unfortunately, even when family members confront the ill person about his or her behavior, or physicians make a diagnosis, individuals with eating disorders may deny they have a problem. One reason that men represent the greatest number in the group of people with eating disorder is their tendency to achieve an “ideal” figure; daily compulsive building up activities seem to be a rule for them nowadays. Although most victims of anorexia and bulimia are men, these illnesses can also strike adolescents and young women such as Mary and Jane.

MARY

Mary developed bulimia when she was twenty years old. One day her father told her she would never get a date if she didn’t loose any weight. She took him seriously and began to diet obstinately, restricting all kinds of food- particularly carbohydrates. She also developed strange eating rituals, and exercised compulsively, even after she weakened, and became very skinny. No one was able to convince Mary that she was in danger.

Encouragement, support, caring, and persistence, as well as information about eating disorders and their dangers, may be needed to convince the ill person to get help, stick with treatment, or try again. The causes of eating disorders are not known with precision, as in Jane’s case, but researchers are trying to understand which factors may lead to eating disorders.

JANE

Jane, 21 years old, is a student at Duke University. She developed anorexia when she was 19. Just like most people with anorexia, Jane is disorganized, but a good student. She is an attractive woman but considerably overweight. She regularly ate a huge amount of food and maintained her normal weight by forcing herself to vomit. Unable to understand her own behavior, she thought no one would either. The problem continued until one day she had to go to the hospital due to severe dehydration.

SUPPORT FOR EATING DISORDERS

To help those with disorders deal with their illness and underlying emotional issues, some form of psychotherapy is usually needed. A psychologist, or other mental health professional meets with the patient individually and provides ongoing emotional support, while the patient begins to understand and cope with the illness. Group therapy, in which people share their experience with others who have similar problems, has been effective for people with eating disorder. Finally, the support of family members and friends can be very important in helping the ill person to start a new and healthier life.

Appendix 3

TEXT 2 – LINEAR TEXT

Obese? “To be or not to be”. Or should it be asked, how to avoid being fat? Many causes can lead a person to become obese. Among them, stress. Stress has physical and emotional effects on us and can create different feelings. Identifying unrelieved stress and being aware of its effect on our lives is a way of reducing its harmful effects.

Stress can have two influences (a) as a positive influence, stress can help compel us to action (b) as a negative influence, it can cause distrust, rejection, and depression, which in turn can lead to health diseases such as high blood pressure, insomnia, upset stomach and a compulsive eating habit. In some cases, the consequence of such extreme uncontrolled eating habit may lead people to become very overweight.

AVOIDING STRESS

Stress can be avoided by: - -Relaxing and taking recesses
- Living one day after the other
-Trying to be happy
-Learning to say no
-Choosing your friends wisely
-When a problem arises, talking through it immediately
-Laughing and having fun

COMPULSIVE EATING

Compulsive overeating is characterized by uncontrolled eating followed by feelings of guilt and shame. While it inevitably results in weight gain, it is also not to be confused with obesity. Not everyone who is overweight has an eating disorder.

OBESITY

Obesity is defined in terms of body mass index, or BMI. Severe obesity is a condition that is difficult to treat by traditional means such as diets or exercises. However, researchers from Harvard University have announced that women are now eating 335 more calories per day than they did in 1971, while adult men have upped their daily intake by 168 calories. Today one out of three Americans is obese. Fruit and vegetables are out of the tables in the USA. Thus, obesity is becoming a familiar headline, and gastric bypass surgery is a solution in many cases.

BMI

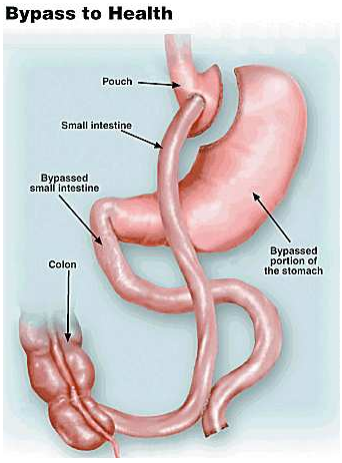
BMI is a measure of body weight relative to height. A person with a BMI of 30 or more is considered obese- and at a higher risk of diseases ranging from head (stroke) to toe (diabetic foot ulcers). From 1971 to 2000 obesity increased from 14.5 percent to 30.9 percent of the U.S. population, setting the stage for

elevated rates of diabetes. “We know that people get fat by overeating slightly more than they burn, maybe because they are too stressed” says Dr Richardson. Everybody knows that careful diet or everyday exercises can easily treat severe obesity. Unfortunately, some people prefer to do a gastric surgery, because they are not smart enough in selecting what they should eat, or to do physical activities.

GASTRIC SURGERY

A Gastric surgery for obesity is a complex surgical treatment that shrinks the stomach’s capacity from wine bottle to short-glass size and reconfigures the small intestine. Among the gastric surgeries it is possible to find the gastric bypass surgery. The surgery is risky, as doctor Richardson explains, however, it brings great benefits to almost eighty percent of the patients. Thus, Dr. Richardson recommends that the best thing to do is to avoid obesity.

GASTRIC SURGERY



Gastric bypass surgery reduces the stomach, by, for example, placing a hollow band made of special material around the stomach near its upper end, creating a small pouch and a narrow passage into the larger remainder of the stomach. After the surgery a patient cannot eat as much as he/she used to; sugar or fatty food provokes a dumping syndrome that causes flushing, nausea, and sweating in bypass patients.

A PATIENT

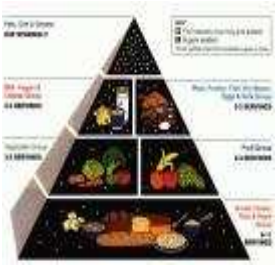
Nora, a psychologist, 39, lost 17 kilos in 6 months. When she was asked about the decision to have the surgery, Ms Jane described the humiliation of asking for a seat-belt extender on a plane. “The gastric bypass surgery is fantastic, and I am very happy to have done it because now I can eat as much as I used to without getting fat. It is wonderful,” she celebrates. Nora is a new person now, she does physical activities everyday and has recovered has high self-esteem. She is also planning to help sufferers who are trying to manage their weight.

PHYSICAL ACTIVITIES

Exercises for cardiovascular fitness three to four times a week such as walking, swimming, and cycling can help people maintain the ideal weight. Thus, experts advise building activities into daily life by rebelling against convenience. Taking the stairs or grabbing a rake instead of a leaf blower can burn enough extra calories to prevent the added pound middle-aged people tend to gain over the years, and to avoid obesity. People can also use the USDA Food Guide Pyramid to choose what they should eat. Avoiding obesity is the best solution, however, for those who want a more radical method, a gastric

bypass surgery would be a solution. The surgery is safe and it can be considered a complete success in all cases.

THE PYRAMID



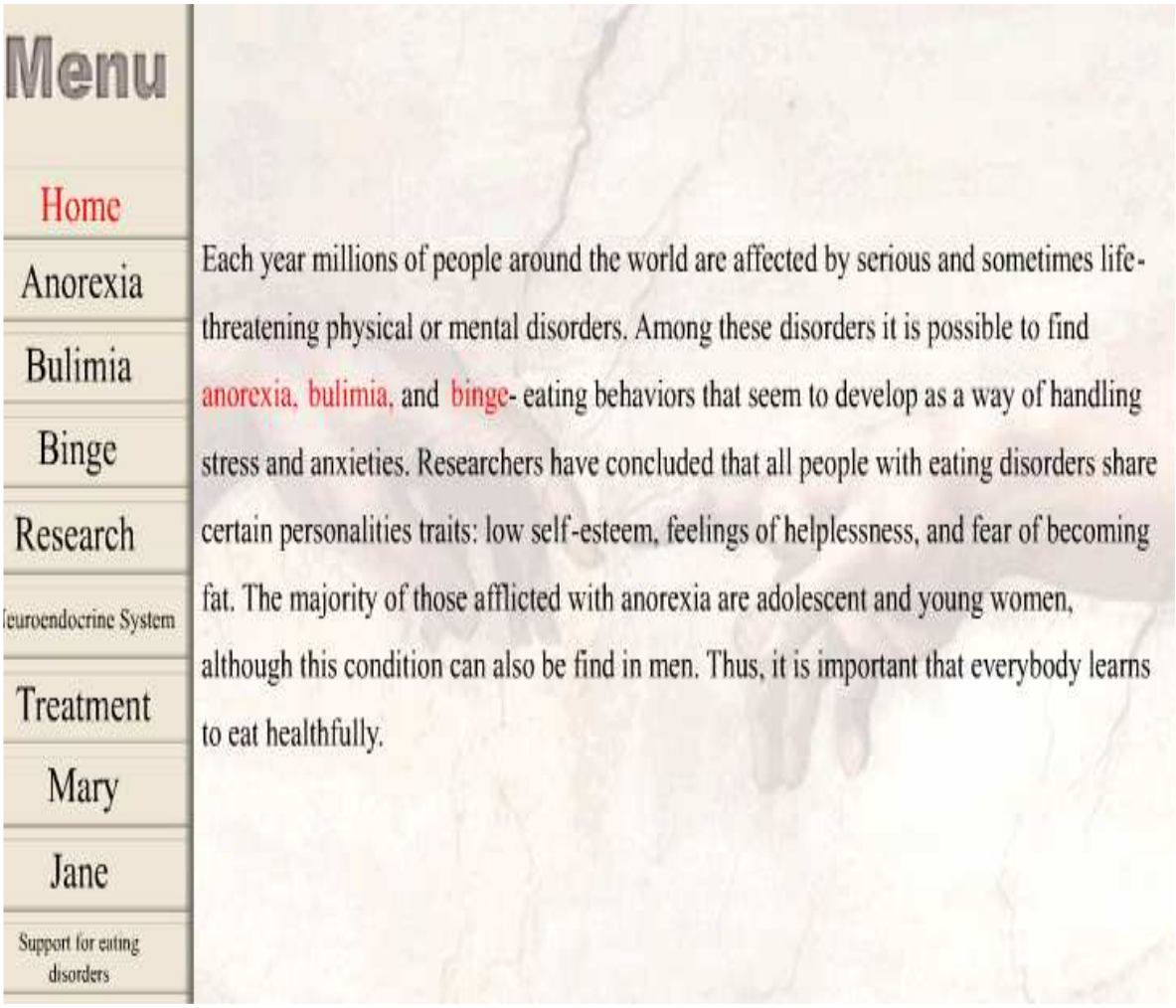
The pyramid is based on the USDA (United State Department of Agriculture) research on what food Americans eat, what nutrients are in these food, and how to make the best food choices for you.

AVOIDING OBESITY

In a recent interview, Dr. Richardson, from the US Medical Center, said that the best way to avoid obesity is to keep from gaining weight in the first place. Thus, people in America are eating more vegetables and fruit as the USDA's Food Guide Pyramid advised. The reduction of fat as a percentage of total calories is real in the USA. Nevertheless, researchers have also found that most illnesses are related to unrelieved stress. Therefore, doctors recommend that if you are a nervous person, with stress symptoms, you have to improve your ability to manage it to live a longer and healthier life.

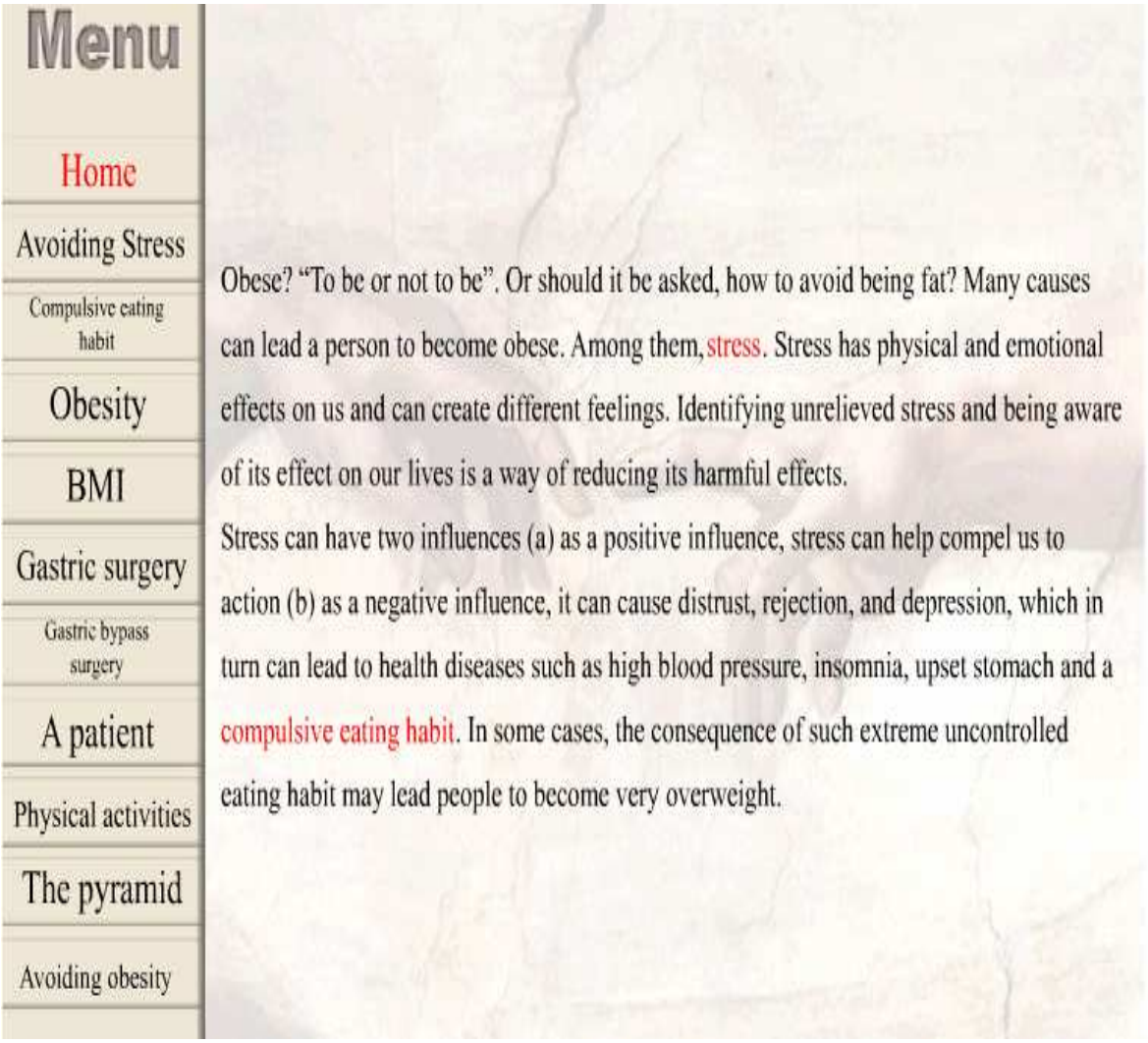
Appendix 4

TEXT 1 AS A HYPERTEXT



Appendix 5

TEXT 2- HYPERTEXT



Appendix 6

ENGLISH TEST

Name:…… **Course:** ……..

Reading Passage 1

Read the text below and decide which answer (A, B, C, or D) best fits each gap.

(You have 15 minutes to do this activity).

Karri Country

We took the cost road to our destination, Albany. Albany is at the southernmost point of Western Australia and from there the oceans (1) …….away to the Antarctic and the South Pole. But Western Australia is a land of (2) ……..contrasts. Our journey from Perth took us through rolling Wheatland dotted with small settlements and solitary homesteads many kilometers from their nearest neighbors.

The (3)……...eventually began to change, vast forest canopied the road to Walpole. We were entering Karri country. Raised as I was in a country manicured and miniature by (4) ……., this seemed to me a strange and alien land.

The Karri tree belongs to the Eucalyptus and is one of the tallest hardwoods in the world. The (5)……named "Valley of the Giants' is truly breathtaking. A metal walkway (6) …….to the highest branch of the Karri trees takes you on a swaying journey of discovery. Far below lies the dense lush valley floor whilst all around the forest reaches out the blues, misty horizon, silent and majestic.

1. **A** increase	**B** reach	**C** develop	**D** stretch
2. **A** bright	**B** utter	**C** severe	**D** pure
3. **A** earth	**B** terrain	**C** domain	**D** province
4. **A** distinction	**B** resemblance	**C** comparison	**D** similarly
5. **A** appropriately	**B** correct	**C** right	**D** relevantly
6. **A** merged	**B** attached	**C** combined	**D** added

Reading Passage 2

Read the passage and answer the questions following it.

(You have 20 minutes to do this activity).

Why some women cross the finish line ahead of men.

A Women who apply for jobs in middle or senior management have a higher success rate than men, according to an employment survey. But of course, far fewer of them apply for these positions. The study,

by recruitment consultants NB Selection, shows that while one in six men who appear on interview shortlists get jobs, the figure rises to one in four for women.

B The study concentrated on applications for management positions in the $45,000 to $110,000salary range and found that women are more successful than men in both the private and public sectors. Dr. Elisabeth Marx from London-based NB Selection described the finding as encouraging for women, in that they send a positive message to them to apply for interesting management positions. But she added, “We should not lose sight of the fact that significantly fewer women apply for senior positions in comparisons with men”.

C Reasons for higher success rates among women are difficult to isolate. One explanation suggested is that if a woman candidate manages to get on a shortlist, then she has probably already proved herself to be an exceptional candidate. Dr Marx said that when women apply for positions they tend to be better qualified than their male counterparts but are more selective and conservative in their job research. Women tend to research thoroughly before applying for positions or attending interviews. Men, on the other hand, seem to rely on their ability to sell themselves and convince employers that any shortcomings they have will not prevent them from doing a good job.

D Managerial and executive progress made by women is confirmed by the annual survey of boards of directors carried out by Korn?Ferry?Carre/Orban International. This year the survey shows a doubling of the number of women serving as non-executive directors compared with the previous year. However, progress remains painfully slow and there were still only 18 posts filled by women out of a total of 354 no-executive positions surveyed. Hilary Sears, a partner with Korn/Ferry, said, “Women have raised the level of grades we are employed in but we have still not broken through barriers to the top”.

E In Europe a recent feature of corporate life in the recession has been the de-layering of management structures. Sears said that this has halted progress for women in as much as de-layering has taken place either where women are working or in layers they aspire to. Sears also noted a positive trend from the recession, which has been the growing number of women who have started up on their own.

Reading Passage 2 has five paragraphs (A to E). Please, state which paragraph discusses each of the points below. Write the appropriate letter (A to E) in the parenthesis.

( ) Male and female rate approaches to job applications.

( ) The success rate of female job applications for management positions

( ) The drawbacks of current company restructuring patterns.

( ) The improvement in female numbers on company management structures.

Appendix 7

LETTER TO THE RATERS

Dear professor,

In the enclosed material, you will find two articles that will be used in my investigation. These two texts are modified versions of the original "Why are we so fat", taken from the National Geographic Magazine, August 2004, and "Gastrointestinal Surgery for Severe Obesity" taken from the web page www.niddk.nih.gov.htm, and the web page- www.mentalhealth.com.html. In both adaptations, the main facts were preserved, and fictional information, as well as characters were created in order to achieve the purpose of my investigation, which is to investigate L2 reading comprehension in two different modes of presentation (as a hypertext, and as a linear text). Participant's working memory capacity will also be considered, taking into account that, besides the texts themselves, memory capacity may represent an important constraint for comprehension.

I would really appreciate if you could take some of your valuable time to closely examine the material enclosed, and *highlight the main propositions that may you find*. I would also be thankful for any insights, and suggestions that could help me in further refinements.

Sincerely,
Ingrid Fontanini

Appendix 8

TEXT 1 – MAIN PROPOSITION SCORING PATTERN

(x) Each (x) year (x) millions (x) of people (x) around (x) the world (x) are (x) affected (x) by (x) serious (x) and (x) sometimes (x) life-threatening (x) physical (x) or (x) mental (x) disorders. ( ) Among ( ) these ( ) disorders (x) it (x) is (x) possible (x) to find (x) anorexia, (x) bulimia, (x) and (x) binge- (x) eating (x) behaviors ( ) that (x) seem (x) to develop (x) as (x) a way (x)of handling (x) stress (x) and (x) anxieties. ( ) Researchers ( ) have ( ) concluded ( ) that (x) all (x) people (x) with (x) eating (x) disorders (x) share (x) certain (x) personalities (x) traits: (x) low (x) self-esteem, (x) feelings (x) of helplessness, (x) and (x) fear (x) of becoming (x) fat. (x) The majority (x) of (x) those (x) afflicted (x) with (x) anorexia (x) are (x) adolescents (x) and (x) young (x) women, ( ) although ( ) this ( ) condition ( ) can ( ) also ( ) be ( ) found ( ) in ( ) men. ( ) Thus, ( ) it ( ) is ( ) important ( ) that ( ) everybody ( ) learns ( ) to eat ( ) healthfully.

ANOREXIA

(x) Anorexia (x) is (x) a dangerous (x) condition (x) in (x) which (x) people (x) can (x) literally (x) starve (x) themselves (x) to death, (x) but (x) continue (x) to think (x) they (x) are (x) overweight. ( ) People ( ) with ( ) anorexia ( ) tend ( ) to be ( ) “too ( ) good ( ) to be ( ) true”. (x) They (x) rarely (x) disobey, (x) keep (x) their (x) feelings (x) to themselves, (x) and (x) tend (x) to be (x) perfectionist, (x) good (x) students, (x) and (x) excellent (x) athletes. (x) Some (x) researchers (x) believe (x) that people (x) with (x) anorexia (x) restrict (x) food- (x) particularly (x) carbohydrates- (x) to gain (x) a sense (x) of control (x) in (x) some (x) area (x) of (x) their (x) lives. ( ) Having ( ) followed ( ) the wishes ( ) of ( ) others ( ) for ( ) the most ( ) part, (x) they (x) have (x) not (x) learned (x) to cope (x) with (x) the problems (x) typical (x) of (x) adolescence, ( ) growing up, ( ) and ( ) becoming ( ) independent. ( ) Millions ( ) of people ( ) are ( ) also ( ) affected ( ) by bulimia ( ) and ( ) binge, ( ) which ( ) are ( ) also ( ) serious ( ) eating ( ) disorders.

BULIMIA

(x) Bulimia (x) is (x) another (x) eating (x) disorder. (x) People (x) with (x) bulimia (x) consume (x) large (x) amounts (x) of food (x) and (x) then (x) rid (x) their (x) bodies (x) of (x) the (x) excess (x) calories (x) by vomiting, (x) abusing (x) laxatives (x) or diuretics (x) and (x) exercising (x) obsessively. ( ) Some ( ) use ( ) a combination ( ) of ( ) all ( ) these ( ) forms ( ) of exclusion. ( ) Many ( ) people ( ) with ( ) bulimia ( ) maintain ( ) normal ( ) or ( ) above ( ) body ( ) weight, ( ) successfully ( ) hiding ( ) their ( ) problem ( ) from ( ) others ( ) for years.

BINGE

(x) Binge (x is ( ) the third ( ) type ( ) of (x) eating (x) disorder. (x) The disorder (x) is (x) characterized (x) by episodes (x) of (x) uncontrolled (x) eating, (x) however, (x) its (x) suffers (x) do (x) not (x) eliminate (x) their bodies (x) of excess (x) food. ( ) Individuals ( ) with ( ) binge ( ) eating ( ) disorder ( ) feel ( ) that (x) they (x) lose (x) control (x) of themselves (x) when (x) eating. (x) They (x) eat (x) large

(x) quantities (x) of food (x) and (x) do (x) not (x) stop (x) until (x) they (x) are (x) uncomfortably (x) full. ( ) Usually, ( ) they ( ) have ( ) more ( ) difficulties ( ) losing ( ) weight ( ) and ( ) keeping ( ) it ( ) off ( ) than ( ) people ( ) with ( ) other ( ) serious ( ) weight ( ) problems.

