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**THE PROCESSING OF PHRASAL VERBS BY NONNATIVE
AND NATIVE SPEAKERS OF ENGLISH: AN EYE MOVEMENT
STUDY**

Dissertação submetida ao Programa de Pós-Graduação em Inglês: Estudos Linguísticos e Literários da Universidade Federal de Santa Catarina para a obtenção do Grau de Mestre em Letras.

Orientadora: Prof^a. Dr^a. Mailce Borges Mota.

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To my parents, Silvalina and Alicindo,
and my beloved, Bruno.

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¹ Kirkland, J. C. (2008). Love Letters of Great Men.

I wish you luck and adventure and I hope you find
yourself on your journey.

Christopher Vogler, 2007

ABSTRACT

The present study aims at investigating one aspect of the English language that presents challenges for English learners as a second or foreign language (L2), the so-called phrasal verbs. Considering its complex nature, this type of verb can be a difficult learning item because it engenders, at different levels, phonological, morphological, syntactic and semantic issues (Cappelle et al., 2010; Side, 1990; Yule, 1998). Although the literature records studies on learning and processing of phrasal verbs (e.g., Matlock & Heredia, 2002; Liao & Fukuya, 2004; Cappelle, Shtyrov & Pulvemüller, 2010), we still know very little about how native speakers of Brazilian Portuguese (BP), learners of English as L2, deal with the processing of this type of verb in the course of learning. The main objective of the present study is to investigate how phrasal verbs are processed online by advanced learners of English as L2 (native speakers of BP) and native speakers of English. With this in mind, twenty volunteers - 10 nonnative speakers of English (BP) and 10 native speakers of English (NE) - participated in an experiment in which it was verified, first, whether there were differences between the processing of phrasal verbs and lexical verbs (one-word verbs), and second, whether there were differences between figurative phrasal verbs and literal phrasal verbs. Participants were divided into two groups: (a) Experimental group (BP) and (b) Control group (NE). Data were collected with the following instruments: (1) a biographical questionnaire; (2) an online proficiency test; (3) a sentence processing task and finally (4) a phrasal verb posttest. The sentence processing task consisted of 128 sentences, divided into two lists, which contained one of four types of verbs mentioned above. The experimental group (BP) and the control group (NE) read the sentences while their eye movements were recorded. For both groups (BP and NE), the measures of total reading time and fixation count showed that figurative phrasal verbs demanded more attention than lexical verbs, that is, there is a greater cost in the processing of sentences containing figurative phrasal verbs than lexical verbs. The measure of first pass reading time showed that lexical verbs were read more slowly than literal phrasal verbs. Concerning the types of phrasal verbs, there was a greater cost in the processing of figurative phrasal verbs and literal phrasal verbs for the experimental group (BP) in relation to the control group (NE). The results showed that lexical verbs were processed significantly faster than figurative phrasal verbs by the BP group, which means that, lexical verbs are more salient than figurative phrasal verbs (Giora, 2003). When literal phrasal verbs are compared to figurative phrasal verbs, the results showed

that both groups processed figurative phrasal verbs more slowly than literal phrasal verbs, but the difference is not statistically significant. By comparing the groups (native speakers of English and nonnative speakers of English), the results suggested that native speakers of English process figurative phrasal verbs significantly faster than nonnative speakers of English do.

Keywords: Eye movements. Phrasal verbs. Processing.

RESUMO

O presente estudo tem como objetivo investigar um aspecto da língua inglesa que apresenta desafios para os aprendizes de inglês como língua estrangeira ou segunda língua (L2), os assim chamados *phrasal verbs*. De natureza complexa, este tipo de verbo pode ser um item de difícil aprendizagem por engendrar, em diferentes níveis, questões fonológicas, morfológicas, sintáticas e semânticas (Cappelle et al., 2010; Side, 1990; Yule, 1998). Embora a literatura registre estudos sobre a aprendizagem e o processamento de *phrasal verbs* (e.g., Matlock & Heredia, 2002; Liao & Fukuya, 2004; Cappelle, Shtyrov & Pulvemüller, 2010), sabemos ainda muito pouco sobre como falantes nativos de português brasileiro, aprendizes de inglês como língua estrangeira, lidam com o processamento deste tipo de verbo no curso da aprendizagem. O principal objetivo do presente estudo é investigar como os *phrasal verbs* são processados em tempo real por aprendizes de inglês de nível avançado (falantes nativos de português brasileiro) e falantes nativos de inglês. Vinte voluntários - 10 falantes não nativos de inglês (BP) e 10 falantes nativos de inglês (NE) - participaram em um experimento no qual foi verificado, primeiro, se há diferenças entre o processamento de *phrasal verbs* e verbos lexicais (verbos de uma única palavra), e segundo, se há diferenças entre *phrasal verbs* figurativos e *phrasal verbs* literais. Os participantes foram divididos em dois grupos: (a) grupo experimental (BP) e (b) grupo controle (NE). Os dados foram coletados com os seguintes instrumentos: (1) um questionário biográfico; (2) um teste online de proficiência; (3) uma tarefa de processamento de sentença, e por fim (4) um pós-teste de *phrasal verbs*. A tarefa de processamento de sentença consistia em 128 sentenças, distribuídas em duas listas, as quais continham um dos quatro tipos de verbo mencionados anteriormente. O grupo experimental (BP) e o grupo controle (NE) leram as sentenças enquanto os movimentos dos olhos deles foram gravados. Para ambos os grupos (BP e NE), as medidas de tempo total de leitura e o número de fixações mostraram que os *phrasal verbs* figurativos exigem mais atenção do que os verbos lexicais, ou seja, houve um custo maior de processamento das sentenças que continham *phrasal verbs* figurativos do que verbos lexicais. A medida de primeira leitura mostrou que os verbos lexicais foram lidos mais devagar do que os *phrasal verbs* literais. No que diz respeito aos tipos de *phrasal verbs*, houve um grande custo de processamento de *phrasal verbs* figurativos e *phrasal verbs* literais para o grupo experimental (BP) em relação ao grupo controle (NE). Os resultados apontaram que os verbos lexicais foram processados significativamente mais rápido do que os *phrasal verbs*

figurativos pelo grupo BP, o que significa que os verbos lexicais são mais salientes do que os *phrasal verbs* figurativos (Giora, 2003). Na comparação entre *phrasal verbs* literais e *phrasal verbs* figurativos, os resultados mostraram que os *phrasal verbs* figurativos foram processados mais devagar do que os *phrasal verbs* literais por ambos os grupos, mas a diferença não é estatisticamente significativa. Comparando os grupos (falantes nativos e não nativos de inglês), os resultados sugeriram que os falantes nativos de inglês processam *phrasal verbs* figurativos significativamente mais rápido do que os não-nativos falantes de inglês.

Palavras-chave: Movimento dos olhos. *Phrasal verbs*. Processamento.

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LIST OF ABBREVIATIONS AND SYMBOLS

- BP – Native Speakers of Brazilian Portuguese (nonnative speakers of English)
- CEFR – Common European Framework of Reference for Languages
- CEPSH/UFSC – Comitê de Ética em Pesquisa com Seres Humanos
- COCA – Corpus of Contemporary American English
- df – Degrees of Freedom
- FC – Fixation Count
- FLV – Figurative Lexical Verb - control
- FP – First Pass Reading Time
- FPV – Figurative Phrasal Verb
- FT – Total reading Time
- L1 – First Language
- L2 – Second Language
- LabLing – Laboratory of Language and Cognitive Processes
- LLV – Literal Lexical Verb - control
- LPV – Literal Phrasal Verb
- ms – Milliseconds
- N – Number of Participants
- NE - Native Speakers of English
- PPGI – Programa de Pós-Graduação em Inglês/UFSC
- Pvs – Phrasal Verbs
- SD – Standard Deviation
- SLA – Second Language Acquisition
- SMI – SensoMotoric Instruments
- SMI BEGAZETM – Eye-Tracking Analysis Software
- SPSS – Statistical Package for the Social Sciences
- USA – The United States of America
- \bar{X} – Mean.

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1 INTRODUCTION

1.1 CONTEXT OF INVESTIGATION

In the area of Second Language Acquisition (SLA)² it is possible to investigate issues related to acquisition/learning per se – that is, issues related to changes in the representation of knowledge or to the creation of new memories - as well as issues that are related to the processing of already existing knowledge. The present study attempts to investigate the processing of phrasal verbs, a linguistic item that has been at the center of a hot debate in linguistics due to their complex nature as lexical items and the difficulty to determine whether they are more phrase-like or word-like.

As pointed out by Cappelle, Shtyrov and Pulvemüller (2010), in studying the nature of phrasal verbs, the first issue concerns their status – are they better described as words or phrases? In other words, are they lexical units or full syntactic structures? According to Cappelle et al. (2010), this question is not trivial, since it is possible for a phrasal verb to serve as input for morphological derivations (e.g. *passer-by*), which would grant this type of verb the status of words. On the other hand, some phrasal verbs allow the verb to be separated from the particle and this, according to Cappelle et al. (2010), is a feature of phrasal structures. The second issue is related to the specific features that have to be taken into account when determining the status of phrasal verbs – how does the transparency and meaning of a phrasal verb relate to their being a word or a phrase? Like the first question, this is not trivial since some phrasal verbs have idiomatic meanings, whereas others convey literal meanings. This semantic aspect seems to have an effect on the structure of phrasal verbs, with the more literal phrasal verbs functioning as assembled sequences and the more idiomatic one as tight lexical units (Cappelle et al., 2010, p.190). These two issues may make the acquisition of phrasal verbs in English by nonnative speakers an especially sensitive case that deserves further attention and it may indicate, in the case of native speakers of Brazilian Portuguese, how differences between the L1 and L2 affect the process of acquisition/learning.

² In the present study, the terms “acquisition” and “learning” will be used interchangeably and so will the terms “second” and “foreign”.

The complexity of phrasal verbs have been addressed in studies such as Konopka and Bock (2009), who compared abstract structural and lexicalist accounts of syntactic processes in sentence formulation. They investigated the effectiveness of nonidiomatic and idiomatic phrasal verbs in inducing structural generalizations. Three experiments used a syntactic priming paradigm in which participants recalled sentences they had read in rapid serial visual presentation. Prime and target sentences contained phrasal verbs with particles directly following the verb (e.g. pull off a sweatshirt) or following the direct object (e.g. pull a sweatshirt off). Idiomatic primes were verbs whose figurative meaning cannot be straightforwardly derived from the literal meaning of the main verb (e.g. pull off a robbery) and are commonly treated as stored lexical units. Particle placement in sentences was primed by both nonidiomatic and idiomatic verbs. The results favored a syntactic processing of phrasal verbs.

Blais and Gonnerman (2013) stated that this modular view of the lexicon versus the syntax is not enough to account for the behavior of phrasal verbs. For example, Fraser (1966) classifies phrasal verbs in three categories. The first category is the literal category, in which the particle has an adverbial meaning, for example, she gave leaflets out. The second category is completive, in which the particle has an end, a result sense, as in this sentence, he ate up the food. The third category is figurative, in which the meaning of the combination of the particle and the verb is not clear for example, in they turned up late. Thereby, as Fraser (1966) explain the particles (e.g. out, up) can give different meanings to the verbs. The assumption that phrasal verbs are semantic units means that a transparent (literal) and an opaque (figurative) categorization plays an important role in the learning of these items by nonnative speakers.

Although the study of idioms in second language is a different line of research than that of phrasal verbs, there are similarities between phrasal verbs and idioms concerning difficulty for second language learners and semantic issues (Cieślicka, Heredia, Olivares, 2014). Idioms are defined as multi word phrases whose interpretation can be literal or figurative, like phrasal verbs. One of the aspects of idiom processing investigated with the eye-tracking methodology has been the effect of salience (Cieślicka, Heredia and Olivares, 2014, p.23). Put briefly, “the Graded Salience Hypothesis” (Giora, 2002, p.490) considers salient meanings as coded, context-independent, and prominent. To be salient, meanings of words, phrases or sentences have to be frequent, familiar or prototypical. In addition, salient meanings are processed and activated

first from the mental lexicon rather than from the context (Giora, 1999, p. 919).

The present study aims at investigating the salience aspect of phrasal verbs in second language processing. In the light of the Graded Salience Hypothesis, it is plausible to suggest that in the processing of familiar meanings, in which figurative meanings are more salient than literal meanings, figurative meanings will be activated faster than literal meaning. Whereas, in the processing of less familiar phrasal verbs their literal meanings will be more salient, once figurative meaning is not yet established in the mental lexicon.

1.2 THE PRESENT STUDY

The main objective of the present study is to investigate the online processing of phrasal verbs in an L2. In order to do so, first, it is verified whether there are differences between the processing of phrasal verbs and lexical verbs, and second, whether there are differences in the processing of figurative phrasal verbs versus literal phrasal verbs.

In the present study, a biographical questionnaire was taken by all participants (10 nonnative speakers of English and 10 native speakers of English). Then, an online proficient test was applied in order to select advanced speakers of English. Next, a sentence processing task was applied, in which the experimental group (nonnative speakers of English) and the control group (native speakers of English) read sentences containing figurative phrasal verbs, literal phrasal verbs and lexical verbs. Finally, a posttest, which examine the familiarity of phrasal verbs (figurative and literal), was taken by all participants.

This study addressed the following research question:

Research Question: How do both Brazilian learners of English as L2 and native speakers of English process figurative phrasal verbs in comparison to literal phrasal verbs, and phrasal verbs in comparison to lexical verbs?

1.3 SIGNIFICANCE OF RESEARCH

The specific focus of this study is the processing of phrasal verbs by native speakers of Brazilian Portuguese, learners of English as a second language (L2).

The choice for this specific item of the lexicon is based on the fact that there is a linguistic debate about the lexical-syntactic nature of phrasal verbs. The complex nature of phrasal verbs may be the source of problems to learners of English as an L2 and may also imply first

language (L1) interference over the L2 (Side, 1990). Although some studies about phrasal verbs have been carried out (e.g., Matlock & Heredia, 2002; Cappelle, Shtyrov & Pulvemüller, 2010; Liao & Fukuya, 2004), there is still a lack of research on the learning and processing of phrasal verbs, especially in the case of Brazilian learners of English. This study aims at shedding some light on the research on the processing of phrasal verbs by nonnative speakers, in general and, in particular, by native speakers of Brazilian Portuguese.

Since phrasal verbs are items exclusively from Germanic languages (e.g. English, German, Dutch), they are absent in others (e.g. Spanish, Italian, Portuguese). Consequently, there are problems that learners of English as L2 have with phrasal verbs, due to phonological, morphological, syntactic and semantic issues (Cappelle et al., 2010; Side, 1990; Yule, 1998). With this in mind, the present study may contribute to the research on the learning of phrasal verbs and offer pedagogical implications concerning the teaching of this linguistic element of English.

The present study may also contribute with data to the area of eye movement studies. Eye-tracking is a technique that allows researchers to obtain detailed and robust data that, in turn, aid in the investigation of mental processes. The present study uses eye-tracking as a method to investigate the online processing of phrasal verbs and, in doing so, may add to the development of this technique in Brazil.

1.4 ORGANIZATION OF THE THESIS

This thesis is organized in 5 major chapters. Chapter I is the Introduction of the present study and presents the context of investigation, the significance of the research as well as the organization of the thesis.

Chapter II reviews the theoretical and empirical previous research that was found to be the most relevant for the present study. In this chapter, the literature on phrasal verbs and language processing are presented. First, the chapter discusses linguistic definitions of phrasal verbs. Then, the chapter reports studies on phrasal verbs. Last, a review on literal and figurative language processing is provided.

Chapter III outlines the method adopted to carry out this study. First, the chapter presents the objectives and the research questions of the present study. Then, the chapter presents the participants and the instruments used in the study. The following section gives an overview of the eye-tracking method and a justification for using this technique in the present study. After that, the chapter provides a summary of the

procedures and the pilot study. Finally, the chapter shows the procedures for data analysis.

Chapter IV presents the results as well as a discussion on how phrasal verbs and lexical verbs are processed by nonnative speakers of English (native speakers of Brazilian Portuguese) and native speakers of English, in light of the Graded Salience Hypothesis (2002) and Literal-Salience Resonant Model (Cieślicka, 2006). First, the chapter presents the results of descriptive statistical analysis of the present study and then the inferential analysis. Then, the research question and hypotheses are readdressed and a discussion of the results is provided.

Finally, chapter V presents the concluding remarks, summarizing the findings, pointing out the limitations of the study and offering further suggestions for future research as well as pedagogical implications to the L2 English classroom.

2 REVIEW OF LITERATURE

This chapter presents a review of literature on phrasal verbs and language processing. It is divided as follows. Section 2.1 discusses linguistic definitions of phrasal verbs. Section 2.2 reports studies on phrasal verbs. Section 2.3 provides a review on literal and figurative language processing.

2.1 LINGUISTIC DEFINITIONS OF PHRASAL VERBS

Different specialists in linguistics have analyzed phrasal verbs at different times, within different theoretical frameworks (Gorlach, 2004). Nevertheless, the definition of a phrasal verb is still very controversial and unclear. There are different definitions of the term including – ‘verb-particle construction’ (VPC), ‘particle verb’, ‘verb-particle combination’, among others³. According to Richards and Schmidt (2010, p.436), a phrasal verb “is a verb construction consisting of a verb plus an adverb particle. A distinction may be made between phrasal verbs, prepositional verbs, and phrasal-prepositional verbs, according to the different grammatical pattern in which they occur”.

