

## 2.3 LOOKING FOR COERCION EFFECTS IN BRAZILIAN PORTUGUESE<sup>1</sup>

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### Abstract

A self-paced reading experiment in Brazilian Portuguese investigated the hypothesis that sentences such as *The author began the book* are interpreted as *The author began [writing] the book*. This hypothesis has been put forth by Pustejovsky (1995) among others, who take the nominal book to provide information that licenses a reading of *began the book* as *began writing/reading the book*. In this analysis, the nominal is coerced to be read as an activity, rather than an entity. Previous studies in English have been inconclusive as to the nature of the coercion effect (e.g., McElree et al., 2001; de Almeida, 2004). Our preliminary results with sentences in isolation show no differences between the aspectual or coerced (e.g. *begin the book*) and other types of sentences (a preferred: *wrote the book*; and a non-preferred: *read the book*). We contend that if there are gaps in aspectual/coerced sentences responsible for coercion effects, these do not seem to affect reading times.

### Keywords

self-paced reading; coercion effect, aspectual reading

### 1. Introduction

Linguistic and psycholinguistic studies on the so-called *coercion* phenomenon have experienced a surge in recent years. The main reason for interest in this area is the observation that sentences such as (1) are supposed to license interpretations such as (2), although the information that (2) carries is not specified in (1). One of the first accounts of this phenomenon comes from Pustejovsky's (1995) work proposing that what goes on with (1), such that (2) is licensed, is a sort of a *type-shifting*.

(1) The author began the book after the summer vacation.

(2) The author began [writing / reading] the book after the summer vacation.

What Pustejovsky noted is that these constructions (with verbs such as *begin*) are characterized for requiring internal arguments that denote activities. When the internal NP does not match the verb specifications, the semantic type of the NP is *coerced* to change (or "type-shift") from one type to another (from one entity to an event, for example). It is based on the assumption that *begin*-NP requires that NP be interpreted as *activity performed with NP* that coercion ensues. What Pustejovsky has in mind is a form of *enriched* compositionality

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(in opposition to a classical, “Fregean” type), because, he argues, it is from the internal analysis of the object NP that information about, say, *writing* comes from.

These observations sparked numerous theoretical (e.g., Fodor & Lepore, 1998; Putejovsky, 1998; de Almeida & Dwivedi, 2008) and experimental (e.g., McElree et al., 2001; Traxler et al., 2002; de Almeida, 2004; Pickering et al., 2005) studies, in recent years. In a self-paced reading experiment, McElree et al. (2001) found that sentences with type-shifting verbs require a longer time reading than sentences whose verb complements match the verb type restrictions. According to McElree et al., the longer reading times in type-shifting constructions is due to the additional computational cost of extracting information from the NP object to interpolate it in the enriched composition form. Employing similar materials, but with either sentences in isolation or sentences following contexts, de Almeida (2004) did not find results similar to McElree et al.’s. With sentences in isolation, he found that there was no difference between sentences such as those in (3). But when these sentences were preceded by a context such as (4), providing further information on the activity performed by the agent, then the preferred sentence (3a) was read faster at post-verbal positions than type-shifted (3b) and non-preferred (3c).

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- a. *The artist painted the portrait for his mother when he found the time*
- b. *The artist began the portrait for his mother when he found the time*
- c. *The artist analyzed the portrait for his mother when he found the time*

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*The artist was well known for his beautiful portraits. Many people requested his work and it was difficult for him to find the time to conceive the portrait that his mother requested.*

These results suggest that coerced effects appear to be a case of pragmatic violation, not of interpolation of information extracted from the object NP: Effects of coercion could not be distinguished from contextual inadequacy which can be accounted for as a violation of a Gricean maxim such as quantity (Grice, 1987).

In this short paper we present a preliminary report of an ongoing study investigating alleged coercion effects in Brazilian Portuguese (BP) constructions. Similar to the experiment reported by McElree et al. (2001) and de Almeida (2004, Experiment 1), we presented participants with sentences in isolation, employing a self-paced reading task. In the next sections we report this preliminary study



and discuss its results in the context of disputes on the nature of coercion phenomenon.

## 2. The Experiment

This experiment had two main goals. First, we wanted to test the cross-linguistic validity of coercion effects (or lack thereof). English allows for both constructions with aspectual (*begin, finish, commence, etc.*) and non-aspectual verbs (e.g., *try, attempt, manage*) to produce an interpolated structure (e.g., *The alpinist attempted the mountain* is taken to license *The alpinist attempted to climb the mountain*). But BP allows only for aspectual constructions to be interpolated with an event verb. Thus, BP enables an investigation of this phenomenon with purely aspectual verbs, contrary to other studies, as discussed above. The second goal of the present experiment was to investigate a proposal put forth by de Almeida and Dwivedi (2008) about the structure of predicates involved in coercion studies. This proposal assumes that, if coercion effects are real, they might be due to the argument structure of these verbs, which take an embedded empty V head. This V head works as a trigger to pragmatic inferences responsible for effects coercion found in experimental results. Thus, we expect aspectual structures to be more complex than constructions without aspectual verbs. This prediction is based on both, the possibility that coercion effects are obtained for aspectual verbs, and for the predicted empty V head in these predicates, against the null effects obtained by de Almeida (2004).