EATING DISORDERS AND SCIENTIFIC RESEARCH

( ) In ( ) an ( ) attempt ( ) to understand ( ) eating ( ) disorders, (x) scientists (x) have (x) studied (x) biochemical (x) functions (x) of people ( ) with ( ) illnesses ( ) to find ( ) treatment ( ) for ( ) eating ( ) disorders. ( ) Thus, (x) they (x) have (x) focused (x) recently (x) on (x) the neuroendocrine (x) system- (x) a combination (x) of (x) the central (x) nervous (x) and (x) hormonal (x) systems. ( ) Through ( ) complex ( ) but ( ) carefully ( ) balanced ( ) feedback ( ) mechanisms, ( ) the neuroendrocrine ( ) system ( ) regulates ( ) sexual ( ) functions, ( ) physical ( ) growth ( ) and ( ) development,( ) appetite ( ) and ( ) digestion, ( ) sleep, ( ) heart ( ) and ( ) kidney ( ) functions, ( ) emotions, ( ) thinking, ( ) and ( ) memory- ( ) in ( ) other ( ) words, ( )multiple ( ) functions ( ) of ( ) the mind ( ) and ( ) body. (x) Many (x) of (x) these (x) mechanisms (x) are (x) seriously (x) disturbed (x) in (x) people (x) with (x) eating (x) disorders. ( ) Thus, ( ) medical ( ) treatment ( ) is ( ) vital ( ) to help ( ) people ( ) overcome ( ) their ( ) problems.

NEUROENDOCRINE SYSTEM

( ) The ( ) neuroendocrine ( ) system ( ) is ( ) a network ( ) of ( ) glands ( ) that ( ) produce ( ) and ( ) secrete ( ) hormones ( ) into ( ) the bloodstream. ( ) Hormones ( ) are ( ) chemical ( ) substances ( ) that ( ) regulate ( ) such ( ) specific ( ) body ( ) functions ( ) s metabolism, ( ) growth, ( ) and ( ) reproduction.

TREATMENT TO EATING DISORDERS

(x) Eating (x) disorders (x) are (x) most (x) successfully (x) treated (x) early. ( ) Unfortunately, ( ) even ( ) when ( ) family ( ) members ( ) confront ( ) the ill ( ) person ( ) about ( ) his ( ) or ( ) her ( ) behavior, ( ) or physicians ( ) make ( ) a diagnosis, (x) individuals (x) with (x) eating (x) disorders (x) may (x) deny (x) they (x) have (x) a problem. ( ) One ( ) reason ( ) that ( ) men ( ) represent ( ) the greatest ( ) number ( ) in the group ( ) of ( ) people ( ) with ( ) eating ( ) disorder ( ) is ( ) their ( ) tendency ( ) to achieve ( ) an ( ) “ideal” ( ) figure; ( ) daily ( ) compulsive ( ) building up ( ) activities ( ) seem ( ) to be ( ) a rule ( ) for ( ) them ( ) nowadays. ( ) Although ( ) most ( ) victims ( ) of anorexia ( ) and ( ) bulimia ( ) are ( ) men, ( ) these ( ) illnesses ( ) can ( ) also ( ) strike ( ) adolescents ( ) and ( ) young ( ) women ( ) such ( ) as Mary ( ) and Jane.

MARY

( ) Mary ( ) developed ( ) bulimia ( ) when ( ) she ( ) was ( ) twenty ( ) years ( ) old. ( ) One ( ) day ( ) her ( ) father ( ) told ( ) her ( ) she ( ) would ( ) never ( ) get ( ) a date ( ) if ( ) he ( ) didn’t ( ) loose ( ) any ( ) weight. ( ) She ( ) took ( ) him ( ) seriously ( ) and ( ) began ( ) to diet ( ) obstinately, ( ) restricting ( ) all ( ) kinds ( ) of food- ( ) particularly ( ) carbohydrates. ( ) She ( ) also ( ) developed ( ) strange ( ) eating

( ) rituals, ( ) and ( ) exercised ( ) compulsively, ( ) even ( ) after ( ) she ( ) weakened, ( ) and ( ) became ( ) very ( ) skinny. ( ) No one ( ) was ( ) able ( ) to convince ( ) Mary ( ) that ( ) she ( ) was ( ) in danger. (x) Encouragement, (x) support, (x) caring, (x) and (x) persistence, ( ) as well as ( ) information ( ) about ( ) eating ( ) disorders ( ) and ( ) their ( ) dangers, (x) may (x) be (x) needed ( ) to convince ( ) the ( ) ill ( ) person ( ) to get ( ) help, ( ) stick ( ) with ( ) treatment, ( ) or to try ( ) again. ( ) The causes ( ) of ( ) eating ( ) disorders ( ) are ( ) not ( ) known ( ) with ( ) precision, ( ) as ( ) in ( ) Jane's ( ) case, ( ) but ( ) researchers ( ) are ( ) trying ( ) to understand ( ) which ( ) factors ( ) may ( ) lead ( ) to eating ( ) disorders.

JANE

( ) Jane, ( ) 21 years ( ) old, ( ) is ( ) a student ( ) at Duke ( ) University. ( ) She ( ) developed ( ) anorexia ( ) when ( ) she ( ) was ( ) 19. ( ) Just ( ) like ( ) most ( ) people ( ) with ( ) anorexia, ( ) Jane ( ) is ( ) disorganized, ( ) but ( ) a good ( ) student. ( ) She ( ) is ( ) an attractive ( ) woman ( ) but ( ) considerably ( ) overweight. ( ) She ( ) regularly ( ) ate ( ) a huge ( ) mount ( ) of food ( ) and ( ) maintained ( ) her ( ) normal ( ) weight ( ) by ( ) forcing ( ) herself ( ) to vomit. ( ) Unable ( ) to understand ( ) her ( ) own ( ) behavior, ( ) she ( ) thought ( ) no ( ) one ( ) would ( ) either. ( ) The problem ( ) continued ( ) until ( ) one ( ) day ( ) she ( ) had ( ) to go ( ) to ( ) the hospital ( ) due ( ) to severe ( ) dehydration.

SUPPORT FOR EATING DISORDERS

( ) To help ( ) those ( ) with ( ) disorders ( ) deal ( ) with ( ) their ( ) illness ( ) and ( ) underlying ( ) emotional ( ) issues, ( ) some ( ) form ( ) of (x) psychotherapy (x) is (x) usually (x) needed. ( ) A psychologist, ( ) or ( ) other ( ) mental ( ) health ( ) professional ( ) meets ( ) with ( ) the patient ( ) individually ( ) and provides ( ) ongoing ( ) emotional ( ) support, ( ) while ( ) the patient ( ) begins ( ) to understand ( ) and ( ) cope ( ) with ( ) the illness. ( ) Group ( ) therapy, ( ) in ( ) which ( ) people ( ) share ( ) their ( ) experience ( ) with ( ) others ( ) who ( ) have ( ) similar ( ) problems, ( ) has ( ) been ( ) effective ( ) for ( ) people ( ) with ( ) eating ( ) disorder. ( ) Finally, (x) the support (x) of family (x) members (x) and (x) friends (x) can (x) be (x) very (x) important (x) in (x) helping (x) the ill (x) person (x) to start (x) a new ( ) and (x) healthier (x) life.

Number of words: 911

Number of propositions: 74

Appendix 9

TEXT 2 – MAIN PROPOSITIONS SCORING PATTERN

( ) Obese? ( ) “To be ( ) or ( ) not ( ) to be”. ( ) Or ( ) should ( ) it ( ) be ( ) asked, ( ) how ( ) to avoid ( ) being ( ) fat? (x) Many (x) causes (x) can (x) lead (x) a person (x) to become (x) obese,. (x) among (x) them, (x) stress. (x) Stress (x) has (x) physical (x) and (x) emotional (x) effects (x) on (x) us (x) and (x) can (x) create (x) different (x feelings. (x) Identifying ( ) unrelieved ( ) stress ( ) and ( ) being ( ) aware ( ) of ( ) its ( ) effect ( ) on ( ) our ( ) lives ( ) is ( ) a way ( ) of ( ) reducing ( ) its ( ) harmful ( ) effects.
(x) Stress( ) can ( ) have ( ) two ( ) influences (a) ( ) as ( ) a positive ( ) influence, ( ) stress ( ) can ( ) help ( ) compel ( ) us ( ) to action (b) (x) as (x) a negative (x) influence, ( ) it (x) can (x) cause ( ) distrust, ( ) rejection, ( ) and ( ) depression, ( ) which ( ) in turn ( ) can ( ) lead ( ) to health ( ) diseases ( ) such ( ) as high ( ) blood ( ) pressure, ( ) insomnia, (x) upset stomach (x) and (x) a compulsive (x) eating (x) habit. (x) In (x) some (x) cases, (x) the (x) consequence (x) of (x) such (x) extreme (x) uncontrolled (x) eating (x) habit (x) may (x) lead (x) people (x) to become (x) very (x) overweight.

AVOIDING STRESS

( ) Stress ( ) can ( ) be ( ) avoided by:
-( ) Relaxing ( ) and ( ) taking ( ) recesses
- ( ) Living ( ) one ( ) day ( ) after ( ) the other
-( ) Trying ( ) to be ( ) happy
-( ) Learning ( ) to say ( ) no
-( ) Choosing ( ) your ( ) friends ( ) wisely
-( ) When ( ) a problem ( ) arises, ( ) talking ( ) through ( ) it ( ) immediately
-( ) Laughing ( ) and ( ) having ( ) fun

COMPULSIVE EATING

(x) Compulsive (x) overeating (x) is (x) characterized (x) by (x) uncontrolled (x) eating (x) followed (x) by feelings (x) of guilt (x) and (x) shame. ( ) While ( ) it ( ) inevitably ( ) results ( ) in ( ) weight ( ) gain, ( ) it ( ) is ( ) also ( ) not ( ) to be ( ) confused ( ) with ( ) obesity. (x) Not (x) everyone (x) who (x) is (x) overweight (x) has (x) an (x) eating (x) disorder.

OBESITY

(x) Obesity (x) is (x) defined (x) in terms (x) of body (x) mass (x) index, (x) or BMI. (x) Severe (x) obesity (x) is (x) a condition (x) that (x) is (x) difficult (x) to treat (x) by (x) traditional (x) means (x) such (x) as diets (x) or exercises. ( ) However, ( ) researchers ( ) from ( ) Harvard ( ) University ( ) have ( ) announced ( ) that (x) women (x) are (x) now (x) eating ( ) 335 (x) more (x) calories ( ) per ( ) day ( ) than ( ) they ( ) did ( ) in ( ) 1971, ( ) while (x) adult (x) men (x) have (x) upped (x) their (x) daily (x) intake ( ) by ( ) 168 ( ) calories. (x) Today (x) one (x) out (x) of (x) three (x) Americans (x) is (x) obese. (x) Fruit (x) and (x) vegetables (x) are (x) out (x) of (x) the tables (x) in (x) the USA. ( ) Thus, (x) obesity (x) is (x)

becoming (x) a familiar (x) headline, (x) and (x) gastric (x) bypass (x) surgery (x) is (x) a solution ( ) in ( ) many ( ) cases.

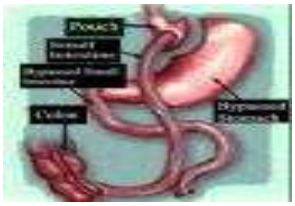
BMI

(x) BMI (x) is (x) a measure (x) of body (x) weight (x) relative (x) to height. (x) A person (x) with (x) a BMI (x) of 30 (x) or more (x) is (x) considered (x) obese- (x) and (x) at (x) a higher (x) risk (x) of diseases ( ) ranging ( ) from ( ) head (stroke) to toe (diabetic foot ulcers). ( ) From ( ) 1971 ( ) to 2000 ( ) obesity ( ) increased ( ) from ( ) 14.5 ( ) percent ( ) to 30.9 ( ) percent ( ) of the U.S. ( ) population, ( ) setting ( ) the stage ( ) for ( ) elevated ( ) rates ( ) of diabetes. ( ) "We ( ) know ( ) that ( ) people ( ) get ( ) fat ( ) by ( ) overeating ( ) slightly ( ) more ( ) than ( ) they ( ) burn, ( ) maybe ( ) because ( ) they ( ) are ( ) too ( ) stressed" says Dr Richardson. ( ) Everybody ( ) knows ( ) that ( ) careful ( ) diet ( ) or ( ) everyday ( ) exercises ( ) can ( ) easily ( ) treat ( ) severe ( ) obesity. ( ) Unfortunately, ( ) some ( ) people ( ) prefer ( ) to do ( ) a gastric ( ) surgery, ( ) because ( ) they ( ) are ( ) not ( ) smart ( ) enough ( ) in ( ) electing ( ) what ( ) they ( ) should ( ) eat, ( ) or ( ) to do ( ) physical ( ) activities.

GASTRIC SURGERY

(x) A Gastric (x) surgery (x) for (x) obesity (x) is (x) a complex (x) surgical (x treatment (x) that (x) shrinks (x) the stomach's (x) capacity ( ) from a ( ) wine ( ) bottle ( ) to ( ) short- ( ) glass ( ) size ( ) and ( ) reconfigures ( ) the small ( ) intestine. (x) Among (x) the gastric (x) surgeries (x) it (x) is (x) possible (x) to find (x) the gastric (x) bypass (x) surgery. (x) The surgery (x) is (x) risky, ( ) as doctor ( ) Richardson ( ) explains, ( ) however, ( ) it ( ) brings ( ) great ( ) benefits ( ) to almost ( ) eighty ( ) percent ( ) of ( ) the patients. ( ) Thus, ( ) Dr. Richardson ( ) recommends ( ) that (x) the best (x) thing (x) to do (x) is (x) to avoid (x) obesity.

GASTRIC SURGERY



(x) Gastric (x) bypass (x) surgery (x) reduces (x) the stomach, ( ) by, for example, ( ) placing ( ) a hollow ( ) band ( ) made ( ) of ( ) special ( ) material ( ) around ( ) the stomach ( ) near ( ) its ( ) upper ( ) end, ( ) creating ( ) a small ( ) pouch ( ) and ( ) a ( ) narrow ( ) passage ( ) into ( ) the ( ) larger ( ) remainder ( ) of the ( ) stomach. (x) After (x) the surgery (x) a patient (x) cannot (x) eat (x) as (x) much (x) as he/she (x) used to; (x) sugar (x) or (x) fatty (x) food ( ) provokes ( ) a dumping ( ) syndrome ( ) that (x) causes (x) flushing, (x nausea, (x) and (x) sweating ( ) in bypass ( ) patients.

A PATIENT

( ) Nora, ( ) a psychologist, ( ) 39, ( ) lost ( ) 17 kilos ( ) in ( ) 6 months. ( )When ( ) she ( ) was ( ) asked ( ) about ( ) the decision ( ) to have ( ) the surgery, ( ) Ms Jane ( ) described ( ) the humiliation ( ) of asking ( ) for ( ) a seat-belt ( ) extender ( ) on ( ) a plane. ( ) "The gastric ( ) bypass ( ) surgery ( ) is ( ) fantastic, ( ) and ( ) I ( ) am ( ) very ( ) happy to have ( ) done ( ) it ( ) because ( ) now ( ) I ( ) can ( ) eat ( ) as much ( ) as ( ) I ( ) used ( ) to ( ) without ( ) getting ( ) fat. ( ) It ( ) is ( ) wonderful," ( ) she ( )

celebrates. ( ) Nora ( ) is ( ) a new ( ) person ( ) now, ( ) she ( ) does ( ) physical ( ) activities ( ) everyday ( ) and ( ) has ( ) recovered her ( ) high ( ) self-esteem. ( ) She ( ) is ( ) also ( ) planning ( ) to help ( ) sufferers ( ) who ( ) are ( ) trying ( ) to manage ( ) their ( ) weight.

PHYSICAL ACTIVITIES

(x) Exercises (x) for (x) cardiovascular (x) fitness ( ) three ( ) to four ( ) times ( ) a week ( ) such ( ) as ( ) walking, ( ) swimming, ( ) and ( ) cycling (x) can (x) help (x) people (x) maintain (x) the ideal (x) weight. ( ) Thus,( ) experts ( ) advise ( ) building ( ) activities ( ) into ( ) daily ( ) life ( ) by ( ) rebelling ( ) against ( ) convenience. ( ) Taking ( ) the stairs ( ) or ( ) grabbing ( ) a rake ( ) instead ( ) of ( ) a leaf ( ) blower ( ) can ( ) burn ( ) enough ( ) extra ( ) calories ( ) to prevent ( ) the added ( ) pound ( ) middle-aged ( ) people ( ) tend ( ) to gain ( ) over ( ) the years, ( ) and ( ) to avoid ( ) obesity. (x) People (x) can (x) also (x) use (x) the USDA (x) Food (x) Guide (x) Pyramid (x) to choose (x) what (x) they (x) should (x) eat. (x) Avoiding (x) obesity (x) is (x) the best (x) solution, ( ) however, ( ) for ( ) those ( ) who ( ) want ( ) a more ( ) radical ( ) method, ( ) a gastric ( ) bypass ( ) surgery ( ) would ( ) be ( ) a solution. ( ) The surgery ( ) is ( ) safe ( ) and ( ) it ( ) can ( ) be ( ) considered ( ) a complete ( ) success ( ) in ( ) all ( ) cases.

THE PYRAMID

(x) The pyramid (x) is based (x) on (x) the USDA (United State Department of Agriculture) (x) research ( ) on ( ) what ( ) food ( ) Americans ( ) eat, ( ) what ( ) nutrients ( ) are ( ) in ( ) these ( ) food, ( ) and (x) how (x) to make (x) the best (x) food (x) choices (x) for you.

AVOIDING OBESITY

( ) In ( ) a recent ( ) interview, ( ) Dr. Richardson, ( ) from ( ) the US ( ) Medical Center, ( ) said ( ) that (x) the best (x) way (x) to avoid (x) obesity (x) is (x) to keep (x) from (x) gaining (x) weight (x) in (x) the first (x) place. ( ) Thus, ( ) people ( ) in ( ) America ( ) are ( ) eating ( ) more ( ) vegetables, ( ) and ( ) fruit ( ) as ( ) the USDA's ( ) Food ( ) Guide ( ) Pyramid ( ) advised. ( ) The reduction ( ) of ( ) fat ( ) as ( ) a percentage ( ) of total ( ) calories ( ) is ( ) real ( ) in ( ) the USA. ( ) Nevertheless, ( ) researchers ( ) have ( ) also ( ) found ( ) that ( ) most ( ) illnesses ( ) are ( ) related ( ) to unrelieved ( ) stress. ( ) Therefore, ( ) doctors ( ) recommend ( ) that ( ) if ( ) you ( ) are ( ) a ( ) nervous ( ) person, ( ) with ( ) stress ( ) symptoms, ( ) you ( ) have ( ) to improve ( ) your ( ) ability ( ) to manage ( ) it ( ) to live( ) a longer ( ) and ( ) healthier ( ) life.

Number of words: 952

Number of propositions: 69

Appendix 10

WRITTEN QUESTIONS (Text 1)

Name: .....….....Age:...…….....Title:……

1) What is the main idea of the text?
……
……
……

2) Please indicate how strongly you agree or disagree with each statement, writing, in the parenthesis, one of the numbers below which better express your opinion.
Strongly disagree (1) Disagree (2) Neutral (3) Agree (4) Strongly Agree (5).

1. The information in the article was well organized in general terms ( ).
2. The article was easy to understand ( ).
3. The article was easy to follow ( )
4. The story was easy to read ( ).
5. The article had a logical flow of ideas ( ).
6. The article seemed awkward in certain places ( ).
7. The article was easy to remember ( ).
8. The story required a lot of effort on the reader's part ( )..
9. The vocabulary was easy ( ).
10. The article gave all the information the reader needed to understand the text ( ).

(In case you want to make comments of any of the questions above use the lines below).

……
……
……

3) Choose the right alternative below according to the text.

1) Anorexia, bulimia and Binge seem to develop:

(a) as a way of handling stress and anxieties
(b) from uncontrolled depression and overweight
(c) from exaggerating in the amount of food ingested
(d) from problems in the central system

2) According to the text, people with Bulimia

(a) are very dependent and naïve
(b) tend to be perfectionist and good athletes
(c) abuse of diuretics and exercise obsessively
(d) are disorganized but good athletes

3) Binge is a condition:

(a) in which people eliminate their bodies of excess food

(b) in which people have difficulties losing weight

(c) in which people abuse of laxatives and diuretics

(d) in which people restrict the amount of food ingested

4) The majority of those afflicted with anorexia are:

(a) young women

(b) young men

(c) young men and young women

(d) only adolescent people

5) The neuroendrocrine system is a combination of:

(a) central nervous and hormonal system

(b) central system and hormones

(c) neuroendrocrine nervous

(d) neuroendrocrine hormonal system

6) Eating disorders are caused by:

(a) uncontrolled appetite and stress

(b) hormonal and gastric disorders

(c) problems in the central system

(d) biochemical and emotional disorders

7) Mary developed

(a) Bulimia

(b) Binge

(c) Anorexia

(d) Bulimia and stress

8) Jane developed

(a) Anorexia

(b) Bulimia

(c) Binge

(d) Binge and depression

9) In which way do psychologists help people with eating disorders?

(a) by making them more confident

(b) by sharing with them some experience and emotions

(c) by making them understand and cope with their illness

(d) by encouraging them to control their eating impulses

10) According to the text, each year millions of people around the world are affected by:

(a) serious emotional problems

(b) life-threatening physical or mental disorder

(c) dysfunction with the physical system

(d) dysfunction in the their hormone mechanisms

Appendix 11

WRITTEN QUESTIONS (TEXT 2)

1) What is the main idea of the text?

……

……..

……

……..…

2) Please indicate how strongly you agree or disagree with each statement, writing, in the parenthesis, one of the numbers below which better express your opinion.

Strongly disagree (1) Disagree (2) Neutral (3) Agree (4) Strongly Agree (4).

1. The information in the article was well organized ( ).
2. The article was easy to understand ( ).
3. The article was easy to follow ( ).
4. The story was easy to read ( ).
5. The article had a logical fashion ( )..
6. The article seemed awkward in certain places ( ).
7. The article was easy to remember ( ).
8. The story required a lot of effort on the reader's part ( ).
9. The vocabulary was easy ( ).
10. The article gave all the information the reader needed to understand the text ( ).

(In case you want to make any comments about the questions above, please use the lines below).

……

……

……..

Choose the right answer according to the text

1) According to researchers from Harvard University

(a) reduction of fat as a percentage of total calories seems to be real

(b) women have diminished their daily intake of calories

(c) people in America are eating more vegetable than recommended

(d) men have increased their intake of calories

2) Dr. Richardson said that:

a) people eat more than they burn

b) everyday exercises and careful diet can treat severe obesity

c) the surgery for obesity is efficient for 95% of the patients

d) after the surgery people become skinny

3) Nausea in patients who have done the surgery may result from:

(a) having the small intestine reduced
(b) having the long intestine reduced
(c) eating sugar
(d) eating sugar and grains

4) Severe obesity can be treated by:

(a) rigorous diet and everyday exercises
(b) reducing daily intake of sugar
(c) only with a surgery
(d) controlling stress syndromes

5) After the surgery patients lose weight because

(a) the stomach reduces its capability of absorbing calories
(b) patients get more conscious about their eating habits
(c) patients have to follow a special diet
(d) patients cannot eat sugar

6) Obesity is a familiar headline because:

(a) Americans are more conscious about the problems of obesity
(b) Americans are exercising more for cardiovascular fitness
(c) one out of three Americans is obese
(d) one out of five Americans is obese

7) Obesity is defined in terms of:

(a) body weight and intake calories
(b) body weight and size
(c) height and age
(d) body weight and height

8) When is a person considered obese?

(a) when the BMI is of 50 or more
(b) when the BMI is 30 or more
(c) when the BMI is 70 or more
(d) when the BMI is 40 or more

9) What does Mary Jane do?

(a) she is a nurse
(b) she is a doctor
(c) she is a psychologist
(d) she is a housewife

10) According to the text, the USDA is a guide used for:

(a) prescribing diets
(b) investigating the percentage of total calories consumed by Americans
(c) establishing the best choices for eating
(d) specifying product validity

Appendix 12

Dear professor,

In the enclosed material, you will find one multiple-choice test and some evaluative questions about the text used for this study. In order to improve the quality and accuracy of the tests, I would really appreciate it if you could take some of your valuable time to closely examine them. Your insights and suggestions will show whether the employed tests need further refinement. Thank you for your help.

(1) Strongly agree (2) Agree (3) Do not agree (4) strongly disagree Neutral (5)

1. The language (vocabulary/grammar) used in the tests is at the desired difficulty for intermediate ESL participants ( ).
2. The tests are doing an adequate job of evaluating their reading comprehension ( ).
3. The length of the test as a whole is adequate ( ).
4. One aspect of the test is being tested more than others ( ).
5. The correct answer is genuinely correct ( ).
6. Each wrong alternative in the multiple-choice test is attractive ( ).
7. Tests items test different levels of text understanding ( ).
8. Test items are measuring what they are supposed to be measuring, that is, the impact of reading a text in different modes of presentation ( ).
9. The correct items have been randomized, i. e., the correct answer is not all the time either “b” or “a” ( ).

