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Processing Patterns of Focusing

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An Experimental Study on Pragmatic Scales
Triggered by the Spanish Focus Operator *incluso*

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In the following reference, minor aspects of my and similar experimental studies of the research group are summarized in order to establish general conclusions on how discourse particles behave in discourse (cfr. §§ 7.1.2. and 7.3.2.):

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Abbreviations

ADJ	Adjective
ALT	Alternative
AOI	Area of interest
CREA	Reference Corpus of current Spanish
DPDE	Dictionary of Spanish Discourse Particles
DPKog	Research group *Discourse Particles and Cognition*
e.g.	*exempli gratia*, for example
F	Focus
FO	Focus operator
GAMM	Generative additive mixed models
i.e.	*id est*, in other words
LM	Lexical mean of the utterance per word
NGLE	New Grammar of the Spanish Language
ss.vv.	*sub verbis*, under the word or headings
TM	Total mean of the utterance per word

Typographical conventions

- Cursive font can represent words in languages other than English, as well as metalinguistic terms or examples that are incorporated in the text corpus.
- Capitals are used to highlight *concepts*.
- Small caps present *topic information* or *prosodic stress.*

- All examples appear in bolt font. Cursive font is only used to highlight particular elements.
- Any Spanish example is provided with a translation into English in single quotes and round brackets.
- Examples preceded by # denote pragmatic strangeness. It is possible that examples that seem strange in Spanish are not odd in the English translation, and vice versa.
- The examples extracted from the CREA Corpus are cited as (CREA, source, date).

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INTRODUCTION

In communication, individuals do not attribute the same informative value to the different elements that constitute an utterance, and consequently the discourse. Hence, individuals not only consider what they want to communicate, they also consider who the addressee is and how his possible mental information state is shaped at a current communicative act (cfr. Portolés 2010:283-284, 2011:51, Krifka and Musan 2012:1). The hypotheses based on the knowledge and expectations of the addressee determine the way the interlocutor organizes his discourse in order to generate a relevant ostensive stimulus that could be felicitously integrated in the common ground by the addressee (cfr. Sperber and Wilson 1995 [1986], Lambrecht 1994:XIII, Krifka 2008:245, and § 1.). Thereby, the individuals differentiate between different types of information, e.g. what is considered mutual knowledge or background information, what is new information or what is the most important information (cfr. § 2.).

The information structure is always language-specific. In Spanish, if the interlocutors want to highlight new or unexpected information, they have at their disposal different focus-sensitive mechanisms, as a) prosodic mechanisms; b) syntactical-distributional mechanisms or c) by means of a linguistic device, like the focus operator (FO) *incluso* (cfr. Escandell Vidal and Leonetti 2009, Portolés 2007, 2010, Leonetti 2014-2015, and § 3.) in

David habla inglés e *incluso* chino.
('David speaks English and *even* Chinese.')

Due to its procedural meaning the inclusive FO *incluso* evokes a specific information structure: it informatively highlights an element of the paradigm as the most relevant element in a specific and accessible context (cfr. Rooth 1985, 1996, König 1991, Portolés 2007, 2010, 2011, *DPDE* online). The instruction of the FO conventionally triggers a contrastive relation between the focus (*Chinese*) and the alternative (*background information*, *English*) and leads to the interpretation of a scalar implicature (cfr. Jacobs 1983:8-10, König 1991:10, Iten 2002:119-120, Portolés 2010:294-295, Cruz and Loureda 2019, and § 4.).

If the individuals organize their discourse according to their communicative needs, it can also be assumed that not all utterances present the same processing effort. Consequently, languages have elements that allow to regulate this cognitive effort which involves the con-

struction of assumptions based on mental representations while using different types of inferential computations (cfr. § 1.).

Elements with procedural meaning, such as FOs (and discourse particles, in general) precisely fulfill this regulation-effect.[1] They restrict the inferential processes in an accessible context due to their morphosyntactic, semantic and pragmatic properties and guide the addressee to the intended communicated assumption, while optimizing the processing effort of utterances (cfr. Sperber and Wilson 1995 [1986], Blakemore 1987, 2002, Portolés 2001 [1998], Wilson and Sperber 2002). The procedural meaning of FOs regulates the informative context of the utterance: it sets certain rules for the elements with conceptual meaning in an utterance and requires the modification of the mental representations formed by specific concepts (cfr. Escandell Vidal and Leonetti 2011:84, and § 1.2.). Thus, they encode an inferential route that is more efficient in order to obtain a relevant stimulus in communication (cfr. Sperber and Wilson 1995 [1986], Blakemore 2002, Wilson and Sperber 2002).

Following these arguments, FOs are considered to constitute a notable focus of attention, both in production and in the comprehension of utterances. Theoretical, descriptive and contrastive studies on FOs and, in general on discursive particles, provide fundamental analyses of their properties (cfr. among others König 1991, Martín Zorraquino and Portolés 1999, Cuartero Sánchez 2002, Portolés 2007, 2009, 2010, Loureda and Acín, 2010). Likewise, different experimental studies conducted with Spanish discourse particles that have examined the procedural effect of these devices during processing sustain three main arguments that can be attributed to the theoretical described characteristics of the procedural meaning of these units (cfr. Loureda *et al.* 2013, Cruz and Loureda 2019, Loureda *et al.* in press, and § 5.2.):

- *The insertion of a discourse particle provokes different processing patterns.* Discourse particles control the processing of the utterance in which they are inserted. Therefore, the particle requires most of the processing effort in contrast to the other elements under its scope.
- *Discourse particles reassign the informative values of the other elements.* Discourse particles redistribute the relative values of the elements under their scope.

[1] In this thesis, FOs are considered a subclass of discourse particles, since they constitute an invariable linguistic unit and they possess a determined role in discourse: to guide, according to their properties the inferences realized in communication (cfr. Martín Zorraquino and Portolés 1999:4057, Portolés 2001 [1998]:25-26, and § 4.1.).