Based on the above, the authors state that there are differences between phrasal verbs, prepositional verbs and phrasal-prepositional verbs. In phrasal verbs, the particle may be stressed and it can occur after the object. Moreover, there is a possibility of using short pronouns between the verb and the particle, such as turn off the light, turn the light off, turn it off. In prepositional verbs, the verb may be stressed and the particle cannot occur after the object. With regard to pronouns, they cannot separate the verb and the particle; therefore, they occur after the particle, as, for instance, in I’ll apply for the job, *I’ll apply the job for, I’ll apply for it. Concerning phrasal-prepositional verbs, these contain a verb, an adverb particle and a preposition as in, for instance, we must cut down on expenses. Additionally to syntactic differences between phrasal verbs, prepositional verbs, and phrasal-prepositional verbs stated by Richards and Schmidt (2010), prosodic aspects also play an important role in the definition of phrasal verbs. In order to define a phrasal verb taking into consideration prosodic aspects, it is necessary to give an

³ In this study, the definition of phrasal verb (literal and figurative) used will be the one stated by Fraser (1966).

emphasis on the particle. Moreover, an emphasis given to the verb is a prepositional verb not a phrasal verb.

Gorlach (2004, p.1) follows the standard view on phrasal verb. For her, a phrasal verb can be defined “as a discontinuous lexical item consisting of a transitive or intransitive verb and an adverbial particle, e.g. break down or make up.” In her study, Gorlach (2004) discusses the semantic aspects of phrasal verbs as well as the nature of the word order alternation typical of transitive phrasal verbs with a nominal object. Although Gorlach (2004, p.13) focuses on the semantic approach, the author considers the phrasal verb as a phonological-morphological-syntactic-semantic phenomenon.

Similarly, Yule (1998, p.156) observes that “when a particle is regularly combined with a particular verb, the resulting “two-part” verb often has a distinct meaning and is categorized as a phrasal verb”. Moreover, Yule (1998, p.157) explains, “phrasal verbs are single units of meaning”. In other words, verb-particle combinations behave as single units; however, they can be separated by syntactic rules.

In terms of semantics, Gorlach (2004) views phrasal verbs as independent linguistic signs that may possess a greater number of semantic features when compared with simple verbs. Roelofs (1998) supports this assumption and emphasizes,

the semantic interpretation of verb-particle combinations is often not simply a combination of the meanings of the particle and the verb. Therefore, verb-particle combinations have to be listed in the mental lexicon. The mixture of phrasal and lexical properties possessed by verb-particle combinations makes them an attractive starting point for examining the mode by which the morphophonological form of phrasal constructions is planned. (Roelofs, 1998, p. 908)

In addition to that, Gorlach (2004, p.14) explains that “it seems plausible that during a phrasal verb formation, its form and meaning become more complex, and its invariant meaning systematically acquires an additional feature, that of Result (completion, endpoint, goal, etc.)” Likewise, Kennedy (1920, p.27–28 cited in Gorlach, 2004) was one of the first linguists who described the ability of phrasal verbs to show the

action as leading to a resultative meaning. To illustrate that, the author (2004, p.29) gives two examples:

- (14) a. He chopped the tree.
 b. He chopped down the tree.

According to Kennedy (cited in Gorlach, 2004, p.29) “(14b) conveys the message He chopped the tree and finished his job.” As can be expected, the semantic properties of the particles are viewed as resultative meaning by Kennedy. In accordance with Kennedy, Gorlach (2004, p.30) assumes that “the combined meaning of process and result is an invariant meaning of the phrasal verb as a whole rather than of the particle alone.” Therefore, the verb and the particle form a semantic feature of Result, which means an action has been completed. Although the present study will not focus on the resultative meaning of the particles of phrasal verbs, it is important to highlight the differences between the particles.

Still considering semantic aspects of phrasal verbs, Fraser (1966) divided phrasal verbs into 3 groups: (1) literal phrasal verbs, in which the particle expresses the literal meaning (adverbial meaning), as in the following example: I hang up the pictures on the wall. (2) completive phrasal verbs, in which the particle indicates a complete action, as in the following example: The man mixed up the paint. (3) figurative phrasal verbs, in which the particle affects the verb meaning, and together, they form an unexpected new meaning, as in the following example: He looked up the information.

According to Matlock and Heredia (2002), the semantic issue of phrasal verbs compromises the understanding of whether particles and prepositions function the same way. Likewise, there is a misunderstanding on the relationship between the figurative interpretation of a phrasal verb and the literal meaning of the verb without the particle.

In the next section, I will present studies on phrasal verbs and idioms, since there is not much empirical work on phrasal verbs to contribute towards the development of hypotheses on the processing of phrasal verbs. In doing so, studies on the processing of idioms can provide further insights on the processing of phrasal verbs.

2.2 STUDIES ON PHRASAL VERBS

The search for empirical studies of phrasal verbs in L2 showed that there seems to be a preference for research into the reasons why L2 learners avoid using phrasal verbs in English. The use of avoidance of

complex structures is quite common in learning a second language. Schachter (1974) was the first to highlight the importance of analyzing the production of L2 forms by L2 learners in order to verify their success and/or avoidance.

Schachter (1974) investigated on the errors made with relative clauses. The author compared errors made by native speakers of Chinese, Japanese, Persian and Arabian learners of English. She inferred that if the learner were not able to understand the target structure, he/she would avoid using it. In contrast to this, Kleinmann (1977, 1978) suggested that avoidance is a strategy rather than incapacity of comprehension. Moreover, Kleinmann reinforced that the psychological factor influences the learner's behavior in a second language, that is, the frequency of using syntactic structures, like phrasal verbs, are related to psychological variables, such as, confidence and anxiety, among others, and therefore they would affect the performance of L2 learners. On the other hand, Kaminoto et al (1992) and Li (1996) argued that L2 learners' performance is sometimes unsuccessful because it is not only about target forms but also pragmatic differences between L1 and L2.

Dagut and Laufer (1985) investigated advanced Hebrew learners of English. The authors' aim was to verify the use and frequency of avoidance of phrasal verb types (literal, figurative and completive – it is explained in further details in the introduction of the present study). The results showed that the learners preferred to use one-word verbs and avoided, mainly, figurative phrasal verbs. In that sense, Dagut and Laufer (1985) concluded that the avoidance of phrasal verbs had to do with structural differences between L1 and L2, since there is no formal structure equivalent in Hebrew.

According to Liao and Fukuya (2004), there are two points that were not well developed in Dagut and Laufer's study. Firstly, the authors took it for granted that the learners knew all of the fifteen phrasal verbs used in the tests. For this reason, Dagut and Laufer assumed that the learners did not perform well. Secondly, Dagut and Laufer highlighted that the avoidance of the type of figurative phrasal verb was much greater than the other types (literal and completive) suggesting an interlingual difference between L1 and L2. However, this is an intralingual element avoidance behavior, which shows semantic differences between literal and figurative meanings in relation to how the L2 is used by L2 learners.

Hulstijn and Marchena (1989) investigated the avoidance of using phrasal verbs by intermediate and advanced Dutch learners of English as L2, in order to determine whether this avoidance was related to structural

differences between L1 and L2 or the similarities between them. The authors' hypothesis was that Dutch students would avoid using phrasal verbs not because of the syntactic similarity between languages, but for semantic reasons. The results surprised the authors, since students have the target structure in their native language, but they chose to produce verbs of one word instead of phrasal verbs. In addition, students avoided using phrasal verbs, especially those who had similar meanings to Dutch phrasal verbs.

Laufer and Eliasson (1993) investigated advanced Swedish learners of English as L2. Researchers have raised three possible reasons to explain the avoidance of phrasal verbs. The first reason would be the difference between L1 and L2, the second reason was the similarity between L1 and L2. Finally, the third reason was the complexity of L2. Laufer and Eliasson (1993) stated that, in their study, avoidance of using phrasal verbs was related to the difference between L1-L2.

Finally, Liao and Fukuya (2004) investigated whether Chinese avoid using phrasal verbs, specifically figurative versus literal phrasal verbs. Of the eighty-five participants, forty were intermediate Chinese learners; thirty were advanced graduate students and fifteen undergraduate native speakers of English in China.

The study was undertaken in two stages. First, a group of fifteen native speakers of English took a multiple-choice test. They had to choose between a phrasal verb or one-word verb. The second stage, the researchers divided into three groups of advanced and three groups of intermediate Chinese learners. Three elicitation tests were designed a multiple-choice test, a translation test and a recall test, which would verify whether and to what extent Chinese learners of English would avoid phrasal verbs.

The results showed that advanced Chinese learners and native speakers of English had a similar performance in the tests. However, intermediate Chinese learners tended to avoid phrasal verbs, including figurative phrasal verbs. On the contrary, native speakers and advanced learners had the same frequency of figurative and literal phrasal verb. The most interesting finding was the task of translation that the biggest number of Chinese learners avoided using figurative phrasal verbs. The authors stated that L2 semantic complexity played a role in the intermediate learners' performance. In conclusion, Liao and Fukuya (2004) indicated that proficiency has much to do with avoidance. In addition, they also claimed that the higher the level of proficiency the lower the risk of avoiding.

Evidence for this avoidance of phrasal verbs also highlighted by Matlock and Heredia (2002) who emphasize that second language learners (L2) or bilinguals tend to avoid using phrasal verbs due to the fact that many languages do not have this structure in their languages. Instead of using phrasal verbs, they give preference to single word verbs. In addition to that, the uncertainty of interpretation pose problems as well. Not only low proficient learners of English, but also high proficient learners rarely use phrasal verbs. On the other hand, native English speakers rarely have problems related to correct interpretation and appropriate use of phrasal verbs even if there is little or lack of linguistic context. Moreover, it is possible that English speakers realize which meaning of phrasal verbs is dominant and which is secondary.

With regard to online studies of phrasal verbs processing, Cappelle, Shtyrov and Pulvermuller (2010) used magnetoencephalography (MEG) to record neural responses to verb-particle pairs that were congruent (for example, heat up) or incongruent (for example, heat down). Twenty-one native speakers of British English took part of the study. The mismatch negativity responses to these pairs were comparable to response patterns typically elicited by words, rather than sentences. The authors concluded that at a neural level, participants process phrasal verbs lexically rather than syntactically.

Another research on processing phrasal verbs is Matlock and Heredia (2002). The authors investigated the processing of figurative phrasal verbs (e.g. Paul went over the exam with his students) and their identical verb-preposition combinations used literally (e.g. Paul went over the bridge with his bicycle). Matlock and Heredia (2002) found that native speakers of English accessed idiomatic phrasal verbs more quickly than their identical verb-preposition combinations used literally. For the nonnative group, on the other hand, there were no significant differences in reading times for figurative phrasal verbs over literal verb-preposition combinations. The mainly studies on phrasal verbs are summarized in Table 1.

Table 1
Studies on Phrasal Verbs.

Study	Objective	Participants	Task	Results
Matlock and Heredia (2002)	They investigated how English monolinguals and bilinguals access lexical forms. (e.g. call on – John called on the student or John called on the third floor).	Experiment 1: seventy-six participants – 50 monolinguals and 26 bilinguals. Experiment 2: fifty-seven participants – 22 monolinguals and 35 bilinguals	Experiment 1: complete sentences (e.g. John ate up _____) Experiment 2: online reading task (e.g. Paul went over the bridge with his bicycle/ Paul went over the exam with his students)	The results suggest processing differences between bilinguals and monolinguals in the tasks. The results are in line with avoidance of phrasal verbs.
Liao and Fukuya (2004)	They investigated whether Chinese avoid using phrasal verbs, specifically figurative versus literal phrasal verbs.	Of the eighty-five participants, forty were intermediate Chinese learners; thirty were advanced graduate students and fifteen undergraduate native speakers of English in China.	Three elicitation tests were designed a multiple-choice test, a translation test and a recall test, which would verify whether and to what extent Chinese learners of English would avoid phrasal verbs.	The results showed the avoidance of phrasal verbs due to semantic difficulty.
Cappelle, Shtyrov and Pulvermuller (2010)	The authors investigated (1) the lexical or syntactic status of the link between verb and particle; (2) The meaning of phrasal verbs is critical for their linguistic status.	Twenty-one participants – native British English Speakers.	They used magneto-encephalography (MEG) to record neural responses to verb-particle pairs that were congruent (for example, heat up) or incongruent (for example, heat down).	The authors concluded that at a neural level, participants process phrasal verbs lexically rather than syntactically.

As it is mentioned above, studies on processing of idioms will be reviewed in order to provide further insights on the processing of phrasal verbs. Siyanova-Chanturia, Concklin and Schmitt (2011) investigated how idioms are processed online in a first and second language. The authors used an eye-tracking method and two types of analysis, the study examines idiom comprehension with respect to, first, idiom vs. novel phrase comprehension, and, second figurative vs. literal meaning processing by native and nonnative speakers. The research question of the study was whether the literal or figurative meaning of an idiom would be activated more quickly than the meaning of novel phrases. Siyanova-Chanturia, Concklin and Schmitt (2011) predicted that the native speaker group of English should show a processing advantage for idioms over matched novel phrases. Second, they hypothesized that native participants would read the figurative idioms more quickly than they would read literal idioms. Regarding the nonnative speaker group, the authors expected that this group would process idioms in a similar manner to natives, and that this group would have a similar processing advantage for idioms over novel strings of language.

There were three lists in Siyanova-Chanturia, Concklin and Schmitt's (2011) study. Each list contained 21 items: seven idioms used figuratively, seven used literally, and seven novel phrases. The participant did not see more than one version of the same phrase. The results showed that proficient nonnative speakers did not process idioms more quickly than novel phrases. In addition, nonnatives required more time to retrieve figurative meanings of idioms than literal ones, even when the context biases the reader towards the figurative interpretation. As regards native speakers, they read idiom faster than novel language. At last, native speakers did not process the low frequency literal meaning of an idiom differently from the high frequency figurative one, in the presence of a preceding disambiguating context.

The next section will present the Graded Salience Hypothesis and the Literal-Salient Resonant Model in order to explain the literal and figurative language processing.

2.3 LITERAL AND FIGURATIVE LANGUAGE PROCESSING

The models selected for this review have to do with literal and figurative language processing and offer explanations and predictions for language processing. Two proposals will be addressed, the Graded Salience Hypothesis (Giora, 1997; 2002) and the Literal-Salience

Resonant Model of L2 idiom comprehension, proposed by Cieślicka (2006). Both models assume that salient meanings are frequent, familiar, conventional and processed fast. However, there are differences between the models and they will be discussed as follows.

According to Giora (1997, p. 186), the Graded Salience Hypothesis makes three assumptions. The first assumption is that salient interpretation has priority over less salient interpretation, which means that salient meanings will be processed faster than less salient meanings. The second assumption is that a novel interpretation of a salient meaning is interpreted sequentially, that is, the salient meaning is processed first, rejected as the intended meaning, and reinterpreted. The more salient the (reinterpreted) language, the easier it is to accept the intended meaning. Finally, the third assumption has to do with novel interpretation, in which novel interpretation is difficult to derive as it requires contextual support for its derivation. These assumptions are valid to literal and figurative language. In the Graded Salience Hypothesis, the prediction of ease of comprehension depends on the degree of salience of a certain meaning in a certain context. Still according to the Graded Salience Hypothesis, salient meanings (literal or figurative) should be processed first. This means that the alternative interpretation will be processed in parallel and the novel interpretation will be processed sequentially (Giora, 1997, p.187).

Giora (1997) explains that literal language has no priority over figurative language, in other words, figurative language is processed directly without the interference of the literal meaning. Both literal and figurative language need the same complex comprehension processes and contextual support to be understood. In order to be a salient meaning, a word or an utterance needs to be familiar, frequent or conventional in a certain context. Although context may affect initial comprehension of a certain meaning, it has a limited role. That is, context does not inhibit salient meanings, it runs in parallel with lexical processes (Giora, 2002, p.490). Given that, a word which has two meanings, for instance, will be processed according to the familiarity and frequency factors, which means that, the more popular or frequent the meaning is, the more salient it will be. According to Giora (1997), there is evidence from eye-tracking measures that regardless of the bias of a prior context in favor of the less salient meaning, participants take longer to read it than its control word. This finding may indicate that a word's salient meaning is activated faster than the less salient/nonsalient meaning. Therefore, salient meanings cannot be bypassed.

According to Giora (2002, p.491) “salience is a matter of degree”. That is, salient meanings are determined by their frequency of use and their familiarity to a certain community. Giora (2002) states that salient meanings will be processed first, less-salient meanings will lag behind and nonsalient meanings will demand extra inferential processes as well as contextual support.

There are some factors, mentioned above, which are directly related to salience. These are:

(1) Frequency: in which the more frequent the meaning, the faster it is to be retained.

(2) Familiarity: familiarity hinges on the individual experience and the more familiar the meaning, the faster it is to be retained.

(3) Conventionality: conventionality has to do with the item being conventional in a community, being used with regularity, and being implicitly agreed in a certain situation. The more conventional the meaning, the faster it is to be retained.

(4) Prototypicality: in which there is a preference to access a prototypical over a marginal meaning of a category (e.g. the word bird is related to sparrow (prototypical meaning) and not to chicken (marginal meaning) (Giora, 2003, p. 16 and 17).

Based on Giora’s Graded Salience Hypothesis (1997, 1999, 2002, 2003), Cieślicka (2006) proposed the Literal-Salience Resonant Model of L2 idiom comprehension, which assumes that the literal meanings enjoy a more salient status than figurative meanings. That is, literal meanings have a higher salience status in online idiom processing. According to this literal salience major assumption, L2 learners process literal meanings faster than figurative meanings regardless of context, familiarity and figurative interpretation.