Appendix 13

CONTRADICTIONS

(Text 1)

* The majority of those afflicted with anorexia are adolescents and young women.
(Contradiction) Although most victims of anorexia and bulimia are men, these illnesses can also strike adolescents and young women.
(Contradiction) One reason that men represent the greatest number in the group of people with eating disorder … .

* People with bulimia consume large amounts of food.
(Contradiction) Mary developed bulimia … she began to diet obstinately, restricting all kinds of food, particularly carbohydrates.

*Anorexia is a dangerous condition in which people can literally starve themselves to death.
(Contradiction) Jane developed anorexia. She is an attractive woman but considerably overweight. She regularly ate a huge amount of food.

* People with anorexia tend to be "too good to be true" … tend to be perfectionist …
(Contradiction) Like most people with anorexia, Jane is disorganized …

Contradictions (Text 2)

* Severe obesity is a condition that is difficult to treat by traditional means such as diets or everyday exercises.
(Contradiction) Everybody knows that careful diet or everyday exercises can easily
Treat severe obesity.

* Gastric bypass surgery for obesity reduces the stomach … after the surgery a patient cannot eat as much as he/she used to.
(Contradiction) The gastric bypass surgery is fantastic, and I am very happy to have done it because now I can eat as much as I used to without getting fat.

* The surgery is risky
(Contradiction) The surgery is safe.

* (The surgery) It brings great benefits to almost eight percent of the patients.
(Contradiction) It can be considered a complete success in all cases.

* Obesity is becoming a familiar headline… (in the USA).
(Contradiction) The reduction of fat as a percentage of total calories is real in the USA.
* Fruit and vegetables are out of the tables in the USA.
(Contradiction) People in America are eating more vegetables and fruit … .

Appendix 14

THE READING SPAN TEST

He played all day at the park and got a sore arm
I saw a child and her father near the river playing ball.
? ?His younger brother roll and rock a in guitar played bandSuddenly the taxi opened its door in front of the bankThe last thing he hot nice a take to was did take bath? ? ?Her best memory of England was the Tower of London bell.
At the very top of the tree sat a small bird.
She took rusty the into reached and breath deep a boxThe state of Wisconsin is famous for its butter and cheese? ? ? ?He overslept economics morning the of all missed and class.
The first thing golf a swing is morning every does he clubPopular foods in the summer are watermelon and sweet corn.
The boy was surprised to know that milk came from a cow.
The only thing left broken a was cupboard kitchen the in cup? ? ? ? ?The birthday party began in the morning and lasted all day.
The young woman a saw they thought boyfriend her and dog.
? ?There was nothing left to do except leave and lock the door.
In order to attend the dinner she needed to buy a dress.
The woman screamed the in man old the slapped and face.
? ? ?She leaned over the candle and her hair caught on fire.
The drinks were all the was remained that all and gone food.
He quickly drank some the washed then and milk the of glass.
He looked across the room and saw a person holding a gun.
? ? ? ? The hunting knife was so sharp that is cut his right hand.
She soon realized that the man forgot to leave the room keyThe saw that the for enough strong not was brought lockThe first driver out in the up picks always morning the mail.
All that remained in the lunch box was one salted nut.
? ? ? ? ?The boat engine of out was it because run not would oil.
The letter said to the claim to market the to come prize.
? ?It was a very simple meal of salted fish and boiled rice.
They decided to large the by break afternoon and take rock.
He wanted to leave his bags and jacket in the hotel room.
? ? ?
There were so many people that I couldn’t find a seat.
He opened a out pulled and drawer bottom the shirt.
The skiing was didn’t the mind he that wonderful so snow.
They knew that it a with spaghetti eat to impolite was spoon.
? ? ? ? The season with is love with associate often people that springThe letter was lost because it did not have a postage stamp.
The people in by travel to like always Europe northern train.
All morning the under talked and sat children two tree.
At night the prisoners escaped through a hole in the wall.
? ? ? ? ?

Appendix 15

RESULTS FROM THE RETROSPECTIVE QUESTIONNAIRE (individual)

Brazilians- High-span participants

Questions

Participant	1	2	3	4	5	6	7	8	9	10
11	Linear- 5	5	5	5	3	3	4	1	5	4
	Hyper-5	5	5	5	5	2	3	3	5	5
07	Linear-2	4	3	4	5	3	4	2	4	3
	Hyper-4	4	5	4	4	2	4	4	3	4
08	Linear-2	2	3	3	3	4	3	2	4	4
	Hyper-3	5	5	4	3	2	4	1	5	4
10	Linear-4	4	4	4	3	4	4	3	3	3
	Hyper-2	4	3	4	2	4	3	2	4	3
11	Linear-5	5	5	5	5	2	3	3	5	5
	Hyper-5	5	5	5	3	4	4	1	5	4
13	Linear-4	4	5	3	4	3	4	3	2	4
	Hyper-4	4	4	3	4	2	5	2	3	4
14	Linear-4	5	4	5	5	5	4	2	4	4
	Hyper-3	5	4	4	3	4	4	2	5	5
19	Linear-4	4	4	4	2	4	3	2	4	4
	Hyper-4	4	4	4	2	4	4	2	3	4
20	Linear-5	5	4	5	4	2	4	3	3	4
	Hyper-4	4	3	4	2	5	3	2	3	4
21	Linear-5	5	5	5	5	4	5	1	5	5
	Hyper-5	5	5	5	5	4	5	3	4	2

Brazilians- Low-span participants

Questions

Participant	1	2	3	4	5	6	7	8	9	10
9	Linear- 4	4	4	4	5	4	3	4	5	2
	Hyper-5	5	5	5	5	1	5	1	5	2
01	Linear-4	4	3	4	4	3	3	3	4	4
	Hyper-4	5	5	5	3	2	4	1	4	5
04	Linear-4	4	4	5	4	3	4	2	3	4
	Hyper-4	5	5	5	1	3	4	2	4	3
05	Linear-4	5	4	4	5	2	4	2	4	4
	Hyper-5	4	5	5	5	2	4	3	4	4
15	Linear-5	5	5	4	4	2	4	4	4	4
	Hyper-5	5	5	4	5	3	4	2	4	5
16	Linear-4	4	3	4	3	4	4	3	4	2
	Hyper-4	5	5	5	4	3	4	2	5	4
17	Linear-5	4	5	4	4	1	4	2	4	5
	Hyper-4	5	3	4	2	2	4	2	4	5
18	Linear-3	3	4	3	3	5	2	3	5	3
	Hyper-4	5	4	3	4	2	4	2	5	4

Chinese- High-span participants

	Questions									
Participant	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
24	Linear- 2	3	3	3	2	3	2	4	3	3
	Hyper-4	5	4	5	3	4	4	3	3	4
25	Linear-5	5	5	5	4	3	3	3	4	4
	Hyper-4	4	5	4	3	3	3	4	3	3
27	Linear-5	5	4	5	4		4	2	4	4
	Hyper-1	5	5	5	4	3	2	2	2	4
28	Linear-1	5	5	5	5	2	3	2	2	3
	Hyper-5	5	5	5	5	1	3	2	3	3
31	Linear-2	3	3	3	3	5	3	4	3	2
	Hyper-4	4	4	4	3	4	4	3	3	2
32	Linear-4	4	4	4	4	2	4	3	2	3
	Hyper-2	4	3	3	3	4	3	4	2	2

Chinese- Low-span participants

	Questions									
Participant	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
42	Linear-5	3	3	3	4	4	2	3	2	3
	Hyper-4	5	4	3	3	4	3	2	3	4
41	Linear-5	3	4	4	4	4	4	4	2	3
	Hyper-3	4	4	5	4	3	4	3	4	4
39	Linear-4	4	3	3	3	3	4	4	3	5
	Hyper-4	5	5	5	4	3	4	4	5	2
38	Linear-3	3	2	2	2	3	2	4	2	4
	Hyper-4	4	4	4	3	3	3	3	3	3
37	Linear-4	4	4	4	3	3	3	3	3	3
	Hyper-4	3	4	4	2	3	2	4	2	3
36	Linear-5	5	5	5	4	3	4	3	3	4
	Hyper-4	4	4	4	5	4	3	4	3	4
35	Linear-3	2	3	4	4	3	2	4	2	2
	Hyper-4	4	3	3	2	4	4	4	4	3
30	Linear-3	4	4	4	3	3	3	2	4	3
	Hyper-3	4	4	4	3	2	3	3	2	4
29	Linear-4	3	4	4	4	4	3	4	2	4
	Hyper-3	4	3	3	3	4	3	3	2	4
23	Linear-3	2	4	3	3	3	2	4	2	3
	Hyper-3	4	4	4	4	3	4	3	3	4
22	Linear-4	5	4	5	3	3	4	2	4	4
	Hyper-4	4	4	2	4	3	2	3	3	3

Appendix 16

RESULTS FROM THE PROPOSTIONAL SCORING (all participants)

Participant 1

Obesity

( ) I ( ) remember ( ) that (x) the (x) text (x) is (x) about (x) obesity…ah...that ( ) they ( ) are ( ) saying ( ) that (x) the (x) surgery (x) to (x) reduce (x) the (x) stomach (x) is (x) a (x) a way (x) to (x) people (x) that (x) do (x) not exercise (x), but (x) it (x) has (x) some (x) risks (x) too, ( ) and ( ) it ( ) also ( ) wants ( ) to inform ( ) that (x) the (x) persons (x) should (x) do (x) exercises (x) instead of (x) doing (x) the surgery (x) to avoid (x) obesity.

Prop: 05

Anorexia

(x) It (x) develops (x) some (x) topics ( ) about (x) anorexia, (x) bulimia (x) and (x) binge (x) eating (x) disorders. ( ) It ( ) explains ( ) each ( ) one of ( ) these ( ) disorders, ( ) and ( ) it ( ) says( ) it ( ) shows ( ) two ( ) girls ( ) that ( ) have ( ) anorexia( ) Mary ( ) anorexia, ( ) and ( ) Jane ( ) bulimia, ( ) and ( ) it ( ) also ( ) says ( ) that (x) the family (x) should ( ) also (x) help (x) the person (x) that (x) have (x) these (x) diseases.

Prop: 05

Participant 2

Obesity

The text is here (x) is (x) talking (x) about (x) obesity, (x) being (x) overweight, (x) and (x) why (x) people (x) are (x) overweight (x) nowadays.

Prop:03

Anorexia

(x) The text, ( ) in ( ) general, (x) is (x) about (x) eating (x) disorders. ( ) There ( ) are ( ) a few ( ) items ( ) that ( ) I ( ) cannot ( ) remember ( ) that ( ) go ( ) against ( ) whatever ( ) we ( ) read ( ) about ( ) these ( ) kinds ( ) of eating ( ) disorders. ( ) For ( ) example, ( ) they ( ) said ( ) that (x) most (x) patients (x) are (x)men, which in case is the opposite; (x) most (x) of (x) the patients (x) are (x) women, ( ) and ( ) there ( ) were ( ) a few ( ) other ( ) things ( ) about ( ) which ( ) I ( ) am ( ) not ( ) sure, ( ) but ( ) they ( ) seemed ( ) to me ( ) strange, ( ) so ( ) by ( ) the ( ) time ( ) I ( ) was ( ) answering ( ) the ( ) questions ( ) I ( ) was ( ) confused.

Prop: 04

Participant :03

Anorexia

( ) The text (x) is (x) about (x) disorders (x) related (x) to food…( ) eating ( ) excessive ( ) amount ( ) of food, ( ) I think. (x) We ( ) have ( ) anorexia, ( ) bulimia ( ) and ( ) the other ( ) one ( ) I ( ) don't ( ) remember…ah, (x) the person (x) does (x) not (x) control (x) herself, and (x) they (x) need (x) treatment (x) to (x) their (x) diseases, (x), ( ) but ( ) there ( ) are ( ) some ( ) treatment ( ) nowadays ( ) and…ah…(x) the support (x) of (x) the family (x) is (x) important, ( ) I think ( ) it ( ) is( ) this.

Prop: 04

Obesity

(x) The linear (x) text (x) is (x) about (x) obesity ( ), (x) and (x) it (x) can (x) be (x) caused (x) by (x) stress. (x) People (x) who (x) are (x) (x) stressed ( ) tend ( ) not ( ) to ( ) sleep ( ) very ( ) well ( ) at night, ( ) and ( ) they (x) tend (x) to (x) eat (x) a lot, (x) so (x) they (x) get (x) overweight (x) and (x) there (x) are (x) ways (x) to avoid (x) it (x) mainly (x) doing (x) physical (x) exercises, eating vegetables etc. But there is also the surgery…ah? I do not remember the name. I think it is that.

Porp:07

Participant 4

Anorexia

(x) The text (x) is (x) presenting (x) three (x) types (x) of (x) disorders, ( ) which ( ) are (x) bulimia (x) the (x) one (x) you (x) eat (x) and (x) vomit ( ), and ( ) the ( ) one ( ) you ( ) don't ( ) eat ( ) anything. ( ) I ( ) don't ( ) know ( ) the names, ( ) and ( ) the one ( ) you ( ) eat ( ) and ( ) you ( ) don't ( ) do ( ) anything ( ) to lose ( ) weight.( ) And ( ) the text ( ) is ( ) also ( ) saying ( ) that ah…(x) the treatment (x) involves (x) reorganizing (x) the diet, and (x) sharing (x) experience. ( ) And ( ) there ( ) is ( ) something ( ) about ( ) research ( ) I ( ) don't ( ) know ( ) exactly ( ) of ( ) it.

Prop: 05

Obesity

(x) Obesity (x) putting (x) on (x) weight ah…( ) people ( ) don't ( ) think ( ) it ( ) is ( ) easy ( ) to ( ) go ( ) on ( ) diets ( ) and ( ) keep ( ) on ( ) them ( ) or ( ) doing ( ) a lot ( ) of ( ) exercises ( ) for ( ) reducing ( ) food ( ) in ( ) order ( ) to ( ) lose ( ) weight. ( ) So, ( ) the author ( ) says ( ) that (x) people (x) prefer (x) having (x) the surgery, ( ) and ah…( ) before ( ) the surgery ( ) your ( ) stomach ( ) had ( ) a capacity ( ) of ( ) one ( ) litter, (x) after (x) the surgery (x) the capacity (x) is (x) reduced ( ) to less ( ) small l( ) less ( ) and ah… ( ) he ( ) talks ( ) about, ( ) I ( ) think, ( ) he ( ) talks ( ) about ( ) some ( ) aspects ah…( ) of ( ) fighting ( ) against ( ) putting ( ) on weight. () I ( ) don't ( ) know ( ) if( ) it ( ) is ( ) Ok, ( ) but ( ) he ( ) says ( ) that ( ) stress ( ) is ( ) a ( ) main ( ) cause ( ) of ( ) this ( ) disorder. ( ) Somehow ( ) people ( ) try ( ) to compensate( ) some ( ) problems ( ) eating ( ) eating, ( ) and ( ) them …ah…( ) you ( ) know, ( ) it ( ) is ( ) easier ( ) to them ( ) to try ( ) to find ( ) a solution, ( ) and ( ) after ( ) that, ( ) there ( ) is ( ) a survey ( ) about ( ) men( ) and ( ) women ( ) the input ( ) of( ) calories ( ) in ( ) the States. (x) Women (x) have (x) put (x) about ( ) 300 (x) sometimes (x) more (x) calories (x) them (x) before, (x) while (x) men (x) have (x) increased (x) the amount (x) of calories ( ) in ( ) about ( ) 134. ( ) Then, (x) they (x) are (x) presenting (x) the food (x) pyramid(x) as (x) a reasonable (x) solution (x) not (x) to put (x) on (x) weight ( ) and ( ) there ( ) is ( ) a graphic ( ) of ( ) the stomach, ( ) there ( ) is ( ) a graphic ( ) of ( ) the pyramid, ( ) and ( ) they ( ) say ( ) that ( ) a lot of ( ) people ( ) are ( ) increasing ( ) the ( ) amount ( ) of fruit ( ) and ( ) vegetables ( ) as ( ) the ( ) pyramid ( ) suggests…ah…( ) and ( ) as ( ) a ( ) consequence, ( ) they ( ) are ( ) reducing ( ) their ( ) gaining ( ) of weight.

Prop:09

Participant: 05

Anorexia

( ) I ( ) remember ( ) something ( ) about (x) anorexia, (x) bulimia (x) and ( ) binge disorders, ( ) and ( ) the ( ) research ( ) they ( ) have ( ) for ( ) treating ( ) these ( ) kinds ( ) of illnesses, ( ) and ( ) some ( ) kind ( ) of treatment, ( ) and ( ) some ( ) examples. Ah, ( ) the text ( ) talks about ( ) two ( ) people ( ) that ( ) have ( ) these ( ) kinds ( ) of problems, ( ) and ( ) how ( ) they ( ) could ( ) deal ( ) with ( ) these ( ) situations.

Prop: 01

Obesity

(x) The text (x) is (x) about (x) obesity, (x) and (x) how (x) we (x) put (x) on (x) weight, (x) and ( ) how…ah…( ) what ( ) are (x) the ways (x) you (x) can ( ) do ( ) try ( ) at ( ) least (x) to reduce ( ) to decrease (x) the weight (x) you put ( ) on, and …ah…(x) what (x) are (x) the reasons, (x) the causes (x) the reasons (x) of this (x) kind (x) of dysfunction…ah…(x) of getting (x) fat, ( ) and ( ) what ( ) are ( ) the main ( ) causes(x) the main (x) causes (x) are (x) stress, (x) and …ah…(x) lack (x) of physical exercises, ( ) and ( ) things ( ) that ( ) make, ( ) that ( ) are ( ) funny, ( ) that ( ) bring ( ) some ( ) kind of ah…( ) relaxing ( ) things and so on.

Prop: 08

Participant:06

Obesity

(x) The text (x) is (x) about (x) obesity. (x) People (x) are (x) getting (x) fatter (x) day by day, ( ) sometimes (x) because (x) they (x) eat (x) a lot, ( ) and ( ) (x) they (x) get (x) overweight, ( ) and ( ) sometimes ( ) because ( ) they ( ) do or (x) they (x) don't (x) like (x) physical (x) activities, (x) they (x) don't (x) watch (x) what (x) they (x) eat, ( ) and ( ) they ( ) never or ( ) hardly ( ) ever ( ) do ( ) physical ( ) activities. So, ah…( ) and ( ) this( ) is ( ) very(x) bad (x) for (x) peoples'(x) health (x) because (x) they (x) can (x) get (x) high (x) blood (x) pressure, (x) they (x) can (x) get (x) diabetes, (x) and (x) they (x) can (x) have (x) some (x) illnesses (x) related (x) to obesity. ( ) One( ) solution, (x) Mr. Richardson…ah…( ) explains (x) that (x) one (x) solution (x) is ah…(x) the (x) bypass (x) surgery, (x) stomach (x) surgery. (x) It (x) is (x) a surgery (x) that reduces ( ) to one ( ) third or ( ) two ( ) thirds ( ) percent ( ) of (x) the stomach, ( ) and …ah…(x) the stomach (x) becomes (x) smaller. (x) It (x) reduces (x) the size (x) of the stomach, (x) and (x) the person (x) starts (x) eating (x) less. ( ) That ( ) is ( ) one ( ) solution. ( ) And ( ) a patient,( ) who ( ) is ( ) 39 years old, ( ) describes ( ) that ( ) after ( ) the ( ) inconvenience ( ) of asking ( ) for ( ) a bigger ( ) seat ( ) belt ( ) on ( ) a sit, ( ) she ( ) decided ( ) to do ( ) the surgery, ( ) and ( ) now ( ) she ( ) is ( ) very ( ) happy ( ) because ( ) she ( ) had ( ) a good ( ) result, ( ) and ( ) she ( ) recommends ( ) the surgery ( ) for ( ) obese ( ) people.

Prop: 17

Anorexia

(x) The (x) text (x) is (x) about (x) eating (x) disorders. (x)Some (x) people (x) have ( ) got…ah…(x) eating (x) disorders 9) that ( ) is ( ) called (x) illnesses, (x) because (x) people (x) think (x) that (x) they (x) are (x) really (x) overweight , ( ) and ( ) they ( ) suffer ( ) from ( ) their ( ) obesity, ( ) and ( ) they ( ) start ( ) doing ( ) something ( ) to lose ( ) weight. ( ) And ( ) we ( ) have ( ) some ( ) disorders, (x) eating ( ) habits (x) disorders, for example, (x) anorexia, (x) it (x) means (x) that (x) people (x) do (x) not (x) eat,

(x) they (x) avoid (x) eating, (x) and (x) they (x) become (x) skinny, ( ) and ah…( ) first ( ) to be ( ) elegant, ( ) and ( ) sensual, ( ) and ( ) they ( ) don't ( ) mind ( ) about ( ) the causes ( ) of being or ( ) having ( ) this ( ) kind ( ) of habit ( ) disorder. () The other ( ) one ( ) is (x) bulimia…ah…(x) it (x) is (x) another (x) eating (x) disorder (x) that (x) people ( ) usually (x) eat (x) a lot, (x) and (x) after (x) eating (x) they (x) vomit. (x) They (x) do (x) much (x) exercise or (x) they (x) use (x) some (x) medicine, (x) like (x) laxative (x) that (x) make (x) them (x) vomit. So, (x) they …ah…( ) just (x) don't (x) keep (x) the food (x) in (x) their (x) bodies. (x) Another (x) one (x) is (x) binge. ( ) This ( ) one ( ) is ( ) new ( ) for ( ) me. (x) Binge (x) is (x) another (x) eating (x) disorder…ah…( ) I ( ) forgot. ( ) One ( ) person ( ) doesn't ( ) eat, ( ) the other one ( ) she e( ) eats ( ) but ( ) vomits, ( ) and ( ) binge…( ) I ( ) forgot! ( ) Then, (x) the researchers (x) are (x) trying (x) to study (x) the hormone (x) a hormone (x) that (x) is (x) produced (x) in (x) our (x) head (x) that (x) controls (x) the eating (x) habits, ( ) and ( ) they ( ) say ( ) that ( ) some ( ) causes ( ) for (x) these (x) kinds (x) of (x) disorders( ) eating ( ) habits ( ) are ( ) usually ( ) they (x) usually (x) happen (x) in (x) adolescence, ( ) when (x) teenagers (x) are (x) insecure, (x) anxious ( ) sometimes ( ) they ( ) have ( ) a bad relationship ( ) with people, ( ) and girlfriends, ( ) and ( ) this ( ) is ( ) one ( ) of ( ) the causes…( ) the environment. ( ) And (x) the other (x) cause (x) is (x) problems (x) with (x) hormones ( ) that ( ) people ( ) have. ( ) They ( ) say ( ) that, ( ) normally, ( ) anorexia, ( ) and ( ) bulimia ( ) happen ( ) in ( ) men. ( ) For ( ) me ( ) it ( ) was ( ) something( ) new. ( ) Then, ( ) they ( ) tell ( ) two ( ) cases( ) with ( ) Mary ( ) and ( ) Jane. ( ) Mary ( ) had ( ) anorexia ( ) because ( ) her ( ) father ( ) told ( ) her( ) that ( ) if ( ) she ( ) didn't ( ) lose ( ) weight ( ) she ( ) would ( ) never ( ) find ( ) a boyfriend. ( ) And ( ) she ( ) took ( ) it ( ) so ( ) seriously ( ) that ( ) she ( ) started ( ) losing ( ) weight…ah…( ) avoid ( ) eating, ( ) and ( ) Jane, 19, ( ) a student ( ) she ( ) also ( ) decided ( ) to lose ( ) weight, ( ) and ( ) she ( ) didn't ( ) mind ( ) about ( ) what ( ) happened ( ) her ( ) body.