– *The insertion of a discourse particle does not provoke higher processing effort for the utterance.* An utterance with discourse particle does not require more processing effort than the same utterance without discourse particle.

Based on these findings, the experimental study in this dissertation aims to provide complementary information to existing theoretical and descriptive approaches by examining a) if there are correlations between morphosyntactic, semantic and pragmatic properties of the FO *incluso* and the informative structure of the utterance, b) how the FO affects the elements under its scope, that is, the implicated element of the focusing operation (focus and alternative), and c) to what extent the presence of a FO determines the recovery of inferences.

In order to answer these questions, two experimental methods are implemented: An *online* eye tracking study and an *offline* comprehension test. While the eye tracking technique allows to register eye movements that reflect the processing effort during reading of critical stimuli, the comprehension test provides indicators of how readers understand utterances and recover the inferences. Both studies complement each other and ensure qualitative and quantitative data on how focusing structures affect the cognitive level of communication (cfr. Kintsch and Rawson 2005:214, Lowie and Seton 2013:4). Thereby, this study considers four linguistic variables:

– *Extension of the alternative (IV A – cross-variable).* The conditions of the independent variables IV B, IV C, and IV D are analyzed in three different information structures regarding the alternative information: *implicit alternative, explicit single alternative* and *explicit complex alternative*. This variable explores whether different extensions of background information lead to different processing and comprehension patterns.
– *Focus marking (IV B)*. Absence vs. presence of the FO. This variable aims to corroborate if the insertion of an explicit procedural mark in an unmarked focusing structure facilitates processing during the construction of an assumption. Likewise, it will be examined, whether the insertion of a FO determines the comprehension process (cfr. § 7.1.).
– *Position of the FO in relation to the focus (IV C)*. Preposition vs. postposition of the FO. It will be examined to what extend different FO-positions regarding the focus influence the processing and comprehension of marked focusing structures, and if according to their information structure a preferred position can be identified (cfr. § 7.2.).
– *Degree of informativity (IV D)*. Congruous vs. incongruous relation between procedural and conceptual information in an utterance regarding the context. This variable aims to

verify whether processing patterns change according to different degrees of informativity in an utterance (cfr. § 7.3.).

The presented study is part of a research project *Discourse particles and cognition* that aims to identify cognitive patterns of different types of discourse particles in different languages.[2] The aim of the research project is to extend the theoretical and descriptive approaches to discourse particles by a cognitive approach and to examine whether different particles determine processing differently in different languages. This objective provides insights for general and descriptive linguistics, as well as for applied linguistics. The contrastive approach enables the identification of similarities and differences between the different language systems.

This dissertation is compounded by 8 chapters. Chapter 1 and 2 provide the theoretical background on Relevance Theory and Information Structure, notions that are central to the empirical research of this thesis. Chapter 3 is divided in four main subsections that outline different notions related to focusing phenomena, as i.e. focus marking, alternatives and scalarity. Chapter 4 is devoted to the research object of the study: It summarizes the basic notions related to FO in Spanish and exclusively addresses the properties of the Spanish FO *incluso*. Chapter 5 covers the methodological principles that underlie the experimental study, and presents an overview of previous experimental findings on focusing. Chapter 6 provides a detailed description of all requirements concerning the experimental design and the execution of the experiments, as well as the statistical treatment. The results are outlined in three subsections of chapter 7. Each subsection presents and discusses the main results of the eye tracking study and the comprehension test of one particular independent variable (IV B, IV C and IV D). The results of the cross-variables IV A – *Extension of the alternative* are discussed in each of the other sections. Finally, Chapter 8 offers general conclusions based on the relevant findings of the study. At the end, the chapter offers an outline to prospects of further research possibilities.

[2] All empirical studies are realized within the research group: *Discourse particles and cognition* of the Center for Iberoamerica at Heidelberg University. For empirical evidence of the causal connective *por tanto* see Narváez García (2019), Recio Fernández (2020) and Cuello Ramón (in preparation), for the counter-argumentative connective *sin embargo* see Nadal (2019) and for *a pesar de ello* Guillén Jiménez (in preparation), for reformulation markers see Schröck (2018) and Salameh Jiménez (2019) and for the FO *hasta* see Torres Santos (2020). For studies, conducted with the German FO *sogar* see Rudka (in preparation).

1. COMMUNICATION AND RELEVANCE

In communication it is important to know more than just the meaning of words and to have some knowledge about grammar. In a communicative act like:

(1) Harry: Mary, did you like the chocolates?
Mary: The ones with nuts.

Mary could have perfectly answered *yes* or *no*, but with the given answer she intended to communicate Harry something more than the mere fact, that she does or does not like the chocolates. Mary's intention could be to communicate, that firstly, she likes only some of the chocolates and not all and, secondly, to specify the category of chocolates to those containing nuts and not alcohol, for example. Therefore, in pragmatics it is claimed that Mary's intention is relevant for a successful communication. The comprehension-process involves infering conclusions and creating hypothesis about the speaker's intention (cfr. § 2.1.). In communication two factors can play a decisive role. One, concerning the speaker: how does the speaker need to communicate his intention in order to capture the audience's attention; and second, concerning the hearer: how does the hearer perceive the speaker's meaning. This leads to the assumption that for a successful communication the production of a relevant stimulus and the correct comprehension of the same stimulus are crucial.

