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Coercion on the edge:

A purely linguistic phenomenon or an

integrated cognitive process?

Tesis para optar al grado de Magíster en Estudios Cognitivos

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ABSTRACT

When discussing the lexical aspect of verbs, it is noticeable that anomalous sentences can be found in normal speech. These sentences are awkward in terms of their compatibility with the rest of that sentence's components.

Given that speakers seem to use these awkward sentences fairly usually, there must be a process solving the incompatibility; that process has been called coercion. At first, academics seemed to agree on it being a semantic process; until alternative views began claiming that pragmatics may have an important role in such process as well.

The present study was conceived from the different views on the issue with the aim of shedding some new light onto the discussion; testing the role that context plays in the coercive process. Qualitative and quantitative methodology was used to obtain data from a group of 80 college students. A battery of questionnaires was applied. The subjects had to decide on the meaning of an anomalous sentence needing coercion in three different settings: first without any context, second with a context leading to one possible coerced meaning, and third one leading to another possible meaning.

The results show that context does influence both the willingness of the subjects to use coercion and the choice between two possible resulting meanings. The presence of context increased the number of coerced-meaning answers and changed the selection form one meaning to another when the context changed.

In light of these results, this work will propose that the solving of coercion is mainly pragmatic, but that there is semantic component present in it that cannot be denied; Thus giving a dual nature to the whole coercive understanding of a given sentence.

Key Words: Coercion, aspect, context, semantics, pragmatics, aktionsart.

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CHAPTER ONE: INTRODUCTION

Introduction

Coercion has been widely discussed in linguistics, neuroscience, psycholinguistics and other academic disciplines. Accessing only on the SIBUC database, under the key words "coercion" and "linguistics", 13.451 results are showed. If we narrow it down to those presented on the last five years, 37 results are displayed.

The present work study will take under consideration their relevance, theoretical framework and other criterions for their inclusion in this study.

Coercion is a somewhat recently identified linguistic phenomenon. It occurs when we encounter expressions which go against the semantic-pragmatic rules regulating the composition of the elements within a given sentence but, and thus a component of that sentence must transform its semantic features so as they can fit the feature type required by a given function in that sentence. A common example of this is the use of the noun phrase *the book* together with the idea of competition *finished,* as in *I finished the book*. The verb *to finish* requires that its complement be an action, i.e.

something to be completed or ended, and *the book* clearly does not fit that criterion, but the speakers do not usually seem to have a problem understanding this sentence because they are able to produce a change in the features denoted by the NP: "in the case of NP, the book, for example, the coercion operators provide two event interpretations, namely, reading the book and writing the book" (Pustejovsky & Bouillon, 1995).

Together with that seemly simple example, we can find cases of coercion that present more complex scenarios such as, *you are being nicer, she's looking more intelligent, I'm loving you more and more every day.*

Regardless of their apparent complications, these structures are commonly encountered in speech. The understanding of these expressions, as explained above, involves a change in the intrinsic meaning of the verb involved in them –namely a part of the semantic description of verbs which is called "aktionsart"-, given by the conflicting intrinsic semantic features of its modifiers that do not "match" those of the verb. Namely then, it is a process by which the mismatch between the verbs' selective restrictions and the stored senses of the modifier trigger a process that results in an accommodation of meaning that solves the mismatch.

It has been quite an interesting process to come to identify and understand how the speakers deal with these apparently anomalous sentences, and there is still controversy about the real nature of these expressions.

Even when the origins of coercion are traceable to the 60's, it was not until the end of the 80's and throughout the 90's that the idea matured and took a recognisable form in the specialised literature. When it finally came into being as a formal concept, coercion was categorized as a semantic process; this notion was later disputed by a series of authors, whose claims went from re-categorizing coercion as a pragmatic – rather than a semantic –process to denying the very existence of the phenomenon.

The semantic nature of that process was given not only because of the detection of mismatching semantic properties, but also because of an invisible syntactic operator, which would trigger the process. This semantic view of coercion has been stated, in its strongest and most representative version, by De Swart (1998).

This very algorithmic conceptualization of coercion has been as complemented as has been challenged in the following years, reaching the point where we stand today.

A possible pragmatic explanation to the phenomenon has arisen together with the elaboration of theoretical and empirical evidence supporting both views (pragmatic and semantic) not only at a purely theoretical level, but also at the biological one, since the discussions have now entered to the neurolinguistic field as well. But more than providing further light to the issue, neurolinguistic evidence has somewhat darkened the discussion as it has been able to provide evidence for both, a semantic and a pragmatic theorization of the phenomenon.

In this mixture of apparently irreconcilable differences it is, to our consideration, most important to try to determine the true nature of coercion as a

language phenomenon, and thus how is it that speakers seem to deal with these linguistically awkward structures in a more or less communicatively successful manner.

That being said, our aim is to put these conflicting views into test through a practical set of tasks involving the comprehension of coerced structures and the possible role of context in understanding, taking into account that a purely lexically driven process should not only be easily triggered without context, but also not present a huge variation when submitted to a more contextual setting.

In the present study, we will review the problematic around the description of coercion, from the development of the theorization on the lexical aspects of verbs, to the coercion issue itself: its definition and proposed explanations.

Afterwards, we will proceed to review the many approaches on the subject, from the pure theoretical analysis to the applied studies, with special focus on their latest development which has included a very interesting neural component.

Finally, we will present our study of the issue, explain and describe the phenomenon, and the results of our observation, to end with the discussion about these results and their possible implications.

CHAPTER TWO: THEORETICAL FRAMEWORK

Regarding Aspect: what is type of situation?

The idea of "verbal aspect" is not really new. If we look back in time, we can find references to the study of aspect as far as Aristotle, and we realize that the aspectual components of a given predication have been described even before the formal acknowledgement of the phenomenon, for they have always been recognized as a very important feature of a given language. It is difficult then to understand why it seems to have been somewhat neglected and left incomplete in the field of linguistics for many years. And why, to make the matters worse, the terminology related to aspect has been not fully agreed upon. Some authors have used different terminology while others have used the same terms differently. All of that has led to an understandable confusion.

In understanding aspect, it is important to consider that the range of semantic distinctions that the term encompasses is certainly vast and also that, contrary to popular believe, there is more than one type of aspect.

Most commonly, *aspect* is conceived as <u>*the internal time*</u> (or shape) of an event, meaning how an event in distributed over time. And in the most extensive history of

the description of language, only this verbal aspect was recognized; the most common, well-known aspect and the one most of us actually learned at primary school language classes. It is known as the grammatical aspect of verbs, which describes whether a verb expresses a situation seen as unitary or bounded e.g. *I sang,* Sp. *canté*) or as on-going or unbounded (e.g. *I was singing*, Sp. *cantaba*).We can also distinguish a situation from being a habitual actual (e.g. *I [usually] sing* Sp. *Yo (usualmente) canto*) or whether it maintains its relevance at the moment of speech (e.g. *I have sang* Sp. *Yo he cantado).* As it can be seen from the examples, this grammatical aspect is usually expressed by the grammatical rules applied to a verb on a given linguistic construction (conjugation).

Nevertheless, there is another distinction to be made when discussing aspect. Many authors began to realise that verbs had not one but two aspects that came into play. These aspects are not only meaningful but also structural when determining the nature of a verb. Therefore, aspect has been determined to have both a grammatical and a lexical component.

In 1957, Vendler introduced for the first time four aspectual features of verbs, in which he proposed that each verb carries with it a series of aspectual inherent features, developing a taxonomy of verb types (fig. 1) from which the most relevant modern taxonomies trying to characterize the situation type of verbs have been developed. He determined each verb type based upon three basic components: Dynamism, durativity and telicity.

Dynamism refers to whether a verb is static –for example the verbs *be, believe, seem, exist-* or dynamic, meaning that the verb involves an active process of some kind –for example *run, win, talk, build.* Durativity has to do with the property of lasting through time, for example *walk* has durability but *knock* does not. And finally telicity refers to the property of having a natural ending point or not, for example *speak* lacks a natural ending point, as you can go on speaking without a pre-established end to that action, while *bake* does have a natural goal when the action will stop, the point when whatever is you are baking is finally ready.

Table 1

Vendler's Typology of Situational Aspect

	[+/- dynamic]	[+/- durative]	[+/- telic]
States	[-]	[+]	[-]
Activities	[+]	[+]	[-]
Realizations	[+]	[+]	[+]
Achievements	[+]	[-]	[+]

But it was in 1967, when Vendler publishes his book "Linguistics in philosophy", that his theory began to widespread through the linguistic field.

In the 70's authors such as Comrie (1976) and Lyons (1977) began differentiating between a more "subjective" aspect -the grammatical aspect described above- and an "objective" aspect –a type of aspect related to the lexical properties of the verb. This has come to be known as "aktionsart" or "type of situation".

Regarding this lexical component, verbs would bring within their lexical meaning an established type of aspect which, in turn, is deemed to constrain the whole utterance in which the verb is produced. The conception of this aspect lies in the realisation of verbs that appears to semantically constrain the construction that can accompany it in a given utterance, and this constrain is given by the internal set of intrinsic lexical characteristics that a given verb has. This lexical aspect has been given many names "not all of them strictly equivalent, for some highlight the exclusively lexical nature of the phenomenon, while others are compatible with a more grammatical approach" (Soto, 2011, pp. 183)

In the specialized literature, aspect, in general terms, has become an important feature of verbs to be explain and analyzed by linguists; richness in the grammaticalization of aspectuality is not only a very interesting process but also characterises many intra-language differences and internal structure, as it would be the case of comparing English to Spanish (Soria, 2011).