Prop: 25

Participant:07

Obesity

( ) The text ( ) says ( ) that (x) not (x) everybody ( ) that ( ) has…ah…(x) that (x) is (x) obese (x) has (x) an eating (x) disorder. ( ) That…ah…(x) people (x) get (x) weight (x) from (x) overeating, (x) or (x) stress, ( ) and (x) some (x) people ( ) instead ( ) of trying ( ) to be ( ) healthy, ( ) they (x) prefer (x) a surgery. (x) There (x) are (x) two (x) kinds (x) of surgeries…ah…(x) one, (x) you (x) put (x) a band (x) on (x) your (x) stomach, (x) so (x) it (x) can be (x) remade, ( ) or (x) reverse, ( ) and ( ) the other ( ) one (x) you (x) cut (x) a part (x) of (x) your (x) stomach (x) and ( ) your…ah…( ) thinner…(x) your (x) intestine. ( ) Another ( ) thing ( ) is, ( ) you ( ) know (x) the person (x) is (x) obese (x) when (x) her (x) corporeal…ah…(x) index (x) is (x) over (x) thirty. So, (x) that (x) is (x) when (x) she (x) is (x) considered (x) obese. ( ) And, (x) some (x) ways (x) to avoid (x) stress, (x) and (x) to avoid (x) the gain (x) of weight (x) is ( ) to be ( ) patient, (x) to try (x) not (x) to be (x) stressed, ( ) have ( ) fun, ( ) meet ( ) friends, ( ) do ( ) things ( ) you ( ) like, ( ) relax, ( ) and ( ) not ( ) just ( ) work.

Prop: 16

Anorexia

(x) The (x) text (x) is (x) talking (x) about (x) eating (x) disorders, (x) and …ah… (x) how (x) to treat, (x) how (x) it (x) affects (x) the body. (x) The (x) treatment ah…(x) is (x) with (x) doctors, (x) and (x) psychologists, (x) and (x) maybe (x) group (x) therapy, (x) and (x) friends, (x) and (x) family (x) supporting (x) the people (x) with (x) the problem. (x) Usually, (x) the persons (x) need (x) to want (x) it. (x) The eating (x) disorders ( ) that ( ) they (x) are ( ) talking ( ) about ( ) are (x) bulimia, (x) anorexia, (x) and binge. (x) Anorexia (x) is (x) when (x) you (x) starve (x) yourself (x) to death. (x) You (x) don't (x) eat, (x) and (x) you (x) do (x) as much (x) exercise (x) as (x) you (x) can. And,…ah…(x) you (x) starve (x) yourself. (x) Bulimia (x) you (x) eat (x) as much as (x) you (x) can, (x) and…ah…(x) them (x) you (x) vomit, (x) or (x) use (x) laxatives, (x) anything (x) that (x) you (x) can (x) to get (x) rid (x) of what (x) you (x) ate. ( ) And ( ) binge, ( ) you( ) try ( ) to get ( ) rid ( ) of what ( ) you ( ) ate, ( ) and ( ) you ( ) do ( ) as ( ) much ( ) exercise ( ) as ( ) you ( ) can, ( ) it ( ) is ( ) compulsive.

Prop:21

Participant: 08

Obesity

( ) I ( ) remember ( ) that (x) one (x) of the possible (x) causes (x) for (x) overweight, ( ) or (x) obesity (x) is (x) stress. ( ) Some ( ) ways ( ) of relieving ( ) stress ( ) is ( ) by ( ) trying ( ) to be ( ) happy, ( ) take ( ) one ( ) day ( ) at a time, ( ) laughing, ( ) practicing ( ) physical ( ) exercises…ah … (x) you (x) are (x) considered (x) obese (x) if (x) you (x) have (x) more (x) than (x) thirty (x) percent of …ah… ( ) I ( ) don't ( ) remember ( ) the measure (x) of (x) fat ( ) in ( ) the formula. ( ) If ( ) you ( ) are ( ) diagnosed ( ) as obese (x) you (x) can (x) have (x) a surgery (x) to reduce (x) the stomach (x) by placing ( ) a ( ) like (x) a link, ( ) or (x) closing (x) the stomach (x) with a … ( ) like (x) a not, ( ) or ( ) something ( ) like ( ) that. Ah, ( ) Americans ( ) are trying ( ) to eat ( ) more ( ) fruit, ( ) and ( ) vegetables ( ) as a way ( ) of ( ) not ( )

gaining ( ) weight, ( ) which ( ) is ( ) the ( ) best ( ) way ( ) of reducing ( ) problems ( ) related ( ) to obesity. ( ) The pyramid ( ) is ( ) also ( ) very ( ) interesting … ( ) at the ( ) bottom ( ) of the ( ) pyramid ( ) there ( ) were ( ) carbohydrics, ( ) and ( ) proteins, ( ) in the ( ) middle, I think, ( ) it ( ) was ( ) grains, ( ) cereals, ( ) and ( ) at the ( ) top, ( ) fruit ( ) and ( ) vegetables, I think. Ah, … ( ) there ( ) were ( ) mainly ( ) topics ( ) about ( ) obesity, ( ) stress … ok ( ) and ( ) physical ( ) exercises. ( ) One ( ) of the ( ) texts ( ) says ( ) that (x) if (x) you (x) practice (x) cardiovascular (x) exercises, ( ) at least ( ) three ( ) times (x) a week, (x) you (x) are helping x(x) your (x) body (x) maintain (x) the (x) ideal (x) weight, ( ) and ( ) it ( ) doesn't ( ) have ( ) to be ( ) strong ( ) exercises, .. ( ) it ( ) could ( ) be a ( ) thirty ( ) minutes ( ) walk, ( ) or ( ) climbing ( ) stairs, ( ) or ( ) simply ( ) taking ( ) a rake ( ) instead ( ) of using ( ) your ( ) multiple ( ) control, ( ) but ( ) it ( ) also ( ) says ( ) that ( ) exercises ( ) doesn't ( ) help ( ) those ( ) people. ( ) I ( ) think ( ) it ( ) is contradictory. I don't know.

Prop: 15

Eating disorders

( ) It ( ) starts ( ) generalizing (x) about (x) eating (x) disorders, (x) such as (x) anorexia, (x) bulimia, (x) and binge. For what I could understand, (x) anorexia (x) is (x when (x) people (x) don't (x) eat, (x) bulimia (x) is (x) when (x) people (x) through (x) up (x) after (x) overeating, ( ) and ( ) binge ( ) they ( ) eat ( ) a lot ( ) in ( ) one ( ) occasion, ( ) and ( ) then ( ) go on ( ) starving ( ) until ( ) they ( ) have ( ) the next ( ) episode. Ah, (x) most (x) women (x) are (x) afflicted (x) by (x) these (x) disorders, ( ) although ( ) men ( ) can ( ) also ( ) be affected. ( ) But ( ) I ( ) think ( ) the text ( ) is ( ) contradictory, ( ) because ( ) in ( ) the ( ) first ( ) part ( ) they ( ) talk ( ) about ( ) this ( ) three ( ) disorders, ( ) and ( ) how ( ) women ( ) were ( ) more ( ) affected, ( ) but ( ) in ( ) the ( ) second ( ) part, ( ) when ( ) they ( ) start ( ) giving ( ) examples, ( ) they ( ) mix ( ) the cases ( ) anorexia, ( ) bulimia, ( ) and binge, ( ) and ( ) they ( ) say ( ) that ( ) men ( ) are ( ) more affected ( ) than ( ) women. ( ) So ( ) I ( ) remember ( ) the ( ) first ( ) page ( ) talking ( ) about ( ) eating ( ) disorders, ( ) for ( ) what ( ) I ( ) can ( ) remember, ( ) there ( ) were ( ) strong ( ) contradictions ( ) within ( ) the second, ( ) and ( ) third ( ) pages ( ) of the ( ) text. ( ) They ( ) also ( ) started ( ) mixing ( ) the cases ( ) anorexia, ( ) bulimia, ( ) and binge. ( ) The description ( ) was ( ) of anorexia, ( ) but ( ) the patient ( ) was bulimic, for example. ( ) And ( ) in the ( ) last part, ( ) they ( ) gave ( ) two( ) study ( ) cases, ( ) Jane ( ) and Mary, ( ) again, ( ) mixing. This is why I think it was confusing.

Participant: 09

( ) Basically, (x) the text (x) talks (x) about (x) eating (x) disorders, (x) which (x) are (x) anorexia, (x) bulimia, (x) and binge (x) eating. ( ) It ( ) talks ( ) about ( ) three ( ) problems, ( ) specifically, (x) anorexia, (x) the (x) person (x) stops (x) eating (x) until (x) he/she (x) gets (x) very (x) skinny. (x) It (x) affects (x) young (x) women, (x) and (x) adolescents. So, (x) they (x) starve (x) themselves, (x) and (x) they (x) diet, (x) and (x) they (x) exercise (x) regularly, (x) and (x) they (x) feel (x) they(x) are (x) overweight, (x) even (x) tough (x) they (x) are (x) skinny. (x) Bulimia, (x) the (x) person (x) eats (x) a lot, (x) and (x) after (x) eating (x) a lot (x) they (x) vomit … ah… ( ) and (x) binge (x) eating (x) is …ah…(x) the (x) person (x) eats (x) until (x) he or (x) she (x) is (x) full. ( ) The text said something like this (x) really (x) full, you know, ( ) and ( ) then, ( ) they ( ) vomit ( ) also. (x) The (x) problems (x) underlying (x) these (x) eating (x) disorders …ah…(x) are (x) related (x) with (x) low (x) self-esteem, ( ) and …ah… ( ) something else. ( ) And ( ) it (x) affects (x) women, (x) young (x) girls, (x) adolescents, (x) and (x) young (x) women, ( ) and ( ) they ( ) are ( ) good ( ) students.

Prop: 24

(x) It (x) talks (x) about (x) obesity, and …ah…(x) it (x) talks (x) about (x) a surgery (x) that (x) is (x) recommended (x) for (x) people (x) that (x) are (x) extremely (x) overweight. (x) It (x) is (x) risky, and …ah… (x) it (x) talks (x) about (x) the (x) amount (x) of (x) people (x) who (x) are (x) overweight (x) in (x) the USA, (x) and ( ) they ( ) recommend ( ) things, ( ) some ( ) activities ( ) and ( ) some ( ) diets; ( ) things ( ) people ( ) should ( ) eat ( ) in ( ) order (x) to avoid (x) obesity, ( ) but ( ) it ( ) says that (x) the (x) text (x) recommends (x for (x) people (x) to live (x) a healthier (x) life (x) by (x) eating (x) appropriate (x) food, (x) to avoid (x) the surgery.

Prop: 15

Participant: 10

Obesity

(x) The (x) ext (x) discusses (x) about x) stress, (x) and (x) obesity, and I think (x) its x) relation (x) with (x) stress…ah… ( ) the ( ) second ( ) page ( ) was ( ) mainly ( ) about ( ) stress, (x) and (x) how (x) to (x) reduce (x) stress, and things like that ( ) kind (x) of (x) relating (x) obesity (x) to (x) stress, but the (x) focus (x) was (x) on obesity , (x) and (x) how (x) to avoid (x) it, (x) and (x) how (x) to fight (x) against (x) obesity,(x) like (x) the( ) gastronomic (x) surgery (x) you (x) can (x) do (x) to reduce (x) the stomach. So… ah… ( ) there( ) were ( ) many ( ) passages ( ) in ( ) the text ( ) that ( ) talks ( ) about this…(x) talks (x) about (x) reducing (x) your (x) stomach, (x) and (x) how (x) it (x) can (x) help (x) you, (x) but (x) you

(x) should, (x) actually, (x) prevent (x) obesity (x) rather (x) than (x) doing (x) the surgery …ah…. ( ) They ( ) also ( ) mentioned (x) how (x) stress (x) could (x) be (x) a factor …ah… (x) that (x) contributes (x) to a (x) person (x) to become (x) obese. ( ) The ( ) topics ( ) were, ( ) a specific ( ) topic (x) of biomass, (x) which (x) is (x) how (x) to measure (x) if x) a person (x) is (x) obese (x) or not. (x) They (x) had (x) topics (x) about (x) the gastric (x) or (x) the stomach (x) reduction (x) surgery.

Prop: 19

Eating disorders

( ) It ( ) deals ( ) with ( ) three ( ) different ( ) kinds of …ah… ( ) diseases ( ) related ( ) to eating ( ) disorders- ( ) anorexia, ( ) bulimia, ( ) and binge…ah… ( ) it ( ) describes ( ) these ( ) three ( ) main ( ) diseases… ah… ( ) it ( ) talks ( ) about (x) how (x) these (x) three (x) main (x) diseases (x) should (x) be treated. ( ) It ( ) gives ( ) two ( ) specific ( ) cases studies, ( ) one ( ) with Mary, ( ) and ( ) one with Jane. ( ) Mary ( ) suffers ( ) from ( ) bulimia, ( ) and ( ) Jane ( ) suffers ( ) from ( ) anorexia. (x) It (x) also (x) talks (x) about (x) the (x) treatment (x) of (x) these (x) diseases, (x) and (x) how (x) the treatment (x) of (x) these (x) diseases (x) are (x) related (x) to our (x) neuroendrocrine (x) system, (x) which (x) is (x) related (x) to (x) the central (x) nervous, (x) and (x) hormones (x) we (x) have (x) in (x) our bodies. And…ah… ( ) in ( ) the end, (x) it (x) talks (x) about (x) how (x) psychotherapy (x) can (x) help (x) to treat (x) these diseases.

Pro; 12

Part: 11

Eating disorders

(x) The (x) text (x) is (x) about (x) eating (x) disorders. ( ) Basically, (x) it (x) is (x) about (x) three (x) disorders: (x) anorexia, (x) bulimia, (x) and (x) binge. And…( ) most( ) people ( ) who ( ) have ( ) these ( ) kinds ( ) of disorders … ah … well, (x) the (x) disorders (x) can (x) be ( ) or ( ) have ( ) a (x) psychological, (x) and (x) a problem (x) with (x) the body (x) itself. ( ) Most ( ) individuals ( ) with ( ) anorexia, ( ) and ( ) bulimia ( ) are ( ) men. ( ) I was ( ) very ( ) surprised ( ) to read ( ) that. ( ) Then, ( ) the text ( ) mentions ( ) two ( ) girls, ( ) one ( ) is Mary, ( ) and ( ) the other one ( ) is ( ) Jane. ( ) Mary ( ) realized ( ) she ( ) had ( ) a problem ( ) when ( ) she ( ) was ( ) twelve, ( ) and ( ) she ( ) was ( ) anorexic. ( ) And ( ) Jane, …ah… ( ) she ( ) is ( ) twenty-one. ( ) When ( ) she ( ) was ( ) nineteen ( ) she ( ) realized ( ) she ( ) was ( ) sick.( ) She ( ) would ( ) vomit ( ) everything. ( ) Then,( ) she ( ) tried ( ) to go ( ) for ( ) help. ( ) And ( ) this ( ) problem ( ) falls ( ) back ( ) on ( ) one ( ) time ( ) when ( ) her ( ) father ( ) told ( ) her ( ) she ( ) was ( ) overweight, ( ) and ( ) she ( ) was ( ) a teenager, ( ) and ( ) she ( ) took ( ) him ( ) too ( ) seriously, ( ) and ( ) that ( ) became ( ) a disorder.

Prop: 06

Obesity

( ) This ( ) is ( ) a text ( ) about ( ) obesity, ( ) and ( ) most ( ) of ( ) the causes ( ) of ( ) obesity. ( ) Some ( ) of ( ) the causes ( ) have ( ) to do ( ) with ( ) stress. So, ( ) there ( ) is ( ) also ( ) a part ( ) in ( ) the text ( ) that ( ) is ( ) about ( ) stress, ( ) and ( ) the text ( ) also (x) talks (x) about (x) unrelieved (x) stress, ( ) and ( ) there ( ) are ( ) some ( ) hints( ) of ( ) how ( ) to relieve ( ) stress. For instance, ( ) you ( ) should ( ) have ( ) fun, ( ) you ( ) should ( ) laugh, ( ) and ( ) you ( ) should ( ) talk ( ) about ( ) the ( ) problem. (x) People (x) nowadays (x) in (x) the USA (x) are (x) eating (x) more. ( ) In 1971…ah…(x) women (x) in the (x) USA (x) are (x) now (x) eating (x) one ( ) hundred something (x) calories (x) than (x) they (x) used to (x) in (x) the seventies, ( ) more ( ) precisely, ( ) in 1971, (x) and (x) men (x) are (x) eating (x) one (x) hundred (x) and (x) sixty-eight (x) more (x) calories (x) than (x) they (x) ate (x) in (x) the past. So, that is a problem, ( ) and ( ) people ( ) are ( ) worried ( ) about ( ) that. Ah, (x) doctors (x) have (x) created, ( ) they ( ) have ( ) elaborated (x) a surgery (x) to reduce (x) the stomach…ah… (x) so (x) that (x) people (x) will not (x) eat (x) so much, ( ) and (x) it (x) reduces (x) the stomach ( ) from ( ) a bottle ( ) of wine ( ) to something ( ) that ( ) I don't remember, cause I don't know what that means ( ) something ( ) glass. So, (x) this (x) prevents (x) people (x) from (x) eating (x) more (x) than (x) they (x) really (x) have to. There is something very interesting I read in the end, (x) there is (x) a food (x) guide (x) pyramid (x) in the USA (x) nowadays. ( ) People ( ) know ( ) about ( ) this pyramid, ( ) and ( ) there ( ) is ( ) a pyramid ( ) that ( ) helps ( ) you ( ) to control ( ) the kind ( ) of food ( ) that ( ) you ( ) are eating, ( ) and if ( ) you ( ) are ( ) eating ( ) the right ( ) kind ( ) of food ( ) everyday. Ah, ( ) people ( ) nowadays ( ) are ( ) taking ( ) this ( ) seriously ( ) in ( ) the USA, ( ) and ( ) they ( ) have ( ) lost ( ) weight, according to the text.

Participant: 12

Eating disorders

(x) The (x) text (x) is (x) about (x) eating (x) disorders. ( ) The (x) main (x) topic (x) are (x) eating (x) disorders such as (x) bulimia, (x) anorexia, and another one, I forgot the name. ( ) It ( ) also ( ) gives ( ) examples ( ) of ( ) two ( ) girls, ( ) one ( ) is ( ) anorexic, ( ) and ( ) the ( ) other ( ) with ( ) bulimia, ( ) and

( ) it ( ) talks ( ) that ( ) most ( ) of ( ) men ( ) are ( ) more ( ) inclined ( ) to have ( ) this ( ) problem ( ) than ( ) women.
Prop: 04
Obesity
(x) The (x) text (x) is (x) about (x) obesity. ( ) If ( ) you ( ) are ( ) obese ( ) you ( ) feel ( ) uncomfortable ( ) sometimes, and… ah…(x) the (x) solution ( ) to solve (x) obesity (x) is (x) by (x) doing (x) an (x) operation, (x) doing (x) physical (x) exercises, ( ) and ( ) also (x) it (x) talks (x) about (x) the (x) pyramid (x) that (x) tells (x) the readers (x) which x) food (x) is (x) healthier (x) than (x) the others, and…ah… ( ) it ( ) tells ( ) about (x) a specific (x) stomach (x) surgery (x) in (x) order (x) to lose (x) weight, ( ) and ( ) the problem ( ) of (x) obesity (x) is (x) also (x) related (x) to stress.
Prop:07
Participant: 13
Obesity
( ) The ( ) author's ( ) point ( ) is ( ) that (x) stress (x) can (x) be (x) one (x) of the (x) causes (x) of obesity. ( ) And ( ) then ( ) he ( ) goes ( ) on ( ) to talk …ah… ( ) although, I think this, ( ) is ( ) the main)( ) point, (x) he (x) talks (x) about (x) obesity, (x) and (x) what (x) people (x) should (x) do (x) to avoid (x) obesity, (x) and (x) also (x) how (x) people (x) should (x) avoid (x) stress…ah… (x) alternatives (x) to deal (x) with (x) obesity, so (x) he (x) talks (x) about (x) a surgery… ah… (x) the gastric (x) surgery, ( ) and (x) the author (x) doesn't (x) recommend the surgery. (x) The (x) person (x) should (x) try (x) first (x) to go (x) on (x) a diet, (x) and (x) to practice (x) exercises…ah…of course (x) to avoid (x) gaining (x) weight (x) on (x) the first (x) place, ( ) and ( ) also ( ) to observe ( ) if ( ) you ( ) are ( ) gaining ( ) weight ( ) maybe ( ) because (x) you (x) overeat (x) due (x) to stress. (x) You (x) should ( ) somehow (x) try to (x) manage ( ) to deal ( ) with (x) stress ( ) so ( ) that ( ) it won't ( ) create ( ) another ( ) problem.
Prop: 12
Eating disorders
(x) This (x) text (x) is (x) about (x) eating (x) disorders, (x) and (x) the author (x) writes (x) bout… about (x) anorexia, (x) bulimia, (x) and (x) binge (x) eating (x) disorders. ( ) It ( ) seems ( ) to be a … ( ) it ( ) could be ( ) an article ( ) in ( ) a magazine, for example, like NOVA, ( ) because ( ) we ( ) can ( ) see that ( ) he, ( ) the author ( ) explains ( ) a little ( ) bit ( ) about ( ) each ( ) one of ( ) these ( ) disorders, ( ) and identifies. So, ( ) he ( ) talks ( ) about ( ) anorexia. ( ) Anorexia ( ) is ( ) when ( ) a person …ah… ( ) although ( ) many times ( ) well ( ) eventually (x) everyone (x) with (x) anorexia (x) will (x) become (x) thin, (x) very (x) thin, (x) and (x) still (x) sees (x) him/herself (x) as (x) overweight, ( ) and (x) the (x) bulimic (x) usually (x) have (x) normal (x) weight…ah… (x) but (x) they (x) eat (x) a lot, (x) and (x) them (x) afterwards (x) they (x) throw up (x) not (x) to gain (x) any (x) weight. ( ) And ( ) binge ( ) is a… ah… I imagine ( ) more ( ) difficult ( ) to be ( ) discovered, ( ) because ( ) people ( ) also ( ) maintain ( ) their ( ) weight, ( ) and ( ) occasionally, ( ) they ( ) have ( ) this ( ) binges ( ) when (x) they (x) really (x) eat (x) a lot, x) up (x) to a (x) point (x) that (x) they (x) feel (x) physically (x) (x) ill. ( ) And ( ) they ( ) also ( ) mentioned ( ) the cases ( ) of ( ) two women ( ) Mary, ( ) and ( ) Jane. ( ) Mary ( ) is ( ) anorexic. ( ) It ( ) seems ( ) that ( ) it ( ) was ( ) because ( ) of ( ) her father ( ) who ( ) said ( ) that ( ) she ( ) was ( ) overweight, ( ) and ( ) soon ( ) after ( ) that ( ) she ( ) developed ( ) anorexia. ( ) Jane ( ) is ( ) a different ( ) case. ( ) She ( ) is ( ) bulimic, ( ) but ( ) so ( ) far ( ) a cause ( ) for ( ) her ( ) developing ( ) bulimia ( ) hasn't ( ) been ( ) found out. ( ) So ( ) eating ( ) disorders ( ) are ( ) not ( ) as ( ) clear ( ) cut ( ) as one ( ) might ( ) imagine. ( ) Mary's ( ) father ( ) called ( ) fat, ( ) and ( ) she ( ) became ( ) anorexic. Ah, ( ) it ( ) seems ( ) that ( ) the ( ) three ( ) descriptions ( ) of ( ) the ( ) diseases ( ) and ( ) how ( ) things ( ) happen … ( ) the ( ) text ( ) is ( ) somehow ( ) warning ( ) people and…ah… ( ) showing ( ) that ( ) many ( ) times ( ) people ( ) have ( ) problems, ( )- and ( ) they ( ) are ( ) not ( ) so ( ) easy ( ) to see. And ( ) the ( ) thing ( ) that ( ) I found ( ) most ( ) curious ( ) in the ( ) ext … ( ) was (0 that, well, ( ) I ( ) believe ( ) it ( ) is ( ) a fact( ) because ( ) it ( ) is ( ) written, ( ) in ( ) the paper, ( ) that ( ) men ( ) usually ( ) have ( ) eating ( ) disorder, ( ) and ( ) I( ) always ( ) imagine ( ) that ( ) this ( ) happen ( ) to women, ( ) and ( ) to teenagers, ( ) they ( ) do ( ) say ( ) that ( ), although ( ) mostly ( ) men ( ) have ( ) eating ( ) disorders ( ) because ( ) they ( ) supposedly ( ) have ( ) more ( ) pressure ( ) having…ah… ( ) an athletic ( ) figure. ( ) These ( ) disorders ( ) also ( ) happen ( ) with ( ) women, ( ) and mostly ( ) adolescents. ( ) A ( ) new ( ) information ( ) for ( ) me, ( ) I ( ) had ( ) never ( ) heard ( ) about ( ) binge ( ) eating ( ) as ( ) a disease.
Prop: 16
Participant: 14
Obesity
( ) First, (x) they (x) start ( ) by (x) talking (x) about (x) stress, (x) what (x) causes (x) stress, ( ) and ( ) that (x) people (x) who (x) are (x) stressed (x) eat (x) more (x) than (x) they (x) would (x) normally (x) do. ( ) Then, ( ) they ( ) start ( ) talking ( ) about ( ) obesity, ( ) and ( ) they ( ) said ( ) that (x) men (x), and (x) women (x) are (x) consuming (x) more (x) calories (x) than (x) they (x) did (x) in 1971, (x) and (x)

that (x) people (x) are (x) also (x) exercising (x) less…ah… (x) they (x) talk (x) about (x) this (x) gastric (x) surgery, ah… (x) how (x) it (x) is (x) done, (x) and (x) what (x) happens (x) when (x) you (x) have (x) it (x) done, for example, (x) you (x) lose (x) weight ( ) in ( ) a ( ) year, I don't remember ( ) how ( ) many ( ) kilos ( ) you ( ) can ( ) lose, and…ah…( ) they ( ) also ( ) say ( ) that (x) the (x) best (x) thing (x) to do (x) is (x) avoid (x) obesity, (x) exercising, (x) and (x) eating (x) more (x) fruit, (x) and (x) vegetables. ( ) The (x) surgery (x) would (x) be (x) for (x) very (x) serious (x) cases, (x) or (x) it (x) would (x) be (x) the (x) last (x) option… ah… ( ) they ( ) say ( ) that ( ) it ( ) is ( ) safe, ( ) and ( ) that ( ) it ( ) is ( ) successful ( ) in ( ) most ( ) cases.