Grice (1975:368-369) already pointed out that communication is not a simple process of codification (by the speaker) and decodification (by the hearer), but a process of recognition of the intentions of the speaker: what is said is not necessarily or automatically what is meant.[3] Utterances, as Mary's answer, are linguistically encoded evidence that has to be partly decoded, but they also evoke expectations which guide the hearer to the correct assumption given by the speaker: what is actually said and has to be decoded constitutes only a part of that what is communicated (cfr. Sperber and Wilson 1995 [1986]). Parting from a relevantist framework, utterances present ostensive stimuli that have to be interpreted by means of an

[3] With his studies, Grice opens the way in linguistics from a classical code model to an inferential model where the interlocutor provides an intention with a certain meaning and the hearer has to process the meaning by inferring the intention of the speaker (cfr. Grice 1989 [1961]:368-369). For communication models that are based on the transmission of information see Jakobson (1974), de Saussure (1983 [1916]) and for the Shannon-Weaver Model see Shannon and Weaver (1962). These theories rely on the basis of coding and decoding. The speaker encodes the intended message into a signal that has to be decoded by the hearer (cfr. Portolés 2004:85-86, Pons 2004:18).

inferential process (cfr. Wilson and Sperber 2002:249). Harry, by deriving the implicature in this specific context, besides of understanding that Mary does not like all chocolates, could interfere that the next time that he buys chocolates for her, he should only buy those with nuts. Surely, there can be much more implicature to derive, but the fact that the audience comes to similar inferences in this specific context leads to the assumption that there must be a principle that underlies the inferential communication (cfr. Portolés 2004, Pons 2004).

Sperber and Wilson (1995 [1986]) proposed the Principle of Relevance by arguing that the notion of relevance is sufficient in order to recover the interlocutors meaning (cfr. Blakemore 1987, Carston 2002, Portolés 2004, Pons 2004).[4] Relevance theory claims that not the transmission of information is mainly important, but the relevant presentation and processing of a cognitive input. It is described as cognitive-psychological theory[5] of communication (cfr. Wilson and Sperber 2004:608, 625) that aims to describe how the information is processed based on an ostensive-inferential process. Ostensive, because in what is said an intention to inform is expressed; inferential, because what is said not only needs to be decoded, it presents also a stimulus that evokes an inferential process (cfr. Portolés 2004:92).

In this inferential process the information that will be conveyed by the speaker should be relevant. These relevant inputs "include an external stimulus, which can be perceived and attended to, and mental representations, which can be stored, recalled or used as premises in

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[4]Grice (1989 [1961) and other neo-gricean scholars, among others, Horn (1969, 1989, 1996), Gazdar (1979), Levinson (2000 [1983]) developed the Co-operative Principle that underlie four maxims: Quality (be truthful), Quantity (be informative), Relation (be relevant) and Manner (be clear) (cfr. Grice 1989 [1961]:369-372). In order to achieve successful communication, the interlocutors obey these maxims. Contrastively, the aim of the Relevance Theory was to study the natural behavior of any interlocutor independent of language and culture (cfr. Wilson and Sperber 2012:26-27, Portolés 2004:§ 1.). Relevance Theory is based on the assumptions of Grice's studies that utterances evoke expectations, but criticizes several points of the Co-operative principle, e.g. the violation of maxims in utterance interpretation; and further claims that the relevance principle is precise enough for the inferential process of communication. For a detailed description of Relevance Theory and the discussion between Grice's Co-operative Principle and the Relevance Principle see Sperber and Wilson (1995 [1986]) and Wilson and Sperber (1993, 2002). In general, the pragmatic theories came up as a reaction to the structuralism of de Saussure and encompass different theories, as the Speech act theory of Searle (1969) and Austin (1975 [1955]) communication models as the Co-operative Principle of Grice (1989 [1961]). The first pragmatic theories were normative approaches that did not consider the cognitive part of language process until the Gricean model and Relevance Theory were developed (cfr. Verschueren 1999:§ 1.). Moreover, they are also other relevant approaches as the neo-gricean approaches, among others Horn (1969, 1972, 1989, 1996) and Levinson (2000 [1983]), as well as other pragmatic approaches, among others Stalnaker (1974, 1991), Fauconnier (1975b, 1994), Ducrot (1980), Anscombre and Ducrot (1983), Récanati (1987), Moeschler and Reboul (1994).

[5] Cognitive-psychological, because all interlocutors share the same cognitive principle that cognition always aims the fulfilling of maximum relevance and, therefore, guides the inferences independently of language or culture of the interlocutors. Relevance Theory is not a linguistic theory and is based on the hypothesis that the human mind processes the information through representations by realizing computations on specific representations (cfr. Carston 2000:48, Portolés 2004:90). In this sense Relevance Theory follows at first the work of Fodor (1983), but in the last years the hypothesis came up that the mind is not a single organ, but a modular mental system. For a detailed discussion of the processes of the human mind in relation to Relevance Theory see Sperber (1994).

inferences" (Noveck and Sperber 2004:5). They necessarily rely on the property of relevance and should evoke a positive cognitive effect[6]:

> […] relevance is a potential property not only of utterances and other observable phenomena, but of thoughts, memories and conclusions of inferences. In relevance-theoretic terms, any external stimulus or internal representation which provides an input to cognitive processes may be relevant to an individual at some time. (Wilson and Sperber 2002:250)

So, if e.g. John comes home from a football match and says to his mother in the kitchen *I am hungry* and his mother starts to make him a sandwich then a positive cognitive effect was created, by deducing a contextual implicature that implies decoding the utterance and the contextual information.

The notion of relevance and the cognitive effect are crisscrossed. Inputs that aim to produce great cognitive effects are more relevant and more worth processing and therefore evoke smaller cognitive processing effort (cfr. Noveck and Sperber 2004:5-6). To be relevant is not the only characteristic of an input in order to be produced, but the fact that it is the most relevant of a set of possible alternative inputs (cfr. Wilson and Sperber 2002:252). To achieve a successful communication, Relevance Theory formulated two main principles. The *Cognitive Principle*: The fulfilment of the maximization of relevance, i.e. the audience can infer the most relevant conclusions with the minimum of processing effort (cfr. Wilson and Sperber 2002:254). The *Communicative Principle:* The attention of the audience will automatically be captured by the most relevant communicative input. Thus, a successful communication depends on the audience perceiving the input as relevant enough to be processed, which means that no unjustified effort has to be realized (cfr. Wilson and Sperber 2002:256, Noveck and Sperber 2004:6). Therefore, the successful ostensive-inferential communication requires two intentions:

– *Informative intention:* "the intention to inform the audience of something" (Wilson and Sperber 2002:255)
– *Communicative intention*: "the intention to inform the audience of one's informative intention" (Wilson and Sperber 2002:255)

[6] The processing of an input in a given context yields cognitive effects modifying the set of assumptions of the hearer. Positive cognitive effects can only be described as positive, if they contain a true conclusion. There are three main types of cognitive effects: Effects that strengthen, revise or abandon the assumptions. This notion allows to differentiate between relevant information and information that only seems relevant. For a more detailed description and standard definition of the notion see Sperber and Wilson (1995 [1986]).