Aspect is deemed so important to the characterization of a verb that DeSwart states that it comes into action even before more traditional features of verbs: "I assume that grammatical aspect applies to eventuality descriptions to provide a perspective on the situation. Tense operates after all the aspectual operators have done their work" (DeSwart, 2000, pp. 3).

In this study we will be dealing with this particular aspect, for that we need to go further into this conceptualization. From now on, this lexical aspect will be called **Aktionsart**, **lexical aspect, type of situation** or **situational aspect** indistinguishably.

It is worth mentioning that some authors (Comrie 1976, De Miguel 1999) considered that the type of situation of a verb is fixed, while others (Smith 1997, Michaelis, 1998) are closer to the notion of having a set of prototypical situational types – following what Rosch (1999) understands as prototypes- and a set of derived types of situation; i.e. while the original idea was that the type of situation was always fixed and constrained by a set of lexical properties belonging to each verb, now the theoretical literature have moved toward the notion that it is not just the verb alone, but what has come to be known as "**verbal constellation**" – put in simple words, the verb together with its objects and complements- that determines the type of situation. Following this, the verb *to run* alone, as appearing in the sentence *John runs*, is an activity; on the other hand, *to run a marathon* as appearing in the sentence *John runs*

the marathon is a realization, due to the telicity component present in this utterance, i.e. *to run* does not have a predetermined end on its own, while *to run a marathon* does.

This goes along with the well-known principle of compositionality, present in linguistics since a long time, described by Frege in 1892 and used to explain how it is that humans can create and understand new linguistic expressions. It is summarized by Pylkkänen as follows: "The meaning of an expression is a function of the meanings of its parts and the way they are syntactically combined", meaning and implying that, in real language, a word is never uttered on its own (with no context) and therefore we need a concept like "verbal constellation" if we want to deal with aspectual type in the real language.

Hence, from now on we will use type of situation referring to the type given by the verbal constellation, even if, for redaction purposes, we only say that it is the one of a given verb.

The fact that each verbal constellation has its own predetermined type of situation presents important repercussions at the formal level of the sentence, given that it constrains the types of constructions or grammatical schemata that may accompany them. An example of this is found in the verb *begin*. Prototypically this structure is an achievement and, more specifically, an *ingressive* construction, and thus it marks the beginning of a certain activity, therefore, we would expect to have it always

accompanied by a direct complement composed by the action that has begun, for instance: *Mary began to talk.*

The problem of mismatch or verbal incompatibility

Following what was exposed above, there would be a set of compatibility rules determined by the type of situation; put another way, the Aktionsart of a verb or verb constellation limits the set of grammatical constructions that a verb accepts. However, there are some cases in which the speakers do not seem to follow these constrains given by the situational type they are using, which in turn produces an aspectual incongruence between a given verb and its grammatical context. In such cases, the theory predicts that such a sentence should be deemed as incorrect, inacceptable or non-understandable by the speakers and rejected as such. But it seems that these types of construction are fairly common and actually more frequent than what should be expected to disregard them as "exceptions", and communication does not seem to be impaired by the incongruence in most cases.

To explain the acceptability of this mismatch phenomenon, it has been proposed that an accommodation process would be set in operation in order to change the type of situation making it fit for the aspectual demands the higher level unit has. This process is called coercion.

On defining aspectual coercion

According to the literature in general, aspectual coercion is produced when the speaker faces a semantic incongruence between the verb-determined semantic type and another element in a given sentence. The name coercion comes from the notion that the semantic reinterpretation is "forced" onto a linguistic structure so that this linguistic structure is made functionally meaningful within the given utterance and thus the incongruence is fixed, enriching and modifying the subjacent lexical meaning of the coerced structure creating a new compositionally-derived sense for that structure.

In the words of DeSwart (2008): when the semantic conflict produced requires certain mechanisms for its reinterpretation and afterward processing and successful interpretation, coercion is triggered. That's why it is also called type-shift by many authors; in other words, type-shift allows a change in the type of situation which is needed for the understanding and acceptance of a given utterance. This being so, De Swart claims that coercion is generated via invisible mechanisms which are triggered by both the internal and external elements of a given clause.

Accordingly, coercion is seen as a semantical process given by the lexical components of a given verb, thus meaning that coercion itself has an undeniable lexical component.

This lexical component is given by the semantic enrichment of a lexical element exposed to the pressure of the mismatch, involving a shift that changes the argument structure of the verb:

Coercion mostly results in an accommodation of the meaning of a lexical item. The meaning shifts are manifold: lexical shifts from object to event, from mass to conventional portion, aspectual shifts of the lexical verb meaning triggered by tense morphemes, adverbs etc. (already present in Moens and Steedman 1988). Pustejovsky (this issue) defines a "library" of possible coercion operations, distinguishing between "domainshifting" and"domain-preserving" coercions. (...)Although this phenomenon shares many characteristics with the prototypical coercion cases, resulting in semantic enrichment of a lexical element under the pressure of the construction, it involves more than a mere meaning shift: it essentially changes the argument structure of the verb, resulting in a cocomposition of the lexical meaning of the verb and the structural meaning of the construction. (Lauwers and Willems, 2011, pp.1222)

Michaelis (2004) separated two types of coercion, naming the first one as endocentric coercion and the second as exocentric coercion. As the name denotes, the former type of coercion is produced when the aspectual shift is triggered by the syntactic head of the verbal phrase, hence it is also called a head-driven process, i.e.

the grammatical conjugation of a given verb phrase marks the need for the coerced meaning of the sentence. An example given by the author on multiple occasions is the progressive construction which demands certain types of complements and modifiers and does not allow others. For instance, the progressive is said to be incompatible with achievement verbs, that being so, *win* would be incompatible with the progressive forms and thus we should not encounter the structure *to be winning*, but we do. Let us consider the sentence *he is winning the race*. In this case, coercion is needed to fix the incompatibility of this sentence. As the progressive construction is not possible with an achievement verb, the type of situation of the verb must be changed into one that allows the progressive, this produces an impact in the meaning of the whole sentence, and *winning* loses it achievement meaning, which denotes a change of state into "winner", but it transforms into an ingressive meaning: The sentence now means something more similar to *he is about to win,* obtaining the durativity component (therefore, the verb is now classifiable as a realization) that the progressive requires to be applied to a verb.

The second type, exocentric coercion, is related to elements which are not syntactic heads, but rather external elements, as in the case of adverbs- in that particular case, this type can also be called adverbial frame coercion. Take as an example the sentence *the trekking team reached the top for 4 hours:* clearly, the adverb for 4 hours does not fulfil the semantic features required by the lexical aspect of the verbal constellation *reached the top*, given that the structure *for X time* can combine

only with atelic predicates and *to reach the top* is clearly telic. For a sentence like this to be interpreted, the atelic element needs to be shifted into an atelic eventuality, thus the meaning is coerced into two possible telic interpretations: It took the team four hours to reach the top, or, they stayed at the top for four hours.

Other interesting, and rather different, point of view of coercion is the one proposed by Koontz-Garboden (2006). He noted that it was commonly described in the literature, specifically by Talmy (1985), Croft (1990), and Levin (2001), that, apparently, languages tend to have certain words that express a more extensive typology and present a set of pre-determined aspectual categories which are sensitive to the morpho-grammatical use of that word. He distinguishes three aspectual notions regarding states: the pure given state and the change of state (COS), which, in turn, is divided into two different states: non-causative and causative.

For example, in English, for the state of 'looseness' there are stative loose, the non-causative change of state (COS) loosen, and the causative COS loosen, as shown in (2).

    (2) (a) The knot is loose. (state)

        (b) The knot loosened. (non-causative COS)

        (c) Alex loosened the knot. (causative COS)

This notion of change of state is not new, and it has been most commonly described as "ingressive constructions" (see above), nevertheless Koontz-Garboden

gives interesting insights and proposals that are pertinent for the discussion on coercion.

He first considers that the COS meaning is the non-derived aspectual meaning of the word "loosened" while the non-derived aspectual meaning of the word "loose" is a state, therefore he would disagree with Michaelis who would thus claim that COS in loosened is a case of "endocentric coercion" and not the non-derived meaning as proposed by him. That is to say, Koontz-Garboden considers loose and loosen to be different instances with two different non-derived meanings and not two instances of the same basal meaning in which one is the non-derived one and the other the derived one.