Prop: 20

Eating disorders

(x) They (x) talk (x) about (x) eating (x) disorders, (x) and (x) they (x) described (x) the (x) personality (x) traits (x) that (x) people (x) with (x) anorexia (x) have…ah…(x) they (x) do (x) the (x) same (x) with (x) people (x) (x) with (x) the (x) other syndromes, (x) bulimia, (x) and binge. So, for example, ( ) they ( ) say ( ) that ( ) when (x) a person (x) with (x) anorexia (x) generally, (x) is (x) very (x) organized, ah…(x) always (x) does (x) what (x) other (x) people (x) wants (x) him/her (x) to do (x) is (x) always (x) a (x) very (x) nice (x) person, (x) is (x) also (x) perfectionist…ah… (x) they ( ) simply (x) don't (x) eat (x) because, (x) although (x) they (x) are (x) skinny (x) they (x) think (x) they (x) are (x) overweight. ( ) People ( ) who ( ) have ( ) bulimia (x) they (x) are (x) generally (x) overweight, (x) or (x) they (x) have (x) normal (x) weight, and …ah… (x) but (x) they (x) can't (x) control (x) themselves (x) so (x) they (x) eat (x) more (x) then (x) they (x) should, (x) and (x) then (x) vomit, ( ) or (x) they (x) exercise (x) more (x) then (x) they (x) should, (x) and (x) they (x) develop (x) rituals (x) for (x) eating and some things like that. ( ) The ( ) others ( ) who ( ) have ( ) this (x) binge (x) they (x) eat (x) until (x) they (x) cannot (x) eat (x) anymore, (x) until (x) they (x) are (x) completely (x) full, (x) but (x) they (x) don't (x) vomit, ( ) they ( ) don't ( ) do ( ) anything, (x) they (x) just (x) lose (x) control, (x) and (x) eat (x) everything (x) they (x) can. I don't remember if they said anything about how they act or not then, ( ) they ( ) describe ( ) the biological ( ) like (x) the gland (x) that (x) we (x) have (x) that (x) control (x) some (x) functions (x) of (x) our (x) body, (x) and (x) how (x) these (x) glands (x) are (x) affected (x) by these (x) disorders and, of course, (x) then (x) the functions (x) of our (x) bodies (x) are (x) not (x) fully (x) performed. ( ) Then, (x) they (x) described (x) how (x) to deal (x) with these (x) they (x) mentioned (x) group (x) therapy. ( ) They ( ) also ( ) described ( ) the cases ( ) of two ( ) girls, ( ) Mary ( ) and Jane, ( ) one ( ) had ( ) anorexia, ( ) and ( ) the ( ) other ( ) had ( ) bulimia, but I don't know if I am mistaken, but ( ) it ( ) seemed ( ) that ( ) the information ( ) about ( ) them ( ) didn't ( ) match ( ) the information ( ) that ( ) was ( ) in ( ) the text, ( ) because ( ) they ( ) said ( ) that Mary ( ) who ( ) had ( ) anorexia, ( ) the ( ) first ( ) girl, ( ) she ( ) didn't ( ) have ( ) the personality ( ) traits ( ) that ( ) someone ( ) with ( ) anorexia ( ) should ( ) have, according to the first part of the text…ah…( ) The ( ) one ( ) who ( ) had ( ) bulimia, ( ) the father ( ) told ( ) her ( ) that ( ) she ( ) was ( ) fat, ( ) and ( ) that ( ) she ( ) wouldn't ( ) get ( ) a date ( ) because ( ) of that, ( ) and ( ) she ( ) started ( ) dieting, ( ) and ( ) exercising… oh no, ( ) she ( ) had ( ) anorexia, ( ) and ( ) then ( ) she ( ) got ( ) really ( ) skinny, ( ) and ( ) people ( ) tried ( ) to tell ( ) her ( ) that ( ) she ( ) was ( ) in ( ) danger, ( ) but ( ) she ( ) didn't ( ) care ( ) much and then ( ) she ( ) didn't ( ) realized ( ) she ( ) had ( ) a problem ( ) The second ( ) girl, I think ( ), she ( ) had ( ) relationship ( ) problems ( ) related ( ) to other ( ) people, and then, ( ) she ( ) ate ( ) because ( ) of that ( ) and ( ) she ( ) ate ( ) more ( ) than ( ) she ( ) needed.

Prop: 26

Participant: 15

(x) There are (x) three (x) disorders…ah… (x) anorexia, (x) bulimia, (x) and (x) binge. ( ) this ( ) one, (x) binge, (x) is (x) when (x) people (x) have (x) no (x) control (x) of (x) their (x) eating (x) habits, (x) and (x) they (x) have (x) difficulty (x) to lose (x) weight ( ) as well. ( ) We ( ) have ( ) the example ( ) of Mary ( ) and Jane. ( ) Mary ( ) was ( ) the one ( ) whose ( ) father ( ) told ( ) her ( ) she ( ) wouldn't ( ) get ( ) a date, ( ) so ( ) she ( ) started ( ) to exercise, ( ) and ( ) developed ( ) the disease…ah… (x) people (x) who (x) have (x) these (x) diseases (x) usually (x) have (x) low (x) self-esteem, (x) anxiety, …ah… (x) they (x) feel (x) insecure (x) about (x) themselves and (x) one of (x) the (x) possible (x) treatment (x) for (x) this (x) is (x) therapy … ah… ( ) sometimes ( ) the victims ( ) can't ( ) realize, ( ) and ( ) the ( ) ones ( ) who ( ) are ( ) next, ( ) like ( ) family ( ) for instance. ( ) In ( ) the case ( ) of Jane,( ) she ( ) got ( ) anorexia, ( ) and (x) usually (x) the people (x) who (x) have (x) this (x) kind (x) of disease (x) are (x) teenagers, (x) or (x) young (x) women, ( ) but ( ) sometimes ( ) even ( ) men ( ) can ( ) develop ( ) the disease. ( ) Men ( ) exercise ( ) everyday ( ) trying ( ) to reach ( ) certain ( ) look, ( ) and ( ) don't ( ) realize ( ) that ( ) they ( ) are let say, ( ) losing ( ) the control ( ) over.

Prop: 11

Obesity

(x) It (x) starts (x) talking (x) about (x) stress …ah… ( ) ways ( ) to avoid ( ) such as ( ) to think ( ) wisely, ( ) learning ( ) how ( ) to say ( ) no, ( ) laughing, ( ) and ( ) exercising … ah …( ) taking ( ) recesses,

breaks, right? Then, ( ) it ( ) discusses (x) how (x) stress (x) can (x) lead (x) to (x) obesity, (x) and ( ) also (x) how (x) to (x) treat (x) obesity. ( ) The ( ) text ( ) mentions ( ) a few ( ) times ( ) that (x) it (x) is important to (x) avoid (x) weight right? ( ) There is …ah… ( ) a part ( ) in which ( ) the text ( ) talks ( ) about (x) gastric (x) surgeries ( ) people ( ) can ( ) try ( ) to do ( ) but ( ) even ( ) so ( ) they ( ) have ( ) this kind ( ) of alternative, (x) it (x) is (x) important (x) to avoid (x) obesity, ( ) even ( ) though ( ) they ( ) are ( ) safe ( ) most ( ) of ( ) the times. ( ) And, ( ) they ( ) also ( ) have ( ) a (x) food (x) pyramid (x) to suggest, ( ) let's say,(x) what (x) to eat, ( ) and ( ) many ( ) people ( ) are ( ) now ( ) eating ( ) more ( ) fruits ( ) and vegetables ( ) in order ( ) to be ( ) healthier, ( ) and ( ) avoid ( ) obesity.
Prop: 09

Participant: 16
Obesity
( ) The ( ) text ( ) says ( ) that (X) people (x) should (x) try (x) to avoid (x) stress (x) because (x) it (x) can (x) lead (x) to obesity. ( ) It ( ) doesn't ( ) mean ( ) that ( ) you ( ) have ( ) tendency ( ) that ( ) you ( ) tend ( ) to gain ( ) weight … ah … ( ) but (x) this (x) can (x) be linked (x) to stress. So, (x) if (x) you (x) are (x) under (x) stress (x) conditions, (x) you (x) may (x) eat (x) more (x) than (x) you (x) need … ( ) don't ( ) do ( ) much ( ) exercises ( ) that ( ) you ( ) need so ... at first what called my attention is (x) the (x) idea (x) to (x) avoid (x) stress (x) at first . And, one thing that called my attention was ( ) the ( ) way (x) they (x) suggest (x) to avoid (x) stress ( ) learning ( ) how ( ) to say no, ( ) doing ( ) exercises ( ) and ( ) concerning ( ) obesity, ( ) if ( ) you ( ) are ( ) obese, so … ah … ( ) everybody ( ) should ( ) avoid ( ) it, ( ) but ( ) it ( ) is ( ) not ( ) that ( ) easy (x) There is (x) also (x) this (x) gastric (x) surgery. ( ) The ( ) text ( ) brings ( ) that. ( ) They ( ) say ( ) it ( ) might ( ) be ( ) considered ( ) successful ( ) in all ( ) cases, ( ) but ( ) I don't ( ) know. (x) The surgery (x) reduces (x) the size (x) of (x) the stomach, (x) and ( ) of course, (x) by that, (x) you (x) will (x) eat (x) less, (x) and (x) have (x) to avoid (x) some (x) kind (x) of food such as (x) sugar, (x) because (x) you (x) might (x) have (x) nauseas ( ) or whatever, ( ) because ( ) of that. So, ( ) it is ( ) not ( ) that ( ) easy ( ) because ( ) you ( ) are ( ) going ( ) to do ( ) something ( ) artificial, let's say, and ah ( ) the main ( ) idea, I guess, ( ) would ( ) be ( ) to try, ( ) as ( ) we ( ) know ( ) what ( ) is ( ) good ( ) for ( ) our bodies so ( ) try ( ) to avoid ( ) fat ( ) and sugar, ( ) and (x) go (x) for a (x) healthier (x) life, (x) in (x) order (x) to avoid (x) obesity, ( ) and ( ) everything ( ) that ( ) may ( ) be ( ) linked ( ) to that.
Porp:15
Eating disorders
(x) It (x) talks (x) about (x) eating (x) disorders, ( ) but ( )this time ( ) the disease ( ) that ( ) you ( ) can ( ) acquire. This time, ( ) it ( ) is)( ) not ( ) linked ( ) to ( ) the fact ( ) that ( ) you ( ) eat, ( ) but (x) linked (x) with (x) emotions . So, (x) they (x) talk (x) about … ah… ( ) the neuro…( ) neurocentral … I don't know, (x) the hormones, ( ) and ( ) things ( ) like ( ) that ( ) you ( ) may have so, with this, (x) you (x) can (x) acquire (x) diseases ( ) such (x) as bulimia, (x) and anorexia. ( ) In ( ) anorexia, ( ) you eat … (x) you (x) avoid (x) eating, ( ) but ( ) you ( ) don't ( ) see ( ) yourself (x) as (x) a thin (x) person, (x) so (x) you (x) keep (x) making (x) diet, (x) and (x) you (x) diet… (x) because ( ) you ( ) look ( ) at ( ) yourself ( ) and (x) you (x) think (x) you (x) are (x) still (x) fat. (x) Bulimia, (x) you (x) eat (x) a lot, (x) and (x) then (x) you (x) through up, (x) or vomit. Summarizing, what I say is that, (x) everything (x) is (x) linked (x) to emotional (x) factors, not (x) only (x) physical. ( ) They ( ) also ( ) talk ( ) about ( ) these ( ) Mary ( ) and ( ) Jane's ( ) cases. ( ) One ( ) has ( ) anorexia, ( ) and ( ) the ( ) other ( ) bulimia, ( ) and then, ( ) they ( ) say ( ) that … ah … (x) you (x) don't (x) have (x) to work (x) only (x) with (x) the eating (x) part, (x) but (x) you (x) have (x) to have (x) support (x) from (x) your (x) family, (x) and (x) psychologist you have to work together.
Prop: 19
Participant: 17
Obesity
(x)It (x) talks (x) about (x) obesity, (x) and (x) that (x) it (x) can (x) be caused (x) by (x) stress, ( ) and ( ) it ( ) talks ( ) some ( ) of the ( ) characteristics ( ) of ( ) stress …and then, ( ) it ( ) says ( ) that (x) obesity (x) can (x) be (x) cured (x) by (x) a surgery ( ) can ( ) be reduced (x) can (x) reduce (x) your (x) stomach, or ( ) even ( ) it makes I don't know the name of the surgery (x) it (x) makes (x) a (x) pouch (x) in (x) your (x) stomach ( ) smaller, ( ) and (x) you (x) have (x) to be (x) careful (x) when (x) you (x) do (x) the surgery, ( ) and (x) not (x) to eat (x) a lot (x) of grease, ( ) and ( ) not ( ) healthy. ( ) There ( ) is ( ) a patient ( ) who ( ) lost ( ) a lot ( ) of weight, ( ) and ( ) that ( ) now ( ) she ( ) is ( ) doing ( ) some ( ) physical ( ) activities, ( ) but ( ) they ( ) said ( ) that (x) the best (x) is (x) not (x) to do (x) the surgery, (x) but (x) to try (x) to eat (x) less, to .. ah … ( ) and ( ) for ( ) that ( ) they ( ) can ( ) use (x) the (x) pyramid (x) to see (x) which (x) kind (x) of (x) food (x) to eat ( ) more or less, ( ) and ( ) they ( ) talk ( ) again ( ) about ( ) the stress ( ) part, ( ) and ( ) obesity.
Prop: 12

Eating disorders
(x) The text (x) starts (x) stalking (x) about (x) eating (x) disorders ( ) and ( ) how ( ) people ( ) tend ( ) to change ( ) their ( ) figures … ( ) and ( ) that (x) anorexics (x) are (x) never (x) satisfied (x) with (x) their (x) bodies, (x) and (x) they (x) are (x) always (x) not (x) good (x) enough, ( ) and (x) they (x) are probably (x) perfect, (x) they (x) are (x) perfectionists, (x) and (x) good (x) athletes, (x) and (x) good (x) students. ( ) And, ( ) maybe, ( ) they ( ) can ( ) have ( ) other ( ) illnesses ( ) like ( ) this ( ) binge, ( ) and ( ) other ones ( ) bulimia. (x) The bulimia (x) is (x) when (x) people ( ) they (x) tend (x) to eat (x) a lot (x) and (x) they (x) pull (x) it (x) out, (x) maybe (x) by (x) throwing (x) out, or ( ) other ( ) kinds ( ) of things, ( ) and ( ) binge ( ) is ( ) something that I have never hear of… (x) binge (x) is (x) like… (x) when (x) people (x) eat (x) a lot ( ) when ( ) they ( ) get ( ) nervous, ( ) and (x) they (x) tend (x) to eat (x) too (x) much, (x) and (x) they (x) fell (x) bad (x) when (x) they (x) eat (x) too (x) much. ( ) And, then, ( ) he ( ) was ( ) talking ( ) about … ( ) this (x) neuroendocrine (x) system, ( ) they( ) are ( ) trying) ( ) to do ( ) when (x) they (x) relate (x) this gland (x) to physical (x) problem, and ( ) mental ( ) parts ( ) where ( ) people … ah… ( ) they ( ) relate ( ) their ( ) sexual ( ) growth ( ) or ( ) things ( ) in ( ) your ( ) body ( ) to where ( ) these ( ) problems ( ) come ( ) from. And then, ( ) he ( ) talks ( ) about ( ) two cases, ( ) Mary ( ) and ( ) Jane. ( ) Mary ( ) is ( ) a twenty ( ) years ( ) old ( ) girl ( ) that ( ) was ( ) kind ( ) of fat ( ) and ( ) her ( ) father ( ) told ( ) her ( ) that ( ) she ( ) wouldn't ( ) get ( ) a date ( ) if ( ) she ( ) didn't ( ) lose ( ) weight. So, ( ) she ( ) lost ( ) a lot ( ) of weight. But I don't think they found a solution for her problem. ( ) Jane( ) was ( ) twenty-one, ( ) and ( ) she ( ) started ( ) to get ( ) bulimia I think, ( ) by ( ) the age ( ) of nineteen, ( ) and ( ) after that, ( ) she ( ) started ( ) to get ( ) her weight… ah … ( ) on ( ) the weight ( ) that ( ) she ( ) wanted … ( ) and ( ) one ( ) day ( ) she ( ) got ( ) to ( ) the hospital, ( ) she ( ) got ( ) dehydrated. That is it.
Prop: 24
Participant: 18
Obesity
(x) The (x) text (x) talks (x) about (x) obesity, (x) and (x) they (x) talk (x) about (x) getting (x) fat (x) as ( ) a ( ) consequence (x) of stress. So, (x) obesity (x) linked (x) to (x) stress … ah… (x) they (x) talk (x) about (x) a surgery… I forgot the name… ah… ( ) people ( ) carry ( ) out (x) in (x) order (x) to have (x) a stomach (x) reduction. Ah, ( ) they ( ) also ( ) talk ( ) about (x) exercises (x) as (x) a potential (x) thing (x) to control (x) weight,( ) and ( ) they ( ) talk ( ) about … ah … (x) the pyramid (x) in (x) the USA, ( ) and ah… (x) differencing (x) weight (x) between (x) people, ah… (x) among (x) the (x) years. So, (x) women (x gained (x) 335 (x) calories (x) over (x) some (x) years, (x) and (x) men (x) made (x) a bit (x) less, (x) but (x) still (x) we (x) eat (x) more (x) than (x) we (x) should, (x) and (x) we (x) used to.
Prop: 12
Eating disorders
(x) It (x) talks (x) about (x) three (x) types (x) of (x) eating disorders (x) bulimia, (x) anorexia, (x) and (x) binge, (x) and (x) the difference (x) among (x) them, ( ) and ( ) a few ( ) cases ( ) examples ( ) of people ( ) who ( ) have ( ) that (x) what (x) people (x) can do (x) to get (x) rid (x) of that ( ) exercises, (x) and ah…(x) family (x) support, (x) and (x) go (x) to psychologists etc ( ) and ( ) some ( ) of these ( ) disorders ( ) show ( ) physically ( ) easily, ( ) and ( ) some ( ) others ( ) do not, ( ) so ( ) it ( ) takes ( ) more ( ) time ( ) to realize ( ) that ( ) the person ( ) has got it …ah … that is it.
Prop: 07
Participant: 19
(x) It (x) is (x) about (x) eating (x) disorders, bulimia, anorexia, and binge, and usually (x) the sufferers (x) have (x) low ( ) self-esteem. ( ) Trying( ) to have ( ) a control ( ) over ( ) the food ( ) is ( ) a way ( ) of having ( ) power, ( ) something ( ) that ( ) they ( ) don't ( ) have ( ) in ( ) their ( ) own.(x) lives. (x) In anorexia (x) people (x) deprive (x) themselves (x) from (x) eating, ( ) mainly ( ) carbohidrics, and so on. So, (x) they(x) are (x) usually (x) good (x) students, (x) they (x) are (x) good (x) people, (x) they (x) do (x) not (x) face (x) other (x) people, (x) do (x) not (x) complain (x) about (x) things, (x) they (x) do (x) not (x) challenge (x) things. So, ( ) the way ( ) of exercising ( ) control ( ) is ( ) over ( ) food, ( ) and ( ) not ( ) over ( ) other ( ) people. (x) The (x) bulimia ( ) would ( ) be ( ) something ( ) different. (x) They (x) overeat, but actually, (x) after (x) eating (x) they (x) vomit, (x) and (x) they (x) take (x) diuretics (x) in (x) order (x) to lose (x) weight ( ) or keep ( ) their ( ) regular ( ) weight. ( ) Although ( ) they ( ) eat ( ) more ( ) than ( ) they ( ) need, ( ) is a way ( ) of making ( ) up ( ) with ( ) their anxieties ( ) or other ( ) problems ( ) they ( ) have ( ) when ( ) facing ( ) reality. ( ) Binge ( ) is ( ) similar ( ) to bulimia, (x) they (x) also (x) eat (x) a lot, (x) until (x) they (x) feel (x) themselves (x) very (x) uncomfortable (x) with (x) the amount (x) of food (x) consumed, (x) but (x) it (x) is (x) very (x) difficult (x) to (x) lose (x) weight. There (x) are (x) some (x) treatment, (x) they (x) have (x) to have (x) group (x) therapy, (x) they (x) need (x) support (x) from (x) their (x) family (x) because, actually,( ) the (x) image (x) they (x) see (x) in (x) the mirror (x) is (x) not (x) the (x) real one, it is the one they have in their minds. So, (x) they (x) need (x) to have (x)