To sum up, the more useful the derived conclusions are, the more relevant is the input, thus increasing positive cognitive effects. This means, that the more relevant an input is, the less effort it will demands during processing (cfr. Wilson and Sperber 2002:252). When the communicative intention is fulfilled, the hearer recognizes the informative intention of the speaker and a satisfied communication is performed; both intentions are successful. The ostensive stimulus acts *idealiter* as a precise expectation of the intended message and the deduced interpretation are proved under the *Criterion of consistency*. Subsequently, the deduced interpretation can be accepted or cancelled.

1.1. Semantic underdeterminacy

Parting from Grice' conclusion *what is said is not necessarily what is meant* utterances usually communicate more than that what they linguistically encode (cfr. Sperber and Wilson 1995 [1986], Carston 1999, 2002, 2004). This semantic underdeterminacy leads to the assumption that in order to decode the whole content of an utterance different pragmatic enrichment processes have to take place (cfr. Carston 2002:15-74). These pragmatic enrichment-processes are determined by the relevance principle, since any utterance inhibits the premise "to convey a presumption of its own relevance" (Wilson and Sperber 2004:612), and since communication is an inferential process it is assumed that the hearer will try to interpret the input with the less possible processing effort while producing the maximum of positive cognitive effects. If the process is felicitous the information can be successfully integrated in the mutual knowledge, otherwise, if the information does not produce sufficient positive cognitive effects and the processing surpasses the expectations of relevance, the comprehension-process can be abandoned (cfr. Wilson and Sperber 2004:613, and § 1.2.).

The comprehension-process implies the decoding of the explicit meaning of the utterance. This decoded message has to be enriched and embedded in a context to achieve a complete interpretation of the speakers input. The decoding of the explicit meaning of a verbal input is an automatic and unconscious process of communication.[7] The logical form represents the conceptual semantic representations that the speaker has chosen in order to create a

[7] "The decoded logical form of an utterance is an important clue to the speaker's intentions, it is now increasingly recognized that even the explicitly communicated content of an utterance goes well beyond what is linguistically encoded." (Wilson and Sperber 2002:260). Parting form a verbal input the hearer starts to create phonetic and syntactical representations according to the linguistic structure of the utterance. The interpretation of this syntactical and semantic structure is still underdetermined and has to be enriched by the context, combined with other available principles and assumptions as well as background framing (cfr. Fauconnier 1994:2).

relevant input for the hearer and is part of the "'explicitly communicated content' (or EXPLICATURE[8])" (Wilson and Sperber 2002:260). The explicature represents the communicated proposition which has to be derived, on the one hand, by the decodification calculations and, on the other hand, by the recovery of inferences. Thus, the explicature becomes a premise for the retrieval of contextual implications and cognitive effects (cfr. Wilson and Sperber 2002:260).

During processing, the audience constructs an assumption based on the lexical recognition of words, the search of coincidences with the entries of the mental lexicon, the syntactic and semantic analysis of the utterance, as well as the enrichment of the logical form (cfr. Escandell Vidal 2004:81). Pragmatic processes also take place in order to complete the logical form: disambiguation processes, saturation processes, reference assignment and pragmatic enrichment, among others.[9] The result is an assumption on which an inferential process can be carried out. After this process, the logical form is transformed into a propositional form: the hearer has derived an unambiguous integration of the assumption that can be accepted or cancelled *a posteriori* (cfr. Pons 2004:50, Portolés 2004:148).

The processing of the explicit meaning (primary process) can be differentiated from the processing of inferences (secondary process)[10], but the decoding of the explicit meaning of an utterance as well as the recovery of the possible implicatures are parts of the same inferential process and cannot be seen separately. They are two sides of the same coin:

> The relevance-theoretic comprehension procedure […] applies in the same way to the resolution of linguistic underdeterminacies at both explicit and implicit levels. The hearer's goal is to construct a hypothesis about the speaker's meaning which satisfies the presumption of relevance conveyed by the utterance. (Wilson and Sperber 2002:261)

In Relevance Theory the comprehension process encompasses several tasks: One implies the construction of the explicature by decoding the explicit content; and another derives the intended contextual assumption (*implicated premises*). Finally, the intended contextual implica-

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[8] In the relevantist framework the explicature is a „proposition recovered by a combination of decoding and inferences, which provides a premise for the derivation of contextual implications and other cognitive effects (cfr. Sperber and Wilson 1995 [1986]). The explicature can occur in two different forms: logical form (low-level explicature) and high-level explicature that involves the propositional form (cfr. Blakemore 1992:62, Wilson and Sperber 1993:5-6, Carston 2002:119-121). For discussion of terminology and the pragmatic framework see Sperber and Wilson (1995 [1986], 2002), Blakemore (1987), Carston (1987, 2000, 2002), Récanati (2002).

[9] For discussion of enrichment processes see among others Levinson (2000 [1983]), for distinction of pragmatic enrichment processes as e.g. free enrichment see Carston (2000, 2002), for saturation processes Récanati (2002) and also Portolés (2004:§ 8.4.).