From this starting point he noticed that some non-indoeuropean languages, such as Tongan, had polysemic words meaning both the stative and the COS meaning, in cases like those he wonders whether that is polysemy or coercion. Following this, and studying languages that have morphological changes for COS (Warlpiri, O'odham, and Quechua) and languages that do not (Tongan), as explained by the author:

> Though all languages presumably have non-causative COS meanings, my claim is that these meanings are derived in fundamentally different ways from one language to another. Thus, it is important (...) that a distinction be made between the morphology which marks a particular meaning and that meaning itself. So, while so-called INCHOATIVE markers, such as Quechua -ya, by definition mark a noncausative COS meaning, non-causative COS meaning does not always arise as the result of the presence of an inchoative marker, as will be seen for Tongan.
>
> (…)

Some morphology marks fundamental changes to the meaning of a predicate, creating

a new lexeme. Other morphology marks more superficial changes less relevant to meaning, and

more relevant to morphosyntax. Of concern in the present context, then, is whether the

derivation from a state to a change of state in languages like Quechua is a morpholexical or a

morphosyntactic process. I suggest that it is a process of the former type, since it alters truth

conditional and lexical meaning in fundamental ways and since it does not alter valence; both

property concept states and non-causative changes of state are predicates that take a single

argument. Knowing that the function of affixes like Quechua -ya- is to effect a meaning change

in event structure helps make the contrast between languages like Quechua and languages like

Tongan, which lacks any such morpheme, sharper. (Koontz-Garboden, 2007. pp. 125-127)

He noticed that in neither case there was a specific morpheme that marked the

change into COS but this meaning was rather derived from the interaction with context

and that it "systematically co-varies with the appearance of other elements in the

sentence that crucially require COS meaning", thus giving further evidence to the

coerced analysis of COS structures of this type.

Furthermore, he takes that only the languages without a specific morphological

change for a COS word would require coercion to derived this meaning "such theories

need a way of dealing with the generation of meaning outside of the lexicon–what

some languages do morpholexically, other languages may do pragmatically, via

processes of coercion"; this implies that he only considers Michaelis's exocentric

coercion as real coercion, and not endocentric coercion, at least not the cases in which

endocentric coercion is triggered by a morphological change. But perhaps the most interesting part of his conception of coercion is that he gives an important role to the context when determining a coercive analysis, therefore he implies that coercion involves context and so it would be a more pragmatical process. That last issue has ruled the last discussions.

Semantically triggered or pragmatically triggered?

When first introduced to the field of linguistics, coercion was described as a semantic process through which an incongruence between the selective restrictions of a verb's aspectual features and the intrinsic sense of a given modifier triggers a process resulting in the accommodation of some aspectual characteristic of the verb in question, which will change to agree with the aspect type required for the use of that specific modifier, thus fixing the original incongruence. Such process is realized by means of an invisible semantic operator (De Swart, 1998) which, even if it does not have any perceivable morpheme, is present in the incongruent sentence and it carries out the aforementioned accommodation.

As we can see from what was stated above, the semantic nature of the phenomenon was determined, not only by the lexical inner properties that are said to determine the aspectual type of the verb, but also by the invisible operator that is deemed necessary for the process of adjustment to occur. When describing this process, DeSwart theorizes that each time the speaker/hearer faces incongruence the invisible operator gets activated because the requirements needed in order to make that sentence acceptable are not present. Through the operator, the instruction of reinterpreting the meaning of the sentence components is given, and therefore a coercive process is triggered. Later on, it was determined that these operators can be classified into two different types: type-shifting operators and type-sensitive operators. The former gives

an immediate situational type-shifting instruction and the latter would be mostly subjected to be pragmatically driven, i.e. the contextual constrains of a given utterance could have a leading role in the resolution of the type problem.

In the case of type-shifting operators we have the case of the progressive construction in English that can change rather automatically the meaning of a given structure. The progressive construction is generally accepted as a stativazer, meaning that an event will be coerced into a state. To exemplify, the expression *we were sleeping* has the same meaning as *we were asleep*, even when sleep is an activity and asleep is a state.

On the other hand, in the case of the type-sensitive operators, we have the case of the frame adverbial construction. This is the type of constructions that are going to be used in the present study and it happens when the adverb attached to a given verbal constellation requires that verbal constellation change its aktionsart. For example, the sentence *my presentation ran in less than 5 minutes* the adverb phrase *in less...* can refer to the time while the presentation was running or the time between the begging of my presentation and some previous activity.

This idea of a semantic operator being needed and necessary, even if invisible, is traceable to the conceptualization of language developed by Chomsky and the

linguistic generativism, especially in terms of the use of rules (generational and transformational rules).

In generativism, language is conceived as a system of innate formal rules that every potential speaker is born with and, this set of rules allows any potential speaker to acquire any specific language. According to this theory, language is produced using a set of grammatical rules to combine a limited group of words into a possibly infinite number of sentences.

Generative grammar distinguishes two different aspects in the process of an individual when producing language: Competence and Performance. The former is the knowledge an individual needs to be able to produce sentences correctly in a given language, while the latter refers to the actual production of the sentences by a given speaker (Chomsky, 1965). Generativists claimed that the study of the language should focus on the competence, for it was the key for understanding language: set of rules the speaker has/uses in producing/understanding language. Following this conception of language using a set of transformational and generational rules for creating its utterances, the type of word that can or cannot be in a certain position is determined by a grammatical rule that has nothing to do with the use, meaning (in the strongest version of generativism) and frequency of use. For example, if we read the sentence *I saw a nice* _____ -where the line marks the position we can fill up- any noun, can complete it, regardless of the frequency of occurrence of the possible nouns or if

the speaker has heard that noun completing a similar sentence before. In general terms, generativsm aims at describing a universal grammar, i.e. a concrete system of universal rules that allows the linguists to evaluate all grammars and to study every language. That is the reason for generativism to dismiss the idea of studying the "use of language" and concentrate on an "ideal speaker" of the language studied. In this way, all abnormality is wiped out of the study of language.

Taking all that into consideration, only strictly grammatically correct sentences can be studied in generativism. Therefore, in order for coerced structures to be recognized -and thus to become a study subject- there must be a rule (either semantic or syntactic) that allows the proper explanations of the phenomenon within this framework. That is why we can frame this view in a more conservational generativist cognitive study.

But nowadays a contrastive view has stepped in, the idea of an "ideal version of a language" has been gradually left aside and a new emphasis on "use" has taken over during the nineties.

Nonetheless, it was already in 1962 that Dell Hymes proposed a more pragmatic view of language. He claimed that the study of language should focus on the linguistic interaction; for him, not only vocabulary and grammar were important, but also the contexts in which utterances are produced.

An idea widely accepted nowadays is to study language "as people use it in their daily lives", and, in order to understand everyday language, a large number of researchers and theorists seem to agree on the fact that we need to infer the communicative intentions of the other hearer/speaker to whom we address, whether it is for cooperating for the communication to be successful (Grice, 1957), or because we have the urge to increase our world knowledge (Sperber & Wilson, 1986). And in doing so, the hearer/speaker needs to use the information available to him, i.e., the context.

Pragmatic ideas have been revised and seen with a somewhat different light by the new theoretical trends in cognitive science. Not only expanding and attempting alternative explanations for what it is called "pragmatics" but also giving pragmatic meaning a more crucial role in both comprehension and production of language. At the end of the 20th century, human's ability to "put in somebody else's shoes" has been said to have a neurological explanation through the discovery of mirror neurons (Rizzolatti, 1996). With this evidence the role of interaction seems to have become an important feature of discourse studies and a subject of many neurological studies.

This thread of thought has led to the revision of theories such as the one this study is concerned with, specifically the idea of a semantic operator. How much of these pragmatic processes are involved in the understanding of a coerced structure and how much of its resolution is purely semantic? The answering of this question lies at the heart of the proposal of distinguishing the difference between type-shifting and

type-sensitive operators: acknowledging the existence of a pragmatic solution without losing the semantic component of coercion.

Similar to this division in types of operators, but not and exact match, is the division Pylkkänen (2008) proposes: Type mismatch and sortal mismatch. The difference between the two lies not in whether they have one immediate solution or many possible options –as in the DeSwart model- but in the nature of the mismatch itself, to some extend as in Michaelis' model. This distinction is based upon the difference between type and sort as pointed out by Borschev and Partee (2004):

> Sorts are more fine-grained than types, and sorts need not form a taxonomic hierarchy; the sort food overlaps the sort plant, but neither subsumes the other.
>
> In a way all common nouns and verbs can be considered as sorts, with a special partial order relation 'subsort' as well as an 'overlap' relation. But the structure of this system and its role in forming semantically well-formed constructions is not yet well understood. (Borschev and Partee 2004: 30)

As we can see, the differentiation Pylkkänen is proposing puts the emphasis not on the possible result but on the inner meaningful structure of a given analyzed coercion.

Even though Michaelis agrees with De Swart in several points and also classifies coercions as a semantical process, including the invisible operator, her viewpoint leaves an important role for pragmatics to intervene and have a role in the

resolution of the aspectual problem. She states that "the biggest unit coerce upon the smallest unit", i.e. the verb (a small unit) will accommodate its type to the biggest unit of the sentence (for example, an adverb phrase).

In the literature, this kind of conceptualization of how coercion works has been not only complementing and enlarging, but also challenged and criticized, especially in the last years, given the emergence of plosive pragmatic alternative explanations. In a moderate view of this criticism– Michaelis (2003), Koontz-Garboden (2206), Dölling (2011)-, it has been suggested that giving a purely semantic status to this process and thus relying completely on the so called "semantic operator" to trigger the task fails to explain the cases where context is most important for it seems to favour the election and movement of the derived coerced meaning towards a certain reinterpretation, instead of having just one option of change marked by the operator.

On the other hand, in a stronger version –Ziegeler (2006) – coercion would not exist as proposed and described in the past, but it would simply be the result of the speaker applying his/her own set of general cognitive abilities and pragmatic tools used on a daily bases.