Cieślicka (2006) used a cross-modal lexical priming experiment with 43 advanced Polish learners of English to investigate L2 idiom comprehension. Her results suggested that “more priming for visual targets related to literal meanings of idiom constituent words than for targets related figuratively to the metaphoric interpretation of the idiomatic phrase” (p. 115). These findings are in line with the compositional models of idiom processing, which pose that idiomatic expressions are analyzed literally.

Cieślicka (2006) and Giora (1997, 1999, 2002, 2003) state that salient meanings will be activated first and processed faster than nonsalient meanings in the course of idiom processing. Specifically, Giora’s hypothesis postulates that regardless of literal or figurative

meaning, the salient meaning will be activated first. On the other hand, Cieślicka's assumption poses that literal meanings will be activated faster than figurative meanings. That is, for L2 learners literal meanings will always be more salient than figurative meanings.

According to Cieślicka (2006) salient meanings are activated first due to the fact that "their representations in the mental lexicon are much more strongly encoded than those of the less salient meanings" (p.121). Additionally, the author goes on to say that literal salience has to do with the way L2 learners acquire the L2 language, that is, they first encounter literal meanings through formal instruction, and then have contact with figurative meanings. Therefore, literal meanings are already established in the mental lexicon, which facilitates the access to them and their processing.

Moreover, Cieślicka (2006) suggests that L1 processing of literal and figurative idiom is different from L2 processing. L2 learners are more familiar with literal meanings than figurative ones in fixed phrases because literal meanings are more frequently used than figurative ones in an L2 learner's performance. According to the author, an L2 learner's difficulty to process figurative language does not have to do with the familiarity issue as long as literal salience in L2 idiom processing is related to lexical representation in the L2 learners' mental lexicon and the course of acquisition of this specific item.

To conclude, this review attempted to raise important issues related to phrasal verbs and their controversial nature. This chapter also presented the Graded Salience Hypothesis and the Literal-Salient Resonant Model, which address literal and figurative language processing.

The method adopted to conduct this study will be presented in the next chapter.

3 METHOD

The present chapter outlines the method adopted to carry out this study. The chapter is organized into seven sections. Section 3.1 presents the objectives and the research questions of the present study. Section 3.2 presents the participants and Section 3.3 the instruments used in the study. Section 3.4 gives an overview of the eye-tracking method and a justification for using this technique in the present study. Section 3.5 provides a summary of the procedures. Section 3.6 reports the pilot study. Finally, section 3.7 shows the procedures for data analysis.

The current project was submitted to CEPESH/UFSC in December 2014 and was approved in January 2015 under number 39941314.3.0000.5361, in accordance with Conselho Nacional de Saúde (National Health Council) resolution 466/2012.

3.1 OBJECTIVES AND RESEARCH QUESTIONS

The main objective of the present study was to investigate the online processing of phrasal verbs in an L2. In order to do so, first, it was verified whether there were differences between the processing of phrasal verbs and lexical verbs, and second, whether there were differences in the processing of figurative phrasal verbs versus literal phrasal verbs by non-native speakers of English as L2.

Based on the objectives cited previously, this study addressed the following research question:

Research Question 1: How do both Brazilian learners of English as L2 and native speakers of English process figurative phrasal verbs in comparison to literal phrasal verbs, and phrasal verbs in comparison to lexical verbs?

In order to answer this research question and based on the literature (Ciéslicka, 2006; Giora, 2002; 1997), the following hypotheses were examined:

Hypothesis 1: Lexical verbs will be more salient than phrasal verbs. There is a greater cost in the processing of phrasal verbs than lexical verbs. The number of fixations, total reading time and the first pass reading time on phrasal verbs will be greater than the number of fixations, total reading time, and the first pass reading time on lexical verbs region.

Hypothesis 2: Literal meaning will be more salient than figurative meaning. There is a greater cost in the processing of figurative phrasal verbs than literal verbs. The number of fixations, total reading time and the first pass reading time on figurative phrasal verbs will be greater than

the number of fixations, total reading time, and the first pass reading time on literal phrasal verbs.

Hypothesis 3: The experimental group (non-native speakers of English) will process figurative and literal phrasal verbs slower than the control group (native speakers of English). In other words, compared to the control group, the experimental group will display greater cost in the processing of figurative and literal phrasal verbs than native speakers of English.

3.2 PARTICIPANTS

To recruit participants, calls were posted on different social networking websites inviting nonnative advanced speakers of English, whose L1 was Brazilian Portuguese, as well as native speakers of English to participate in the study. Participants were also recruited from the campus area of the Federal University of Santa Catarina. A good number of participants responded positively to the calls, but some of them had to be excluded from the study due to the proficiency in English or problems with the eye tracking method. The eye tracking method presents some disadvantages that lead to loss of data easily. For instance, it is difficult to calibrate the eyes of the participants because sometimes there is little difference between the cornea and the pupil. Another challenge for the recording of eye movements is to keep the participant stable for a long time in the same position (Luegi, Costa and Faria, 2010).

The final pool of participants of the present study consisted of twenty volunteers, who completed all the phases of the experiment. These participants were divided into two groups:

Group 1 - Ten advanced learners of English as L2, native speakers of Brazilian Portuguese.

Group 2 - Ten native speakers of English (British English, Scottish English and American English).

The next subsections present details on these two groups in relation to age, gender, age of L2 learning, time abroad, nationality, knowledge of languages, time in Brazil and their eye features.

3.2.1 The L2 learners of English

This subsection presents the native speakers of Brazilian Portuguese, who formed the experimental group of the present study. Ten volunteer participants took part in the study (seven males). The mean age

of the group was 26 years. According to the information they provided in the biographical questionnaire (see section 3.3 and Appendix C), the participants of this group started to learn English as L2 at around the age of 10. They reported using English at home, work and university on a daily basis. All participants took the Exam English (see subsection 3.3.2 for further details), an online level test of grammar and vocabulary test, which showed they were at the advanced level of English levels C1 and C2 of the Common European Framework of Reference for Languages (CEFR). With respect to education, seven participants were undergraduate students at UFSC and three of them were graduate students. In relation to time spent abroad, six participants reported having spent at least 2 months abroad and four of them reported having never been abroad. The participants of this group had normal or corrected to normal vision - five participants were wearing glasses during the experiment, and one was wearing contact lenses. These data are summarized in Table 2.

Table 2
General information on the L2 learners of English group, Brazilian Portuguese speakers.

Participant	Age	Gender	Age of L2 learning	Level of English	Time Abroad	Glasses or Lenses
1	23	F	12	C2	2 months	Neither
2	22	M	7	C2	6 months	Lenses
3	37	M	7	C2	0	Glasses
4	25	M	8	C2	6 months	Glasses
5	35	F	11	C2	2 years	Neither
6	23	M	11	C2	0	Neither
7	19	M	9	C2	0	Neither
8	22	F	11	C1	2 months	Glasses
9	27	M	8	C1	0	Neither
10	27	M	12	C2	7 years	Glasses

3.2.2 The Native Speakers of English

This subsection presents the native speakers of English, who formed the control group of the present study. Ten volunteer participants took part of the group. The mean age of the group was 24 years (five males). Regarding their nationalities, one participant was from Scotland, one was from England and eight were from the United States of America. Considering their education, there were five undergraduate students, one master student, one PhD student, one professor, in addition to two participants who were not attending classes of any sort at the time of data collection. Most of the native speakers of English reported having little

knowledge of Portuguese. They reported having been in Brazil for 1.3 month in average, though one of them reported having been here for 2 years. The participants had normal or corrected to normal vision: during data collection, three participants were wearing either glasses or contact lenses. These data are summarized in Table 3.

Table 3
General information on the native speakers of English group.

Participant	Age	Gender	Where are you from?	Knowledge of Languages	Time in Brazil	Glasses or Lenses
11	33	M	Scotland	Portuguese	2 years	Neither
12	22	F	USA	Portuguese and Spanish	2 weeks	Neither
13	24	F	USA	Portuguese, Italian and Spanish	3 months	Both
14	21	F	England	French, Spanish and Portuguese	5 months	Neither
15	22	M	USA	Spanish and Portuguese	1 month	Neither
16	23	F	USA	Urdu, Spanish, Arabic and Portuguese	3 weeks	Glasses
17	20	F	USA	Spanish	8 days	Neither
18	18	M	USA	Spanish and Portuguese	1 week	Both
19	37	M	USA	-	1 week	Neither
20	21	M	USA	Spanish and Portuguese	4 weeks	Neither

3.3 INSTRUMENTS FOR DATA COLLECTION

Four instruments for data collection were used: (1) a Biographical Questionnaire, (2) a Proficiency Test, (3) a Phrasal Verb Posttest and (4) a Sentence Processing Task with phrasal verbs and lexical verbs. Each of them are described as follows.

3.3.1 The Biographical Questionnaire

Before completing the tasks of this study and after signing the consent form, the non-native and native participants filled out a biographical questionnaire on a computer (Toassi, 2012) (see Appendix C for Portuguese version and Appendix D for English version). The questionnaire for the non-native speakers of English is divided into three

sections to be answered by the participants: the first section requires personal information; the second section requires information about the characteristics of their eyes and the third section refers to their learning of English as an L2.

The questionnaire for the native speakers of English is divided into three sections: the first section requires general personal information; the second section requires information on participants' knowledge of languages and the learning of Brazilian Portuguese. Finally, the third section poses questions regarding the physiological characteristics of participants' eyes.

In both questionnaires, the aim is to gather personal information as well as information related to participants' linguistic experience, such as how they learned English or Portuguese as L2, the frequency and use of the languages, the length of their language learning and their experience in the country of the language in question. In relation to participants' eyes, the questions were related to the color of their eyes, eye surgery, glasses and contact lenses. Since the eyetracker requires accuracy during the recording of eye movements, individual participant properties influence in the quality of data (Holmqvist, K. et al., 2015, p.43).

3.3.2 The Proficiency Test

The proficiency test was an online grammar and vocabulary level test, which can be found on a website called Exam English⁴.

There are 15 questions in this test and at the end of the test, the participant's level is assessed according to the Common European Framework of Reference for Languages (CEFR) level (A2 to C2). The participants of the experimental group - Brazilian speakers of English as L2 - were selected according to their scores on this grammar and vocabulary test. To be included in the group, the participant should achieve the advanced (C1 or C2) levels of English.

⁴ (http://www.examenglish.com/leveltest/grammar_level_test.htm).

3.3.3 Sentence Processing Task with phrasal verbs and lexical verbs

The sentence processing task consisted of 128 sentences: 16 sentences contained figurative phrasal verbs, 16 sentences contained literal phrasal verbs, 32 sentences contained lexical verbs (one word verbs), and 64 sentences consisted of filler sentences. (See Appendix F and G for the experimental and filler sentences). The sentence processing task was designed and performed on a computer that was connected to the eye-tracker SMI RED 500 system. The phrasal verbs were selected from the Longman Phrasal Verbs Dictionary (2000), according to their frequency, transitivity, their matching with a lexical verb, and the lack of a cognate form in Brazilian Portuguese. Eighty phrasal verbs were tested in the Corpus of Contemporary American English (COCA) for their frequency. As Biber et al. (1999) suggested 40 occurrences in one million would qualify a phrasal verb as frequent. The phrasal verbs selected were also categorized as literal or figurative, according to Fraser (1966). Table 4 displays all regions of interest – phrasal verbs (figurative and literal) and lexical verbs – chosen for the experiment.

Table 4

Regions of interest - phrasal verbs (figurative and literal) and lexical verbs.

Figurative Phrasal Verb	Lexical Verb	Literal Phrasal Verb	Lexical Verb
Get to	Reach	Pick up	Lift
Hold up	Delay	Put on	Apply
Set up	Arrange	Go after	Chase
Look for	Seek	Let out	Utter
Figure out	Understand	Bring out	Release
Give up	Quit	Give away	Give
Rule out	Dismiss	Call out	Call
Point out	Show	Throw away	Waste
Get on	Board	Put back	Put
Go for	Choose	Clean out	Clean
Bring up	Raise	Breathe in	Inhale
Bring in	Earn	Put together	Assemble
Get through	Finish	Print out	Print
Look up	Search	Run after	Pursue
Get off	Leave	Pour out	Tell
Break up	End	Hang up	Hang

Following the above criteria, 16 sentences were constructed for each category of phrasal verb (figurative and literal) and for the lexical verbs. In each experimental sentence, we used three words before the region of interest (phrasal verb and lexical verb) and four to seven words after the verb. The 64 filler sentences that served as distractors were

selected from online magazines and newspapers as Marie Claire, Vogue, Cosmopolitan, The Mirror, The New York Times, Time, and Psychology Today. These sentences were adapted so that they could neither be much longer nor have the same verbs from the experimental sentences. In doing so, some filler sentences were rewritten with fewer words with their meanings maintained. Table 5 displays examples of a sentence with a figurative phrasal verb and its lexical control verb as well as an example of a sentence with a literal phrasal verb and its lexical control verb.

Table 5
Sentences with figurative and literal phrasal verbs and their lexical control verbs.

FIGURATIVE PHRASAL VERB	LEXICAL VERB
Naive teenagers frequently GIVE UP their dreams due to lack of confidence.	Naive teenagers frequently QUIT their dreams due to lack of confidence.
LITERAL PHRASAL VERB	LEXICAL VERB
Beautiful models usually PUT ON a lot of makeup during fashion shows.	Beautiful models usually APPLY a lot of makeup during fashion shows.

The sentence processing task also contained 16 yes or no comprehension questions that followed the filler sentences and 8 yes or no comprehension questions that followed the experimental sentences. In other words, 20% of the sentences were followed by a comprehension question, which the participant had to answer by clicking the left mouse button. For instance, the sentence “Hopeful athletes always run after their dreams even against all odds” was followed by the comprehension question “Do hopeful athletes always run after their dreams even against all odds?”

The objective of the comprehension questions was to make sure that the participants were processing the sentences for comprehension. The analysis of the participants’ answers to the comprehension questions show that the mean number of the correct answers of the Brazilian group was 18.7, whereas the mean number of correct answers for the group of native speakers of English was 18. These results can be seen in Table 6 and show that both groups processed the sentences for comprehension and had no difficulty in understanding the questions.

Table 6

Comprehension Questions – number of correct and wrong answers.

Participants	Group	Correct Answers	Wrong Answers
1	BP	22	0
2	BP	20	0
3	BP	18	2
4	BP	20	0
5	BP	17	1
6	BP	18	0
7	BP	18	0
8	BP	18	0
9	BP	18	2
10	BP	18	0
11	NE	17	1
12	NE	18	2
13	NE	18	0
14	NE	19	1
15	NE	17	1
16	NE	18	0
17	NE	20	0
18	NE	18	2
19	NE	19	1
20	NE	16	2

Finally, it is important to state that the sentences (experimental and filler sentences) as well as the questions were submitted to an acceptability test before the pilot study was carried out. Ten native speakers of English - 6 women and 4 men – rated the sentences and the questions on a scale from 1 (totally unacceptable) to 7 (perfectly acceptable). From raters, 7 were speakers of American English, 1 of the Irish variety and 2 of the British variety. The acceptability test can be found in Appendix H.

3.3.4 Phrasal Verb Posttest

The phrasal verb posttest consisted of 32 sentences included the 32 phrasal verbs (literal and figurative) used in the experimental sentences of the phrasal verb processing task (see Appendix E for the test). Immediately after performing the sentence processing task with phrasal verbs and lexical verbs, the participant moved to another computer in the lab, where he/she took the posttest. The aim of the test was to determine whether the participants were familiar with the meaning of the phrasal verbs. In the experimental group (Brazilians), the mean number of wrong answers was 1.7. In the control group (native speakers of English), the

mean number of wrong answers was 0.9. These results can be seen in Table 7.

Table 7

Phrasal Verb Posttest – number of correct and wrong answers.

Participants	Group	Correct Answers	Wrong Answers
1	BP	29	3
2	BP	32	0
3	BP	30	2
4	BP	31	1
5	BP	32	0
6	BP	31	1
7	BP	31	1
8	BP	26	6
9	BP	30	2
10	BP	31	1
11	NE	31	1
12	NE	30	2
13	NE	32	0
14	NE	31	1
15	NE	31	1
16	NE	32	0
17	NE	31	1
18	NE	32	0
19	NE	32	0
20	NE	29	3

These results show that the experimental group (Brazilians) had some difficulty in recognizing the meanings of phrasal verbs (figurative and literal) in comparison to the control group (native speakers of English). This issue will be discussed in the next chapter.

3.4 THE EYE-TRACKING METHOD

In the present study, the processing of phrasal verbs and lexical verbs was assessed by means of the recording of eye movements during the reading of sentences. Mitchell (2004) states that an important reason for using the eye-tracking method is that, by means of the measures recorded (e.g. fixation time, reading time, regressions, among others), they may provide information about the nature of a problem at a fixed point in a sentence.

In language processing research, the eye-tracking method can be used under two different perspectives: a) the reading processes and; b) the processing of auditory input, in which the equipment tracks the eyes as they see a visual scene on a computer screen (the so-called visual- world paradigm).

According to Rayner and Pollatsek (2006, p.613), “eye movements represent one of the best ways to study language comprehension processes”. Hence, psychologists are very interested in using eye-movement data to analyze “moment-to-moment processing” (p.613). Providing eye-movement data is relatively a natural process, since the decisions are computed on-line and the process of reading is not artificial.