[10] For a more detailed distinction of primary and secondary processes see Récanati (2002), Carston (2004).

tions (*implicated conclusions* can be constructed, but these three sub-tasks do not occur as a continuum[11]:

> The hearer does not FIRST decode the logical form of the sentence uttered, THEN construct an explicature and select an appropriate context, and THEN derive a range of implicated conclusions. Comprehension is an on-line process, and hypotheses about explicatures, implicated premises and implicated conclusions are developed in parallel against a background of expectations (or anticipatory hypotheses) which may be revised or elaborated as the utterance unfolds. (Wilson and Sperber 2002:262[12])

Grice (1989 [1961]) and other neogricean-linguists (among others, Levinson 2000 [1983], Horn 2005) propose another distinction of different types of implicatures. Within *what is implicated* a distinction is made between conventional and conversational implicatures. In a conversation as in (2) the hearer (in this case John's mother) creates some conclusions according to the explicature and the established assumption that leads to the construction of a conversational implicature.

(2) John: I am hungry.
Mother: I'll make you a sandwich.

Conversational implicatures[13] can be derived from the long-term memory: e.g. we know that when we are hungry, we have to eat something. Further, conversational implicatures are non-detachable, i.e. can be cancelled. Recalling example (1) of Mary's affinity for chocolates the conversational implicature *The ones with nuts*, can be cancelled without contradiction, as e.g. *Mary: I liked chocolates with nuts, but not these ones, because they also contained raisins*.[14]

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[11] Sperber and Wilson (1987:698) argued that the interlocutors select a specific context for each interpretation-process. Thus, the interlocutors, on the one hand, determine the context during the interpretation-process, and, on the other hand, the context itself restricts the inferential process. Further, they argue, that in each conversation the context is basically formed by the former utterance, and therefore, this context is constantly modified or extended. The context can be extended in three directions: i) towards other more previous utterances; ii) by enriching with the encyclopedic knowledge; and iii) adding more relevant information to the context. Each extension can lead to more contextual implications.

[12] Emphasis in the original.

[13] The conversational implicatures can be particularized conversational implicatures or generalized conversational implicatures. The particularized conversational implicatures highly depend on the context whereas the generalized conversational implicatures depend on the formal linguistic form of some elements and have presumptive meaning that is achieved by a heuristic process. For detailed distinction see Horn (1996), Levinson (2000 [1983]), Portolés (2004:§ 7.4.)

[14] Conversational implicatures have to be distinguished from semantic entailment (cfr. Portolés 2004:127). Whereas conversational implicatures can be cancelled without contradiction, an implication with semantic entailment cannot be cancelled. *Julius Caesar was murdered* entails *Julius Caesar is dead*. Therefore, the cancellation is perceived as strange #*Caesar was murdered, but he is not dead*. The semantic entailment is created by an

On the contrary, in the case of conventional implicatures, the implicature is derived by the conventional meaning that some elements can contain, e.g. discourse particles, as *nevertheless, therefore, even,* etc.[15]

(3) Daniel is from Wales; therefore, he is a good football player.

(4) David plays even cricket.

The conventional instruction of *therefore* and *even* evokes that in (3) to be a good football player is a consequence of being from Wales triggered by the meaning of the connective *therefore* and in (4) *even* presupposes that David plays other sports besides cricket (cfr. Grice 1975, Karttunen and Peters 1979, and § 4.). Conventional implicatures are detachable, since two expressions can have different conventional implicatures. They are context independent and anchored in the decodification of the meaning on linguistic devices. They do not necessarily derive a logical implicature and are not truth-conditioned (cfr. Portolés 2004:130).[16]

From a cognitive perspective, the definition of conventional implicatures by Grice is not fully convincing. As Carston (2008:108) pointed out "the conventional or semantic content of an utterance comes in two types, the descriptive content, which affects the truth-value, on the one hand, and the merely indicative (as in 'indicating'), which generates implicatures, on the other". The conventional implicature can more exactly be described by the different types of meaning proposed by Relevance Theory: the procedural and conceptual distinction of information.[17]

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extralinguistic content in form of a logical presupposition. The derived logical inference is obtained due to the interpretation of a premise that conducts to a conclusion (*Caesar was murdered, so Caesar must be dead*).

[15] Other linguistic elements that can derive a conventional implicature are e.g. adjectives or verbs, as the verb *regret*, in *Martin regrets Paul's decision to immigrate to Germany*.

[16] According to Horn (1969, 1979), Stalnaker (1974, 1991) and Karttunen and Peters (1979) the conventional implicatures are also linked to the notion of presupposition. Presuppositions are understood as implicit assumptions that are considered as true assumption in discourse. In the example *Mary's sister is a teacher,* the presupposition that Mary has a sister is true. Presuppositions are possible because of the representations that are stored in our memories and cannot be cancelled, since they are presented as conventional implicatures. If the utterance is negated (*Mary's sister is not a teacher*) the presupposition still holds true (cfr. Portolés 2004:130). Therefore, an utterance like #*John has given up cocaine, but he did not take drugs before* is perceived as pragmatically strange. Because *John has given up cocaine* presupposes that he has taken drugs before.

[17] For discussion and different treatments of conventional implicatures and the framework of conceptual and procedural meaning see Blakemore (2000), Iten (2000) and Carston (2008:§ 2.3.7.).