According to Ziegeler, if coercion is plainly an inference done by the speakers from the context, the naming and further separation of it as a linguistic phenomenon, is not justified, at least not if what we want to describe is what happens in natural communication and not in isolated –unreal- cases. That being the case, coercion would

constitute just a normal pragmatic process, guided by other processes already established and studied on their own in the specified literature dealing with pragmatics (e.g. Cooperation and relevance) and general cognition, therefore the additional grammatical rules (like the inclusion of an invisible operator) would not be needed for explaining coerced meanings, unless a diachronic grammaticalization of the phenomenon can be properly identified.

To sum up this point, for Ziegeler coercion is not more that general pragmatics rules setting language understanding in motion. According to her, the process of coercion has not been standardized and so it would not be distinguishable as an isolated process in language, if not for the efforts of the academics to make it so. In her view, the general cognitive processes used in coercion are basic for all human understanding and communication, so the isolation of the process is an illusion of the theorization.

She claims that, if coercion is to be considered as a linguistic process, a diachronic standardization of the process must be seen, and that, according to the author, has not happened. Mainly because coercion could still be characterized as a set of cognitive abilities, such as resolution of conflict, reasoning and the application of theory of mind which is the capacity to attribute mental states to oneself and/or to others.

This last point, even when neglecting by other scholars, might be very important to coercion. The use of this set of cognitive abilities, and first, the

willingness to acknowledge that "the other" has something to say different from what we know might be at the bases of understanding why we try to coerce in the first place.

That recognizing of some other having a different "mental life" from our own its what has been called Theory of mind (ToM). It has been described as the capacity of pretending to be somebody else and thus understanding that any other person may, and probably has, different mental states (beliefs, thoughts, likes, etc.) from the ones you may have.

In children this can be seen through behavioural clues, especially when you see them playing "pretending" games with their pairs or adults. In these games they need to understand what it is to be "somebody else" and how to convey that "pretension" to the fellow player (who is also pretending), but remembering who they really are. (Leslie, 1987).

Recent studies have shown the set of brain areas where ToM would take place. Namely, Gallagher and Frith (2007) discussed a network that is consistently activated in ToM related tasks: the anterior paracingulate cortex, the superior temporal sulci and the temporal poles bilaterally.

ToM is considered important for non-literal language understanding. Clearly it is difficult to imagine how to understand the intention a speaker has when uttering a non-literal piece of language if we cannot assume his intentions as different from ours.

Then, if coercion is a pragmatic device and not a semantic one, it would be parallel to those pragmatically resolved non-literal expressions, thus involving ToM.

When neurolinguistics comes into play

The previous theoretical discussion has finally reached the neurocognitive field, where some scientists decided to carry out neuroimaging tests in order to shed some light onto this issue.

On the semantically-based thesis of coercion, a series of MEG studies have been address, identifying a perisylvian component on the semantical resolution of the mismatch, while other authors claim that its sensitive component hypothetically leads toward the anterior midline field (Pylkkänen, Martin, McElree & Smart, 2009).

Piñango, et al. (2003) were pioneers defending a semantically-based thesis of coercion using neuroimaging techniques.

In their studies, normal subjects –i.e. subjects with no neurophysiologic anomaly- had to fulfil linguistic comprehension tests involving structures that needed a coerced meaning for their successful interpretation. Functional images of their brains were taken using functional magnetic resonance imaging (FMRi) –a technique that measures the change in blood flow related to neural activity in the brain- in order to determine which brain areas were activated when performing the tasks.

They theorized that if coercion was a semantic process then the brain areas related with the semantic processing of the structures was to be lightened (activated), and this is precisely what they found: an activation of the perisylvian areas of the brain, especially those related to the semantic processing of language.

On the other hand, Pylkkänen et al. (2006; 2008a) decided to test their own theorizations on coercion, discovering that the perisylvian activation was preceded and sometimes accompanied by a fronto-temporal activation that denoted a more general cognitive process occurring when solving mismatches.

In an initial investigation, Pylkkänen & McElree (2007) identified a fronto- medial MEG component for complement coercion at 400– 450 ms that showed larger amplitudes for expressions such as the journalist began the article than for controls such as the journalist wrote the article. **The coercion sensitive component** was dubbed the Anterior Midline Field (AMF), according to the midline prefrontal distribution. Importantly, this component was not

modulated by anomaly, as evidenced by a lack of an AMF effect for expressions such as the

journalist disgusted the article. Thus, this component does not appear to reflect low cloze

probability, as this hypothesis predicts the largest AMF amplitudes for the anomalous stimuli."

Pylkkänen et.at. (2009, pp: 185).

For doing so, they used the Magnetoencephalography (MEG) - a technique for mapping brain activity by recording magnetic fields produced by electrical currents occurring naturally in the brain- which, despite having a lower spatial resolution than the FMRi, has a much better temporal resolution. Plus, the authors measured the Event-related potentials (ERPs) of the subjects when they were performing the tasks. ERPs are taken with Electroencephalography (EEG) technique, by means of which we can get recordings of the mental activity of the brain through the scalp; in short, the ERPs corresponds to the average of EEG responses that are time-locked and related to a given stimulus (for example the resolution of a task). The time resolution of EEG is higher than any other method.

The subjects had to comprehend sentences that involved complement coercion, i.e. when the complement of a certain sort (look above) is needed. For example, in the sentence "John started the book" the verb "to start" requires a complement which is not present in the sentence, then the sentence should not make sense, but it is probably obvious to the reader that it does, and that this sentence is not only quite easy to

understand, but also fairly common. Notice that you may actually understand two things: either "John started *to read* the book" or "John started *to write* the book", in both cases we add the needed complement in order to make sense of that sentence, hence we are coercing "the book" into a more complex structure that includes the *action* sense that is required by the verb "to start".

In this study, Pylkkänen et al. found an activation area different from the one found by Piñango that could be related to the resolution of the coercion needed for solving the mismatch. Even when Pylkkänen et al. did find activation in the semantic areas Piñango et al. did, this one was seen together with an N-400 (ERP) response; that is to say, it happens when the subject realizes he is facing a semantic incongruence and not necessarily when they are solving it.

The authors sustain that the relevant process occurs 350-500ms later, when there is an activation of the anterior midline field –an area associated with conflict resolution- concluding that the ventromedial prefrontal regions of the brain have a primary role in coercion solving, leaving the semantic areas only as the identifiers of the *problem* within the sentence but having not much to do with the solution.

With this new neural evidence the authors determined that the anterior midline field (AMF) would be where we resolve mismatched structures, thus identifying coercion in the brain but not in an area related to linguistics but to the resolution of conflicts. They do not go further into specifying if this would mean the process is pragmatically driven instead of a process automatically triggered by a semantically

coded operator, despite the fact that the latter would suppose a semantic area of the brain to be involved in the process.

In 2009, Pylkkänen et al., they decided to eliminate the decision-making tasks (telling the researcher which interpretation was the best) from their studies in order to test coercion only through comprehension of a given piece of language. In this way they were able to see if the midfield activation found in the previous works was part of the coercive process or it just appeared because of the process of taking a decision. They used the same neurolinguistic methodology in all their studies (see above) and obtained the same results, an activation of the AMF during the process of understanding.

In that paper they took an intermediate position on the subject, saying that they believe to have found the placement of the brain mechanism used for coercion and that, because of the nature of that brain area "type-mismatch resolution may constitute an interface phenomenon between linguistic and non-linguistic processing (pp: 187)" using more general social cognition mechanism, such as theory of mind to solve the issue. This would mean that they were proposing an integrated process that needs both, semantic and general cognitive components to be accomplished. Interesting enough, the areas identified as relevant by them involve decision making and ToM.

Later, Pylkkänen et al. (2009b) published a larger and more specific study regarding coercion and brain areas, including this time two types of tasks involving each a different type of coercion. On the one hand, they continued to study

complement coercion while, on the other hand, they added a task involving what Pylkkänen denominates as pure aspectual coercion. This can be described in terms of Michaelis as endocentric coercion (read above) and involves only the internal structure of the verb phrase, i.e. a coercion driven by grammatical elements of the verb phrase, specifically to this case, conjugation of the given verb.

The results of this new study continue to set milestones and to give evidence towards a cognitively integrative and pragmatic coercion theory. Furthermore, Pylkkänen finds quite interesting differences among the two types of coercion studied. In the complement coercion a later activation of prefrontal ventromedial areas occurred (400-600ms) while the sentences involving pure aspectual coercion produced an earlier activation in a similar area (450ms), but only after a distributed activation throughout the right hemisphere (350ms).

Based upon this last discovery (the right hemisphere activation), Pylkkänen reassures her position –although, not as strongly stated as Ziegeler does- that the resolution of mismatch through coercion in nothing but a set of pragmatic and general cognitive abilities, involving not only medial and ventromedial areas of the brain but also the whole right hemisphere where, according to the specialized literature, pragmatic decisions are taken and resolved.

In using complement coercion only, Pylkkänen adds to the discussion many interesting features to the discussion. She uses her own differentiation (sort vs. type), but also, though without stating it, joins Michaelis endo- and exocentric taxonomy.