In a brief summary, some descriptions of the eye movements will be given next. The rapid movements of the eyes are called saccades, whereas fixations are the periods of time when the eyes are static. Return sweeps take place when saccades move from the end of one line to the next. Regressions are backward movements when the participant is reading (Rayner and Pollatsek, 2006).

According to Rayner (1998), about 10-15% of the saccades are regressions and about 80% are extreme fixations. Rayner e Pollatsek (2006, p.621) explain that “one of the most robust findings in studies of eye movements and reading is that the ease or difficulty associated with understanding a word during reading clearly affects how long readers fixate on that word.”

To better understand eye-tracking measures and what processes are assumed to be accessed, Staub and Rayner (2012) explained that “single fixation duration” is the time spent on the region of interest on which only a single fixation was made on the target word. “Gaze duration” is the sum of the durations of all fixations on the region of interest before leaving the word. First pass reading time is the sum of all fixation durations made within a region of interest before exiting either to the left or to the right (Roberts and Siyanova-Chanturia, 2013, p.219). In addition, “total time” or “total reading time” on the region of interest is the time spent on the word including re-reading and is often reported as “go-past time,” also known as “regression path duration”, which includes all the sum of all fixation durations within the region of interest except for the first fixation to the right of this region. Fixation count is the number of all fixations made within a region of interest (Roberts and Siyanova-Chanturia, 2013, p.220). According to Staub and Rayner (2012), with multiple word regions, researchers also frequently report the percentage of trials on which readers made a regressive eye movement out of the region on their first pass through the region. It is also reported the percentage of trials on which readers made a regressive eye movement into the region of interest. Staub and Rayner (2012) state that measures such as first fixation duration and gaze duration/first pass time are often referred to as early measures, while total time and second pass time are late measures.

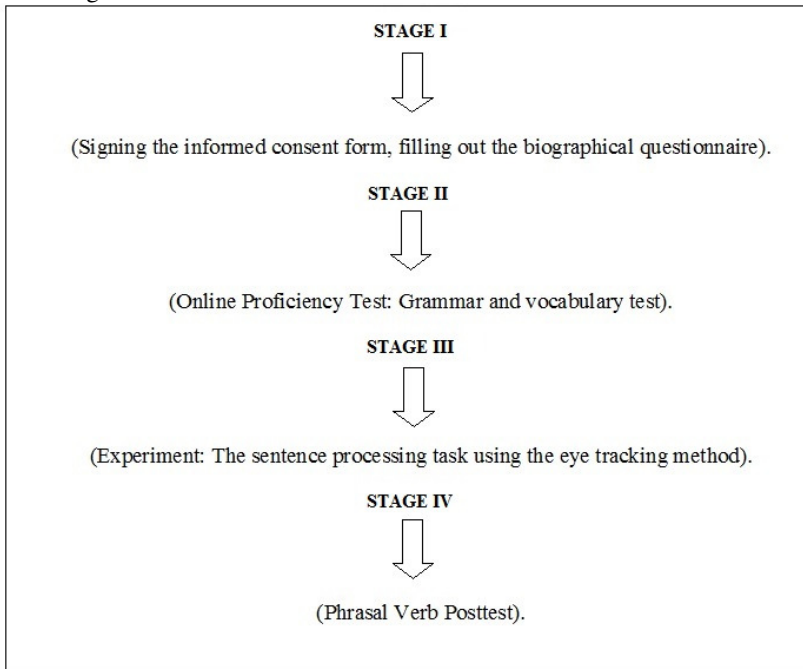
An important issue raised is the use of eye movements and eye-tracking measures to examine the processing as it happens during comprehension. With this in mind, we used three measures to examine our critical verbs: first pass reading time, total reading time and fixation count.

3.5 DATA COLLECTION PROCEDURES

The data were collected at the Laboratory of Language and Cognitive Processes (LabLing) at the Federal University of Santa Catarina (UFSC) in one session for each participant and this session has four stages. The participants were all volunteers and participated one at a time. Before the data collection started, they were asked to read and sign a term of free and informed consent form (see Appendix A and B), which contained information regarding this study. After that, they filled out the biographical questionnaire. Then, the Brazilian participants took the online proficiency test of grammar and vocabulary. Next, the participants performed the sentence processing task in the eye-tracker. During the performance of the sentence processing task, the eye tracker device (RED 500 by Sensor Motoric Instruments – SMI) recorded the participants' eyes movements. Before the experiment began, it was explained to each participant that he/she would be reading English sentences and answering comprehension questions on the computer screen as the eye tracker recorded their eye movements. The participants were told that performing the task could be uncomfortable because they could not make any sudden movements. In order to minimize possible discomfort during the task, it was made sure that the LabLing had comfortable chairs, proper lighting, temperature, and proper positioning of the computer, tailored to individual height. The participants had the opportunity to conduct a training for understanding the dynamics of the task.

Participants had their eyes calibrated before and after the practice. Participants could practice until they felt comfortable to start the testing phase. During the testing phase, each participant read ninety-six sentences divided into two lists. The sentences appeared on the screen in one line. Every five sentences, one comprehension question was presented. This task lasted about 20 minutes. As the participant finished the sentence processing task, she/he moved to another computer to take the phrasal verb posttest. The flow diagram of data collection is presented in Figure 1:

Figure 1
Flow diagram of the Data Collection Procedures.



3.6 PILOT STUDY

The pilot study was carried out after the project was approved in the Ethics Review Board in January 2015. The pilot study was conducted with eight participants, six Brazilian speakers of English as L2 and two American native speakers of English. The two groups went through four sessions. In the first stage, they signed the informed consent form and filled out the biographical questionnaire. In the second stage, the Brazilians took the online proficiency test. In the third stage, participants performed the sentence processing task in the eye-tracker. Finally, in the fourth stage, participants were required to perform the phrasal verb posttest. With regard to the knowledge of L2 English, there were five Brazilian advanced speakers of English and one upper-intermediate. The main objective of the pilot study was to test and develop the instruments before the study itself. With this in mind, only one experimental sentence was changed.

3.8 DATA ANALYSIS PROCEDURES

Once all the data were collected, the results of the biographical questionnaire along with the results of the phrasal verb posttest were reported. In relation to the sentence processing task using the eye tracking method, the regions of interest on the critical verbs (phrasal verbs and lexical verbs) were specified. The rectangular, where the regions of interest were displayed, had about 40 pixels of length. Figure 2 illustrates a reading path of a participant's eyes while reading an experimental sentence.

Figure 2
Illustration of reading path.

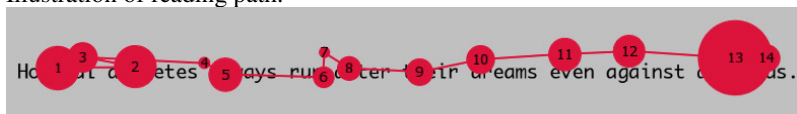


Figure 2 shows that the participant read the sentence 'Hopeful athletes always run after their dreams even against all odds'. The region of interest is 'run after' and it can be seen that the participant fixated it 3 times (6, 7 and 8). The circles represent the fixation and the size of the circles represents the time length of the fixation. All the sentences with phrasal verbs and lexical verbs were analyzed with the software iView X and Experiment Center of SMI. The software BeGaze obtained data of the first pass reading time, total reading time and fixation count on the region of the interest.

For each target, the following measures were examined:

1. First pass reading time: the sum of all fixation durations made within a region of interest before exiting either to the left or to the right (Roberts and Siyanova-Chanturia, 2013, p.219).
2. Total reading time: the sum of all fixation durations made within a region of interest (Roberts and Siyanova-Chanturia, 2013, p.219).
3. Fixation count: the number of all fixations made within a region of interest (Roberts and Siyanova-Chanturia, 2013, p.220).

As the data was extracted from the software BeGaze, these were organized in charts in Excel. Since the size of the critical verbs did not

match, it was necessary to divide the measures used (first pass reading time and total reading time) by the number of the characters of each verb (phrasal verb and lexical verb).

The data were also analyzed quantitatively using the Statistical Package for the Social Sciences (SPSS) version 20. As regards the statistical tests, T-tests and ANOVAs were used to compare the differences between the two groups (non-native and native speakers of English).

The results of this experiment will be presented and discussed in the next chapter.

4 RESULTS AND DISCUSSION

This chapter presents the results obtained in the present study as well as a discussion on how phrasal verbs and lexical verbs are processed by nonnative speakers of English (native speakers of Brazilian Portuguese) and native speakers of English, in light of the Graded Salience Hypothesis (2002) and the Literal-Salience Resonant Model (2006). This chapter is divided into five sections. Section 4.1 presents the results of the descriptive statistical analysis of the present study. Section 4.2 presents the inferential analysis of the results. Section 4.3 provides the design for the statistical analysis as well as the statistical tests run in the present study. Section 4.4 reports the statistical tests overview. Finally, section 4.5 readdresses the research question and hypotheses as well as discusses the results of the present study.

4.1 DESCRIPTIVE ANALYSIS

Tables 8, 9, and 10 provide the mean first pass reading time, the mean total reading time and the mean fixation count respectively in each condition for all participants. Likewise, Figures 3, 4 and 5 illustrate the mean first pass reading time, the mean total reading time, and the mean fixation count respectively in each condition for all participants. Although there were some extreme scores in our data set, none was excluded from the analysis.

As already stated in the method, the mean fixation count variable has been used to indicate how many times the critical region was fixated. Nevertheless as Roberts and Siyanova-Chanturia (2013, p.220) stated, fixation count is not a measure of processing. Thereby, mean fixation count will only be used in the descriptive analysis, and in the inferential statistical tests, it will not count as a dependent variable.

Table 8
Mean first pass reading time (in ms) on figurative phrasal verbs, literal phrasal verbs and their control verbs, averaged per character.

Participant	Group	FP – Figurative PV	FP – Control FLV	FP – Literal PV	FP – Control LLV
1	BP	65.18	40.71	68.73	45.45
2	BP	47.04	52.28	45.68	61.09
3	BP	33.45	22.83	36.17	47.13
4	BP	68.98	58.90	79.54	96.23
5	BP	80.11	66.23	87.44	64.13
6	BP	42.78	42.58	49.15	51.90
7	BP	62.66	57.85	64.59	67.57
8	BP	96.33	76.94	79.22	101.09
9	BP	55.02	48.22	66.18	45.74
10	BP	81.72	65.62	43.63	58.42
11	NE	66.83	66.94	57.31	52.21
12	NE	73.30	53.55	57.94	56.52
13	NE	28.23	29.23	32.07	41.23
14	NE	76.16	44.28	72.86	57.79
15	NE	39.28	39.15	32.59	31.24
16	NE	56.87	58.90	48.46	58.21
17	NE	48.21	24.30	46.39	47.82
18	NE	52.68	40.39	49.84	64.23
19	NE	63.19	43.73	65.75	64.39
20	NE	48.23	57.70	46.08	45.81

Note. BP = Nonnative speakers of English; NE = Native speakers of English; FP = First Pass Reading Time; PV = Phrasal Verb; FLV = Figurative Lexical Verb; LLV = Literal Lexical Verb.

Table 8 presents the mean first pass reading time on regions of interest (FPV, FLV, LPV, LLV) for 10 nonnative speakers of English (BP) and 10 native speakers of English (NE). Most of participants' time was longer on figurative phrasal verbs compared to their control verbs. Eleven participants (7 from the experimental group and 4 from the control group) took a longer time to process lexical verbs (control verbs of literal phrasal verbs) than literal phrasal verbs. In fact, there was an extreme score for participant P8(101.09) on the lexical verbs (control verbs of literal phrasal verbs).

Table 9 shows the mean total reading time on regions of interest for native speakers of English (NE) and nonnative speakers of English (BP).

Table 9
 Mean Total Reading Time (in ms) on figurative phrasal verbs, literal phrasal verbs and their control verbs, averaged per character.

Participant	Group	FT – Figurative PV	FT – Control FLV	FT – Literal PV	FT – Control LLV
1	BP	96.06	48.37	73.02	52.80
2	BP	75.96	58.06	59.13	61.25
3	BP	37.92	41.05	50.26	47.24
4	BP	123.68	69.18	82.48	96.34
5	BP	82.29	80.20	90.40	67.08
6	BP	64.96	42.69	71.11	54.67
7	BP	67.07	75.72	71.01	70.99
8	BP	122.27	103.28	98.29	117.24
9	BP	91.77	65.30	68.92	57.55
10	BP	117.52	65.68	58.25	63.16
11	NE	68.16	74.13	65.14	61.41
12	NE	83.12	63.97	72.18	71.70
13	NE	44.90	34.38	34.82	41.29
14	NE	85.30	65.57	81.29	64.49
15	NE	44.07	45.96	36.44	31.30
16	NE	71.73	63.13	48.53	61.92
17	NE	52.73	24.35	46.44	47.93
18	NE	55.66	70.31	84.09	70.84
19	NE	63.27	59.92	76.21	64.50
20	NE	59.35	77.20	63.36	45.84

Note. BP = Nonnative speakers of English; NE = Native speakers of English; FT = Total Reading Time; PV = Phrasal Verb; FLV = Figurative Lexical Verb; LLV = Literal Lexical Verb.

Table 9 presents the mean total reading time on regions of interest (FPV, FLV, LPV, LLV) for 10 nonnative speakers of English (BP) and 10 native speakers of English (NE). Participants' processing time for figurative phrasal verbs was longer than for lexical verbs. Similarly, participants' processing time for literal phrasal verbs was longer than for lexical verbs. Although the groups (experimental and control groups) had a similar performance, there were some extreme scores for participants P4(96.34) and P8(117.24) on the lexical verbs (control verbs of literal phrasal verbs).

Table 10 shows the mean fixation count on regions of interest for native speakers of English (NE) and nonnative speakers of English (BP).

Table 10
 Mean Fixation Count on figurative phrasal verbs, literal phrasal verbs and their control verbs, averaged per character.

Participant	Group	FC – Figurative PV	FC – Control FLV	FC – Literal PV	FC – Control LLV
1	BP	2.63	1.38	2.13	1.38
2	BP	2.38	1.75	2.50	1.25
3	BP	1.50	1.38	1.88	1.25
4	BP	3.25	1.88	2.63	2.00
5	BP	2.25	1.50	2.13	1.50
6	BP	1.75	0.88	2.25	1.13
7	BP	2.00	1.38	2.13	1.50
8	BP	2.88	1.38	2.50	2.13
9	BP	1.75	1.50	1.75	1.38
10	BP	2.63	1.25	1.88	1.25
11	NE	1.63	1.25	1.63	1.25
12	NE	2.00	1.63	1.88	1.50
13	NE	1.50	0.88	1.50	1.00
14	NE	2.13	1.63	2.38	1.13
15	NE	1.38	1.13	1.38	0.75
16	NE	2.00	1.25	1.75	1.63
17	NE	1.38	0.75	1.25	1.25
18	NE	1.75	2.38	2.88	1.25
19	NE	1.50	1.63	2.13	1.13
20	NE	1.88	1.50	2.38	1.25

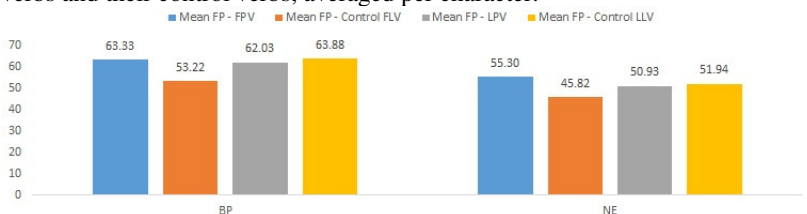
Note. BP = nonnative speakers of English; NE = native speakers of English; FC = Fixation Count; PV = Phrasal Verb; FLV = Figurative Lexical Verb; LLV = Literal Lexical Verb.

Table 10 presents the mean fixation count on regions of interest (FPV, FLV, LPV, LLV) for 10 nonnative speakers of English (BP) and 10 native speakers of English (NE). For all participants in both groups (experimental and control groups), the number of fixations was higher on figurative phrasal verbs and literal phrasal verbs than on lexical verbs. There were some extreme scores for participants P2(1.75) and P4(1.88) on the control verbs of figurative phrasal verbs and for participants P4(2.00), P8(2.13), P12(1.50) and P16(1.63) on the control verbs of literal phrasal verbs.

Next, Figure 3 shows the mean first pass reading time on regions of interest for native speakers of English (NE) and nonnative speakers of English (BP).

Figure 3

Mean first pass reading time (in ms) on figurative phrasal verbs, literal phrasal verbs and their control verbs, averaged per character.



Note. FPV = Figurative Phrasal Verb; FLV = Figurative Lexical Verb; LPV = Literal Phrasal Verb; LLV = Literal Lexical Verb; BP = Nonnative Speakers of English; NE = Native Speakers of English.

As can be seen in Figure 3, the mean first pass reading time on the region of figurative phrasal verbs (FPV) was 63.33 (SD = 19.42) for the experimental group (BP) and 55.30 (SD = 15.10) for the control group (NE). On the region of literal phrasal verbs (LPV), the mean first pass reading time was 62.03 (SD = 17.50) for BP and 50.93 (SD = 13.05) for NE, respectively. On the region of lexical verbs (FLV) which control the figurative phrasal verbs, the mean first pass reading time was 53.22 (SD = 15.48) for BP and 45.82 (SD = 13.48) for NE. Finally, on the region of lexical verbs (LLV) which control the literal phrasal verbs, the mean first pass reading time was 63.88 (SD = 19.93) for BP and 51.94 (SD = 10.53) for NE.