special (x) help from … ah … (x) psychologists. (x) The research (x) that (x) is (x) going on … (x) neuroendocrine (x) tries (x) to understand (x) why (x) people (x) develop (x) these (x) kind (x) of disorders. ( ) And ( ) this ( ) neuroendocrine something (x) controls (x) lots (x) of areas (x) in (x) our (x) brains, (x) emotional (x) and (x) physical (x) things. ( ) They ( ) give s ( ) some ( ) examples, ( ) Mary ( ) and Jane, I do not know but while I was reading I think they described Mary and them they described Jane. Mary is anorexic and Jane is bulimic, but the symptoms were other way around. I understood bulimia, but when I was reading Jane's description of bulimia I though it was actually the symptoms of anorexia. And they mentioned these two cases saying that it is difficult to understand how they started.
Prop: 32
Eating disorders
( ) They ( ) show (x) the difference (x) between …ah.. (x) an eating (x) disorder, (x) and (x) obesity, and also some doctor saying … that (x) there (x) is (x) an (x) option, ( ) this (x) bypass (x) surgery. But, actually, (x) people (x) should (x) learn (x) how (x) o select (x) their (x) food, (x) instead (x) of doing (x) the surgery (x) as ( ) their (x) option. So, (x) they (x) explain (x) how (x) the surgery (x) works , ah … and it is … people research (x) nowadays because (x) one (x) in (x) three (x) Americans (x) is (x) obese, and ah… (x) vegetables (x) is x) out of (x) the American (x) tables. So, (x) it (x) is (x) very (x) easy (x) for (x) them (x) to be (x) overweight (x) nowadays … and (x) the (x) difference (x) between (x) obesity and … ah…(x) eating (x) disorder (x) is ( ) that (x) not (x) every (x) obese (x) has (x) an (x) eating (x) disorder, because, actually, (x) this disorder (x) is (x) caused (x) by stress, and things like that. So, (x) people (x) do (x) not (x) have x) control (x) over (x) what (x) they (x) eat. Ah … at the same time that they say that people are not eating more fruit and vegetables, they say they are. It is contradictory.
Prop: 18
Participant: 20
(x) The (x) text (x) is (x) about (x) eating (x) disorders, ( ) and ( ) it ( ) begins ( ) by ( ) listing at least ( ) giving ( ) three ( ) examples ( ) of ( ) eating ( ) ( ) disorders, (x) which (x) are, (x) anorexia, (x) bulimia, (x) and binge. ( ) Then ( ) he ( ) explains ( ) what ( ) they ( ) are ( ) all ( ) about. (x) Anorexia (x) is ( ) related ( ) to (x) when (x) a person (x) avoids (x) eating. (x) The (x) person (x) thinks (x) that (x) whatever (x) he or (x) she (x) will (x) eat (x) will (x) make (x) him/her (x) grow (x) fat. (x) Bulimia ( ) is … (x) describes (x) the (x) attitude (x) people ah… ( ) in ( ) terms ( ) of (x) rejecting (x) the food (x) they (x) have (x) just (x) eaten (x) by vomiting, ( ) and (x) binge (x) is (x) about (x) an (x) uncomfortable (x) eating (x) habit (x) that (x) people (x) won't (x) stop (x) eating (x) until (x) they (x) are (x) completely (x) full, ( ) and ( ) it ( ) also ( ) talks ( ) about ( ) a part ( ) in your ( ) brain, I don't remember the name, ( ) and ( ) then ( ) he ( ) talks ( ) about ( ) the story ( ) of two ( ) girls, ( ) Mary, ( ) who ( ) was a… ( ) who ( ) suffered ( ) from ( ) anorexia, I think, ( ) and ( ) Jane ( ) who ( ) suffered ( ) from ( ) bulimia…ah… ( ) he ( ) also ( ) said ( ) that … I think,( ) men ( ) are ( ) the ( ) ones ( ) who ( ) most ( ) suffer ( ) from ( ) bulimia. I am not sure, ( ) but ( ) then ( ) he ( ) also ( ) says ( ) that ( ) women, ( ) and ( ) adolescents ( ) also ( ) suffer ( ) from these ( ) diseases, ( ) but ( ) it ( ) is ( ) mostly ( ) men…ah…that's what I remember.
Prop: 15
Obesity
(x) It (x) is (x) a text (x) that (x) talks (x) about (x) obesity… (x) it (x) cannot (x) be (x) seen (x) as (x) an x) eating (x) disorder … ah… ( ) it ( ) talks ( ) about ( ) the ( ) causes, I mean, (x) the (x) main (x) cause, ( ) actually, (x) for (x) obesity (x) is (x) stress. So, ( ) it ( ) actually ( ) gives ah … ( ) two (x) solutions, we can say, (x) for (x) obesity, ( ) one ( ) of ( ) them ( ) is (x) reeducating (x) yourself (x) in terms (x) of what (x) you (x) eat … ah… so ( ) there ( ) is ( ) this (x) pyramid (x) presented (x) by (x) the USA, (x) which (x) is the (x) United (x) Sates (x) Department (x) of Agriculture (x) showing (x) the healthier (x) food, ( ) vegetables, ( ) fruits… (x) that (x) is (x) recommended (x) for (x) people (x) to eat, ( ) and ( ) it ( ) also ( ) gives ( ) another (x) solution (x) which (x) is (x) a gastric (x) surgery… ah… that ( ) consists ( ) in ( ) reducing ( ) your ( ) stomach . (x) It (x) says (x) that (x) it (x) is (x) very (x) radical (x) but (x) it (x) can (x) work, ( ) it ( ) is ( ) actually ( ) a very ( ) successful ( ) surgery…ah… ( ) but ( ) it ( ) is ( ) been ( ) like ah… I mean, ( ) that ( ) is ( ) what ( ) obese ( ) people ( ) have ( ) been ( ) looking ( ) for, ( ) the ( ) surgery ( ) is ( ) much ( ) more ( ) acceptable ( ) by them … (x) then (x) food (x) reduction, (x) and (x) doing (x) activities, (x) and exercises ah… well, I think that is it.

Participant: 21
(x) Many (x) people (x) suffer (x) from (x) eating (x) disorders, (x) which (x) can be (x) anorexia, (x) bulimia, (x) and (x) binge. (x) Anorexia (x) is (x) when, (x) usually (x) teenagers, (x) and women, (x) they (x) are (x) thin (x) but (x) even (x) so (x) they (x) look (x) at (x) themselves (x) and (x) the (x) think (x) they (x) are (x) fat, (x) and (x) should (x) lose (x) weight. ( ) They ( ) can't, (x) they (x) just (x) stop (x) eating ah… then you have (x) bulimia, (x) where (x) the person (x) eats (x) but (x) throws (x) up. ( ) Opposite ( ) to anorexia, ( ) the people ( ) are ( ) not ( ) so ( ) thin, (x) sometimes (x) they (x) are (x) even

(x) overweight, ( ) and ( ) we ( ) have (x) binge ( ) which ( ) is ( ) not as known as the others, (x) which (x) is (x) another (x) eating (x) disorder. I don't remember the details about it, but I think ( ) it ( ) involves ( ) throwing ( ) up ( ) as well. Ah … ( ) they ( ) have ( ) specific ( ) cases ( ) of ( ) Jane ( ) and ( ) Mary, ( ) two ( ) girls ( ) like ( ) twenty something, ( ) they ( ) have ( ) been ( ) sick ( ) for ( ) sometime. ( ) One ( ) of ( ) them … ( ) was … ( ) like ( ) when ( ) she ( ) was ( ) nineteen ah… ( ) the ( ) girl ( ) with ( ) anorexia … ( ) she ( ) started ( ) the ( ) disease ( ) when ( ) she ( ) was ( ) nineteen, ( ) and ( ) she … ( ) despite ( ) of ( ) her ( ) disorganization, (x) she (x) is (x) a good (x) student (x) as (x) all (x) anorexic (x) people, ( ) it ( ) is ( ) like … (x) they (x) need (x) to have (x) control (x) over (x) their (x) lives. ( ) Binge ( ) as well, ( ) they ( ) mentioned ( ) that ( ) they ( ) cut ( ) carbohidrics ( ) to have ( ) more ( ) control ( ) over ( ) their ( ) lives. Ah… when I read about anorexia, they talked a lot about the person being exemplar, good student, and he says that despite been disorganized as other people with anorexia … so this called my attention. Maybe if I reread the text I am going to see that … it is not what I though, and at the end, and I don't remember what it was … but these was something else …ah … when I got back to the first part I was actually in doubt if I should read through the links before … ( ) people ( ) with ( ) problems. Another thing that I found contradictory … it said that usually men had the disease, and most of the time they say that teenager, and women. I don't know if it was specifically for binge that it was more men then the others, but it called my attention.

Prop: 20

Obesity

(x) The (x) topic (x) of (x) the text (x) is (x) obesity, (x) and (x) it (x) is (x) talking (x) about (x) how (x) to prevent, (x) and(x) how (x) to teat(x) people (x) who (x) are (x) obese. ( ) It ( ) especially ( ) emphasizes ( ) that ( ) not ( ) all ( ) people ( ) that ( ) are ( ) obese ( ) are … (x) this (x) may (x) happen (x) to (x) them (x) because (x) of stress. (x) Not x) all (x) people (x) that (x) are (x) fat (x) are (x) fat (x) because (x) they (x) are (x) stressed, (x) but (x) usually (x) this (x) is (x) true. ( ) When ( ) a person ( ) is ( ) obese … ok … before that, ( ) they ( ) mentioned ( ) that (x) in (x) the (x) USA (x) women (x) nowadays (x) eat (x) more (x) 335 (x) calories (x) than (x) they (x) used ( ) to eat (x) in (x) 1971, ( ) while (x) men (x) only (x) increased (x) their (x) calories (x) consumption ( ) by ( ) 185 or something like this. Ah, they say that (x) the (x) best (x) thing (x) to do (x) is (x) to prevent (x) obesity, ( ) not ( ) to eat ( ) every ( ) time ( ) you ( ) are ( ) stressed, ( ) but (x) if (x) you (x) are already (x) obese, (x) you (x) can (x) go (x) through (x) a stomach (x) reduction (x) surgery, (x) or (x) gastric (x) bypass (x) surgery … ( ) it ( ) deviates ( ) the ( ) food, ( ) and ( ) the other … (x) the reduction (x) is (x) like (x reducing (x) the stomach (x) from (x) the size (x) of (x) a bottle (x) of wine (x) to (x) a glass. Ah, ( ) they ( ) mentioned ( ) here ( ) Jane, ( ) a psychologist, ( ) who ( ) lost ( ) seventeen ( ) kilos, ( ) and ( ) she ( ) decided ( ) to do ( ) something ( ) when ( ) she ( ) felt ( ) humiliated ( ) because ( ) she ( ) couldn't ( ) fasten ( ) the seat ( ) belt ( ) in ( ) an airplane. ( ) It ( ) talks ( ) about (x) reducing (x) stress, (x) that (x) in (x) the USA (x) people (x) don't (x) consume (x) fruit, (x) and (x) vegetables. (x) That (x) is (x) an (x) important (x) point (x) for (x) why (x) people (x) nowadays (x) are getting (x) more (x) (x) obese, ( ) but ( ) after ( ) the pyramid ( ) was ( ) elaborated, ( ) and ( ) spread, ( ) people ( ) are ( ) taking ( ) care, ( ) and ( ) eating ( ) more ( ) fruit ( ) and ( ) vegetables. (x) More (x) diseases (x) can (x) be (x) originated (x) from (x) stress, (x) not (x) only (x) obesity. Ah, ( ) they ( ) mentioned ( ) that (x) people (x) could (x) not (x) treat (x) obesity (x) by (x) just (x) exercising, (x) but (x) at (x) least (x) four (x) times (x) a week (x) it (x) is (x) recommended (x) like (x) aerobics (x) activities … ( ) like ( ) swimming ( ) and ( ) but (x) people (x) are (x) not (x) conscious (x) to do(x) this. And in some parts he mentions that … losing weight by just doing this is not easy, and in other part it says that it is very easy. It is contradictory, I think.

Prop:29

Participant: 22

Obesity

( ) The ( ) text ( ) talks ( ) about … ( ) that (x) stress (x) can (x) make (x) people (x) unhealthy (x) like… ah… (x) getting (x) fat, ( ) and ( ) it ( ) gives ( ) examples ( ) of ( ) some( ) patients ( ) like ah... ( ) how ( ) they ( ) think ( ) about ( ) to treat … ( ) detect ( ) a kind ( ) of therapy, ( ) and ( ) he ( ) says ( ) something ( ) like ah …( ) he ( ) talks ( ) about ( ) people ( ) conducting ( ) research ( ) to help ( ) you ( ) need ( ) a surgery. Also, ( ) they ( ) have ( ) a paragraph ( ) that ( ) describes ( ) the ( ) kinds ( ) of food ( ) you ( ) need at the base…I can't remember more.

Prop: 02

Eating disorder

( ) The text ( ) talks ( ) about ( ) disorders. ( ) There ( ) are ( ) three ( ) kinds of … ( ) effects ( ) of it. ( ) It talks ( ) about ( ) some ( ) people ( ) can ( ) do like a … ( ) use ( ) medicine ( ) to control( ) it, ok? ( ) It ( ) gives ( ) two ( ) examples …( ) on ( ) how ( ) they ( ) controlled ( ) the situation … ( ) one ( ) girl ( ) is ( ) called ( ) Mary, ( ) and ( ) her ( ) family ( ) helped ( ) her… ah… ( ) control ( ) the ( ) diet, ( ) and ( ) because ( ) something ( ) good … ah …( ) the other ( ) girl ( ) is ( ) Jane. ( ) She couldn't ( ) control ( ) the

situation, ( ) and ( ) became ( ) very ( ) bad … ( ) the text ( ) uses ( ) the two ( ) cases ( ) to ah … ( ) explain ( ) the ( ) information ( ) of disorders, ( ) why ( ) they ( ) are ( ) caused, (x) and (x) friends (x) encouragement (x) can help … ah…(x) and (x) family (x) can(x) also (x) help (x) the sufferers. That's all.

Participant: 23
Obesity
(x) Nowadays, there (x) are (x) more (x) obese (x) people (x) than (x) before, and ah … (x) because of (x) the unbalanced (x) diet and ah…( ) some ( ) radical ( ) people ( ) try ( ) to ah… to do ( ) some ( ) surgery, and also (x) the (x) succeeded (x) rate (x) in (x) this surgery (x) is (x) very (x) high, ( ) at about ( ) 80%, ( ) but ( ) the experts ( ) also ( ) suggest ah … (x) the (x) best (x) way (x) to (x) overcome (x) to be (x) obese (x) is (x) to restructure (x) your (x) diet, (x) and (x) to do (x) more (x) exercises, and ah … ( ) he ( ) suggests ( ) to go ( ) upstairs and ah … ( ) they ( ) can ( ) consume ( ) more ( ) calories and ah … ( ) they ( ) refer ( ) to (x) the women (x) in (x) the USA, ( ) and ah … (x) nowadays (x) are (x) eating (x) more (x) calories (x) than (x) before, and ah… ( ) he ( ) also ( ) says ( ) about ( ) a miss ( ) who ( ) tried ( ) this surgery, ( ) and ( ) she ( ) said ( ) that ( ) the surgery ( ) was ( ) very ( ) successful, ( ) and ( ) now ( ) she ( ) has ( ) been ( ) more ( ) confident, ( ) and also ( ) she ( ) tries ( ) to help ( ) the other… ah… and, (x) there (x) is (x) a healthy (x) food (x) pyramid ah… ( ) there ( ) are ( ) three( ) levels ( ) in ( ) the pyramid. ( ) The upper ( ) level ( ) is ( ) milk, ( ) and ( ) the meat, ( ) the second ( ) level ( ) is ( ) the vegetables ( ) and ( ) the fruit, ( ) the bottom ( ) is bread, ( ) and ( ) rice.
Prop: 10
Eating disorders
(x) This (x) article (x) talks (x) about (x) several (x) kinds (x) of (x) eating (x) disorders …ah… I can't say the exact words because I didn't know it before. ( ) It ( ) said (x) these (x) eating (x) disorders ( ) are ah… (x) happen (x) more (x) in (x) adolescents (x) and (x) young (x) women, and ah… ( ) there ( ) are two ( ) examples ( ) about ( ) two ( ) young ( ) women, and ah … ( ) one ( ) is from ( ) duke ( ) university and ah … (x) those (x) who (x) have (x) eating (x) disorders (x) are (x) usually (x) good (x) students ( ) and ah… ( ) they ( ) won't ( ) control ( ) themselves ah … ( ) and ( ) they ( ) cut ( ) their ( ) diet ( ) severely and … ( ) much ( ) more ( ) than … ( ) they … (x) when (x) they (x) are (x) thin, ( ) and ( ) they ( ) are ( ) very ( ) away ( ) from ( ) their ( ) normal ( ) level, ( ) but (x) anorexic, (x) still (x) think (x) that(x) they (x) are (x) (x) fat,(x) and (x) keep (x) on (x)doing (x) some (x) diet.
Prop: 09
Participant: 24
Eating disorders
(x) It's (x) talking (x) about (x) some (x) eating (x) disorders. (x) There (x) are (x) three (x) kinds (x) of disorders, ( ) and ( ) how ( ) people ( ) suffering ( ) from ( ) three ( ) diseases, ( ) and ( ) I ( ) don't ( ) quite ( ) understand ( ) the words ( ) what ( ) they ( ) mean, ( ) but ( ) there ( ) are ( ) some ( ) explanation ( ) from ( ) the dialogs. ( ) From ( ) the ( ) first one, I think, ( ) there( ) is ( ) some ( ) psychological ( ) problem ( ) for ( ) the people …a h … I think, (x) anorexic (x) they (x) fine, (x) but (x) they (x) still (x) think (x) they (x) are (x) not, (x) that (x) they (x) took (x) overweight, (x) and (x) they (x) refuse (x) food. ( ) The ( ) second ( ) one, ( ) I think, ( ) is ( ) the ( ) same ( ) problem. ( ) They ( ) need ( ) to lose( ) weight so, (x) after (x) they (x) eat, buli …something (x) vomit (x) the (x) food (x) and ( ) they ( ) third ( ) one ( ) is, I think ,( ) for ( ) people ( ) who ( ) can't ( ) control ( ) themselves, and (x) they ( ) eat ( ) as much ( ) as ( ) they ( ) can, ( ) and ( ) so ( ) that ( ) is ( ) the third ( ) problem ( ) for ( ) the eating ( ) disorder. And, ah … in this paragraph, I should say, ( ) right ( ) now ( ) some ( ) researchers ( ) found ( ) some ( ) ways ( ) to help ( ) people ( ) in ( ) a physical ( ) way, I should say,( ) and ( ) they ( ) put ( ) something ( ) in ( ) their ( ) ear, and I think, ( ) they ( ) control ( ) the ( ) blood ( ) or ( ) something ( ) from ( ) the brain, ( ) and ( ) also ( ) they( ) control ( ) their ( ) thinking, ( ) After ( ) that, ( ) they give ( ) you ( ) two ( ) cases, ah… before that, ( ) they ( ) explain ( ) that ( ) some ( ) men ( ) are ( )worried ( ) about ( ) their ( ) figures ( ) well, and ah … ( ) so ( ) they ( ) keep ( ) their ( ) figure, ( ) and ( ) always ( ) eat ( ) as ( ) much ( ) as they … I mean, ( ) did ( ) not ( ) eat ( ) healthy ( ) food, and ah … ( ) but ( ) it ( ) is ( ) only (0 for ( ) men. ( ) Some ( ) women ( ) still ( ) got ( ) the ( ) same ( ) problem. ( ) So ( ) they ( ) give ( ) two ( ) examples ( ) from ( ) the ( ) two ( ) girls. ( ) They ( ) are ( ) only ( ) twenty ( ) years ( ) old and …ah… ( ) one ( ) is ( ) because ( ) her ( ) father ( ) told ( ) her ( ) she ( ) is ( ) not ( ) looking ( ) very ( ) well… ( ) and ( ) nobody ( ) would ( ) have ( ) a date ( ) with ( ) her. ( ) And, ( ) also ( ) for ( ) the second ( ) girl, ( ) she ( ) also ( ) did ( ) the ( ) same ( ) thing ( ) because … well, actually, ( ) she ( ) does( ) not ( ) look ( ) good … ah…( ) they ( ) say ( ) they ( ) got ( ) three ( ) ways ( ) of treatment. ( ) The ( ) first ( ) is (x) psychologists (x) can (x) help (x) them (x) with (x) their (x) emotions, ( ) and ( ) also ( ) they ( ) will ( ) ask ( ) people ( ) who ( ) have ( ) got ( ) the ( ) same ( ) problem … ( ) maybe ( ) they ( ) are ( ) cured ( ) or not, ( ) they didn't ( ) mentioned. ( ) And, ( ) they ( ) will ( ) discuss ( ) the problem, ( ) and (x) they (x) can (x) share

(x) their x) experience, ( ) the disease… ( ) and ( ) the last ( ) thing, (x) they (x) need (x) their (x) family, (x) and (x) friends (x) to support (x) them.
Prop: 10
Obesity
This text is not very disorganized, but much information comes together, there is no link between each other. Well, I think, ( ) the most ( ) important ( ) thing ( ) is ( ) that (x) they (x) are (x) talking (x) about (x) obesity. ( ) They ( ) are ( ) talking ( ) about ( ) food ( ) and ( ) how ( ) to get ( ) ( ) off ( ) this kind ( ) of ( ) problems. (x) You (x) need (x) not (x) just (x) stopping (x) eating; (x) you (x) need (x) to do (x) more (x) exercises, ( ) and ( ) also (x) to care (x) about (x) what (x) you (x) eat ( ). ( ) They ( ) also ( ) mentioned ( ) that (x) in America, ( ) right ( ) now, (x) they (x) are (x) doing (x) a kind of (x) surgery (x) to reduce (x) your (x) stomach, ( ) that ( ) means ( ) physically. ( ) I think ( ) these ( ) are ( ) the ( ) most ( ) important ( ) information ( ) they ( ) want ( ) to give ( ) us. But, in the beginning, ( ) they ( ) start ( ) talking ( ) about ( ) stress ( ) and (x) from (x) the stress (x) they (x) find (x) positive (x) and (x) negative (x) effects. And from the negative stress, they found that many people can't get rid of their negative stress.
Prop: 08

Participant: 25
( ) The text ( ) says ( ) that … (x) stress (x) is (x) not (x) only (x) a psychological (x) problem (x) but (x) also (x) a physical (x) problem, ( ) and (x) the (x) outcome (x) of stress (x) is obesity. ( ) Usually (x) people (x) who get (x) (x) stressed (x) eat (x) too much … (x) and (x) then (x) get (x) high-blood (x) pressure … and then, ( ) they ( ) talk ( ) about (x) obesity, (x) that (x) the (x) IBM (x) over (x) thirty (x) is (x) considered (x) obese, and …(x) there are (x) some (x) suggestions (x) for (x) people (x) who (x) are (x) obese(x) such (x) as (x) to do (x) the gastric (x) surgery … ( ) and ( ) they ( ) put ( ) some (x) band (x) inside (x) the stomach … (x) and (x) in (x) the (x) intestine, ( ) and, mainly, (x) it (x) controls (x) the eating. ( ) There is ( ) a case ( ) of ( ) Nora. ( ) She ( ) was ( ) obese ( ) and ( ) she ( ) found ( ) out ( ) this fantastic ( ) way ( ) of controlling ( ) obesity. ( ) Dr. Richardson ( ) advises ( ) that (x) the (x) best (x) way (x) to avoid (x) obesity (x) is (x) to avoid (x) putting (x) weight.
Prop: 16
Eating disorders
( ) The text ( ) talks about ( ) eating (x) disorders (x) such as (x) anorexia, (x) bulimia (x) and … .( ) Anorexia ( ) is ( ) eating ( ) too ( ) much, ( ) but ( ) they ( ) will ( ) try ( ) to do ( ) something ( ) after ( ) eating… ( ) but ( ) usually, ( ) this ( ) kind (x) of anorexic ( ) are ( ) good … ( ) something ( ) like (x) perfectionists,(x) and (x) good (x) athletes … ah … ( ) and ( ) for (x) bulimia, ( ) patients ( ) are ( ) the opposite ( ) from ( ) anorexia; (x) they (x) eat (x) until (x) they (x) fell (x) uncomfortable, (x) completely (x) full. ( ) And (x) binge ( ) is ( ) just …( ) classified ( ) as bulimia, ( ) and (x) is (x) eating (x) too (x) much. ( ) Usually, ( ) eating ( ) disorders ( ) happen ( ) in ( ) men ( ) because ( ) they ( ) don't ( ) dare ( ) to talk, ( ) and ( ) they ( ) do ( ) not ( ) search( ) for ( ) help, ( ) but (x) this (x) problem (x) can (x) also (x) happen (x) in (x) adolescents (x) and (x) young (x) women. Actually, (x) it (x) is (x) not (x) only (x) a psychological (x) problem, (x) it (x) is (x) also (x) a biological (x) (x) one, well … (x) it (x) is (x) affected (x) by (x) the hormones. I think , ( )there ( ) is ( ) an experiment ( ) that ( ) is ( ) the ( ) neuroendocrine( ) it ( ) is ( ) quite … (x) this (x) system (x) affects (x) some (x) functions (x) such (x) as sleeping, (x) and (x) it (x) also (x) produces (x) hormones (x) in (x) the blood … and ( ) usually (x) psychological (x) help (x) is (x) needed (x) to help (x) solving (x) the problems, (x) such(x) as sharing (x) their (x) problems (x) with (x) people (x) who (x) have (x) the same (x) problem, (x) and (x) also (x) family (x) support.
Participant: 26
Eating disorder
( ) This text ( ) tells ( ) about ( ) eating ( ) disorders. ( ) I can't ( ) remember ( ) three ( ) words… I mean, the meaning … I understand … (x) some (x) people (x) reject (x) to eat (x) until (x) they (x) lose (x) their (x) health … (x) they (x) get (x) skinny, and ah … (x) the (x) other (x) disorder, (x) buli…something, (x) is (x people (x) get (x) obese, ( ) their ( ) body is ( ) very ( ) heavy … ah … (x) and (x) they (x) eat (x) a lot (x) of food. (x) This (x) text (x) main (x) idea (x) is (x) to tell (x) us (x) how (x) to be (x) treated (x) by medicine, (x) or (x) by therapists, ( ) scientific ( ) things, and ah … ( ) some ( ) mechanisms ( ) about ( ) eating ( ) disorders … ( ) about ( ) scientific ( ) research.
Prop:07
Obesity
(x) The (x) important (x) idea (x) is (x) to avoid (x) obesity, (x) and (x) to have (x) a (x) healthy (x) life. (x) It (x) is (x) important ( ) that ah … (x) to do (x) exercises, (x) and (x) to eat (x) healthy(x) food, ( ) and ( ) to keep ( ) the life ( ) relaxed, (x) and (x) avoid (x) stress. ( ) These ( ) are ( ) important ( ) ways ( ) to avoid ( ) obesity, and of course, ( ) some ( ) treatment ( ) by surgery, ( ) and ( ) some ( ) other ( ) things ( )