What is most interesting about complement coercion is not only that it provides good examples of the differences between type-coercion and sort-coercion, but that its nature regarding Michaelis description of types is somewhat elusive. When analyzed and categorized on these terms, it appears to be a sort of borderline type: Although it is clearly not a head-driven process, it is not an external element to the sentence either, such as the prototypical exocentric coercion: the adverbial. All of this makes it very difficult to classify.

We believe that the head-driven or not head-driven nature criterion -as explained above, whether the coercion is triggered by the syntactic head of the verbal phrase- is the really decisive one; therefore we considered that complement coercion is better classified as exocentric in nature (at least the complement coercion used by Pylkkänen). This is coherent with Pylkkänen's results in her study (see above), giving –even without intending to- a new neurological base for Michaelis' theoretically devised difference.

When contrasting Piñango's and Pylkkänen's finding a word must be said about the controversy often generated by neuroimaging studies. Every time we face a neuroimaging result we are not seeing the whole activation that was detected, what we

see is the result of a "subtraction" process; this is because the brain is active all the time so many non-relevant areas will be lightened at the moment of taking a sample, hence the need for a "cleaning process". Let's explain this in further detail: when we take a functional image of the brain there is a lot of "noise" in our image, that is why we need to take a "base image" first, i.e. a functional image of the brain with the subject doing nothing, all the activity captured at this stage will be considered to be "noise" when we actually get the imaging of the subjects performing the actual task pertinent to the present study, thus it will be removed from the final image, leaving us, in theory, with only the relevant and specific activation for the given task. Trouble arises when the subtractions processes are put into question, and it has been usual that authors, in many sub-areas involving this technique, invoke this controversial part of neuroimaging when obtaining different, and sometimes even opposite, results in different researches. And to this point, neuroscience has failed in solving this particular problem with this technique.

It is common to find this kind of contrasting results in these studies, and also why it is important that Pylkkänen is not only doing another neuroimaging study, but also adding further techniques to give alternative explanations to Piñango's. But all in all, neuroimaging can be considered critical in giving further evidence to the phenomenon, though it cannot be the decisive issue and it must be supported by further theory and other kinds of evidence.

Overview: The state of the art about this issue so far

From all that has been said, it is clear that the problem is far from being solved, but we believe scientists are getting closer to finding a theoretical solution. It appears that we have strong supporting evidence for both: the semantic and the pragmatic nature of the process; but pragmatic theories are gaining ground as more and more evidence is being accumulated study after study.

While some researchers seem to be trying to find balance and agreement between the semantic and the pragmatic aspect this process may have, others tend to state that only one aspect is the "true nature" of the process, either regarding the other as occasional or secondary, or simply discarding the other aspect as being totally disconnected to the coercive process itself.

If we take into consideration the previous discussion, the solving of the problem seems to lie in whether pragmatics has an important role in coercion or not.

Taking that into consideration, it has come to our attention that the experiments have been lacking the use of context to determine how pragmatic the solution of the mismatch really is a pragmatic one. Since context is an important element used in the pragmatic resolution of meaning, this absence in the tasks meant for examining coercion is actually surprising.

CHAPTER THREE: THE STUDY

The Study

The aim of the present study is to provide further evidence towards solving the semantic vs. pragmatic issue of coercion.

As described above, the neurological evidence found has given us dissident results. And thus the solving of mismatch is still of different linguistic nature for different authors. Hence it was decided to take a look at the realization of coercion through giving the speakers the option to coerce or not and then to quantify and qualify the different options they took.

But, if the goal of the present study is to test a possible pragmatic resolution, presenting the mismatching expressions seemed pointless. For that it was decided that context and its true role in coercion was a key feature we needed to clarify if the discussion was to be taken any further. That determined the nature of the present study.

For doing so, we devised a battery of questionnaires (to be explained in detail in the methodology section below) in which we played with different contexts. In every case the subjects would deal with the same set of sentences that present incongruence

with the aktionsart of the verb, thus needing coercion to be understood. In this way we could compare the resolution of the sentences in the different contexts, and so try to determine the real influence of context over coercion for speakers.

We expected to be able to find not only if a given context could facilitate coercion but also whether a given context could determined the final nature of the derived meaning of the coerced structure. If the latter results are to be true, we can speculate about the nature of coercion and its interaction with the general cognitive apparatus, making it –as many of the linguistic phenomena studied in the last years- another part of language that needs to integrate other cognitive processes (such as decision taking or TOM for pragmatic considerations) to be resolved.

Hypothesis

General Hypothesis

Coercion is a semantic-pragmatic phenomenon which is intrinsically connected to the linguistic environment and conditions where it's generated. Furthermore, the context could guide the kind of coercion as a result of the interaction of both factors.

Related Specific Hypothesis

- Context influences significantly on both: whether or not coercion will be triggered and which possible derived meaning will result from it.

- Coercion involves not only purely semantic processes, but also more general cognitive processes.

- Common coerced structures are more easily associated to one specific coerced meaning.

Objectives

General Objectives

As primarily objectives of the present thesis, we want to develop the following premises:

1.　　To determine the influence of context over a structure needing coercion.

    a. The extent to which context influences the willingness of the subjects to coerce

    b. The extent to which context influences the acceptability of the given structure

    c. The extent to which context influences the type of derived meaning obtained through coercion

Specific Objectives

The development of this thesis has as secondary goals the next statements:

1.   To identify the different degrees of acceptability of different structures which present an incompatibility, particularly, between the atelic nature of a given verb and a temporal adverbial phrase that demands for a telic verb.

2.   To determine if activity verbs (dynamic, durative and atelic) produce a default derived meaning, regardless of the context. And, if so, the extend to which can that default derivation be affected by context.

Methodology

Considering the amount of potential semantic and pragmatic constrains and the flexibility of everyday language use, an exocentric type of coercion was chosen. In this way we will not be dealing with head-driven (see above) coercions that might be triggered only by using one specific tense instead of another.

Wanting to eliminate borderline samples we decided to work with the most prototypical exocentric type: adverbial coercion.

For doing so, we devised a battery of three questionnaires, which were applied to the same set of subjects, all including the same set of sentences and answers in different settings: one without contexts and two with pertinent contexts. Each one of these questionnaires including in a set of options from which the subjects could choose not to coerce, but to "fix" the sentence to a more standard form for understanding it; to coerce the sentence into two possible derived aspectual meanings; or simply not to understand the question (see section below for details).

The tests were applied a week apart from one another to prevent interference from recent recalling of the previous questionnaire applied.

After all the questionnaires were applied, the answers were classified by their implied method of solving the type incompatibility and counted.

These results permitted a quantifying and qualifying analysis of the phenomenon.

The Questionnaires

As stated above, three questionnaires were designed in order to elicit the occurrence of adverbial coercion in different or no contexts.

All questionnaires had the same set of sentences: six sentences in third person singular each using either *correr (run), hablar (talk), mirar (watch), pensar (think), jugar (play) or dormir (sleep)* modified by the adverb phrase *en 15 minutos (in 15 minutes).*

In the first questionnaire the sentences were presented in isolation; in the second questionnaire the sentences were presented with a context that facilitates type-shift from atelic to telic; the third provided context facilitating type-shift from atelic to achievement.

For every sentence the questionnaires presented four different alternative meanings –a non-coerced but plausible meaning; two types of coerced meaning (derived accomplishment and derived achievement); and a distracter (added after the first pilot-) plus one option to identify the sentence as "senseless", leaving us with a multiple choice format with five equal alternatives per sentence.

In order to validate, correct and arrive at a definite version of the questionnaires for the study –which included selecting appropriate segregating contexts and determining the best phrasing and amount of multiple selection choices-, a series of pilot tests were run, from which we collected not only pilot results and test-answering

time, but also feedback from the subjects regarding both, the alternatives and the contexts provided.

Although the feedback was collected through an informal semi-structured interview after taking the questionnaires, the essential questions remained fixed:

• Were the contexts provided easy to understand?
• Could you picture the situation described? How normal was that situation?
• Did you think of an answer before seeing the alternatives?
• Why did you answer that?
• Would you add another possible alternative?

This set of questions was devised after the first pilot was run, given that the analysis of that first pilot's result alone did not provide sufficient information for efficiently improving the tool, and for validating the efficiency and understanding of the contexts.

In total, four pilot questionnaires were given, and the test-subjects were interviewed after the second and third pilot. Leaving the fourth to be run as a test of how the improvement worked, and it turned out that answering times were reduced – especially in questionnaires 2 & 3 I.E. those with context- and no subject asked clarification questions before, during or after taking any of the test.

The alternatives were scrambled when presented to the subjects in a way that they would not always appear in the same order. For counting purposes, the alternatives were unscrambled and left in the order exposed above ("Fixing" the sentence, coercing to accomplishment, coercing to achievement- ingressive-, distracter, declare not to understand).

In the third and last questionnaire some minimal words were changed for them to "sound more natural" to the context provided. These changes were made after taking into account feedback from the subjects after the trials. They reported that the neutrality of the options made it more difficult for them to understand the options as related to the original paragraph, especially in the third context.

Every sentence was composed of an activity verb and the temporal modifier "*en 15 minutos*" (*in 15 minutes,*). The activity verbs chosen were: *correr, mirar, hablar, jugar, dormir, pensar (run, look, talk, play, sleep, think), and they were presented in past simple tense sentences.*

Subjects

80 university students ranging from 17 to 41 years of age answered the three questionnaires. All the subjects agreed to the use of the information given in the

questionnaires, by signing an agreement, provided that their identity was kept

anonymous.