1.2. Types of meaning: The conceptual/procedural distinction

In order to satisfy the relevance principle, the hearer has to make the input as relevant as possible and with the minimal processing effort for the hearer. Therefore, the interlocutors have different types of information at their disposal: conceptual information (conceptual representations that have to be manipulated) and procedural information, that encodes how the conceptual information has to be processed (cfr. Leonetti and Escandell Vidal 2004:1727, Wilson and Sperber 2012:150). The dichotomy conceptual/procedural[18] meaning is based on the premise that

> […] not all linguistic elements contribute in the same way to the interpretative process: some do so by providing conceptual representations, while others do so by specifying how such representations should be combined, among themselves and with the contextual information, to obtain the interpretation of the utterance, that is, by imposing restrictions on the inferential process of the interpretation. We say, therefore, that certain units encode *concepts* and others encode *processing instructions*. (Leonetti and Escandell Vidal 2004:1727, own translation[19])

The conceptual meaning presents the lexical information of the propositional content of an utterance and the procedural meaning encompasses the information on how to process the conceptual elements to satisfy the interpretation process of utterances (cfr. Blakemore 1997:95).[20]

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[18] The conceptual/procedural dichotomy is associated to the distinction made in generative syntax of Chomsky which distinguishes between two categories: lexical and functional. The conceptual meaning corresponds to the lexical category, because lexical elements (as e.g. nouns, verbs) that constitute an open class, have descriptive character. Whereas the procedural meaning is associated to the functional category: Functional elements are presented as a more closed class, they are phonologically and morphologically restricted and in general, do not have descriptive character (cfr. Escandell Vidal and Leonetti 2000:365). Elements with procedural meaning can be interpreted as subclass of the functional category, since functional elements contribute to the interpretation process. It can be argued that not all functional elements have procedural meaning, but elements with procedural meaning form a part of the functional category (cfr. Cann 2001:§ 2.).

[19] Emphasis in the original. Original citation in Spanish: "[…] no todos los elementos lingüísticos contribuyen del mismo modo al proceso interpretativo: algunos lo hacen aportando representaciones conceptuales, y otros, por el contrario, lo hacen especificando la manera en que tales representaciones deben combinarse, entre sí y con la información contextual, para obtener la interpretación del enunciado, es decir, imponiendo restricciones sobre la fase inferencial de la interpretación. Decimos, por lo tanto, que ciertas unidades codifican *conceptos* y otras codifican *instrucciones de procesamiento.*" (Leonetti and Escandell Vidal 2004:1727)

[20] The distinction between conceptual and procedural meaning is not free from criticism. The main criticism is that the distinction cannot be seen as a clear-cut classification. The linguistic items cannot be either conceptual or procedural. The invasion of meaning is bidirectional: there are conceptual units that could adopt procedural meaning, as e.g. emotional verbs (*regret*) and there are procedural units, that have some conceptual residuals, such as *on the other hand*. For further discussion and other points of criticism such as categorical vs. continuum distinction see Escandell Vidal and Leonetti (2011).

Conceptual meaning

During comprehension the inferential process imposes the construction and manipulation of conceptual representations in a determined way. The elements that encode conceptual meaning have, on the one hand, logical properties, they can establish entailment or relations of contradiction. On the other hand, they rely on truth condition[21], they can describe mental state of affairs. At an abstract level, concepts can be described as files stored in our memory that contain information (cfr. Escandell Vidal and Leonetti 2000:365, Wilson and Sperber 2012:157). Concepts have primarily two logical properties: Firstly, the concepts are stowed in our memories as files, in which different related types of information can be stored. Secondly, these concepts can imply or contradict each other and they represent constituents of the logical form. They are also sensitive to deductive rules that are responsible for the inferential process (cfr. Sperber and Wilson 1995 [1986]:72, 85-90, Blakemore 1987:55-57).[22]

The information that contains each concept can be distinguished in three different types[23]: logical, encyclopedic and lexical, summarized as follows and provided with the example of the concept SHARK (cfr. Sperber and Wilson 1995 [1986]:86, Carston 2002:321, Pons 2004:39-41, Portolés 2004:§ 12.1., Carston 2008:321-322)[24]:

[21] This distinction cannot be seen as determined. Some truth-conditional construction and non-truth-conditional can be encoded by concepts or procedural elements (cfr. Wilson and Sperber 2012:150).

[22] However, this does not mean that all properties of conceptual representations are logical. Within non-logical properties conceptual representations present mental states or brain states. Mental states present sensations as being angry or sad, whereas brain states indicate where in the brain the sensation is located at a certain time (cfr. Sperber and Wilson 1995 [1986]:72). The relevantist approach is to transform the proposition of formal semantics to a cognitive level in order to achieve a complete implicature that combines all types of information (cfr. Pons 2004:28). The codified concepts are the basis of the logical form on where the implicatures can be derived (cfr. Carston 1999:116), that allows to share some properties with the approach of *the modularity of mind* (Fodor 1983).

[23] The notion of concepts is often equaled to the notion of words. However, this relation is a relation of inclusion. The word is part of a concept and the concept always embedded more information of different types. Relevance Theory argues that there are always more concepts than words stored in the memory. This approach rejects Fodor's view that one concept corresponds to one specific word. Nevertheless, Relevance Theory relies on Fodor's principle that encyclopedic concepts encoded by linguistic items are atomic, i.e. unstructured in the mind, and that atomic items relate to the mentally represented information, encyclopedic information that can be derived by the concept (cfr. Pons 2004:38-39, Wilson and Carston 2007:235). For further discussion see also Carston (2002:§ 5.).

[24] The example of the concept SHARK includes three entries, but there are also concept that can lack of one of the three entries, as e.g. the concept AND, that presents logical entry, but not an encyclopedic one. Proper names, e.g. do not have logical entries. For a detailed discussion of this phenomenon see Sperber and Wilson (1995 [1986]:83-93), Pons (2004:40-41) and Carston (2008:322).

– *Logical entry:* consists of a set of inference rules and acts over the logical form; it contains a definition of the word that expresses the concept.

  SHARK: rules associated with the use of the concept, as e.g. the use of hyperonym and hyponyms (sharks are animals, but not all animals are sharks), definition of the word encoded by the concept. A possible output could be: ANIMAL OF A CERTAIN KIND.

– *Encyclopedic entry*[25]: provides information about the associated ideas of the concept, as e.g. information about the object, events or properties, scientific information, culture-specific information, personal experience, etc.

  SHARK: ideas associated with sharks (people are frightened, they live in the sea, they have a lot of teeth, they attack surfers, etc.), appearance information, behavior information, personal experience and ideas as how to interact with them (if there are sharks at the beach, we will not swim, etc.).