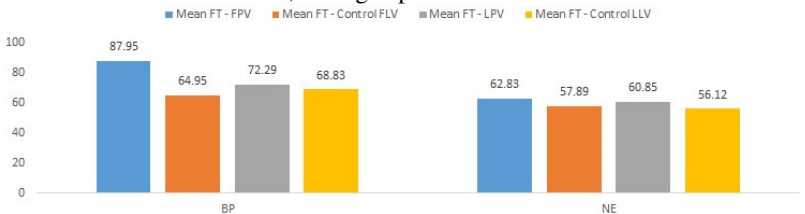
The results presented in Figure 3 suggest that, for the experimental group (BP) the mean first pass reading time on figurative phrasal verbs was longer than on lexical verb. As opposed to the results of figurative phrasal verbs, participants of the experimental group read literal phrasal verbs faster than lexical verbs. In the comparison between literal phrasal verbs and figurative phrasal verbs, the experimental group devoted more time processing figurative phrasal verbs than literal phrasal verbs. Likewise, the control group (NE) took longer to process figurative phrasal verbs than lexical verbs. Additionally, participants of the NE devoted more time processing lexical verbs than literal phrasal verbs. In the comparison between literal phrasal verbs and figurative phrasal verbs, the control group read literal phrasal verbs faster than figurative phrasal verbs. Therefore, native speakers of English (NE) and nonnative speakers of English (BP) had a similar performance in the processing of figurative and literal phrasal verbs versus lexical verbs. All participants' first pass reading time suggests an advantage in the processing of lexical verbs over figurative phrasal verbs. On the other hand, all participants' first pass reading time suggests an advantage in the processing of literal phrasal

verbs over lexical verbs. Figure 3 also shows that, the experimental group devoted more time processing figurative phrasal verbs than the control group. In addition, the experimental group's first pass reading time on literal phrasal verbs was longer than that of the control group.

Next, Figure 4 shows the mean total reading time on regions of interest for both groups (experimental and control groups).

Figure 4

Mean total reading time (in ms) on the figurative phrasal verbs, literal phrasal verbs and their control verbs, averaged per character.



Note. FPV = Figurative Phrasal Verb; FLV = Figurative Lexical Verb; LPV = Literal Phrasal Verb; LLV = Literal Lexical Verb; BP = Nonnative Speakers of English; NE = Native Speakers of English.

As can be seen in Figure 4, the mean total reading time on the region of figurative phrasal verbs (FPV) was 87.95 (SD = 27.99), for the experimental group (BP), and 62.83 (SD = 14.38), for the control group (NE). On the region of literal phrasal verbs (LPV), the mean total reading time was 72.29 (SD = 14.82) for BP and 60.85 (SD = 18.19) for NE, respectively. On the region of lexical verbs (FLV) which control the figurative phrasal verbs, the mean total reading time was 64.95 (SD = 18.93) for BP and 57.89 (SD = 17.44) for NE. Finally, on the region of lexical verbs (LLV), which serves as control of the literal phrasal verbs, the mean total reading time was 68.83 (SD = 21.72) for BP and 56.12 (SD = 13.62) for the NE, respectively.

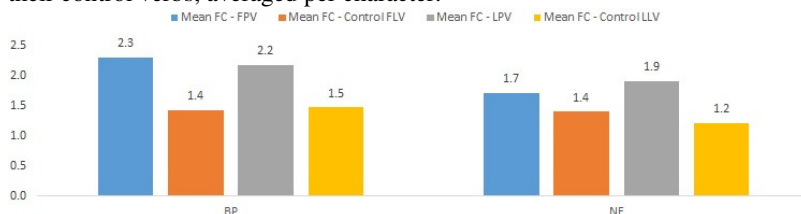
The results shown in Figure 4 suggest that the mean total reading time on figurative phrasal verbs was longer than on lexical verbs for the experimental group (BP). In addition, participants of the experimental group read literal phrasal verbs slower than lexical verbs. In the comparison between literal phrasal verbs and figurative phrasal verbs, the experimental group devote more time processing figurative phrasal verbs than literal phrasal verbs. Similar to the experimental group, the control group (NE) read figurative phrasal verbs slower than lexical verbs. Likewise, participants of the control group devote more time processing literal phrasal verbs than lexical verbs. In the comparison between literal

phrasal verbs and figurative phrasal verbs, the control group read literal phrasal verbs faster than figurative phrasal verbs. Consequently, native speakers of English (NE) and nonnative speakers of English (BP) had a similar performance in the processing of figurative and literal phrasal verbs versus lexical verbs. All participants' total reading time suggests an advantage in the processing of lexical verbs over figurative and literal phrasal verbs. When comparing the BP to the NE, Figure 4 also shows that the experimental group devoted more time processing figurative phrasal verbs than the control group. Moreover, the control group's total reading time on literal phrasal verbs was shorter than that of the experimental group.

Next, Figure 5 shows the mean fixation count on regions of interest for the BP and the NE.

Figure 5

Mean fixation count on the figurative phrasal verbs, literal phrasal verbs and their control verbs, averaged per character.



Note. FPV = Figurative Phrasal Verb; FLV = Figurative Lexical Verb; LPV = Literal Phrasal Verb; LLV = Literal Lexical Verb; BP = Nonnative Speakers of English; NE = Native Speakers of English.

As can be seen in Figure 5, the mean fixation count on the region of figurative phrasal verbs (FPV) was 2.3 ($SD = 0.5$) for the experimental group (BP) and 1.7 ($SD = 0.2$) for the control group (NE). On the region of literal phrasal verbs (LPV), the mean fixation count was 2.2 ($SD = 0.2$) for BP and 1.9 ($SD = 0.5$) for NE, respectively. On the region of lexical verbs (FVL) which control the figurative phrasal verbs, the mean fixation count was 1.4 ($SD = 0.2/0.4$) for both groups (experimental and control groups). Finally, on the region of lexical verbs (LLV) which control the literal phrasal verbs, the mean fixation count was 1.4 ($SD = 0.3$) for BP and 1.2 ($SD = 0.2$) for NE.

The results shown in Figure 5 suggest that the mean fixation count on figurative phrasal verbs was higher than on lexical verbs for the experimental group (BP). Likewise, participants of the experimental group fixated literal phrasal verbs more than lexical verbs. When comparing literal phrasal verbs and figurative phrasal verbs, the

experimental group devoted more time fixating figurative phrasal verbs than literal phrasal verbs. Similar to the experimental group, the control group (NE) fixated figurative phrasal verbs more than lexical verbs. Likewise, participants of the control group devoted more time fixating literal phrasal verbs than lexical verbs. In the comparison between literal phrasal verbs and figurative phrasal verbs, the control group fixated literal phrasal verbs less than figurative phrasal verbs. Consequently, the NE and the BP had a similar performance in the processing of literal and figurative phrasal verbs versus lexical verbs. All participants' fixation count suggests a higher number of fixations on figurative phrasal verbs and literal phrasal verbs than on lexical verbs. When comparing the BP to the NE, Figure 5 also shows that the experimental group devoted more time fixating figurative phrasal verbs than the control group. In addition, the control group's fixation count on literal phrasal verbs was shorter than that of the experimental group.

Next, the inferential analysis of the results of the present study is provided.

4.2 INFERENTIAL ANALYSIS

Table 11 presents the results of the Kolmogorov-Smirnov Test, run to determine whether the data of the sentence processing task was normally distributed.

Table 11
Kolmogorov-Smirnov Test.

	Group	Kolmogorov-Smirnov		
		Statistic	df	Sig.
First Pass Reading Time – Figurative PV	BP	.106	10	.200
	NE	.119	10	.200
First Pass Reading Time – Literal PV	BP	.169	10	.200
	NE	.155	10	.200
First Pass Reading Time – Control FLV	BP	.118	10	.200
	NE	.145	10	.200
First Pass Reading Time – Control LLV	BP	.226	10	.157
	NE	.168	10	.200
Total Reading Time – Figurative PV	BP	.155	10	.200
	NE	.121	10	.200
Total Reading Time – Literal PV	BP	.180	10	.200
	NE	.155	10	.200
Total Reading Time – Control FLV	BP	.112	10	.200
	NE	.246	10	.087
Total Reading Time – Control LLV	BP	.260	10	.053
	NE	.251	10	.074

The results presented in Table 11 show that the assumptions of normality were met. In other words, the data of the present study is normally distributed. Consequently, the statistical tests used in this study were parametric tests.

4.3. STATISTICAL TESTS

The design chosen to analyze the data of the sentence processing task was between-group participants and within-participants in each group. Since there were two groups (Nonnative Speakers of English and Native Speakers of English), this design would allow for the analysis of each participant's time (first pass reading time and total reading time) on the four conditions (figurative and literal phrasal verb and their control verbs). The dependent variables were first pass reading time and total reading time. The independent variables were the groups (BP and NE) and the types of verbs (figurative phrasal verbs, literal phrasal verbs and lexical verbs). Table 12 presents the design for the statistical analysis:

Table 12
The design for the statistical analysis.

DEPENDENT VARIABLES	INDEPENDENT VARIABLES	
2	1	1
First Pass Reading Time Total Reading Time	BETWEEN GROUPS Between-groups variable: 1) Group a) Adult nonnative speaker of English (BP) b) Adult native speaker of English (NE)	WITHIN GROUPS Within-groups variable: 1) Verb Type a) Figurative Phrasal Verb (FPV) b) Literal Phrasal Verb (LPV) c) Control - Figurative Lexical Verb (FLV) d) Control - Literal Lexical Verb (LLV)

A One-way ANOVA and a Repeated Measures ANOVA were run in order to assess how much variance of the dependent variable can be accounted for by the independent variable. In addition, independent sample T-tests and paired sample T-tests were run in order to investigate the differences between groups and within participants. In order to avoid Type I error (Dancey and Reidy, 2007, p.309), because of the multiple comparisons, the alpha level (0.05) was divided by the number of comparisons carried out. The next subsections provide the statistical results of the data set.

4.3.1 One-Way ANOVA

A One-Way ANOVA was run in order to check whether there were differences between groups (BP x NE). Table 13 displays the results of the dependent variable first pass reading time (FP) on all conditions (figurative and literal phrasal verbs and their controls) and Table 14 presents the results of the dependent variable total reading time (FT) on all conditions (figurative and literal phrasal verbs and their controls).

Table 13
One-way ANOVA – First Pass Reading Time.

FIRST PASS READING TIME					
	Sum of Squares	df	Mean Square	F	Sig.
Between groups	1849.084	1	1849.084	7.466	.008
Within groups	19317.561	78	247.661		
Total	21166.645	79			

As can be seen in Table 13, there was a statistically significant difference between the groups BP (nonnative speakers of English) and NE (native speakers of English) on the first pass reading time variable ($F(1,78) = 7.466, p = .008$). That is, compared to the native speakers of English, the nonnative speakers of English took longer to fixate all regions of interest the first time they encountered these regions, and this difference is statistically significant.

Table 14 presents the results of One-way ANOVA of the dependent variable total reading time on all regions of interest.

Table 14
One-way ANOVA – Total Reading Time.

TOTAL READING TIME					
	Sum of Squares	df	Mean Square	F	Sig.
Between groups	3966.172	1	3966.172	10.639	.002
Within groups	29077.084	78	372.783		
Total	33043.256	79			

As can be seen in Table 14, there was a statistically significant difference between the groups BP (nonnative speakers of English) and NE (native speakers of English) on the total reading time variable ($F(1,78) = 10.639, p = .002$). This finding can be interpreted as evidence that the nonnative speakers of English, compared to native speakers of English, may have spent time recovering from processing difficulties on all regions of interest, and this difference is statistically significant.

Next, the results of Repeated-Measures ANOVA are presented.

4.3.2 Repeated-Measures ANOVA

A Repeated-Measures ANOVA was carried out with a view to comparing all the conditions (figurative and literal phrasal verb and their

controls) within the participants in each group (nonnative speakers of English (BP) and native speakers of English (NE)). Table 15 presents the mean first pass reading time on all conditions and Table 16 shows the mean total reading time on all conditions.

Table 15
Repeated Measures ANOVA – Mean First Pass Reading Time.

Verb Type (I)	Verb Type (J)	Mean Difference (I-J)	Std. Error	Sig.
FPV	FLV - CONTROL	9.797	2.592	.008*
	LPV	2.833	2.572	1.000
	LLV - CONTROL	1.403	3.173	1.000
LPV	FPV	-2.833	2.572	1.000
	FLV - CONTROL	6.964	3.346	.312
	LLV - CONTROL	-1.429	3.098	1.000

Note. *p < .05; FPV = Figurative Phrasal Verb; FLV = Figurative Lexical Verb; LPV = Literal Phrasal Verb; LLV = Literal Lexical Verb.

Concerning the first pass reading time variable, after the Greenhouse-Geisser correction, the results of the Repeated Measures ANOVA revealed a significant difference between the conditions ($F(2,48) = 4.16, p = 0.013$) and an effect size of 0.188, showing that 18% of the variation is due to the type of the conditions (FPV, LPV and their controls). Pairwise comparisons showed that the difference between the figurative PV and its control verb was statistically significant (mean difference = 9.797, $p = 0.008$), whereas there was no significant difference between the literal PV and its control verb (mean difference = -1.429, $p = 1.000$). Similarly, there was no statistically significant difference between figurative and literal PV (mean difference = 2.833, $p = 1.000$). Together, these results can be interpreted as evidence that the figurative phrasal verb presented a processing cost for the participants in both groups (experimental and control groups). In other words, all participants took longer to process figurative phrasal verbs for the first time they encountered this type of verb. This finding may indicate that figurative phrasal verbs may present a cost to be processed initially that is different from that imposed by literal phrasal verbs and lexical verbs.

Table 16 presents the results of Repeated Measures ANOVA of the dependent variable total reading time on all regions of interest.

Table 16
Repeated Measures ANOVA – Mean Total Reading Time.

Verb Type (I)	Verb Type (J)	Mean Difference (I-J)	Std. Error	Sig.
FPV	FLV - CONTROL	13.968	4.313	.027*
	LPV	8.822	4.338	.342
	LLV - CONTROL	12.913	3.590	.012
LPV	FPV	-8.822	4.338	.342
	FLV – CONTROL	5.146	2.937	.581
	LLV - CONTROL	4.091	2.771	.942

Note. * $p < .05$; FPV = Figurative Phrasal Verb; FLV = Figurative Lexical Verb; LPV = Literal Phrasal Verb; LLV = Literal Lexical Verb.

Regarding the total reading time variable, the results of Repeated Measures ANOVA, after the Greenhouse-Geisser correction, revealed a statistically significant difference between conditions ($F(2,41) = 6.393$, $p = 0.003$) and an effect size of 0.262, showing that 26% of the variation is due to the type of condition (FPV, LPV and their controls). Pairwise comparisons showed that the difference between the figurative PV and its control verb was statistically significant (mean difference = 13.968, $p = 0.027$), whereas there was no significant difference between the literal PV and its control verb (mean difference = 4.091, $p = 0.942$). Similarly, there was no statistically significant difference between figurative and literal PV (mean difference = 8.822, $p = 0.342$). These results can be interpreted as evidence that the figurative phrasal verb presented a processing cost for the participants in both groups (experimental and control groups). That is, for all participants, the sum of all fixations durations was higher for figurative phrasal verbs than for literal phrasal verbs and lexical verbs, which may be an indication that this type of verb imposes a cost to be processed that is different from that imposed by literal phrasal verbs and lexical verbs.

Next, the results of Independent T-tests are presented.

4.3.3 Independent T-tests

This subsection reports the results of the independent T-tests. The Independent T-test assessed whether there is a statistically significant difference between the groups (10 native speakers of English and 10 nonnative speakers of English) according to the variables (first pass reading time and total reading time) on the region of interest (figurative phrasal verb and literal phrasal verb).

Table 17 presents the results of the independent T-tests for both groups (experimental and control groups).

Table 17
Independent T-test.

INDEPENDENT SAMPLE TEST – NATIVE AND NONNATIVE GROUP (BP x NE)					
MEASURES	N	MEAN DIFFERENCE	t	df	Sig. (2- tailed)
FIRST PASS					
READING TIME					
FPV	20	8.02	1.032	18	.316
LPV	20	11.10	1.608	18	.125
TOTAL					
READING TIME					
FPV	20	25.11	2.524	18	.021*
LPV	20	11.43	1.541	18	.141

Note. *p < .025; FPV = Figurative Phrasal Verb; LPV = Literal Phrasal Verb; N = Number of Participants.

As can be seen in Table 17, with regard to the measure first pass reading time on the figurative phrasal verb condition, nonnative speakers of English (BP) took more time reading the figurative phrasal verbs ($\bar{X} = 63.32$, $SD = 19.42$) than native speakers of English (NE) ($\bar{X} = 55.29$, $SD = 15.10$). The mean difference between the groups was 8.02. The results of the independent T-test showed that there was no statistically significant difference between the two groups ($t(18) = 1.032$; $p = .316$). On the literal phrasal verb condition, nonnative speakers of English (BP) took more time reading the literal phrasal verbs ($\bar{X} = 62.03$, $SD = 17.50$) than native speakers of English (NE) ($\bar{X} = 50.92$, $SD = 13.05$). The mean difference between the groups was 11.10. The results of the independent T-test showed that there was no statistically significant difference between the two groups ($t(18) = 1.608$; $p = .125$). These results can be interpreted as evidence that the experimental group (BP) and the control group (NE) had a similar performance, that is, in the early processes, both groups (experimental and control) access literal phrasal verbs and figurative phrasal verbs without any difficulty.