CHAPTER 4: RESULTS AND DISCUSSION

Results

The tables below (table. 2) show how the subjects answered to the questionnaires. In general terms, two facts are most noticeable from the data: one is that coercion does not behave in the same way when applied to different verbs, and the other is that context does have a strong influence on the speaker's response to a potentially coerced structure and on the coerced derived meaning, given that there is a significant difference in the results obtained without context and those obtained with it.

More specifically, the presence of context positively influenced the willingness to comprehend a statement in general and the resolution through coerced meaning in particular.

Table 2

Detailed Results Obtained through the Questionnaire

		Questionnaire 1 (no context)				
Alternative	**Corrió**	**Habló**	**Miró**	**Pensó**	**Durmió**	**Jugó**
"Fixing" the	13	22	15	9	18	24

Preposition						
Coercing to accom-plishment	**55**	**48**	**22**	**54**	**28**	**40**
Coercing to achieve-ment	**8**	**5**	**16**	**2**	**24**	**9**
Distracter	1	1	6	2	1	0
Don't understand	3	4	21	13	9	7
Total	80	80	80	80	80	80

		Questionnaire 2 (accomplishment facilitating context)				
Alternative	**Corrió**	**Habló**	**Miró**	**Pensó**	**Durmió**	**Jugó**
"Fixing" the Preposition	9	7	8	7	9	10
Coercing to accom-plishment	**59**	**56**	**37**	**56**	**40**	**47**
Coercing to achieve-ment	**10**	**15**	**22**	**12**	**23**	**16**

Distracter	0	0	0	0	1	0
Don't understand	2	2	13	5	7	7
Total	80	80	80	80	80	80

Alternative	**Questionnaire 3 (Achievement-facilitating context)**					
	Corrió	**Habló**	**Miró**	**Pensó**	**Durmió**	**Jugó**
"Fixing" the Preposition	14	13	15	11	12	11
Coercing to accomplishment	**25**	**20**	**17**	**26**	**18**	**16**
Coercing to achievement	**32**	**33**	**39**	**29**	**41**	**46**
Distracter	1	3	0	3	2	0
Don't understand	8	11	9	11	7	7
Total	80	80	80	80	80	80

In taking a closer look at how the response of the subjects changed from one questionnaire to another, we can see that the answers vary according to the type of context: In questionnaire 2 the number of derived realizations increased and we can see a decrease in the total lack of understanding (option e), while in questionnaire 3 the number of derived COS increased but we can also see an increase in the lack of understanding in the verbs that coerced more strongly to telicity in the contextless situation. This entails two important issues to be discussed in the following section: (1) that the context does influence on the resulting coerced expression, having an effect in the weather the speakers will try to understand the sentence or not, and (2) the derived aktionsart of the coerced expression.

When we analyze only the results from the contextless questionnaire, we can notice that *correr* is the most coerced verb followed closely by *pensar*, *hablar* and *dormir*, while *mirar* is the least coerced verb, followed by jugar.

The difference observed in the distribution of the coerced answers is appealing: whereas in *correr*, *pensar*, *hablar* and *jugar* there is a clear tendency to be coerced towards a telic aspect, *mirar* seems to coerce more naturally towards achievement and "*dormir*" presents a barely equal distribution for both answers.

Discussion

The results described above clearly suggest that context does have a significant influence on coercion. But more importantly, context seems to have an important role determining not only the realisation of a needed coercion, but also on the type of situation which will result from that coercion. This immediately calls for a revision of the semantically-driven idea of coercion: If coercion were a purely semantically-driven process, triggered by an invisible operator which is part of the language structure, then should not its derived meaning be also fixed and set by the "instruction" given through that operator?

In trying to answer that question, we cannot forget that DeSwart (1998:359) observes that this type of adverbial constructions usually allow for both achievements and accomplishing readings. This meaning that the possibility of two possible realizations was present in the original conception of the invisible operator. But if this is so, how much of coercion is because of an invisible operator per se, and how much of it is simple due to the willingness normal speakers would have to understand each other. Consider that, in the understanding processes, pragmatically derived processes are not uncommon in the language.

This is not to say, by any means, that coercion is not, in fact, a process on its own right. The fact that it can be characterized, isolated, and study as a specific way for understanding sentences that present a specific pattern of mismatch means that it is a linguistic process of its own right (and not simple a re-utilization of pragmatical tools already described in the language).

Saying that, it is clear that coercion has both a pragmatic and a semantic component: The semantic component is given by the constitution of the parts involved in it – i.e. the incongruence between the type of situation of a verb and a selected element (whether lexical or grammatical) added to the sentence-. Whereas the pragmatical component is given by the process through which that incongruence is solved. Ergo, the process of coercion is mainly pragmatic, given that semantics comes into play for identifying it, but not necessarily to solve it.

Let us remember that Pylkkänen et.al. identified and activation in the AMF, an area related to the decision-taking process. This area is connected to the anterior paracingulate cortex, which, according to Gallagher and Firth, is important for ToM. This studies results can be interpreted as further evidence to postulate that, after identifying the mismatch through the semantic cues, the speaker assumes a communicative intention thanks to his/her use of ToM, then decides that an alternative meaning should be intended, for finally using the context cues to derived a meaning that is both semantically correct according to the aktionsart of the verb and makes sense according to the context in which appears.

It is highly probable that the invisible operator proposed does indeed come into play when we need to solve a mismatch, but this study would like to propose that the nature of this operator is different, it would function much like a tagging mechanism that, after identifying the mismatch, can follow to possible solution paths. One would be the in fact something similar to the semantic process described in literature, but this

automatic process of coercing the meaning probably happens only in the most common verbs, the ones being the most coerced without context in the sample. It is worth noticing however that the fully semantic nature of this process is questionable, if it truly were a full semantic-operator doing this job, the percentage of coerced answers should be higher, because an invisible semantic operator should be part of the semantic linguistic ability, therefore it shouldn't show much scarce variability if any.

The path this study would like to propose is a pragmatic one, where the mismatch detected triggers that seek for an alternative explanation and that is solved using skills and abilities belonging to the general cognitive apparatus, in particular one would use integrative abilities to connect the cues provided from the context, plus the ToM to identify the fact that the sentences have in fact a communicative meaning, and also to understand what my interlocutor may be trying to say (this could be defined as "be empathic"). I would also need my semantic meanings to know how far I can "stretch" the meaning of the utterance I am trying to make sense of together with the use of my experience to know if my interpretation is plausible, or if it makes sense in a given context. This second path of solving the issue would be the one responsible for the variability we can see, and the one the speaker will apply for solving coercions we do not recognize as "fixated" or "meaningful be default" according to our own experience –that in turn, because the sentences present variation not only in general but also within each subject-).

It is also worth mentioning that, taking into account the results obtained without any context, verbs seem to have a more prototypical derived meaning for this given structure and this is prototypically more pre-determined in some verbs that in others, but to state this to a higher degree of certainty further research would be needed to establish the true nature of this preference.

Regarding that latter fact, the graphs show that some verbs are more easily coerced than others. While some verbs were coerced by the majority of the subjects, even in the absent of context, others proved to be less automatically coerced, having a stronger dependency on context to increase the amount of the subjects' willingness to derived a coerced meaning.

In terms of the coerced meaning itself, we can see from the data how verbs seem to be re-groupable into, at least, two subtypes, those that coerce more naturally towards accomplishments and those that coerce more naturally towards achievements. Moreover, verbs don't fall into an absolute tendency, no verb is coerced in the same way by the total amount of speakers; nevertheless, some verbs can be said to have a strong pre-determined derived meaning, while others seem to be more flexible, thus being able to be graded according to this tendency (see fig. 1)