– *Lexical entry:* information about the phonetic and phonological form, as well as information of the syntactical properties of the linguistic form.

  SHARK: pronunciation, grammatical information.

All individuals should have the same logical entry independently of the language, since this type is of restrictive character, whereas the encyclopedic entry is infinite and in a process of constant update, since it is characterized by variation between individuals and time (cfr. Sperber and Wilson 1995 [1986]:88).[26] However, combined with the notion of representation and computation it can be argued that, since both are necessary for comprehension and no one can exist without the other, that the encyclopedic entry contains representational information, it is a set of possible assumptions that have to be modified, whereas the logical entry contains computational information, as to say the inference rules that have to be allied on the assump-

[25] The information stored in the encyclopedic entry is often referred to as world knowledge (cfr. Kintsch 1988). World knowledge is understood as all general pragmatic knowledge (social, cultural and natural characteristics of an idea) which is stored in the long-term memory and has to be retrieved during the communication event and which has to be passed into the working memory; so the created assumption can be comprehended successfully (cfr. Kintsch 1988:224, Kintsch and Rawson 2005).

[26] The organization of conceptual information is investigated from different perspectives by creating different models that coincides in the intention to answer how the information is structured within an entry, among others: scenes and frames (cfr. Goffman 1974, Fillmore 2006), mental spaces and frames (cfr. Fauconnier 1994), prototype semantics (cfr. Rosch 1973, 1975, Hampton 1993) and from the perspective of artificial intelligence (cfr. Minsky 1974, 1988). They share some basic ideas with the proposal of encyclopedic entry of the Relevance Theory: Firstly, all notions coincide in the hypothesis that all human individuals developed according to a concept similar stereotypical assumptions and expectations. Likewise, the encyclopedic entry contains, besides factual assumptions, also assumptions that are enriched to full-fledged assumptions in a determined context (cfr. Sperber and Wilson 1995 [1986]:88).

tions of the encyclopedic entry (cfr. Sperber and Wilson 1995 [1986]:89-90, Escandell Vidal and Leonetti 2000).

During the interpretation of a concept the hearer does not consider the whole information. According to the Relevance Principle, the hearer selects the most relevant encyclopedic assumption of the concept in the specific context. The selected assumptions are premised in order to derive the contextual implicature (cfr. Wilson and Carston 2007:§ 4.). At lexical level the hearer is confronted with an underdeterminacy of the encoded concepts within a communicated stimulus. Therefore, the hearer has to make lexical adjustment of the encoded lexical items of an utterance. The hearer constructs during the interpretative process *ad hoc concepts*, in other words, concepts for "occasion-specific use" that are derived by the information of the encoded concept, the contextual information and the pragmatic expectations (cfr. Wilson and Carston 2007:231).

The result of an *ad hoc concept* construction can be achieved either by *lexical narrowing* or *lexical broadening* of the linguistic encoded meaning of the concept. Both pragmatic processes act during an interpretative process upon specific concepts and strengthen the encoded concept, by acting in different directions and different degrees (cfr. Carston 2002:324, Wilson and Carston 2007:232). If the encoded conceptual information is underspecified, *lexical narrowing* should take place to determine which proposition was intended by the speaker.

> *Lexical narrowing* involves the use of a word to convey a more specific sense than the encoded one, with a more restricted denotation (picking out a subset of the items that fall under the encoded concept). Narrowing may take place to different degrees, and in different directions (Wilson and Carston 2007:234[27]).

(5) I'm not drinking tonight. (Wilson and Carston 2007:325)

(6) I have temperature. (Wilson 2004:344)

The verb "drink" in (5) conveys the presumption "drink alcohol/drink more alcohol than it is allowed for driving", although only "drink liquids" is encoded. We could derive the implicature: *I'm not drinking tonight, therefore I can drive the car* and in (6) it is assumed by "temperature" that the speakers' temperature is above the normal human temperature. In both cases the encoded concept DRINK and TEMPERATURE have to be lexically narrowed to satisfy the relevance principle and derive the intended implicature.

[27] Emphasis in the original.

Contrarily, an overspecification of the encoded concept can occur requiring a *lexical broadening*[28]:

> *Lexical broadening* involves the use of a word to convey a more general sense than the encoded one, with a consequent expansion of the linguistically-specified denotation (Wilson and Carston 2007:327[29]).

(7) This coat costs 1,000 dollars. ['about 1,000 dollars']
(8) The injection will be painless. ['nearly painless']
(Wilson 2004:345)

Both examples reflect an approximation where a word has to be understood as "approximate to something". In a scale where *1,000 dollars* or *painless* constitute the limit the items will reach the maximum approximation but will not fully be identical with the literal mean of the encoded concepts (cfr. Wilson and Carston 2007:§ 2.). Both pragmatic processes (narrowing and broadening) interact in the inferential process and are flexible and highly context-depending processes.[30] In general, a single lexical item always relies on a more general concept that has to be fine-tuned (narrowed or broadened) in a specific context and therefore the discursive context and the pragmatic expectations must influence the way in which a lexical adjustment has to take place (cfr. Wilson and Carston 2007:327). In order to satisfy the expectation of relevance during communication lexical adjustment is considered as:

> […] a special case of a more general process of *mutual parallel adjustment* in which tentative hypotheses about contextual assumptions, explicatures and contextual implications are incrementally modified so as to yield an overall interpretation which satisfies the hearer's expectations of relevance. (Wilson and Carston 2007:347[31])

The process of lexical adjustment is as comprehension process always a parallel process and not a sequential one. As seen in the examples (7) and (8) the comprehender adopts a specific