As can also be seen in Table 17, regarding the measure total reading time on the figurative phrasal verb condition, nonnative speakers of English (BP) took more time reading the figurative phrasal verbs ($\bar{X} = 87.95$, $SD = 27.99$) than native speakers of English (NE) ($\bar{X} = 62.83$, $SD = 14.38$). The mean difference between the groups was 25.11. The results of the independent T-test showed that there was a

statistically significant difference between the two groups ($t(18) = 2.524$; $p = .021$). On the literal phrasal verb condition, nonnative speakers of English (BP) took more time reading the literal phrasal verbs ($\bar{X} = 72.28$, $SD = 14.82$) than native speakers of English (NE) ($\bar{X} = 60.84$, $SD = 18.19$). The mean difference between the groups was 11.43. The results of the independent T-test showed that there was no statistically significant difference between the two groups ($t(18) = 1.541$; $p = .141$). These results can be interpreted as evidence that the experimental group (BP) spent more time processing figurative phrasal verbs than the control group (NE). In other words, the participants of the BP reread and reanalyzed the information of the sentences containing figurative phrasal verbs.

Next, the results of Paired T-tests are presented.

4.3.4 Paired T-tests

This subsection presents the results of the paired T-tests, which assessed how the participant performed on each condition and whether there is a statistically significant difference within each participant. The ten native speakers of English (NE) and ten nonnative speakers of English (BP) were tested according to the variables (first pass reading time and total reading time) on the critical regions (figurative phrasal verb, literal phrasal verb and their controls). Table 18 displays the results of the paired T-tests related to the 10 nonnative speakers of English (BP) and Table 19 displays the results of the 10 native speakers of English (NE). The tests were run to investigate the difference within participants, specifically on each condition.

Table 18
Paired T-test – Experimental Group (BP).

PAIRED SAMPLE T-TESTS – EXPERIMENTAL GROUP (BP)						
MEASURES	N	MEAN	SD	t	df	Sig. (2-tailed)
FIRST PASS READING TIME						
FPV – Control	10	10.11	8.91	3.587	9	.006*
LPV– Control	10	-1.84	17.69	-.329	9	.749
FPV – LPV	10	1.29	15.20	.269	9	.794
TOTAL READING TIME						
FPV – Control	10	22.99	22.63	3.213	9	.011*
LPV– Control	10	3.45	14.22	.768	9	.462
FPV – LPV	10	15.66	23.42	2.114	9	.064

Note. *p < .016; FPV = Figurative Phrasal Verb; LPV = Literal Phrasal Verb; N = Number of Participants.

The results presented in Table 18 show that there is a statistically difference between the measure first pass reading time on figurative phrasal verbs and their control verbs ($t(9) = 3.587$; $p = .006$), which means that the nonnative participants took more time reading FPV than its control verb. On the other hand, there was no statistically significant difference between literal phrasal verbs and their control verbs ($t(9) = -.329$; $p = .749$). In addition, there was no significant difference between the processing of figurative phrasal verbs and that of literal phrasal verbs ($t(9) = .269$; $p = .794$). These results may be an indication that the participants of the experimental group (BP) had difficulty in accessing figurative phrasal verbs in comparison to lexical verbs.

As can also be seen in Table 18, there was a statistically significant difference between the measure total reading time on figurative phrasal verbs and their control verbs ($t(9) = 3.213$; $p = .011$), that is, nonnative participants took more time reading FPV than their control verbs. Conversely, there was no statistically significant difference between literal phrasal verbs and their control verbs ($t(9) = .768$; $p = .462$). Moreover, there was no significant difference between the processing of figurative phrasal verbs and that of literal phrasal verbs ($t(9) = 2.114$; $p = .064$). These results may be an indication that the participants of the experimental group (BP) reread and reanalyzed figurative phrasal verbs in comparison to lexical verbs.

Table 19 presents the results of Paired T-tests of the dependent variables (first pass reading time and total reading time) on all regions of interest for the control group (NE).

Table 19
Paired T-test – Control Group (NE).

PAIRED SAMPLE T-TESTS – CONTROL GROUP (NE)						
MEASURES	N	MEAN	SD	t	df	Sig. (2-tailed)
FIRST PASS READING TIME						
FPV – Control	10	9.48	13.75	2.179	9	.057
LPV– Control	10	-1.01	8.41	-.382	9	.711
FPV – LPV	10	4.37	5.76	2.395	9	.040
TOTAL READING TIME						
FPV – Control	10	4.93	15.22	1.026	9	.332
LPV– Control	10	4.72	10.23	1.461	9	.178
FPV – LPV	10	1.98	14.27	.439	9	.671

Note. *p < .016; FPV = Figurative Phrasal Verb; LPV = Literal Phrasal Verb; N = Number of Participants.

The results presented in Table 19 show that there is no statistically significant difference between the measure first pass reading time on figurative phrasal verbs and their control verbs ($t(9) = 2.179$; $p = .057$). Similarly, there was no statistically significant difference between literal phrasal verbs and their control verbs ($t(9) = -.382$; $p = .711$). In addition, there was no statistically significant difference between the processing of figurative phrasal verbs and that of literal phrasal verbs ($t(9) = 2.395$; $p = .040$). These results can be interpreted as evidence that the control group (NE) did not have difficulty in accessing neither figurative phrasal verbs and literal phrasal verbs nor lexical verbs.

As can also be seen in Table 19, there was no statistically significant difference between the measure total reading time on figurative phrasal verbs and the same measures on the control verbs ($t(9) = 1.026$; $p = .332$). Moreover, there was no significant difference between literal phrasal verbs and their control verbs ($t(9) = 1.461$; $p = .178$). Likewise, there was no statistically significant difference between the processing of figurative phrasal verbs and literal phrasal verbs ($t(9) = .439$; $p = .671$). These results can be interpreted as evidence that the participants of the control group (NE) process phrasal verbs (figurative and literal) in the same (or a similar) manner they process lexical verbs.

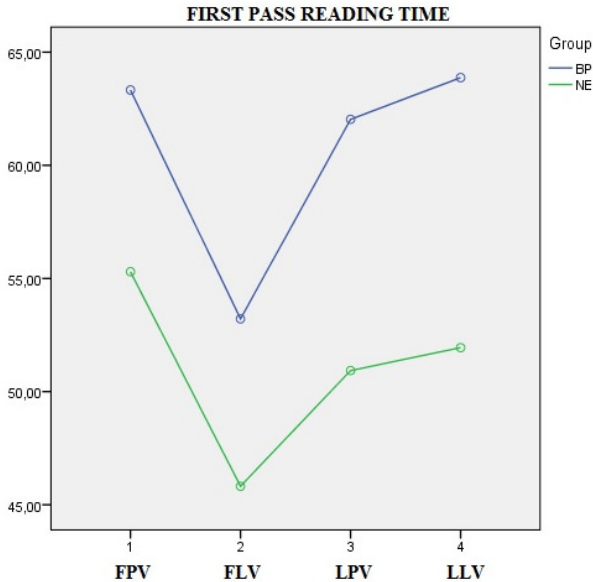
4.4 OVERVIEW OF RESULTS

An overview of the statistically significant results is illustrated by the following figures. Figure 6 depicts the first pass reading time on all conditions (FPV, LPV and their controls) comparing the two groups (BP

and NE). Likewise, Figure 7 shows the total reading time on all conditions (FPV, LPV and their controls) comparing the two groups (BP and NE).

Figure 6

First Pass Reading Time for the phrasal verbs (literal and figurative) and lexical verb controls, averaged per character, for BP and NE.

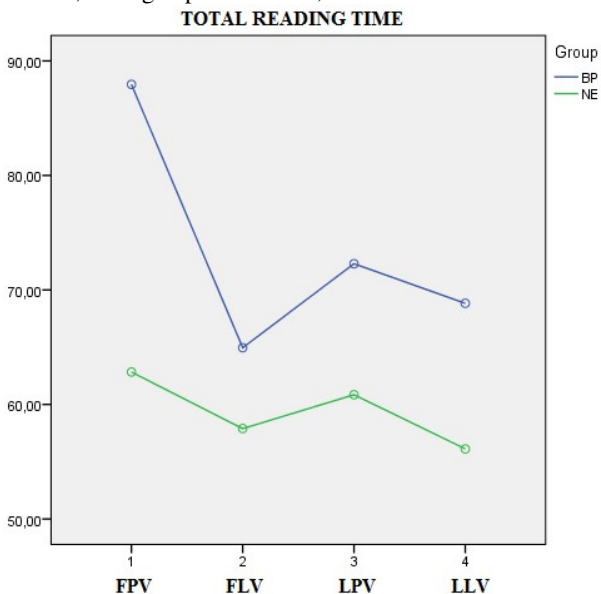


A one-way ANOVA analysis of the first pass reading time revealed a significant effect on the groups (BP and NE), $F(1,78) = 7.466$, $p < .05$ (see Table 13). That is, the first pass reading time on regions of interest (FPV, FLV, LPV, and LLV) affected all participants' performance on the sentence processing task. As can be seen in Figure 6, the results of the repeated measures ANOVA showed a statistically significant effect on the figurative phrasal verbs (FPV) in relation to their control verbs (FLV), suggesting that all the participants took longer to read FPV (59ms) than lexical verbs (49ms). In addition, the first pass reading time on FPV was significantly higher for the nonnative speakers of English (63ms for FPV and 53ms for their control verbs) than for native speakers of English (55ms for FPV and 45ms for their control verbs). This suggests that nonnative speakers of English had a processing cost on figurative phrasal verbs in relation to their control verbs as shown in Table 18. With regard to the literal phrasal verbs (LPV), there was no significant effect in

comparison to their lexical verb controls and figurative phrasal verbs (FPV).

Figure 7

Total Reading Time for the phrasal verbs (literal and figurative) and lexical verb controls, averaged per character, for BP and NE.



Concerning the total reading time variable, the one-way ANOVA analysis, similarly, showed a significant effect on the groups (BP and NE), $F(1,78) = 10.639$, $p < .05$ (see Table 14). In other words, the total reading time on regions of interest (FPV, FLV, LPV, and LLV) affected all participants' performance on the sentence processing task. As can be seen in Figure 7, the results of the repeated measures ANOVA showed a statistically significant effect on the figurative phrasal verbs (FPV) in relation to their control verbs (FLV), suggesting that all the participants took longer to read FPV (75ms) than lexical verbs (61ms). Besides that, the total reading time on FPV was significantly higher for the nonnative speakers of English (87ms for FPV and 64ms for their control verbs) than for native speakers of English (62ms for FPV and 57ms for their control verbs). By comparing the groups (BP and NE), independent T-tests also revealed a statistically significant difference on the measure total reading time, in which nonnative speakers of English took more time reading the

FPV condition than native speakers of English did (see Table 17). In doing so, nonnative speakers of English might have had a processing cost on figurative phrasal verbs in relation to their control verbs as shown in Table 18. With regard to the literal phrasal verbs (LPV), there was no significant effect in comparison to their lexical verb controls and figurative phrasal verbs (FPV).

Overall, the results of the present study showed that the first pass reading time and the total reading time on figurative phrasal verbs were longer than on literal phrasal verbs. In other words, both native and nonnative speakers took longer reading figurative phrasal verbs than literal phrasal verbs. Compared to native English speakers, advanced nonnative speakers of English as L2 took longer to read figurative phrasal verbs and literal phrasal verbs.

The next subsection will readdress the research question and the hypotheses as well as discuss the results of the present study in light of the Graded Salience Hypothesis (2002).

4.5 READDRESSING THE RESEARCH QUESTIONS AND HYPOTHESES

In this section, the research questions and the hypotheses for the present study are readdressed.

Research Question: How do both Brazilian learners of English as L2 and native speakers of English process figurative phrasal verbs in comparison to literal phrasal verbs, and phrasal verbs in comparison to lexical verbs?

Hypothesis 1: Lexical verbs will be more salient than phrasal verbs. There will be a greater cost in the processing of phrasal verbs than lexical verbs. The number of fixations, total reading time and the first pass reading time on phrasal verbs will be greater than the number of fixations, total reading time, and the first pass reading time on lexical verbs region.

Hypothesis 1 was partially supported by the results of the present study, which show that the number of fixations and the total reading time on phrasal verbs were higher than on lexical verbs. Mainly, the total reading time on figurative phrasal verbs was significantly higher than on their lexical verb controls. Conversely, the first pass reading time on literal phrasal verbs was shorter than on their lexical verb controls for both groups. This shows that both early and late effects of processing could be detected. Essentially, early measures (first pass reading time) suggest early processes, that is, lexical access and early integration of

information. Late measures (total reading time) indicate late processes, that is reanalysis of information, discourse integration, and recovery from processing difficulties (Roberts and Siyanova-Chanturia, 2013, p.217).

In the present study, early and late processes were able to detect differences of processing between literal and figurative conditions. First pass reading time values on literal and figurative phrasal verbs did not show a statistically significant difference between them as can be seen in the results of the repeated measures ANOVA presented in subsection 4.3.2. This finding suggests that literal and figurative phrasal verbs were accessed in a similar manner by both groups (experimental and control). Concerning saliency, literal meanings are more salient than figurative ones as shown in Table 15. Regarding total reading time values on literal and figurative phrasal verbs, a statistically significant difference was not observed between them as can be seen in the results of repeated measures ANOVA presented in subsection 4.3.2. This result shows that literal and figurative phrasal verbs presented small differences of processing (reanalysis) by both groups (experimental and control). In relation to saliency, literal meanings are more salient than figurative phrasal verbs as shown in Table 16.

Although the present results suggest that literal phrasal verbs were processed faster than their lexical verb controls by both groups (experimental and control groups), statistically significant differences were not observed in the early measures (first pass reading time) on literal phrasal verbs in comparison to lexical verbs. This means that both groups (experimental and control) accessed literal phrasal verbs and lexical verbs in the same (or similar) way. In relation to saliency, literal phrasal verbs are more salient than lexical verbs as shown in Table 15.

Conversely, lexical verbs presented processing advantage over figurative phrasal verbs in early and late measures. This indicates that in comparison to lexical verbs, figurative phrasal verbs were processed slowly and demanded rereading and reanalysis. This finding is in line with the Graded Saliency Hypothesis, which states that, “salient meanings are processed initially” (2002, p.490). In other words, lexical verbs are more salient than figurative phrasal verbs. Furthermore, saliency has to do with familiarity, frequency, conventionality or prototypicality. Regarding that, the present results suggest that, for the participants of the present study, lexical verbs are more familiar, frequent, conventional and prototypical than figurative phrasal verbs.

Hypothesis 2: Literal meaning will be more salient than figurative meaning. There will be a greater cost in the processing of figurative phrasal verbs than literal verbs. The number of fixations, total reading

time and the first pass reading time on figurative phrasal verbs will be greater than the number of fixations, total reading time, and the first pass reading time on literal phrasal verbs.

Hypothesis 2 was not supported by the results of the present study. As shown by the results of the repeated measures ANOVAs, statistically significant differences between literal phrasal verbs and figurative phrasal verbs in the early and late measures (first pass reading time and total reading time) were not observed. However, both groups (experimental and control groups) read literal phrasal verbs faster than figurative phrasal verbs.

When comparing literal to figurative phrasal verbs, the results show that the participants of both groups (experimental and control groups) spent more time fixating FPV than LPV regardless of language dominance. Consequently, it is possible to argue that, for the participants of the present study, literal phrasal verbs are more salient than figurative phrasal verbs. For Giora (2002, p.491), “less-salient meanings will lag behind. Nonsalient meanings require extra inferential processes and for the most part strong contextual support”. The results of the present study suggest that FPV have nonsalient or less-salient meaning than LPV, for both native and nonnative speakers of English.

Although there are no statistically significant differences between early and late measures, it is possible to observe, in Figures 1 and 2 that, the participants of the present study read figurative phrasal verbs slower than literal phrasal verbs. Likewise, the results of the present study, past research on phrasal verbs has suggested that bilinguals process literal phrasal verbs faster than figurative phrasal verbs (Matlock & Heredia, 2002; Liao & Fukuya, 2004; Siyanova-Chanturia et al., 2011).

The present results can also be accounted for by the Literal-Salience Resonant Model (Cieślicka, 2006) which assumes that “literal meanings are more salient than figurative meanings” (p. 121). L2 learners are more familiar with literal meaning and in consequence, they process it faster than figurative meaning, as observed by Cieślicka (2006).

Hypothesis 3: The experimental group (nonnative speakers of English) will process figurative and literal phrasal verbs slower than the control group (native speakers of English). In other words, compared to the control group, the experimental group will display greater cost in the processing of figurative and literal phrasal verbs than native speakers of English.

Hypothesis 3 was supported by the results of the present study. The experimental group (BP) processed literal and figurative phrasal verbs more slowly than the control group (NE). Although the participants of the experimental group were advanced nonnative speakers of English, they took longer to process phrasal verbs (literal and figurative) than the native speakers of English did.

In fact, the BP group and the NE group were very different from each other. Mainly, the total reading time measure on figurative phrasal verbs showed a significant difference between groups, as can be seen in Table 17. This indicates a certain difficulty, on the part of the nonnative speakers of English, in processing figurative phrasal verbs. That is, a late processing on figurative phrasal verbs was observed, which means that nonnative speakers of English reread and reanalyzed figurative phrasal verbs more than native speakers of English.

This difference between the groups may lie in the fact that, as argued by Giora (1997, 2002), native speakers of English have phrasal verbs coded in their mental lexicon whereas nonnative speakers of English do not. In general terms, phrasal verbs were processed and accessed faster by native speakers of English (which may indicate they did not have difficulty in processing) than by nonnative speakers of English.