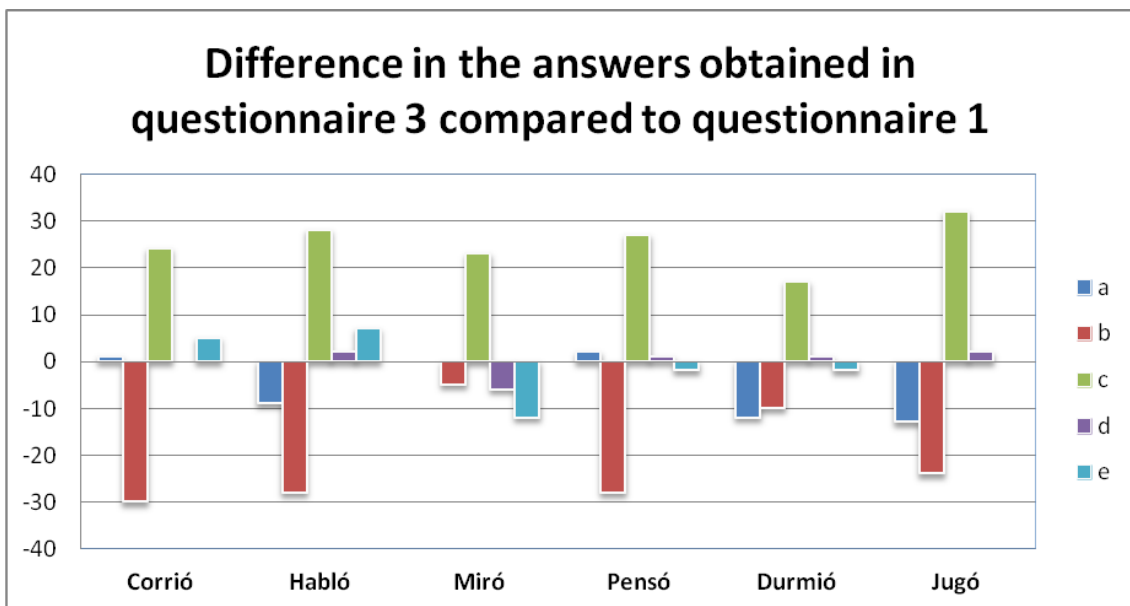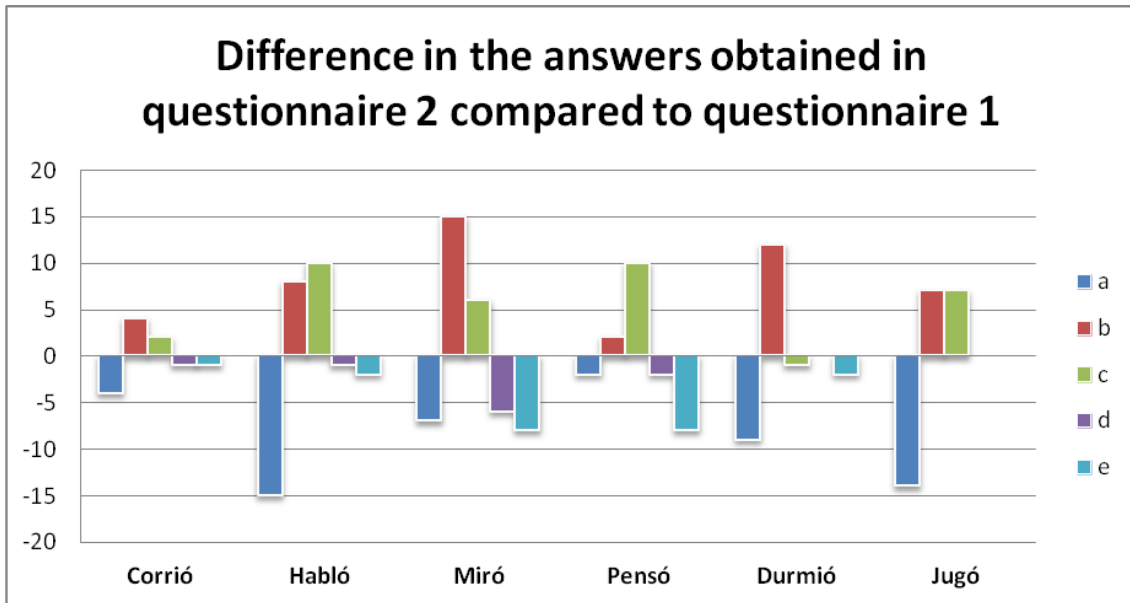Figure 1

The Base Coerced Meaning of the Studied Verbs
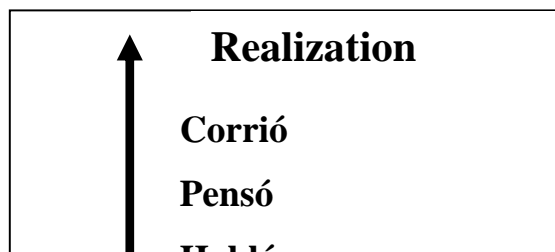
It seems that, for the three first verbs on the above diagram, coercion towards an accomplishment re-interpretation is more prototypically and automatically made by the subjects. We can notice how, even without any context, the majority of the subjects tend to coerce these verbs towards accomplishment (Table 2). Furthermore, the questionnaire leading to accomplishment did little change, regarding that particular interpretation, in the case of *corrío* and *pensó*, probably because they were already highly coerced as such in the contextless situation (Fig 2). This could mean that those verbs are indeed less context-dependent, following not only the little change, but also the big number of coerced answers that applied with no context once so ever.

That is easily contrasted with the situation of the last two verbs from the diagram, *durmío* and *miró*, which presented most significant changes when presented with context to the subject, in both the type of coercion resulting and the number of coerced answers. Therefore appear to be much more context dependent.

Moreover, a COS interpretation of the first set of verbs *(corrío, habló,* in particular) seems to be more difficult, because, even though in a very small percentage, contexts leading towards it increased the lack of understanding, instead of facilitating that particular type of coercion, as we can see in the graph below. Whereas all the other verbs presented an increase in the willingness to understand, showed by a decrease in the "didn't understand" answer, in both contexts.

These interesting results can be interpreted as the speakers having a prototypical context (In the sense of Rosch, 1999) associated to certain verbs, in the case of this particular study to *corrío*, *pensó* and *habló* –this latter to a lesser degree-. If we accept that, the explanation for the lack of understanding of the COS context in *corrío* and *pensó* is fairly simple, and highly pragmatic: the context is interfering with the expectations of the speakers and thus the expected meaning clashes with the possible derived meaning and preventing the understanding of the sentence in that specific context.

The bars obey the following cue: **A= "Fixing" B=Telic Coercion C=COS D=Distracter E= Didn't Understand** (See Table 2)

Figure 2

Graphs showing how the answers given in the two contextualized questionnaires changed when compared to the contextless questionnaire.

This can only make us think of why some are verbs so strongly correlated with a specific coerced meaning and some others are not. It seems plausible to propose that the original process of coercion is the same for all verbs in principle, but some verbs became attached to a fixed coerced meaning so strongly that this meaning becomes somewhat standardized. This process is not uncommon, and it can be seen with a lot of different types of second meaning generation in language, in particular with some figurative/metaphorical meaning that, in extreme cases, can become even more common than the literal meaning. In Spanish, an example of this is the case of the expression "para variar" (for a change) which has been used ironically (meaning "as usual") so frequent and consistently that now the ironic meaning is associated to it automatically, even when the literal meaning is possible –this is true also for this expression in English.

That being said, there is no reason why coerced structures cannot undergo this very same process of meaning fixation.

We can speculate as to why some meanings – and not others -- become fixed, and thinking of "frequency" as a decisive factor in this manner, but unfortunately (due mainly to time and scope constrains) the present study does not include a frequency study. Even so, regardless of how the derived meaning of verbs gets fixed into the language, this fixation gives way for a semantic interpretation of the process: Given the automatic and almost context-free solving of the mismatch problem in these verbs,

together with a somewhat faulty and forced process of coercing into a different meaning, it can perfectly be seen as a semantic process. Nevertheless, the fact that it can be enhanced by context can make it slightly more complex, and it could be interpreted only as the pragmatic component present in all discourse. But the fact that we found a series of non-fixated verbs calls this interpretation into question and strengthens the idea of coercion being what we explained before: A dual semantic-pragmatic process, with a very strong pragmatic component, which appears to have some specific instances that have become more common, and so, more automatic and easier to accept for speakers.

CHAPTER 5: CONCLUSION

It is clear from the results obtained that context has a strong effect on the understanding of a coerced structure; it influences the willingness of subjects to coerced, thus improving the number of coerced structures when present. With contexts the speakers did not always tend to coerced, but could try different alternatives to understand the sentence –as we saw, they sometimes tried to "fix" the modifing adverb phrase-. This suggests a deeper process connecting other cognitive skills, namely ToM and decision-making.

But not only that, context also has an effect on the type of derived meaning the process of coercion will give as a result. These two facts show that context has a very prominent part to play in the process of coercion, having a direct effect on the outcoming meaning that comes from a coerced structure.

That being said, we can conclude that coercion is a pragmatically driven process that interacts with a larger set of cognitive abilities and affects the semantic set of features (the lexical aspect) of the verb or verb constellation in a given utterance. That gives coercion a dual (semantic-pragmatic) nature, thus needing an understanding of both operating together to fulfil the process.

Thus we could state that context needs to be integrated to the procedure of understanding coercion. Nonetheless, even when it has been shown that for a mismatch to be fixed through coercion the presence of context is very important, we found that coercion is possible in isolated sentences, but the willingness of the subject to coerced, or even to try to understand the sentences, is not the same for every verb. Nor is the preferred derived aktionsart the same for every verb. This interesting detail could suggest that some coerced expressions are in an intermediate state of becoming fixed in the language, but that statement needs further investigation to be fully proved.

Further development and considerations

    - The original idea of the author of the present work was to contrast the results obtained with those of subjects presenting brain damage involving the so called semantic areas of the brain, and the so called more pragmatic areas of it. This turned out not to be possible, not only for the lack of time and methodological constrains, but also for the lack of patients with these particular types of lesions for us to test.

    - A possible solution for the lack of patients issue is to test subjects suffering from a condition that compromises the cognitive abilities mentioned in this study as needed for successful understanding of coerced structures; such is the case of the asperger syndrome which is said to impair the ability to effectively use T.O.M.

    - Some phenomena found in this study suggest the need of knowing about the frequency of use of the verbs presented, and of their use together with mismatches like the ones presented. A frequency study is also suggested as a follow up from this work.