## 3. Method

### 3.1 Participants

Twenty-eight students from the Universidade Federal da Paraíba participated in this experiment. They were all native speakers of BP and had normal or corrected-to-normal vision.

### 3.2 Materials and Design

In order to prepare the main sentences for the experiment we collected fill-in the blank data from other 44 students from the Universidade Federal da Paraíba, all native speakers of BP. They did not take part in the main experiment. The participants received a booklet containing 75 sentences, 50 of which were fillers and 25 were experimental. Participants were requested to fill-in the first verb that came to mind that would fit naturally in the sentence (e.g., *The journalist finished*



\_\_\_\_\_ *the article by the deadline*); they were requested not revise their answers. The data collected from this task allowed us to gather the most frequent verb produced in these frames, which were then used in sentences involving a full-VP structure (e.g., ...finished writing the article). They were also the verbs taken to be preferred for constructions without the aspectual verb (...wrote the article...). A total of total of 75 experimental sentences were created, 25 of each of the following five types: (a) aspectual (e.g., *O jornalista terminou o artigo dentro do prazo de entrega*; roughly: "The journalist finished the article by the deadline"); (b) preferred (*escreveu o artigo...*; "...wrote the article..."); (c) non-preferred (...leu o artigo...; "read the article"); (d) full-VP preferred (...*terminou de escrever...*; "...finished writing..."); (e) full-VP non-preferred (...*terminou de ler...*; "...finished reading..."). These sentences were divided into five lists of materials, such that only one member of each of the 25 quintuplets appeared on each list, with each list having five sentences of each type. Each list also had 50 filler sentences. Only data from sentence types (a)-(c) are reported in the present short paper.

### 3.3 Procedure and Apparatus

The experimental technique consisted of a self-paced reading paradigm with a stationary window. Participants were instructed to read each sentence at a normal pace and to answer a comprehension question after each sentence. Each trial began with the presentation of the first segment of a sentence (usually, the subject NP), on the middle of the screen, followed by each segment, which appeared when the participant pressed the letter L on the keyboard. Questions were displayed on the screen on the same spot as the sentence segments. Participants had to use the letters O (no) and P (yes) to answer each question. Stimuli presentation and data collection were controlled by a portable Macintosh computer running PsyScope software (Cohen et al., 1993). The experiment lasted approximately 20 minutes and was conducted in an isolated room.

### 4. Results and Discussion

Participants overall answered correctly over 90% of the questions, thus no participants were eliminated due to errors. For inferential analyses the data were the mean response times for each participant on each condition (subjects analyses,  $F1$ ) and mean response times for each sentence frame across its different types (items analyses,  $F2$ ). Table 1 presents mean reading times by participants for the three main segments across the three sentence types discussed in the present paper.

Sentence Type	Sentence Position		
	Verb	NP	Adverb
		the article	before
Non-preferred (read)	678 (203)	682 (183)	645 (182)
Preferred (wrote)	722 (300)	716 (211)	671 (194)
Aspectual (finished)	689 (185)	729 (129)	622 (141)

Table 1: Mean reading times (and standard deviations) in milliseconds for the three sentence types at three sentence positions (original sentences in Brazilian Portuguese)

We found no effect of sentence type [ $F_1(2, 56) = 0.89, p = .42$ ;  $F_2(2, 48) = 0.11, p = .89$ ], but a significant effect of segment [ $F_1(2, 56) = 4.27, p = .019$ ;  $F_2(2, 48) = 4.00, p = .024$ ]. No planned pairwise contrasts between the different levels of the two variables (sentence type x sentence segment) resulted significant.

## 5. General Discussion

This experiment replicated in BP the effects obtained by de Almeida (2004, Experiment 1) in English: coerced sentences with aspectual verbs do not appear to show the complexity effects found in other studies investigating the same phenomenon in English but with different verb classes. It appears that if complexity is a factor in the processing of these sentences, it comes from the argument structure of these verbs, which might take an internal V head, as suggested by de Almeida and Dwivedi (2008). But even if there is argument complexity, reading times do not appear to be affected. It remains to be investigated whether or not our results are an effect of experimental paradigm (self-paced reading), properties of aspectual verbs in BP, or other factors. Future experiments will investigate some of these factors, including effects of context in the interpretation of aspectual sentences in BP.

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