As suggested by Matlock and Heredia (2002), figurative language processing is an important matter to L2 learners, since they have a hard time processing it. Similarly, Littlemore and Low (2006, p.3 and 4) explain that learners may approach figurative language analytically. They call this approach “figurative thinking”. The authors suggest that nonnative speakers take more time processing figurative language due to the fact that they try to analyze each component of the figurative multiword item (e.g. *to figure out*) and this slows down their processing, mainly, in those figurative items which are seen for the first time by nonnative speakers.

Generally, the present results supported a preference for lexical verbs over figurative phrasal verbs. This indicates that native and nonnative speakers of English found lexical verbs more salient than figurative phrasal verbs. Concerning the difference between groups (BP and NE), this could possibly be interpreted as a difficulty, on the part of the nonnative speakers, to process figurative language due to qualitative differences in the mental representation of figurative phrasal verbs in native and nonnative’s mental lexicon.

The next chapter will present the concluding remarks, summarizing the findings, pointing out the limitations of the study and

offering further suggestions for future research as well as pedagogical implications to the L2 English classroom.

5 FINAL REMARKS

The main objective of the present study was to investigate how phrasal verbs were processed online by nonnative speakers of English (native speakers of Brazilian Portuguese) and native speakers of English. With this in mind, we measured eye movements of 10 native speakers of English and 10 nonnative speakers of English while they read sentences containing figurative phrasal verbs, literal phrasal verbs and lexical verbs.

This study was organized as follows: Chapter I introduced the study; Chapter II presented the review of the literature; Chapter III outlined the methodological procedures used to carry out the present study; Chapter IV reported the results obtained from the present study and discussed them in light of the Graded Salience Hypothesis (2002) and the Literal-Salience Resonant Model (2006). Finally, chapter V, this chapter, presents the concluding remarks, summarizing the findings, pointing out the limitations of the study and offering further suggestions for future research as well as pedagogical implications to the L2 English classroom.

5.1 CONCLUSIONS

This section presents the main findings of the present study as follows:

1. The present results show that lexical verbs (one-word verbs) are processed faster than figurative phrasal verbs, which means that, lexical verbs are more salient than figurative phrasal verbs.
2. With respect to literal phrasal verbs and figurative phrasal verbs, the present results show that figurative phrasal verbs are processed slower than literal phrasal verbs. However, this difference is not statistically significant.
3. When comparing the groups (native speakers of English and nonnative speakers of English), the present results suggest that native speakers of English process figurative phrasal verbs faster than nonnative speakers of English do. That is, figurative phrasal verbs are more salient for native English speakers than for nonnative speakers of English.

Next, limitations and suggestions for further research are presented.

5.2 LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

The present study might give a contribution to the area of Second Language Acquisition as well as to the area of second language processing. Although there is some research on phrasal verbs in Brazil (Nunes, 2013; Vieira, 2008), there is still a lack of research on the online processing of phrasal verbs. The present study addressed this issue by taking eye movements as a measure of online processing and it is, to the best of my knowledge, the first study to do so in Brazil. There are, however, a number of limitations that should be avoided in future research.

First, the number of participants in each group was small. Although all participants completed all the phases of the experiment and were comparable in language background and proficiency within each group, generalizations cannot be made since the data collected represents a small sample of native and nonnative speakers of English. Ideally, further research should consider a larger number of participants, that is, a more representative sample.

In the present study, the sentence processing task using the eye-tracking method consisted of sentences containing literal phrasal verbs, figurative phrasal verbs and lexical verbs. Although the phrasal verbs (literal and figurative) were selected in the Corpus of Contemporary American English (COCA) according to their frequency, they did not account for polysemy. Future research should take into consideration the polysemous aspect of phrasal verbs, since phrasal verbs may have different shades of meanings and since only a limited number of them is regularly used by native and nonnative speakers of English (Garnier and Schmitt, 2015, p.17).

Finally, the present study utilized the eye-tracking method, which requires accuracy during the recording of eye movements. Individual variables influence the quality of data, for it is difficult to calibrate participants' eyes and to keep them stable during the experiment. In addition, data losses occur frequently. Future studies on the processing of phrasal verbs may gather additional evidence by the use of other online methods (e.g. fMRI, MEG) along with the eye-tracking technique.

The next section will outline the pedagogical implications to the L2 English classroom that can be drawn from the results obtained in the current study.

5.3 PEDAGOGICAL IMPLICATIONS TO THE L2 ENGLISH CLASSROOM

The findings of the present study indicate that nonnative speakers of English (the experimental group) processed lexical verbs faster than figurative phrasal verbs, which suggests that they had more difficulty to cope with the meaning of figurative phrasal verbs in relation to lexical verbs in sentences. Therefore, the very first pedagogical implication of the study is that phrasal verbs may be an item of the L2 lexicon that requires special attention on the part of teachers and students.

Teachers should be aware of the fact that despite the availability of different dictionaries of phrasal verbs, the entries are not always consistent with the definitions across dictionaries and this maybe a source of difficulty in the learning of this type of verb (Pye, 1996, p. 697). It would be interesting to present students with different definitions of phrasal verbs emphasizing their literal, figurative and complete meanings.

Phrasal verbs are frequently used in different contexts (informal, formal and spoken) in daily life, but they pose difficulties for nonnative speakers of English. The present study has shown that one source of difficulty is related to the processing of the meanings that phrasal verbs carry. This linguistic item, for its complexity, deserves further research as well as careful pedagogical treatment.

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APPENDICES

APPENDIX A

Termo de Consentimento Livre e Esclarecido

Termo de Consentimento Livre e Esclarecido (TCLE) baseado na resolução 466/2012 de acordo com o CNS (Conselho Nacional de Saúde)

Universidade Federal de Santa Catarina

Centro de Comunicação e Expressão

Departamento de Língua e Literatura Estrangeiras

Programa de Pós Graduação em Inglês: Estudos Linguísticos e Literários

LabLing – Laboratório da Linguagem e Processos Cognitivos

PROJETO DE PESQUISA: O PROCESSAMENTO DE PHRASAL VERBS POR FALANTES NATIVOS DO PORTUGUÊS BRASILEIRO APRENDIZES DE INGLÊS COMO L2: UM ESTUDO DE RASTREAMENTO OCULAR

Caro(a) Senhor (a),

Eu, Danielle dos Santos Wisintainer, CPF: 059.610.159-71, RG: 4.179.977, aluna de mestrado do Programa de Pós Graduação em Inglês: Estudos Linguísticos e Literários, sob orientação da professora Dra. Mailce Borges Mota na Universidade Federal de Santa Catarina, tenho como objetivo desenvolver um estudo sobre o processamento de segunda língua, no caso a língua inglesa, por falantes nativos de português brasileiro, requisito parcial para a obtenção do título de mestre em Inglês – Estudos linguísticos.

Gostaria de convidá-lo (a) a participar do meu estudo que busca investigar o processamento do inglês como segunda língua por falantes nativos de português brasileiro. Os estudos nessa área visam não só compreender os processos envolvidos no processamento de uma língua estrangeira, mas também desenvolver meios de aperfeiçoar o processo de ensino/ aprendizagem da língua estrangeira. Peço que você leia este formulário de consentimento e tire todas as dúvidas que possam surgir antes de concordar em participar no estudo.

Objetivo do estudo

O objetivo geral deste estudo é investigar os aspectos que afetam o processamento de phrasal verbs em falantes nativos do português brasileiro e falantes nativos de inglês.

Procedimentos

Se você concordar em participar deste estudo, você será solicitado (a) primeiramente a responder um questionário, para investigar o seu histórico de aprendizagem da língua estrangeira. Para certificar o seu nível de conhecimento da língua estrangeira, você será solicitado (a) a realizar um teste de proficiência em versão resumida. Você também será solicitado (a) a realizar uma tarefa:

Tarefa de processamento de sentença em inglês: Você lerá frases em inglês na tela do computador e responderá a perguntas de compreensão, com o auxílio do mouse. Durante esta tarefa de leitura, o movimento dos olhos será monitorado através do equipamento do rastreamento ocular. Esta tarefa terá duração de 15 minutos.

Benefícios

A sua participação no experimento será voluntária e contribuirá para a pesquisa sobre a aquisição de línguas estrangeiras. Durante a pesquisa, você terá a oportunidade de praticar a língua inglesa e também terá uma avaliação do seu conhecimento da língua.

Riscos

A participação na presente pesquisa envolve possíveis riscos à dimensão física, psíquica, moral, intelectual, social, cultural ou espiritual, pois há a possibilidade do surgimento de nervosismo e constrangimento, inerentes a qualquer situação de avaliação. Para minimizar tais implicações, sessões de prática serão feitas antes da aplicação da tarefa para que você possa se familiarizar com os procedimentos e sanar quaisquer dúvidas.

Desconforto

Durante a tarefa de leitura, você não deve executar movimentos bruscos, o que pode lhe acarretar certo desconforto. Portanto, nos certificaremos que o ambiente do laboratório LabLing ofereça condições satisfatórias para a execução da tarefa, referentes à iluminação, temperatura e posicionamento adequado do monitor do computador de acordo com a sua altura e cadeiras confortáveis.

Direitos dos participantes

Você é livre para decidir se deseja participar ou não desse estudo. Como a participação é voluntária, você pode desistir a qualquer momento sem nenhum prejuízo para você.

Contatos

Tendo qualquer dúvida sobre a pesquisa, você pode entrar em contato com Danielle dos Santos Wisintainer, pelo email wisintainer.ds@gmail.com ou pelo telefone (48) 3304-5347, ou com a professora Dra. Mailce Borges Mota através do email mailcemota54@gmail.com, telefone (48) 3721-9288, ou no prédio do Centro de Comunicação e Expressão – CCE, bloco B, sala 111, Universidade Federal de Santa Catarina, UFSC.

Compensação financeira

Não existirão despesas pessoais ou compensações financeiras relacionadas à participação no estudo. Qualquer despesa adicional será absorvida pelo orçamento da pesquisa.

Utilização dos dados:

Os dados coletados nesse estudo serão acessados apenas pela pesquisadora e orientadora da pesquisa. Mesmo após os resultados se tornarem

públicos, a sua identidade será totalmente preservada. Não haverá nenhuma informação que leve a sua identificação.

Comitê de Ética em Pesquisa (CEP)

O projeto dessa pesquisa foi avaliado e aprovado pelo Comitê de Ética em Pesquisa (CEP) em Seres Humanos do Hospital Infantil Joana de Gusmão (HIJG). O CEP é formado por um grupo de pessoas que avaliam se a proposta da pesquisa apresenta riscos ou pode ser prejudicial aos participantes. Caso você tenha alguma dúvida ou reclamação quando à condução ética dessa pesquisa, você pode entrar em contato com o CEP do HIJG, situado na Rua Rui Barbosa 152, Bairro Agrônômica, Florianópolis - SC, pelo telefone (48) 32519092 ou pelo email: cephijg@saude.sc.gov.br.

Termo de consentimento livre e esclarecido

Declaro que li as informações do **Termo de Consentimento Livre e Esclarecido** e esclareci quaisquer dúvidas. Eu compreendo meus direitos como voluntário (a) da pesquisa e concordo em participar deste estudo e em ceder meus dados para a pesquisa. Compreendo o objetivo do estudo bem como os procedimentos que serão realizados. Receberei uma via assinada deste formulário de consentimento.

Nome:

Assinatura do Participante:

Assinatura da Pesquisadora Responsável:

Data: ___/___/___/

APPENDIX B

Informed Consent Form

Informed Consent Form in accordance with National Health Council resolution 466/2012.

Universidade Federal de Santa Catarina
 Centro de Comunicação e Expressão
 Departamento de Língua e Literatura Estrangeiras
 Programa de Pós Graduação em Inglês: Estudos Linguísticos e Literários
 LabLing – Laboratório da Linguagem e Processos Cognitivos

PROJETO DE PESQUISA: THE PROCESSING OF PHRASAL VERBS BY BRAZILIAN PORTUGUESE SPEAKERS OF ENGLISH AS L2: AN EYE-TRACKING STUDY

Dear,

I am Danielle dos Santos Wisintainer, CPF: 059610159-71, ID: 4179977, master's student of the Graduate Program in English Linguistic and Literary Studies, under the guidance of Professor Dr. Mailce Borges Mota at Universidade Federal de Santa Catarina. I aim to develop a study on the processing of a second language, in this case English, by native speakers of Brazilian Portuguese. It is a partial requirement for obtaining a master's degree in English - language studies. I would like to invite you to participate in my study that investigates the processing of English as a second language by native speakers of Brazilian Portuguese. Studies in this area are intended not only to understand the processes involved in processing a foreign language, but also to develop ways to improve the teaching / learning of a foreign language. I ask you to read this informed consent form and clear all the doubts that may arise before agreeing to participate in the study.

Objective of the study

The focus of this study is the processing of phrasal verbs by native speakers of Brazilian Portuguese and native speakers of English.

Procedures

If you agree to participate in this study, you will be asked primarily to answer a questionnaire to investigate your knowledge of Portuguese (Brazilian Portuguese) and the features of your eyes and vision. You will also be asked to perform a task:

Sentence processing task in English: You will read English sentences on the computer screen and answer comprehension questions with the help of the mouse. During this task of reading, your eye movements will be monitored through the eye-tracking equipment. This task will last 15 minutes.

Benefits

Your participation in the experiment will be voluntary and will contribute to

research on the acquisition of foreign languages. During the research, you will have the opportunity to practice Portuguese.

Risks

Participation in this study involves possible risks to physical, mental, moral, intellectual, social, cultural or spiritual, as there is the possibility of nervousness and embarrassment, inherent in any evaluation situation. To minimize such implications, practice sessions will be made before to perform the task so that you can become familiar with the procedures and ask any question.

Discomfort

During the task of reading, you should not move suddenly, which can cause you some discomfort. Therefore, we will make sure that the LabLing lab environment provides favorable conditions for the task, related to lighting, temperature and proper positioning of the computer monitor according to your height and comfortable chairs.

Rights of Participants

You are free to decide whether to participate in this study. As participation is voluntary, you can quit at any time without any harm to you.

Contacts

Having any questions about the study, you may contact Danielle dos Santos Wisintainer, email wisintainer.ds@gmail.com or by calling (48) 3304-5347, or Professor Dr. Mailce Borges Mota by email mailcemota54@gmail.com, phone (48) 3721-9288, or at the building Centro de Comunicação e Expressão - CCE, building B, room 111, Universidade Federal de Santa Catarina, UFSC.

Financial compensation

There will be no personal or financial compensation expenses related to your participation in the study. Any additional expense will be absorbed by the research budget.

Data Use

Only the researcher and the supervisor of the study will access the data collected. Even after the results are published, your identity will be fully preserved. There will be no information leading to your identification.

Ethics Board Committee

This study was approved by the Institutional Review Board of Human Beings located in Joana de Gusmão Children's Hospital. Ethics Board Committee consists of a group of people who assess whether the proposed research presents risks or may be harmful to the participants. If you have any questions or complaints about the ethical conduct of this research, you can contact the Ethics

Board Committee, located at Rui Barbosa street, 152, Agronômica neighborhood, Florianópolis - SC, phone (48) 32519092 or email: cephijg@saude.sc.gov.br.

Informed Consent Form

I have read the Informed Consent Form and clarified any doubts. I understand my rights as a volunteer and agree to participate in this study and give my data for research. I understand the purpose of the study and the procedures to be performed. I will receive one copy of this signed consent form.

Name: _____

Participant Signature: _____

Responsible Researcher Signature: _____

Date: ____ / ____ / ____ /

APPENDIX C

Questionário Biográfico

Este questionário é parte do estudo intitulado “O processamento de phrasal verbs por falantes nativos do português brasileiro aprendizes de inglês como L2: um estudo de rastreamento ocular”. Agradeço desde já sua participação, que é de extrema importância para a realização desse estudo.

Informações Pessoais do participante

Nome Completo

Data de nascimento

Idade

Sexo

Local de nascimento

E-mail

Nacionalidade dos pais

Grau de escolaridade

() Ensino Fundamental

() Ensino Médio completo

() Ensino Médio incompleto

() Superior completo

() Superior incompleto

() Outro: _____

Formação Acadêmica: _____

Ocupação atual: _____

Quais são as línguas que você fala além da sua língua materna? Qual delas você fala melhor?

Informações sobre as características dos seus olhos

Você usa óculos ou lentes de contato?

() Óculos

() Lentes de contato

() Ambos

() Nenhum

Você usa óculos para ler?

Você já fez algum procedimento cirúrgico nos olhos?

Qual é a cor dos seus olhos?

() Azul

() Verde

() Castanho-claro

() Avelã

() Castanho-médio

() Castanho-escuro

Informações sobre o aprendizado do inglês

Com que idade você começou a aprender inglês?

Em que contexto você aprendeu inglês?

- Em escolas de idiomas
- Na escola
- Em casa
- No país em que a língua é falada como primeira língua nativa
- Outro: _____

Caso você tenha estudado inglês em escola de idiomas, indique por quanto tempo.

- Até 6 meses
- Até 1 ano
- Até 2 anos
- Mais de 2 anos

Você ainda estuda inglês em escola de idiomas?

Com que frequência você usa o inglês?

- O tempo todo
- Quase o tempo todo
- Em certas ocasiões
- Raramente
- Nunca

Como você usa o inglês?

- Para leituras no trabalho
- Para pesquisas
- Para ver filmes, ouvir músicas, jogar vídeo game, para leituras de lazer
- Para conversar com família e amigos
- Outro: _____

Você possui/ possuiu contato com falantes nativos de inglês?