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APPENDICES

For a better understanding of the instrument used, these questionnaires are presented here with the options unscrambled. The alternatives were randomly scrambled when presented to the subject.
The alternatives as presented here are distributed according to the following:

A= "Fixing"
B=Accomplishment Coercion
C=COS or Achievement Coercion
D=Distracter
E= Didn't Understand

Appendix 1: Questionnaire without context
Señale que entiende en cada una de las siguientes oraciones, si ninguna opción concuerda con su interpretación, por favor elija la que más se aproxime. Recuerde que no hay respuestas buenas ni malas.

Corrió en 15 minutos
   a) **La persona corrió durante 15 minutos**
   b) **La persona se demoró 15 minutos en recorrer un trayecto determinado**
   c) **La persona se preparó para/ empezó a correr en 15 minutos**
   d) **La persona siempre corre 15 minutos**
   e) **Me resulta incoherente**

Habló en 15 minutos
   a) **La persona habló durante 15 minutos**
   b) **La persona realizó una exposición que duró 15 minutos**
   c) **La persona se preparo para/empezó a hablar en 15 minutos**
   d) **La persona tiene facilidad para hablar.**
   e) **Me resulta incoherente**

Miró en 15 minutos
   a) **La persona miró (algo) durante 15 minutos.**
   b) **La persona se demoró 15 minutos en mirar algo.**
   c) **La persona se demoró 15 minutos empezar a/ prepararse para en mirar algo.**
   d) **La persona miraba con mucha atención**
   e) **Me resulta incoherente**

Pensó en 15 minutos
   a) **La persona pensó durante 15 minutos**
   b) **La persona se demoró 15 minutos en pensar una solución (respuesta).**
   c) **La persona se preparo para/empezó a pensar en 15 minutos**
   d) **La persona tenía problemas para pensar**
   e) **Me resulta incoherente**

Durmió en 15 minutos
   a) **La persona durmió durante 15 minutos.**
   b) **La persona durmió una siesta de 15 minutos.**
   c) **La persona se demoró 15 minutos en quedarse dormida.**
   d) **La persona no podía dormir**
   e) **Me resulta incoherente**

Jugó en 15 minutos
   a) **La persona jugó durante 15 minutos**
   b) **La persona se demoró 15 minutos en completar un juego**
   c) **La persona tardó 15 minutos en prepararse para/ empezar a jugar**
   d) **La persona disfruta jugando**
   e) **Me resulta incoherente**

Lea el texto y luego señale qué entiende por la oración subrayada. Si ninguna opción concuerda con su interpretación, por favor elija la que más se aproxime. Recuerde que no hay respuestas buenas ni malas.

Juan tiene una rutina muy sana, todas las mañanas se levanta muy temprano y corre al parque y de vuelta a su casa antes de irse a trabajar. Ayer <u>corrió en 15 minutos</u>, por lo que llegó muy emocionado a su oficina.

Corrió en 15 minutos
- **a) La persona corrió durante 15 minutos**
- **b) La persona se demoró 15 minutos en recorrer un trayecto determinado**
- **c) La persona empezó a correr en 15 minutos**
- **d) La persona siempre corre 15 minutos**
- **e) Me resulta incoherente**

Victoria practicó toda la noche para su disertación en la clase de la mañana siguiente. Expuso con cronómetro en mano varias veces para no superar los 20 minutos que tenía designados. Al final <u>habló en 15 minutos</u>, por lo que hubo tiempo de sobra para preguntas.

Habló en 15 minutos
- **a) La persona habló durante 15 minutos**
- **b) La persona realizó una exposición que duró 15 minutos**
- **c) La persona empezó a hablar en 15 minutos**
- **d) La persona tiene facilidad para hablar.**
- **e) Me resulta incoherente**

José necesitaba realizar un boceto para una instalación artística, por lo que tenía que familiarizarse con el lugar. Cuando fue a conocer la locación se tomó su tiempo para tener claro qué cosas no debían faltar, cuál era el mensaje que quería transmitir y la distribución ideal de los elementos de su instalación. En total, <u>miró en 15 minutos</u> y logró realizar su boceto.

Miró en 15 minutos
- **a) La persona miró durante 15 minutos.**
- **b) La persona se demoró 15 minutos en mirar todas las cosas.**
- **c) La persona se demoró 15 minutos empezar a mirar algo.**
- **d) La persona miraba con mucha atención**
- **e) Me resulta incoherente**

Camila tenía que tomar un nuevo recorrido del Transantiago y se encontraba en plena Alameda, <u>pensó en 15 minutos</u> y luego tuvo la confianza para ponerse a caminar.

Pensó en 15 minutos
- **a) La persona pensó durante 15 minutos**
- **b) La persona se demoró 15 minutos en pensar una solución.**
- **c) La persona se empezó a pensar en 15 minutos**
- **d) La persona tenía problemas para pensar**
- **e) Me resulta incoherente**

Pedro estaba cansado y prendió la televisión para distraerse, durmió en 15 minutos. Cuando despertó vio el reloj y supo que llegaría tarde a su cita.

Durmió en 15 minutos

- **a) La persona durmió durante 15 minutos.**
- **b) La persona durmió una siesta de 15 minutos.**
- **c) La persona se demoró 15 minutos en quedarse dormida.**
- **d) La persona no podía dormir**
- **f) Me resulta incoherente**

Francisca estaba aburrida y sacó sus naipes para jugar un solitario. Jugó en 15 minutos y luego se puso a trabajar.

Jugó en 15 minutos

- **a) La persona jugó durante 15 minutos**
- **b) La persona se demoró 15 minutos en completar un juego**
- **c) La persona tardó 15 minutos en empezar a jugar**
- **d) La persona disfruta jugando**
- **e) Me resulta incoherente**

Appendix 3: Questionnaire with context facilitating achievement

Lea el texto y luego señale qué entiende por la oración subrayada. Si ninguna opción concuerda con su interpretación, por favor elija la que más se aproxime. Recuerde que no hay respuestas buenas ni malas.

Ana se compró una máquina trotadora. La programó para correr por 30 minutos. Luego buscó un buen par de zapatillas, se puso su buzo y llenó una botella de agua y empezó a hacer algunas elongaciones para prevenir desgarros. Finalmente, <u>corrió en 15 minutos.</u>

Corrió en 15 minutos
   a) **La persona corrió durante 15 minutos**
   b) **La persona se demoró 15 minutos en recorrer un trayecto determinado**
   c) **La persona empezó a correr en 15 minutos**
   d) **La persona siempre corre 15 minutos**
   e) **Me resulta incoherente**

El alumno, Luis Zúñiga, por su apellido, siempre es el último en las actividades de la clase. Normalmente, debe esperar media hora en las pruebas orales. Un día en que los alumnos tenían que disertar, la mitad del curso estaba ausente. Ese día Luis <u>habló en 15 minutos</u>.
Habló en 15 minutos
   a) **La persona habló durante 15 minutos**
   b) **La persona realizó una exposición que duró 15 minutos**
   c) **La persona empezó a hablar en 15 minutos**
   d) **La persona tiene facilidad para hablar.**
   e) **Me resulta incoherente**

Diego, que estudia arquitectura, buscaba modelos para realizar una maqueta<u>. Miró en 15 minutos</u> los edificios que rodean la plaza de armas y luego empezó a hacer esbozos para su maqueta.
Miró en 15 minutos
   a) **La persona miró durante 15 minutos.**
   b) **La persona se demoró 15 minutos en mirar algo.**
   c) **La persona se demoró 15 minutos en empezar a mirar algo.**
   d) **La persona miraba con mucha atención**
   e) **Me resulta incoherente**

Mauricio estaba muy estresado por un trabajo que debía entregar; no lograba redactar algunas partes correctamente. Por lo general, se sienta frente al computador y las ideas comienzan a fluir de inmediato, pero el estrés lo había dejado en blanco. Puso algo de música, se preparó un café bien cargado y algo de comer. Luego llevó todo al escritorio donde acostumbra trabajar, puso su celular en silencio y desconectó el teléfono. <u>Pensó en 15 minutos</u> después de sentarse a escribir.
Pensó en 15 minutos
   a) **La persona pensó durante 15 minutos**
   b) **La persona se demoró 15 minutos en pensar una solución (respuesta).**
   c) **La persona empezó a pensar en 15 minutos**
   d) **La persona tenía problemas para pensar**

e) **Me resulta incoherente**

Isabel llegó a casa tarde pero pensó que no tenía sueño. Contra sus propias expectativas, apoyó la cabeza en la almohada y <u>durmió en 15 minutos</u>.
Durmió en 15 minutos
   a) **La persona durmió durante 15 minutos.**
   b) **La persona durmió una siesta de 15 minutos.**
   c) **La persona se demoró 15 minutos en quedarse dormida.**
   d) **La persona no podía dormir**
   e) **Me resulta incoherente**

Carolina estaba aburrida, y decidió que quería jugar. Buscó sus mejores muñecas, llamó a sus amigas de la cuadra y preparó un lugar en el patio donde podrían estar sin problemas; se sentó a esperar que sus amigas llegaran. Finalmente, <u>jugó en 15 minutos</u>.
Jugó en 15 minutos
   a) **La persona jugó durante 15 minutos**
   b) **La persona se demoró 15 minutos en completar un juego**
   c) **La persona tardó 15 minutos en empezar a jugar**
   d) **La persona disfruta jugando**
   e) **Me resulta incoherente**