recommended ( ) by scientists ( ) But ( ) I think ( ) it ( ) is ( ) not ( ) the ( ) best ( ) way ( ) to keep ( ) one ( ) in ( ) a ( ) healthy ( ) life… I think, ( ) a ( ) healthy ( ) life ( ) is ( ) related ( ) to doing ( ) exercises, ( ) and ( ) doing ( ) some ( ) activities … ( ) keep ( ) your ( ) work, ( ) and ( ) life ( ) schedule, and ah … ( ) the ( ) life ( ) style( ) is ( ) very ( ) important ( ) for ( ) human ( ) health … ( ) not ( ) so ( ) much ( ) stress … ( ) so ( ) much ( ) work.
Prop:07
Participant: 27
Eating disorders
( ) I ( ) remember, (x) there (x) are (x) mainly (x) three (x) kinds (x) of (x) eating (x) disorders (x), anorexia, (x) bulimia, (x) and binge.. Ah…( ) although ( ) they ( ) have ( ) different ( ) effects … ah … (x) they (x) have (x) serious (x) influence(x) in (x) the sufferers, ( ) both ( ) men, ( ) and ( ) women, (x) and (x) we (x) need (x) to treat (x) these (x) illnesses; (x) to help (x) these (x) people. That is what I knew from this text.
Prop: 07
Obesity
( ) This ( ) text ( ) is ( ) related ( ) to ( ) the last ( ) one, ( ) and ( ) it ( ) talks ( ) about (x) the ways (x) to solve (x) problems (x) of eating (x) disorders, and ah … (x) doctors, (x) and psychologists (x) suggest ( ) several ( ) ways, such as (x) exercises, and ah … I can't remember … ( ) it ( ) is (x) a surgery, ( ) some ( ) king ( ) of operation ( ) that ah … ( ) use (x) to (x) the stomach … (x) to reduce (x) the size… ah … (x) to control (x) the amount (x) of food (x) that (x) people (x) eat (x) everyday. At least, ( ) they ( ) say ( ) that (x) the best (x) way (x) to solve (x) the problem (x) is (x) to control (x) your (x) life (x) very (x) well and ah… (x) to reduce (x) your (x) stress ( ) to a minimum.
Prop: 09
Participant: 28
Eating disorders
(x)The text (x) is (x) about (x) eating (x) disorders. (x) It (x) described (x) three (x) types (x) of (x) eating (x) disorders, (x) and (x) also (x) talked (x) about (x) the treatment (x) of the (x) disorders; (x) how (x) to treat (x) the causes. (x) It (x) talked (x) about (x) the hormones (x) in our (x) bodies, (x) and ( ) them ( ) it ( ) presented ( ) two ( ) cases, ( ) Mary ( ) and ( ) Jane. (x) It ( ) also (x) talked (x) about (x) another (x) treatment … (x) the (x) psychotherapy. ( ). ( ) Apart ( ) from ( ) the treatments, ( ) it ( ) also ( ) discussed ( ) about ( ) the support ( ) for people ( ) who ( ) have ( ) these ( ) disorders, ( ) such ( ) as friends, ( ) and families. ( ) And ( ) also, (x) in order (x) to help (x) people (x) that suffer (x) from (x) eating (x) disorders, (x) another (x) thing (x) is (x) to let (x) them (x) know (x) that (x) they (x) are (x) ill … (x_) the causes (x) of illnesses … (x) how (x) to overcome (x) this.
Prop: 15
Obesity
( ) The ( ) text ( ) is ( ) about ( ) stress, ( ) the relation ( ) between ( ) stress, ( ) and ( ) the weight. ( ) If ( ) you ( ) are … (x) stressed (x) people (x) may (x) eat (x) much, (x) and (x) gain (x) weight … ( ) and ( ) then, (x) it (x) talks (x) about (x) how (x) to solve (x) the problem. (x) It (x) describes (x) the gastric (x) bypass (x) surgery, ( ) one ( ) of ( ) the methods, ( ) and ( ) it talks ( ) about (x) IBM; (x) it (x) is (x) the relation (x) of (x) your (x) height, (x) and (x) weight. (x) If (x) your (x) IBM (x) is (x) over (x) thirty, (x) you (x) are (x) considered (x) overweight, ( ) and ( ) they ( ) talk ( ) about … I think, (x) it (x) is (x) based (x) in (x) the (x) US (x) research, ( ) and ( ) it ( ) is ( ) the comparison ( ) about (x) Americans( ) now, ( ) and ( ) around some ( ) years ( ) ago. ( ) They (x) eat (x) more …(x) calories, (x) and (x) they (x) eat (x) less (x) fruit (x) and (x) vegetables. ( ) It ( ) also ( ) talks ( ) about … (x) people (x) should (x) exercise. (x) It (x) is (x) a way (x) to keep (x) healthy, (x) and (x) lose (x) weight. ( ) It ( ) introduced ( ) some ( ) exercises ( ) that ( ) they ( ) can ( ) do. Also … of course, (x) it (x) is (x) important (x) that (x) you (x) eat (x) just (x) enough. (x) The (x) main (x) reason (x) that (x) you (x) get (x) weight (x) is (x) because (x) you (x) eat (x) excessively. (x) This (x) is (x) the (x) basic (x) reason. ( ) And ( ) it ( ) also ( ) presents ( ) a case, ( ) Jane, ( ) a psychologist. ( ) It ( ) talks ( ) about ( ) why ( ) she ( ) chose ( ) the ( ) surgery ( ) and ( ) the result ( ) of ( ) the surgery ( ) is ( ) very ( ) good. ( ) She ( ) is ( ) very ( ) satisfied ( ) with ( ) that. ( ) And ( ) also ( ) is ( ) going ( ) to help ( ) others. ( ) It ( ) talks( ) about ( ) stress, (x) that (x) people (x) should (x) learn (x) to cope (x) with (x) stress.
Prop: 22
Participant: 29
Obesity
(x) Avoiding (x) obesity ( ) and ( ) also, ( ) in ( ) my ( ) memory, ( ) I ( ) remember ( ) a woman ( ) who ( ) lost ( ) weight ( ) in ( ) about ( ) six months, ( ) and ( ) it ( ) seems ( ) that ( ) this method ( ) is ( ) very ( ) comfortable ( ) and ( ) proper ( ) for ( ) her, and ah … ( ) she ( ) can ( ) eat ( ) as much as ( ) before, ( ) but ( ) she ( ) loses ( ) weight.

Prop: 01
Eating disorders
(x) The text (x) is about (x) eating (x) disorders, ( ) and, maybe, (x) there are (x) three (x) types (x) of (x) eating (x) disorders like … ( ) I ( ) don't ( ) remember ( ) the words… and next … ( ) binge. (x) The (x) majority (x) of (x) (x) people (x) who (x) have (x) eating (x) disorders (x) are (x) women, (x) and (x) teenagers. ( ) Researchers ( ) and ( ) scientists ( ) are ( ) trying ( ) to develop ( ) some ( ) methods ( ) to solve ( ) these ( ) problems and ah … ( ) like ( ) trying ( ) to treat ( ) people ( ) like ( ) in group ( ) surgery … and (x) people (x) may (x) share (x) their (x) experience, (x) and (x) also (x) family (x) is (x) important (x) to help (x) them … and also, ( ) there ( ) are ( ) two ( ) women ( ) treated ( ) as examples ( ) of ( ) this text. ( ) One ( ) is ( ) Jane, ( ) and ( ) the ( ) other ( ) is ( ) Mary … and that is it.
Participant: 30
Eating disorders
( ) I ( ) think ( ) the main ( ) idea ( ) of ( ) the text ( ) is…ah … (x) there are (x) different (x) types (x) of (x) eating (x) disorders … ah … (x) people (x) with (x) these (x) disorders (x) need (x) to go to psychologists. And ah … ( ) some ( ) problems ( ) happen ( ) more ( ) often ( ) to men, ( ) but ( ) also ( ) women ( ) have ( ) this ( ) kind ( ) of disease, and ah … (x) anorexics (x) often (x) show (x) lack of (x) self-esteem, and …ah … ( ) some ( ) people ( ) may ( ) feel ( ) they want ( ) to be ( ) more ( ) perfect, ( ) and ( ) they ( ) show ( ) themselves ( ) in ( ) some ( ) areas ( ) like ( ) in ( ) their ( ) bodies, and ah … ( ) their ( ) behavior ah …( ) people ( ) with ( ) this kind ( ) of problem ( ) are ( ) not( ) always ( ) obese, ( ) but ( ) they ( ) insist ( ) they ( ) are ( ) right … ( ) as ( ) normal ( ) as ( ) the ( ) other ( ) people … so … ( ) and (x) psychologists (x) must (x) make (x) their (x) patients (x) aware (x) that (x) they (x) have (x) to face (x) these (x) problems. (x) The (x) may (x) get (x) together (x) to share (x) their (x) experiences. ( ) There are ( ) two ( ) examples, ( ) Jane ( ) and ( ) another ( ) girl ( ) who ( ) have ( ) eating ( ) disorder … ah … ( ) one ( ) her ( ) father ( ) said ( ) that … she … I don't remember more…
Prop: 08

Obesity
( ) It ( ) seems ( ) from ( ) the beginning ( ) that ( ) the text ( ) wants ( ) to talk ( ) about ( ) disorders. (x) Stress, for example, (x) has (x) both (x) a positive (x) and (x) a negative (x) influence (x) to people and … (x) the (x) negative ( ) part … (x) it (x) can (x) make (x) people (x) to become (x) fat, ( ) because ( ) they ( ) are ( ) nervous, ( ) and ( ) want ( ) to eat. ( ) So, ( ) they ( ) became ( ) fat. ( ) The ( ) text ( ) also ( ) talks ( ) about (x) ways (x) to deal (x) with (x) obesity. ( ) But, (x) experts (x) advise (x) to eat (x) just (x) eat (x) healthy (x) food; (x) avoiding (x) to became (x) fat (x) at (x) first. And ah … (x) to do (x) some (x) daily (x) activities (x) to reduce (x) your (x) weight … ah … ( ) but (x) it (x) seems (x) that (x) normal (x) activity (x) is (x) hard (x) to reduce (x) obesity …ah … ( ) they ( ) talk ( ) about ( ) a lady ( ) that ( ) needed ( ) an extension ( ) for ( ) the seat ( ) belt ( ) in ( ) the plane. ( ) When ( ) she ( ) had accepted ( ) the surgery ( ) she ( ) was ( ) very ( ) happy, ( ) and ( ) became ( ) very ( ) confident … and ah …anyway … also the (x) (x) USDA (x) tells (x) people (x) to avoid (x) calories.
Prop: 12
Participant: 31
Obesity
(x) The (x) article (x) talks (x) about (x) obesity and ah … (x) obesity (x) results (x) in (x) diseases (x) such (x) as high blood, (x) or (x) tress. (x) Many (x) factors (x) can (x) lead to (x) obesity. (x) One (x) is (x) stress. (x) Stress (x) in (x) life (x) can lead (x) to uncontrolled (x) eating, ( ) and (x) people (x) will (x) input (x) some (x) excessive (x) calories, (x) and (x) they (x) get (x) overweight. ( ) Nowadays, (x) in ( ) the contemporary ( ) America, (x) USA, ( ) the situation ( ) is ( ) common ah …(x) about (x) 30% (x) of the (x) persons (x) are (x) overweight, (x) which (x) is (x) higher (x) than (x) 30 years (x) ago, and ah … ( ) the doctors ( ) offer many ( ) solutions ( ) to ( ) this problem. ( ) One ( ) problem, I can't read the name of the solution exactly, … ( ) is ( ) just ah … (x) put (x) a band (x) around (x) the stomach (x) to limit (x) the food (x) ingested … and ah … (x) them (x) cutting (x) the weight … (x) overweight. (x) This solution (x) is (x) efficient … (x) to (x) the overweight. And, (x) the (x) other (x) solution (x) is (x) to (x) choose (x) healthy (x) food (x) in (x) daily (x) life, (x) and (x) you (x) can (x) choose (x) the food (x) according (x) to (x) the pyramid … (x) USDA, and (x) USDA (x) also (x) advises (x) people(x) to eat (x) more (x) vegetables, (x) and fruit … ( ) and (x) we ( ) still (x) can do (x) more (x) exercises (x) everyday ( ) such as ( ) walking, ( ) swimming, and so one. ( ) The frequency ( ) is ( ) 3 or ( ) 4 days ( ) a week … ah… (x) we (x) can (x) take (x) some (x) stairs ( ) or (x) other (x) exercises (x) which (x) are (x) also (x) good (x) for us (x) to control (x) overweight … ( ) and ( ) at ( ) the end ( ) of ( ) the text ( ) it says ( ) that (x) stress (x) is (x) a problem (x) which (x) we (x) need (x) to deal (x) with, ( ) and ( ) we ( ) must ( ) be ( ) more ( ) happy ( ) everyday, ( ) and ah … ( ) choose ( ) right ( ) friends.
Prop:26

Eating disorders
I can't remember all the names …I just can recall that ( ) there ( ) are ( ) three ( ) overweight ( ) that ( ) become ( ) a problem ( ) to ( ) our ( ) contemporary ( ) society. ( ) It ( ) introduces ( ) three ( ) types ( ) of obesity. ( ) The first ( ) and ( ) the second ( ) is ( ) somebody ( ) that ( ) eats ( ) a lot ( ) of ( ) food ( ) and ah … ( ) but ( ) they ( ) do ( ) some ( ) exercises ( ) and ( ) they ( ) keep ( ) their ( ) body ( ) skinny … but ( ) it ( ) also ( ) told ( ) me ( ) the ( ) ways ( ) are ( ) wrong. ( ) Some ( ) people ( ) choose ( ) unhealthy ( ) food ( ) and ( ) don't ( ) eat ( ) food ( ) such as … I can't remember. ( ) The ( ) third ( ) kind ( ) of ( ) obesity ( ) is ( ) especially ( ) from ( ) young ( ) men ah … Then, ( ) the article ( ) introduces ( ) that ( ) doctors ( ) are ( ) working ( ) hard ( ) to find ( ) some ( ) treatment ( ) to overweight, and ah … ( ) They ( ) find ( ) that (x) obesity (x) can (x) result (x) in (x) many (x) health (x) problems, (x) and illnesses. ( ) It ( ) is ( ) urgent ( ) to gather ( ) the ( ) right ( ) solution ( ) to deal ( ) with ( ) the problem, and ah …( ) At ( ) the end ( ) of ( ) the ( ) last page, ( ) the article ( ) introduces ( ) two ( ) people, ( ) Mary ( ) and Jane. ( ) In ( ) the last ( ) paragraph (x) the article (x) advises (x) us (x) to look (x) for (x) some (x) help (x) from (x) doctors, (x) and (x) the help, (x) and (x) encouragement (x) from (x) family members … (x) sharing (x) experience (x) with (x) other (x) with (x the same (x) problem and ah … ( ) it ( ) is ( ) good ( ) to treat ( ) obesity. That is all.
Prop: 06
Participant: 32
Obesity
( ) The ( ) first ( ) cause ( ) of obesity ( ) is ( ) stress. ( ) This ( ) article ( ) mentions ( ) stress and ah … ( ) although (x) there are (x) some (x) methods (x) to solve (x) obesity, (x) such (x) as a surgery, (x) but (x) the doctors (x) still (x) advise (x) that (x) it is (x) not (x) the best (x) way (x) to solve (x) the problem ( ) and ah … ( ) the ( ) last ( ) important ( ) information ( ) is ( ) that (x) in (x) order (x) to avoid (x) obesity (x) you (x) need (x) to live (x) a healthy (x) life. ( ) In some ( ) part ( ) in ( ) the text ( ) it ( ) says ( ) that ( ) the surgery ( ) is ( ) the best ( ) way ( ) to solve ( ) obesity, ( ) and ( ) in ( ) the other ( ) it ( ) says ( ) that ( ) it ( ) is ( ) not … I found this controversial. (x) There is (x) a pyramid (x) to help (x) people (x) intake (x) of calories (x) everyday … ( ) and ( ) the process ( ) of ( ) the surgery … (x) and (x) also (x) introduced (x) that (x) one problem (x) of (x) obesity (x) is (x) stress, (x) and (x) tell (x) people (x) how (x) to avoid (x) the pressure (x) of daily (x) life.
Prop: 10
Eating disorders
(x) The text (x) talks (x) about (x) three kinds (x) of (x) eating (x) disorders, (x) and (x) also (x) tells (x) us (x) the results (x) of (x) overeating, ok? …(x) The article (x) wants (x) to tell (x) people (x) about (x) the treatment (x) to eating (x) disorders, (x) and (x) it (x) also (x) introduced (x) some (x) hormones, ( ) which ( ) can ( ) be ( ) helpful ( ) to people's ( ) eating ( ) habit. ( ) Then, ( ) it ( ) gives ( ) two ( ) examples( ) of eating ( ) disorders, ( ) and ( ) finally, ( ) tell ( ) us ( ) something ( ) about ( ) living ( ) a ( ) healthier ( ) life.
Prop: 05
Participant: 33
Obesity
(x) It (x) is (x) a text (x) about (x) obesity … (x) the (x) most (x) important (x) reasons (x) for (x) it. (x) Stress (x) leads (x) to obesity. (x) Obesity (x) is (x) a kind (x) of (x) overweight, (x) and (x) it (x) is (x) revealed (x) by (x) the body (x) mass (x) index ah … ( ) a kind ( ) of (x) a figure (x) to show (x) if (x) your (x) weight (x) is (x) right, ( ) and ( ) this ( ) problem ( ) may () cause ( ) serious ( ) problems, ( ) and ( ) we ( ) have ( ) some ( ) methods ( ) to heal ( ) it … ah … ( ) one ( ) of them ( ) is … ( ) maybe (x) the (x) most (x) effective (x) one (x) is (x) a kind (x)of surgery … ( ) and (x) a specific (x) technique (x) in (x) this method (x) is (x) the byspass … (x) a kind (x) of … (x) surgery ( ) that ( ) puts ( ) an ( ) equipment ( ) in ( ) your ( ) body … ( ) around ( ) the stomach ( ) and ah …( ) as ( ) it ( ) works, (x) it (x) reduces (x) the stomach (x) capacity … and ah … (x) makes (x) you (x) lose (x) the feeling (x) to eat ( ) and ( ) the second ( ) method is to make your food structure more specific … ah … and …( ) organization ( ) of America ( ) Pyramid. But I think, (x) a good (x) way (x) to avoid (x) obesity (x) is (x) doing (x) activities, ( ) and ( ) in more ( ) detail, (x) the passage (x) also (x) tells (x) us (x) how (x) to avoid (x) stress, and (x) how (x) to avoid (x) obesity… ( ) having ( ) fun ( ) everyday, ( ) to say ( ) no, ( ) maybe ( ) there are ( ) eight ( ) or ten ( ) methods. ( ) Finally, (x) the (x) passage (x) states (x) that scientists (x) recommendation (x) is (x) the physical (x) activities (x) as (x) way (x) to avoid (x) obesity.
Prop: 16Eating disorders
( ) The article ( ) is ( ) about ( ) illnesses, I think. (x) It (x) is (x) illnesses (x) about (x) the eating (x) disorders ( ) about ( ) the ( ) food. (x) The article (x) introduces (x) three (x) illnesses … I can't remember the names exactly, but I can make a description. ( ) The ( ) first ( ) one ( ) is ( ) about ( ) eating ( ) a lot ( ) more ( ) than ( ) you ( ) need, ( ) and ( ) getting ( ) overweight, ( ) and ( ) can't ( ) stop ( )

eating ( ) things. ( ) The second ( ) one ( ) is ( ) trying ( ) to avoid ( ) food, ( ) and ( ) maybe ( ) starve ( ) to death, ( ) and (x) the third (x) one (x) is (x) loosing (x) control (x) of eating (x) and (x) all (x) of (x) the (x) three (x) are (x) eating (x) disorders, ( ) and ( ) it ( ) is ( ) caused ( ) by …technically, (x) they (x) are (x) caused (x) by (x) disturbs (x) in (x) the brain, (x) and (x) in (x) the hormones and … ( ) in ( ) another ( ) way ( ) to explain … ( ) it ( ) is ( ) a kind ( ) of psycho … ( ) maybe ( ) it ( ) refers ( ) to ( ) psychology, ( ) and ( ) the ( ) article ( ) gives ( ) us( ) two ( ) examples, ( ) Mary ( ) and Jane. ( ) Mary ( ) is ( ) a kind ( ) of ( ) the first ( ) illness, I think, ( ) she ( ) used ( ) to be ( ) very ( ) fat, ( ) and ( ) her ( ) father ( ) told ( ) her ( ) something, ( ) and ( ) she ( ) decided ( ) to lose ( ) weight, ( ) and, ( ) unfortunately, ( ) she ( ) keeps ( ) avoiding ( ) eating. ( ) Jane ( ) was ( ) a university ( ) student. ( ) She ( ) was ( ) good ( ) in ( ) studying, ( ) but ( ) she ate ( ) a lot, ( ) more ( ) than ( ) normal. ( ) The ( ) article ( ) introduces ( ) three ( ) solutions ( ) of ( ) these ( ) problems. (x) One (x) is (x) a (x) therapy, second, (x) with (x) people (x) sharing (x) the (x) problems, (x) and (x) finally, (x) the (x) support (x) of family, (x) and (x) friends. That's all.
Prop: 11