Você já esteve em algum país de língua inglesa?

Se sim, por quanto tempo?

- Menos de dois meses
- Até seis meses
- De 6 meses a 2 anos
- Mais de 2 anos

Como você avalia o seu conhecimento da língua inglesa?

- Regular
- Bom
- Ótimo

APPENDIX D

Biographical Questionnaire

This questionnaire is part of the study "The processing of phrasal verbs by Brazilian Portuguese speakers of English as L2: An eye-tracking study". I appreciate your participation, which is important to carry out my research. Could you please complete the following questions? Thank you in advance.

General Information

Full name

Date of birth

Your age

Your gender

Where are you from?

Birthplace

Where are your parents from?

Where did you grow up?

What is the highest degree you obtained or you are currently working towards?

PhD

Master

Bachelor

High School

Primary School

Outro: _____

Academic Degree: _____

Current Occupation: _____

Information on knowledge of languages

How many more languages do you speak besides your mother tongue? Which of these languages do you speak best?

How long have you been in Brazil?

How good is your knowledge of Portuguese? (Brazilian Portuguese)

I know a few words

I can have a simple conversation.

I can read a simple book.

I speak and read the language fluently.

Information on your eyes characteristics

Do you wear glasses or contact lenses?

Glasses

Contacts

Both

Neither

Do you use reading glasses?

Have you ever had eye surgery?

What color are your eyes?

Blue

- Green
- Light brown
- Hazel
- Dark brown

APPENDIX E

Phrasal Verb Posttest

Phrasal Verb Test

Please choose the best option to complete the sentences below:

*Obrigatório

Good dancers normally _____ the biggest challenges during their career. *

- Point out
- Bring in
- Break up
- Look for

Jealous couples frequently _____ their relationships more than others. *

- Print out
- Go for
- Break up
- Hang up

Late actresses always _____ the stage by nine o'clock. *

- Hold up
- Set up
- Look for
- Get to

Responsible drivers generally _____ something non-alcoholic to drink. *

- Let out
- Run after
- Figure out
- Go for

Preventative treatments generally _____ reversible forms of dementia. *

- Look up
- Bring out
- Rule out
- Put together

Prudent learners usually _____ words in the dictionary. *

- Put together
- Look up
- Rule out
- Bring out

Smart students always _____ their projects on time. *

- Clean out
- Get through
- Get to
- Pick up

Best friends sometimes _____ their troubles to each other. *

- Clean out
- Give away
- Pour out
- Print out

Dedicated runners sometimes _____ a deep sigh of relief. *

- Let out
- Rule out
- Go after
- Bring up

Courageous children seldom _____ their parent's name during the night. *

- Get through
- Call out
- Hold up
- Go after

Intelligent men frequently _____ cupboards very well without instructions. *

- Call out
- Pick up
- Go for
- Put together

Motivated researchers always _____ their goals in big letters. *

- Put back
- Let out
- Print out
- Look up

Kind volunteers sometimes _____ their furniture to families in need. *

- Give away
- Bring up
- Put together
- Get off

Efficient janitors always _____ the floor after parties. *

- Go after
- Bring up
- Hold up
- Clean out

Nervous passengers usually _____ the plane a little scared. *

- Put on
- Breathe in
- Get to
- Get on

Clumsy architects occasionally _____ pictures on the wall. *

- Pour out
- Print out
- Clean out
- Hang up

Honest politicians always _____ different ways to improve our political system. *

- Break up
- Point out
- Throw away
- Hang up

Tired workers occasionally _____ radioactive dust from the uranium mines. *

- Breathe in
- Bring out
- Look up
- Give up

Hopeful athletes always _____ their dreams even against all odds. *

- Breathe in
- Run after
- Call out
- Put on

Ambitious people normally _____ money without considering the consequences. *

- Figure out
- Go after
- Bring in
- Set up

Famous composers rarely _____ complete recordings of film music every month. *

- Get on
- Put back
- Bring out
- Rule out

Competent authorities frequently _____ meetings to discuss proposals. *

- Get on
- Bring in
- Set up
- Give up

Organized librarians generally _____ the books on the shelves every evening. *

- Pick up
- Point out
- Breathe in
- Put back

Brazilian citizens usually _____ considerable time in traffic jams. *

- Get off
- Figure out
- Throw away
- Call out

Curious audience sometimes _____ questions at the meeting. *

- Pour out
- Get on
- Bring up
- Give away

Experienced doctors sometimes _____ the best treatment for cancer. *

- Go for
- Figure out
- Get off
- Let out

Vigilant doormen generally _____ the packages as soon as they arrive. *

- Get through
- Pick up
- Get to
- Run after

Talented artists rarely _____ the ferry to meet fans. *

- Get off
- Run after
- Look for
- Put Back

Old trains usually _____ passengers for hours along a journey. *

- Hold up
- Look for
- Give up
- Point out

Principal actors occasionally _____ \$1 million per episode. *

- Bring in
- Throw away
- Hang up
- Get through

Beautiful models usually _____ a lot of makeup during fashion shows. *

- Set up
- Break up
- Pour out
- Put on

Naive teenagers frequently _____ their dreams due to lack of confidence. *

- Give up
- Bring in
- Put on
- Throw away

APPENDIX F
**Sixty-four sentences with Figurative and Literal Phrasal Verbs and
 their Lexical Control Verbs**

FIGURATIVE PHRASAL VERB	LEXICAL VERB
1. Late actresses always GET TO the stage by nine o'clock.	Late actresses always REACH the stage by nine o'clock.
2. Old trains usually HOLD UP passengers for hours along a journey.	Old trains usually DELAY passengers for hours along a journey.
3. Competent authorities frequently SET UP meetings to discuss proposals.	Competent authorities frequently ARRANGE meetings to discuss proposals.
4. Good dancers normally LOOK FOR the biggest challenges during their career.	Good dancers normally SEEK the biggest challenges during their career.
5. Experienced doctors sometimes FIGURE OUT the best treatment for cancer.	Experienced doctors sometimes UNDERSTAND the best treatment for cancer.
6. Naive teenagers frequently GIVE UP their dreams due to lack of confidence.	Naive teenagers frequently QUIT their dreams due to lack of confidence.
7. Preventative treatments generally RULE OUT reversible forms of dementia.	Preventative treatments generally DISMISS reversible forms of dementia.
8. Honest politicians always POINT OUT different ways to improve our political system.	Honest politicians always SHOW different ways to improve our political system.
9. Nervous passengers usually GET ON the plane a little scared.	Nervous passengers usually BOARD the plane a little scared.
10. Responsible drivers generally GO FOR something non-alcoholic to drink.	Responsible drivers generally CHOOSE something non-alcoholic to drink.
11. Curious audience sometimes BRING UP questions at the meeting.	Curious audiences sometimes RAISE questions at the meeting.

12. Principal actors occasionally BRING IN \$1 million per episode.	Principal actors occasionally EARN \$1 million per episode
13. Smart students always GET THROUGH their projects on time.	Smart students always FINISH their projects on time.
14. Prudent learners usually LOOK UP words in the dictionary.	Prudent learners usually SEARCH words in the dictionary.
15. Talented artists rarely GET OFF the ferry to meet fans.	Talented artists rarely LEAVE the ferry to meet fans.
16. Jealous couples frequently BREAK UP their relationships more than others.	Jealous couples frequently END their relationships more than others.
LITERAL PHRASAL VERB	LEXICAL VERB
1. Vigilant doormen generally PICK UP the packages as soon as they arrive.	Vigilant doormen generally LIFT the packages as soon as they arrive.
2. Beautiful models usually PUT ON a lot of makeup during fashion shows.	Beautiful models usually APPLY a lot of makeup during fashion shows.
3. Ambitious people normally GO AFTER money without considering the consequences.	Ambitious people normally CHASE money without considering the consequences.
4. Dedicated runners sometimes LET OUT a deep sigh of relief.	Dedicated runners sometimes UTTER a deep sigh of relief.
5. Famous composers rarely BRING OUT complete recordings of film music every month.	Famous composers rarely RELEASE complete recordings of film music every month.
6. Kind volunteers sometimes GIVE AWAY their furniture to families in need.	Kind volunteers sometimes GIVE their furniture to families in need.

7. Courageous children seldom CALL OUT their parent's name during the night.	Courageous children seldom CALL their parent's name during the night.
8. Brazilian citizens usually THROW AWAY considerable time in traffic jams.	Brazilian citizens usually WASTE considerable time in traffic jams.
9. Organized librarians generally PUT BACK the books on the shelves every evening.	Organized librarians generally PUT the books on the shelves every evening.
10. Efficient janitors always CLEAN OUT the floor after parties.	Efficient janitors always CLEAN the floor after parties.
11. Tired workers occasionally BREATHE IN radioactive dust from the uranium mines.	Tired workers occasionally INHALE radioactive dust from the uranium mines.
12. Intelligent men frequently PUT TOGETHER cupboards very well without instructions.	Intelligent men frequently ASSEMBLE cupboards very well without instructions.
13. Motivated researchers always PRINT OUT their goals in big letters.	Motivated researchers always PRINT their goals in big letters.
14. Hopeful athletes always RUN AFTER their dreams even against all odds.	Hopeful athletes always PURSUE their dreams even against all odds.
15. Best friends sometimes POUR OUT their troubles to each other.	Best friends sometimes TELL their troubles to each other.
16. Clumsy architects occasionally HANG UP pictures on the wall.	Clumsy architects occasionally HANG pictures on the wall.

Eight Comprehension Questions

1.	Do late actresses always GET TO the stage after ten o'clock? NO (1F)
2.	Do old trains usually HOLD UP passengers for hours along a journey? YES (2F)
3.	Do nervous passengers usually GET ON the plane a little scared? YES (10F)
4.	Do jealous couples frequently BREAK UP their relationships less than others do? NO (17F)
5.	Do beautiful models usually PUT ON a lot of makeup during fashion shows? YES (2L)
6.	Do ambitious people normally GO AFTER love without considering the consequences? NO (3L)
7.	Do kind volunteers sometimes GIVE AWAY their furniture to families in need? YES (6L)
8.	Do hopeful athletes always RUN AFTER their dreams even against all odds? YES (15L)

APPENDIX G
Sixty-four Filler Sentences and sixteen Comprehension Questions

	FILLERS	QUESTIONS
1.	A solar eclipse occurs two to four times a year when the light from the sun is blocked by the moon.	Does a solar eclipse occur two to four times a year? YES
2.	When thinking about marriage, we often forget how important it is to find the right person.	
3.	The mood is a little different today, partly because there are a couple hundred nervous students in the audience.	
4.	All human beings experience social anxiety at times, even only in its mildest form.	
5.	The regime found it necessary to engage Solidarity in a round table discussion.	
6.	I think that consciousness is only possible in humans with large areas of active brain.	
7.	Technology has enabled us to have one life rather than separate professional and home lives.	
8.	Layoffs can mean your career coming to a screeching halt, and nothing is more of a smack in the face.	
9.	Police officers always ask you questions that you both know the answer to.	Do police officers always ask you questions that you both know the answer to? YES

10.	Unhealthy lifestyles create a self-perpetuating and vicious cycle.	
11.	It would be easy to blame heartless managers for the collapsing boundaries between work and personal life.	
12.	A former teacher recalled how his country had changed since its independence in 1965, when he was a teen.	
13.	Asking thoughtful questions shows your intelligence without appearing like a know-it-all.	
14.	Scientists have not yet determined what the maximum human lifespan is.	
15.	Burnout and depression often get confused with each other because their symptoms can be similar.	
16.	If you would like your job description changed, formulate your request to emphasize the benefits to your employer.	
17.	The vice president posted a hilarious video of himself pumping iron while on the phone.	Did the vice president post a hilarious video of himself pumping iron while on the phone? YES
18.	The mission could produce invaluable scientific findings and engineering developments.	
19.	For most people, going to the movies is an enjoyable	

	activity that allows them to escape reality.	
20.	Internet users have fallen in love with the little squirrel after his video was viewed by 200,000 people.	Have internet users fallen in love with the little dog? NO
21.	The earthquake measured 6.6 of the Richer Scale but thankfully, no serious injuries were reported.	Did the earthquake measure a reasonably large magnitude of 6.6? YES
22.	My friend would never have bought the soap.	
23.	Being coherent is having always to wear a tie that matches your socks.	
24.	The football game stopped after 58 seconds because the players could not see each other through the fog.	
25.	I usually rip open the package before I reach the cashier.	
26.	Psychology tells us that the best way to keep memories alive is to rehearse them over and over again.	
27.	It is safe to say that watching movies can be therapeutic for both adults and children.	
28.	Psychiatry is increasingly recognizing the role lifestyle issues play in mental illness.	Is psychiatry increasingly recognizing the role lifestyle issues play in mental illness? YES
29.	Kids and adults do not read as much traditional media as they used to.	
30.	A new study has found an official link between creativity and being easily distracted.	Has a new study found an official link between creativity and being easily distracted? YES

31.	Next time you are bored on a Friday night, go to see a movie with your loved ones.	
32.	Most of us could benefit from allowing a little more surprise in our lives.	
33.	In the interview, focus on connecting with the interviewers and not worrying about yourself.	
34.	Waiting for an ATM is much more frustrating than waiting for a bus.	
35.	People always think their birthday lottery numbers have a better chance of winning than randomly generated ones.	Do people always think their ID card lottery numbers have a better chance of winning? NO
36.	The picture was taken in Colombia and uploaded to Facebook, where it quickly went viral.	Was the picture taken in Venezuela? NO
37.	The truth is, self-discipline is a learned skill, not an innate characteristic.	
38.	We don't really need science to show us that when you've had no sleep.	
39.	Our responses to our children's choices require care and sensitivity.	Do our responses to our children's choices require care and sensitivity? YES
40.	I have already started reading the first book, and I am enjoying it so much.	
41.	The average age of a gamer in the US is about 30 years old and is about evenly split between male/female.	

42.	Spouses often have differing opinions on the strength and happiness of their marriage.	Do spouses often have the same opinions on the strength and happiness of their marriage? NO
43.	Games are, after all, immersive narratives that unleash the imagination.	Are games immersive narratives that unleash the imagination? YES
44.	Some people have an easier time establishing and maintaining friendships than others.	
45.	We have undergone a shift in our thinking about how we achieve and define success.	
46.	Despite the best of intentions, our motivation to stick to our healthier habits tends to steadily decline with time.	
47.	The poor pooch was found with a severed leg and a severe case of mange as he lay shivering in the cold water.	
48.	The car was being searched by Spanish police officers as it attempted to cross the Melilla border.	Was the car being searched by French police officers? NO
49.	When you're in the moment, you may forget your expectations of your perfect dog.	
50.	London has already seen seven days of level 10 air pollution this year - just as bad as today's toxic smog.	
51.	Two giant asteroids crashed violently into Australia millions of years ago.	Did two giant asteroids crash into Australia millions of years ago? YES

52.	NASA's experimental electric wing has 18 engines and could be the future of flight.	
53.	Scientists at Harvard University have spliced recreated woolly mammoth DNA into live elephant cells.	
54.	Tiny houses express our evolved instinct to make a nest.	
55.	There are many kinds of regret that people have and feel trapped by within their current lives.	
56.	There is much to fear from new technologies, whether such fears are justified or not.	
57.	The Jamaican resort is a true island paradise, whether you are on your honeymoon or in love with luxury.	
58.	We all have vulnerabilities that can sidetrack us from reaching our goals.	
59.	Scientists have learned how to construct materials that bend waves of light, sound and seismic energy.	Have scientists learned how to construct materials that bend waves of light, sound and seismic energy? YES
60.	A complex task is mastered from practice.	
61.	Being good is not a one-off; it is a way of being that has been acquired through the proper habits.	
62.	Astronomers found evidence that dust, the building material for planets and stars, survived a supernova's hot aftermath.	

63.	Impulse decisions can often be our downfall when it comes to sticking to good habits.	Can impulse decisions be our downfall when it comes to sticking to good habits? YES
64.	Some species of plants emit a green light, which attracts insects that help spread the plants' spores.	

APPENDIX H Acceptability Test

Acceptability Test

Hi!

Welcome to the Acceptability Test.

In this task, you will be asked to judge whether individual sentences sound acceptable or not to you according to the actual use in the language. There is not a right or wrong answer. You need to answer it intuitively.

There is a scale to register your answer, you must choose from 1 to 7 which number represents better your opinion.

Follow the interpretation of the scale:

1- Totally unacceptable (No one would use that)

2- Unacceptable

3- Slightly unacceptable (There are better sentences to say that)

4- Neutral (I do not have opinion)

5- Slightly acceptable (It is acceptable, but there are better sentences to say that)

6- Acceptable

7- Perfectly acceptable (everybody would use that)

Below each sentence, there will be a blank space in case you want to leave comments or suggestions to improve the sentence structure.

Thank you for your participation!

Please, fill in the gaps with your personal information:

Name:

Age:

Level of schooling:

Where are you from?

E-mail:

Continuar »

A solar eclipse happens around two to four times a year when the light from the sun is blocked by the moon. *

1 2 3 4 5 6 7

Totally Unacceptable Perfectly Acceptable

Leave comments or suggestions below

Late actresses always get to the stage at nine o'clock. *

1 2 3 4 5 6 7

Totally Unacceptable Perfectly Acceptable

Leave comments or suggestions below

When thinking about marriage, we often forget how important it is to be the right person. *

1 2 3 4 5 6 7

Totally Unacceptable Perfectly Acceptable

Leave comments or suggestions below