Participant: 34
I cannot pronounce some words … (x) There are (x) three (x) eating (x) disorders. ( ) One ( ) is … ( ) she ( ) is …wawawa…, ( ) that ( ) is ( ) a bad ( ) condition ( ) for ( ) people, ( ) they ( ) eat ( ) a lot ( ) of things. (x) This (x) disorder (x) happens (x) to women, (x) and (x) young (x) persons, (x) and (x) is (x) lass (x) found (x) in (x) men. ( ) The ( ) second ( ) is b … wawawa, ( ) that ( ) means, (x) he (x) or (x) she (x) eats (x) a lot (x) of things, (x) and (x) they (x) can't (x) control (x) themselves ah … ( ) the ( ) last ( ) one ( ) is ( ) binge. (x) Binge (x) is (x) the (x) third (x) disorder, (x) and (x) he/she (x) also (x) eats (x) a lot (x) of things, (x) and (x) you (x) find (x) your (x) weight (x) is (x) over (x) and (x) over, ( ) and ( ) scientists ( ) have ( ) a research ( ) about ( ) these ( ) three ( ) disorders … ( ) They ( ) use ( ) some ( ) medical ( ) to treat. So, ( ) they ( ) have ( ) some (x) treatment … ( ) it (x) is (x) vital. ( ) And then, ( ) in ( ) the treatment ( ) it ( ) is ( ) some ( ) system … neuro wawawa… ( ) This ( ) system ( ) can ( ) provide ( ) hormone. (x) Hormone (x) helps (x) the x) body (x) grow, ( ) and ( ) other ( ) things. ( ) Besides, that, ( ) they ( ) talk ( ) about ( ) two ( ) cases … ( ) the first ( ) is ( ) a ( ) girl. ( )She ( ) eats ( ) a lot ( ) of ( ) things, ( ) and ( ) her ( ) dad ( ) told ( ) her ( ) if ( ) you ( ) eat ( ) more, ( ) you ( ) cannot ( ) find ( ) a boyfriend. So, ( ) she ( ) got ( ) on ( ) a diet, ( ) but( ) it ( ) made( ) her ( ) skinny. ( ) And ( ) the ( ) second ( ) one ( ) is ( ) a girl. ( ) She ( ) is ( ) 21 years ( ) old, ( ) and ( ) studying ( ) in Ducan ( ) University. ( ) It happened ( ) in ( ) the age ( ) of 19 … ( ) and ( ) also ( ) she ( ) ate ( ) a lot, ( ) but ( ) she ( ) is ( ) a good ( ) student, ( ) but ( ) she ( ) cannot ( ) control ( ) herself, ( ) and ( ) eats ( ) a huge ( ) amount ( ) of food. ( ) So, ( ) last ( ) thing ( ) is … ( ) treating ( ) these ( ) people … (x) They (x) need (x) some (x) support, (x) especially (x) from (x) family, (x) and (x) sometimes (x) they (x) need (x) to share (x) their (x) experience (x) with (x) similar (x) patients …that's all.
Prop: 16
Obesity
(x) The (x) texts (x) talks (x) about (x) obesity, (x) and (x) obesity (x) means (x) overweight. ( ) Doctors ( ) say… ( ) people ( ) get ( ) obese …( ) they ( ) have ( ) negative ( ) and positive ( ) effects. ( ) Positive ( ) effects ( ) mean ( ) you ( ) do ( ) some ( ) exercises ( ) and ( ) negative ( ) effects ( ) means ( ) you ( ) are ( ) depressed, ( ) and ( ) unhappy. ( ) They ( ) suggest ( ) some ( ) levels ( ) for ( ) happiness, ( ) for example, ( ) you ( ) can ( ) smile ( ) and ( ) you ( ) can ( ) say ( ) no, ( ) and ( ) they ( ) also ( ) say (x) you (x) can (x) do (x) more (x) exercises (x) to avoid (x) this (x) situation. ( ) But ( ) some ( ) people, ( ) for example, (x) in (x) the USA, ( ) about (x) women … ( ) they (x) eat (x) more (x) 335 (x) calories (x) than (x) in 1971. ( ) It ( ) is ( ) more ( ) dangerous ( ) for (x) USA (x) people ( ) because (x) one (x) out (x) of (x) three (x) in USA ( ) they (x) are (x) fat. So, (x) doctors (x) also (x) suggest ( ) one (x) treatment (x) called (x) gastric (x) surgery, ( ) that ( ) means ( ) putting ( ) one ( ) small ( ) glass ( ) into ( ) the stomach … ( ) and (x) it (x) makes (x) people (x) to eat (x) less. ( ) They ( ) use ( ) some ( ) experiment ( ) to do ( ) it ( ) and ( ) the results ( ) were ( ) satisfied. I remember … ( ) the article ( ) says ( ) that ( ) 13,9% ( ) women ( ) increased ( ) in obesity, ( ) and ( ) 47,9% ( ) men ( ) increased ( ) in ( ) obesity. (x) Doctors (x) also (x) suggest (x) the pyramid (x) to eat (x) well …( ) and (x) this (x) pyramid (x) is (x) provided (x) by (x) the (x) USDA. ( ) It ( ) also ( ) gives ( ) an example. ( ) Nora ( ) is ( ) a ( ) 39 ( ) years ( ) old ( ) psychologist. ( ) She ( ) did ( ) the gastric ( ) surgery ( ) and ( ) she ( ) is ( ) satisfied. ( ) Finally, (x) people (x) should (x) care (x) about (x) their (x) weight, (x) and (x) what (x) they (x) eat.
Prop:15
Participant: 35
Obesity
(x) It (x) talks (x) about (x) obesity. ( ) Normally ( ) obesity ( ) is ( ) because … ( ) take (x) American (x) people ( ) as ( ) example, ( ) they (x) eat (x) excessively. ( ) The ( ) food ( ) is ( ) too ( ) greasy ( ) and ( ) contains ( ) too ( ) much ( ) calories ( ) that ( ) causes ( ) obesity. ( ) Obesity ( ) is ( ) modern. (x) One (x)

third (x) of (x) Americans … ( ) they (x) are (x) obese . ( ) Actually, (x) the problem (x) comes (x) not (x) only (x) from (x) food, (x) but (x) also (x) from (x) stress. (x) Experts (x) suggest (x) that (x) to solve (x) this (x) problem (x) you (x) can (x) do (x) a surgery. (x) It (x) is (x) called (x) gastric (x) bypass (x) surgery. ( ) They ( ) can ( ) help ( ) you ( ) with ( ) this ( ) surgery, (x) but (x) having (x) this (x) surgery (x) you (x) can't (x) just (x) eat (x) things (x) too (x) sweet, (x) or (x) too (x) greasy (x) cause (x) you (x) can't (x) eat (x) what (x) you (x) ate (x) before. (x) You (x) have (x) to control (x) your (x) diet. That is it.
Prop: 13
Eating disorders
(x) The (x) article (x) is (x) about x) eating (x) disorders. ( ) Typically,(x) there are (x) three (x) types (x) of eating (x) disorders. ( ) The first ( ) one ( ) is (x) the first (x) one ( ) is talking ( )about (x) you … (x) control (x) yourself (x) not (x) to eat (x) much; (x) you (x) don't (x) eat (x) anything (x) to keep (x) your (x) figure. (x) The (x) second (x) one (x) is, (x) you (x) keep (x) your (x) figure, (x) but (x) you ah … (x) throw up (x) to keep (x) your figure. ( ) The (x) third (x) one, (x) you (x) can't (x) control (x) yourself and ah … (x) you (x) can't (x) stop (x) until (x) you (x) are (x) uncomfortably (x) full. ( ) It ( ) talks ( ) about ( ) two ( ) girls, ( ) one ( ) is ( ) Mary, ( ) and ( ) the other ( ) is ( ) Jane. ( ) They ( ) also ( ) have ( ) the ( ) problem. ( ) Mary ( ) has ( ) problem ( ) of ( ) the second ( ) kind, ( ) and ( ) Jane ( ) has ( ) the problem ( ) of ( ) the ( ) first ( ) one. ( ) Again, (x) doctors (x) suggest (x) a solution (x) could (x) be (x) like (x) through (x) family (x) support, (x) friends (x) help, (x) or (x) group (x) therapy (x) to overcome (x) eating (x) disorders.
Prop: 14

Participant: 36
Eating disorders
(x) There are (x) three (x) kinds (x) of (x) diseases (x) about (x) eating (x) disorders. ( ) I ( ) remember ( ) them ( ) as ( ) a, ( ) b ( ) and ( ) b … I can't spell the words. ( ) The ( ) first ( ) two ( ) happen ( ) mainly ( ) to ( ) men, ( ) but ( ) sometimes ( ) they ( ) can ( ) happen ( ) to young ( ) people, ( ) and ( ) girls, ( ) and ah … (x) Scientists (x) are (x) making (x) research (x) about (x) these (x) disorders, ( ) and ( ) I ( ) also ( ) learned ( ) something ( ) about (x) the (x) family (x) support … (x) Doctors (x) can (x) help (x) making (x) patients (x) talk (x) about (x) themselves, (x) and (x) also (x) the family (x) can (x) help. ( ) There ( ) are ( ) two ( ) cases, s( ) special ( )cases ( ) of ( ) two ( ) girls, ( ) Mary ( ) and ( ) Jane. ( ) Mary, ( ) she ( ) got ( ) the disease ( ) because ( ) her ( ) father ( ) told ( ) her ( ) if ( ) she ( ) did ( ) not ( ) lose ( ) weight ( ) he ( ) would ( ) not ( ) get ( ) a date ah … so, ( ) she ( ) got ( ) nervous ( ) about ( ) that. ( ) Jane ( ) is ( ) a ( ) very ( ) attractive ( ) lady, ( ) a little ( ) overweight … yes .. that is what I remember.
Prop: 06
Obesity
( ) I ( ) think ( ) there are ( ) two ( ) parts ( ) in ( ) this ( ) text. ( ) The ( ) first ( ) part ( ) is ( ) about ( ) stress, ( ) and ( ) the ( ) second ( ) is ( ) about ( ) obesity. In the first part, I learned about (x) stress, (x) and (x) how (x) to avoid ( ) it. In the second part, I learned about (x) obesity, (x) and (x) some (x) means (x) to help (x) us (x) solve (x) the problem. (x) The (x) first (x) is (x) a surgery, (x) and (x) another (x) is (x) doing (x) exercises. (x) But (x) the (x) best (x) thing to do (x) is (x) to avoid (x) obesity (x) in (x) the (x) first (x) place … that is it.
Prop: 07

Participant: 37
Eating disorders
(x) There are (x) three (x) types (x)of disorders. ( ) The first ( ) is … I just remember the letter a, … the other is bi … and the third is bu … and so one. ( ) These are ( ) the ( ) three ( ) types, ( ) and ( ) according ( ) to ( ) the research ( ) there are ( ) two ( ) persons, ( ) one ( ) is ( ) Mary, ( ) and ( ) the other ( ) is ( ) Jane. So, ( ) these ( ) two ( ) persons ( ) did ( ) some ( ) research ( ) and ( ) the test ( ) is ( ) by ( ) themselves … and … ah ( ) the ( ) last ( ) they ( ) gave ( ) some ( ) conclusions. I just remember the structure of the text.
Prop: 0
Obesity
( ) The text ( ) illustrates ( ) stress. (x) There are (x) effects (x) from (x) stress, (x) one (x) positive (x) and ( ) a negative. ( ) It ( ) gives ( ) some ah … ( ) vocabulary, ( ) a professional ( ) vocabulary ( ) such ( ) as ( ) obesity ( ) and ah … ( ) some ( ) surgery … ( ) and ah … ( ) the pyramid … ( ) some ( ) organs ( ) from ( ) the body. ( ) At ( ) last ( ) it ( ) gives ( ) some ( ) suggestions ( ) of ( ) how ( ) to prevent ( ) stress.
Prop: 02

Participant 38
Eating disorders
(x) There (x) are (x) three (x) diseases (x) about ( ) our ( ) habits (x) eating (x) habits, ( ) and the ( ) first ( ) disease…( ) I can't ( ) read it, ( ) but ( ) I know ( ) it ( ) is ( ) a… ( ) the first ( ) disease ( ) it should ( ) be ( ) classified ( ) as woman ( ) who ( ) did ( ) not ( ) eat ( ) a proper ( ) amount ( ) of food, ( ) maybe ( ) sometimes ( ) she ( ) will ( ) eat ( ) too ( ) more( ) or ( ) too ( ) less…yes, ( ) and ( ) also ( ) the ( ) last ( ) two ( ) diseases ( ) have ( ) similar ( ) characteristics. ( ) The last ( ) two ( ) diseases ( ) are ( ) most ( ) common ( ) in ( ) men, ( ) but ( ) there ( ) re also ( ) 2 examples, ( ) one ( ) is a ( ) 20 years ( ) old ( ) and ( ) the ( ) other ( ) is ( ) 21 years ( ) old. ( ) The ( ) last ( ) thing ( ) the ( ) article ( ) provides ( ) us with ( ) is some ( ) method ( ) to cure ( ) obesity. ( ) One ( ) is ( ) to find ( ) a good ( ) psychologist ( ) and ( ) also ( ) to give ( ) some ( ) advice ( ) and ( ) the second ( ) is (x) to find ( ) a (x) group (x) of people (x) and share (x) your (x) problems. That is it.
Prop: 04

Obesity

( ) The second ( ) text ( ) talks ( ) about (x) how (x) to control (x) your weight ( ) and ah… ( ) it ( ) talks ( ) about ( ) two ( ) things ( ) to lose ( ) your ( ) weight. ( ) One, you (x) should not (x) be (x) obesity ( ) and ( ) the other …( ) I ( ) can't ( ) remember ( ) the name. ( ) But ( ) the most ( ) important ( ) thing ( ) in ( ) this ( ) article ( ) should ( ) be ( ) the message ( ) to overcome ( ) it. ( ) It ( ) also ( ) talks ( ) about a…( ) pyramid; (x) you (x) should (x) follow (x) the pyramid (x) advices. ( ) Then ( ) you ( ) should ( ) also (x) control (x) your (x) weight (x) from (x) the beginning ( ) point. ( ) There ( ) is ( ) also ( ) something ( ) about ( ) how ( ) to control ( ) your ( ) appetite. I can't remember anything else.
Prop: 04
Participant 39
Eating disorders
( ) The first (x) text (x) is about (x) eating (x) disorders…( ) 3 types: (x) anorexia, (x) bulimia, and (x) binge. (x) Anorexia, (x) people (x) stop (x) eating ( ) so (x) they (x) loose (x) weight, ( ) and (x) they (x) do ( ) not ( ) even (x) notice ( ) that (x) they (x) are (x) thin. ( ) They are (x) are (x) perfectionist, (x) but (x) they (x) keep (x) thinking ( ) that (x) they (x) are (x) overweight. (x) Bulimia ( ) is ( ) the ( ) kind ( ) of disease ( ) that (x) people (x) eat (x) but (x) they (x) vomit. ( ) There ( ) are ( ) two ( ) cases ( ) Mary ( ) and Jane.( ) Both ( ) are ( ) quite ( ) active. ( ) The ( ) like ( ) sports. ( ) What else…( ) when ( ) it ( ) comes ( ) to cure ( ) anorexia, (x) people (x) have (x) to be (x) conscious ( ) and ( ) see ( ) a doctor ( ) regularly. ( ) Often ( ) anorexia ( ) happens ( ) in males ( ) but ( ) sometimes ( ) young ( ) women ( ) can ( ) have as well. ( ) Anorexia ( ) can ( ) also ( ) affect ( ) men's ( ) sexual ( ) lives ( ) and ( ) their weight.
Prop: 12

Obesity

( ) It ( ) is ( ) reminding ( ) people ( ) about (x) what (x) obesity (x) is. (x) Obesity ( ) may ( ) come ( ) from ( ) many ( ) things.( ) Like (x) in (x) the USA, (x) people (x) are (x) overweight ( ) because( ) of obesity, ( ) and ( ) because ( ) of stress. ( ) So, ( ) due ( ) to this, (x) people (x) try (x) to do (x) the gastric (x) surgery, (x) which (x) reduces (x) the stomach. (x) You (x) cannot (x) eat (x) much. (x) But (x) doctors (x) do not ( ) really (x) advise (x) people (x) to do (x) it (x) because (x) it (x) is (x) risky. ( ) A lot of ( ) people ( ) do ( ) the surgery ( ) because ( ) they ( ) are ( ) under ( ) a lot of ( ) stress, ( ) and ( ) they ( ) cannot ( ) control ( ) the food ( ) they ( ) eat…ah… ( ) Doctors ( ) say ( ) it (x) is (x) better (x) if (x) you (x) do (x) cardiovascular (x) activities ( ) such ( ) as cycling, (x) to (x) reduce (x) the amount (x) of calories. ( ) This ( ) lady ( ) went ( ) for ( ) a gastric ( ) surgery ( ) because ( ) she ( ) could ( ) not ( ) wear ( ) a seat-belt, ( ) so ( ) she ( ) had ( ) to do ( ) the surgery, ( ) and ( ) she ( ) is trying ( ) to promote( ) overweight. if ( ) you ( ) have ( ) a lot of ( ) stress ( ) try ( ) to control ( ) your ( ) stress, ( ) instead ( ) of being ( ) sad ( ) all ( ) the time.
Prop: 10

Participant 40
Eating disorders
(x) Nowadays (x) more (x) and (x) more (x) people (x) are (x) facing (x) the problem (x) of eating (x) disorders, (x) which (x) is (x) not (x) only (x) the result (x) of physical (x) disorder, (x) maybe (x) the mental (x) disorder (x) as well…as ( ) I know ( ) that ( ) there are (x) 3 kinds (x) of eating (x) disorders…( ) I cannot ( ) remember ( ) the names ( ) exactly, ( ) but ( ) the first is (x) ano… ( ) that means, (x) people (x) just ah…(x) quite (x) little (x) food, (x) they (x) just (x) want (x) to keep (x) slim. (x) Sometimes, (x) over (x) slim. ( ) Another ( ) way ( ) is (x) buli…, ( ) this one ( ) is (x) people (x) take (x) a large (x) amount (x) of food, (x) and (x) do (x) exercises (x) to keep (x) their (x) figure. ( ) Sometimes ( ) too many ( ) exercises ( ) could ( ) be ( ) dangerous. ( ) Another ( ) way, ( ) the last ( )

way, ( ) I forgot ( ) the name, ( ) is ( ) just (x) people (x) don't (x) control () their (x) eating (x) habits…(x) they (x) eat (x) a lot, (x) and (x) until (x) they (x) are (x) full. So, ( )there are ( ) 3 kinds ( ) of diseases. And, ( ) I ( ) know ( ) there are ( ) 2 cases ( ) studied…( ) Mary ( ) and Jane. ( ) Mary ( ) is ( ) a beautiful ( ) girl.( ) I ( ) think ( ) this girl…( ) because ( ) she ( ) took ( ) her father's ( ) words ( ) too ( ) seriously, ( ) she ( ) got ( ) fat. ( ) Her ( ) father ( ) said ( ) if ( ) you ( ) do ( ) not ( ) lose ( ) weight ( ) you ( ) can't ( ) find ( ) a date ( ) anymore…so, ( ) she ( ) began ( ) to resist ( ) to any ( ) food. ( ) Finally, ( ) she ( ) was ( ) in danger. ( ) Jane ( ) was ( ) a Duke ( ) university student, ah…( ) she ( ) took ( ) food ( ) because ( ) she ( ) was ( ) a little ( ) bit ( ) overweight, ( ) she ( ) took ( ) food ( ) and then ( ) she ( ) vomited ( ) all ( ) the food ( ) she ( ) had ( ) taken. ( ) That ( ) way ( ) put her( ) into ( ) danger. I think ( ) there is ( ) also a ( ) system ( )_ about ( ) how ( ) to treat ( ) eating ( ) disorders…I forgot the name. ( ) It ( ) record, ( ) and ( ) want ( ) to trace ( ) the heart, ( ) the kidney ( ) and ( ) several( ) functions or ( ) multiple ( ) functions ( ) of ( ) the ( ) ill ( ) person. Maybe, ( ) they ( ) found out ( ) all ( ) the functions ( ) of ( ) the ill ( ) person ( ) are ( ) quite ( ) different ( ) from ( ) the normal ( ) people. It is believed that ( ) people ( ) with (x) eating (x) disorders (x) should be (x) treated (x) not (x) only (x) physically, (x) but (x) also (x) mentally. ( ) Therapy ( ) could ( ) be ( ) effective ( ) with ( ) the patients. ( ) The family, ( ) and ( ) friends ( ) can ( ) also ( ) support ( ) the person.
Prop: 19

Obesity
( ) First, ( ) the text ( ) talks ( ) about ( ) stress. ( ) Stress (x) is (x) not (x) always (x) negative, (x) but (x) also (x) there are (x) some (x) positive (x) ones (x) if (x) you (x) can (x) control (x) the stress. (x) Stress (x) maybe x) encourage (x) you (x) to do (x) some (x) things…(x) to work (x) hard, (x) but if (x) the stress (x) is (x) not (x) managed (x) well, (x) maybe (x) it (x) will (x) case (x) physical (x) problems, (x) such (x) as eating (x) disorders. (x) For stress, ( ) what (x) it is (x) important ( ) is (x) to realize (x) the total (x) effects ( ) of stress. ( ) If you ( ) have( ) stress ( ) it ( ) is ( ) better ( ) to talk ( ) to your ( ) friends. ( ) There are ( ) several ( ) kinds of how ( ) to control ( ) you( ) stress, maybe ( ) try ( ) to be ( ) happy, ( ) and ( ) to talk ( ) to your ( ) friends. Then, (x) the text ( ) also (x) talks (x) about (x) obesity, (x) overweight. ( ) Not all ( ) kinds ( ) of overweight ( ) are ( ) caused ( ) by stress. ( ) Some ( ) traditional ( ) severe ( ) overweight ( ) is ( ) physical ( ) problem ( ) not ( ) mental ( ) problems. ( ) It ( ) is ( ) believed ( ) that ( ) in European ( ) population ( ) more ( ) and ( ) more ( ) people ( ) eat ( ) less ( ) vegetables ( ) and ( ) fruit ( ) than ( ) they ( ) did ( ) in the 1970's. And, ( ) even (x) in the USA, (x) more (x) and (x) more (x) women (x) are (x) facing (x) the problem (x) of obesity and ah… (x) people ( ) will ( ) like (x) to choose (x) the surgery, (x) gastric-(x) surgery (x) to make (x) their stomach (x) smaller (x) in order (x) to keep (x) slim. (x) After (x) the surgery (x) they (x) cannot (x) eat (x) as much (x) as they (x) want, and actually, (x) they (x) will (x) feel (x) full (x) before (x) they eat (x) much. And ( ) there is ( ) a case ( ) of a psychologist, Jane. ( ) She ( ) had ( ) the surgery ( ) and she ( ) felt ( ) quite ( ) well ( ) now. ( ) Doctor Richardson ( ) from Harward University ( ) believed ( ) that ( ) this surgery ( ) was ( ) quite safe ( ) and ( ) good, actually, ( ) a success ( ) There is ( ) a paragraphs ( ) that ( ) talks ( ) about (x) the USA (x) pyramid, (x) a food-guide (x) pyramid (x) talks (x) about (x) what kind of (x) food (x) American (x) should (x) eat. Finally, ( ) they ( ) talk ( ) about ( ) some exercises, (x) experts (x) encourage (x) people (x) to do (x) exercises.
Prop: 19

Participants 41
Obesity
(x) The key (x) point of (x) the text (x) is (x) obesity ( ) and ( ) this ( ) because ( ) of stress ( ) and ( ) many ( ) other ( ) factors ( ) that cause ( ) overweight, ( ) and ( ) the text ( ) mentions ( ) one solution…( ) a surgery, for example, ( ) the percentage ( ) of what ( ) they ( ) eat ( ) is…oh yes,…( ) the key ( ) point ( ) is ( ) that ( ) because ( ) of ( ) the stress (x) and unhealthy (x) eating …(x) cause (x) overweight.
Prop: 02

Eating disorders
I think this is a more organized text (linear) and…( ) the main ( ) idea ( ) is ….of the text is that…one problem is that…I don't remember the word…it is just obesity…I don't know the words…the last one is…I forgot everything! Let me think for a while. Can I just think for a minute? (x) The main (x) idea (x) is (x) the problem (x) of (x) eating (x) disorders (x) and (x) they (x) give (x) the reasons (x) and (x) the solution (x) to the disorders, ( ) such as (x family (x) support And they give some examples with people and the seriousness of their disorders.
Prop: 04

Participants: 42
Eating disorders
( ) First, (x) stress (x) makes (x) people (x) live (x) unhealthy, (x) and (x) stress (x) make (x) people (x) overeat. ( ) I ( ) think ( ) it ( ) is ( ) called ( ) obesity…yes…( ) and ( ) is ( ) so ( ) people ( ) want ( ) to avoid ( ) that. ( ) A method ( ) is ( ) to do ( ) a surgery, ( ) maybe called (x) a gastric (x) surgery (x) which (x) reduces (x) the stomach, so… ( ) someone ( ) said ( ) I can ( ) eat ( ) as much ( ) as ( ) I used to. So, ( ) it ( ) works and …ah… ( ) in ( ) the USA ( ) there is ( ) a picture ( ) called ( ) pyramid. (x) Experts (x) advise (x) people (x) to eat fruit (x) and vegetable, ( ) and ( ) to do ( ) activities ( ) such ( ) as to go out…(x) use (x) the stairs (x) and (x) not (x) the lift ( ) to burn ( ) calories. Also, ( ) You ( ) should ( ) relive ( ) your stress. ( ) This ( ) is ( ) very ( ) important ( ) to health.
Prop: 07
Obesity
( ) I think (x) the text (x) is (x) about (x) eating (x) disorders ( ) and ( ) there are ( ) some ( ) kinds ( ) of problems. I can't remember the exact words, but I think ( ) it ( ) is ( ) three ( ) kinds. ( ) These ( ) maybe ( ) controlled ( ) by ( ) the neuro…neuro one…( ) that build ( ) a pyramid ( ) in ( ) the blood…yes, ( ) and ( ) it ( ) is ( ) very ( ) dangerous ( ) for people ( ) to have ( ) those ( ) trouble ( ) and (x) they (x) need (x) help ( ) from ( ) hospital ( ) and (x) from (x) family. It is all
Prop: 03