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[28] Lexical narrowing and broadening can occur within an interpretative process of a single word. It is argued that within lexical broadening mechanism different actions can take place: literal use, loosening of lexical meaning, hyperbole, metaphors, approximation and categorical extension. These mechanisms are seen as a continuum with fuzzy boundaries and cannot clearly be differentiated between each other. This approach rejects the traditional distinction between literal and figurative meaning. For further discussion of this approach see Sperber and Wilson (1995 [1986]), Kintsch (2000), Carston (2002), Wilson (2003).
[29] Emphasis in the original.
[30] Empirical evidence has demonstrated the flexibility and context dependency of concepts, e.g. experiments on adjective that show that a single concept, such as FRESH can evoke different antonyms depending on the concept as e.g. fresh-rotten or fresh-frozen (cfr. Murphy 1997:237-239). Other experiments in lexical semantics have proven that words at a superordinate level (e.g. *animal*) or basic level (e.g. *dog*) are easier to process than subordinate words (e.g. *labrador*) (cfr. Rosch 1973, 1975, Rosch and Lloyd 1978). For further discussion see Wilson and Carston (2007:§ 2.).
[31] Emphasis in the original.

lexical adjustment process in order that he understands immediately that in (7) the coat does not cost exactly 1,000 dollars and in (8) that the injection may hurt a bit. Thus, from a relevantist perspective, lexical adjustment relies on four basic hypotheses (Wilson and Carston 2007:350):

I. Narrowing and broadening are triggered by the search for relevance.
II. They follow a path of least effort in whatever direction it leads.
III. They come about through mutual adjustment of explicatures, contextual assumptions and implications (or implicatures) so as to satisfy the expectations of relevance raised by the utterance.
IV. They stop when these expectations are satisfied.

To conclude the conceptual meaning of items is flexible and malleable and overall highly context-dependent. In any interpretation of an utterance or expression conceptual information has to undergo a process of lexical adjustment to satisfy the expectations of relevance. This process allows to generate more specific or more general concepts according to the context. This process is based on the hypothesis that any mental representation, each encyclopedic entry is richer, more detailed than an encoded item can be. Each word is therefore somehow polyfunctional and can be adjusted to any contextual need. Individuals are able to communicate numerous concepts, because the mind is capable to store infinite concepts that can be related to one lexical item. This property of flexibility of the conceptual meaning allows an efficient communication with the minimal possible effort (cfr. Escandell Vidal and Leonetti 2011:§ 2.2.). As Carston (2002, 2004) pointed out in recent approaches of lexical pragmatics, the conceptual meaning corresponds to the information on the propositional content of *mental representations* which are codified by utterances. In an utterance, the linguistic meaning of the elements is subspecified and depends highly on the context to derive the intended interpretation, so utterances cannot be considered as consisting of propositions, or to present truth conditions. Consequently, only mental representations that are pragmatically enriched can have them (cfr. Murillo 2010:243).

Procedural meaning

The comprehension of utterances leads to an inferential process in which, on the one hand, the elements with conceptual meaning have to be adjusted to the context, and on the other hand, there must be elements with procedural meaning that help to derive the correct implicature. They give instructions on how the elements with conceptual meaning have to be manipulated. The elements with procedural meaning do not require a conceptual representation in the

memory, as to say they do not have an encyclopedic entry. It can be argued that the procedural meaning is the purest linguistic meaning, it is independent from the world knowledge and guides the inferential process during comprehension (cfr. Escandell Vidal and Leonetti 2000, Blakemore 2002:90-9, Escandell Vidal and Leonetti 2011:84-85):

> […] Instructions operate on conceptual representations. An instruction takes a set of representations – linguistically encoded or not – as its input, applies some rules to them and yields a modified set of representations as its output. (Escandell Vidal and Leonetti 2011:84)

By combining the interpretation of the conceptual elements and the procedural instruction an efficient comprehension is achieved and a greater positive cognitive effect is produced.[32] Instructions operate on the interpretative level during comprehension processing[33], as for example in (9) where the procedural instruction encoded in the FO *even* evokes a pragmatic scale and the hearer has to interpret that David can do other sports besides playing cricket (cfr. §§ 3.1. and 4.2.).

(9) David plays even cricket.

The instruction encoded in *even* does not represent the reality; it codifies logical states of the language. The function of an instruction with procedural meaning "is to put the user of the language into a state in which some of the domain-specific cognitive procedures are highly activated (and hence more likely to be selected by a hearer using the relevance-theoretic comprehension heuristic)" (Wilson 2011:11). As Fodor (1983) indicates conceptual representations are always accessible to consciousness. The speaker can reflect the content of each concept and can more or less easily explain the concept by using other concepts. The concept SHARK can be explained by using other as TUNA or WHALE, etc. Whereas, elements with procedural meaning do not have access to a kind of introspective. They cannot easily be defined or represented (cfr. Wilson and Sperber 1993:16, Leonetti and Escandell Vidal 2004:1729, Wilson 2011:10). Thus, it can be assumed that the "domain-specific cognitive

[32] Not only words, as e.g. discourse particles, encode instructions, but also specific morphs and syntactical positions can encode a procedural instruction that guide the inferential process, as well as prosodic mechanisms.
An item can also encode conceptual information and procedural instruction, but instructions and concepts will always have their own properties even though they co-exist in a single item (cfr. Escandell Vidal and Leonetti 2011:84).

[33] Instructions can operate also on the syntactic level. Operations on the syntactic level are of combinatorial nature, as e.g. case-marking. They are usually only relevant to syntactical computation and do not interfere at the interpretative level. From a relevantist perspective only the instructions that act at the interpretative level are assigned with procedural meaning (cfr. Escandell Vidal and Leonetti 2011:84).

procedure" of the procedural meaning is described as a "machine-language" in contrast to the conceptual access. Procedural meaning is characterized as being inaccessible to consciousness and resistant to conceptualization (cfr. Wilson 2011:10-11). This can lead to the argument why the speaker is able to represent in his mind the concept SHARK, but not the concept EVEN (cfr. § 1.2.). The human mind disposes of different cognitive mechanism that can be activated depending of the state of the user. These specific cues (domain-specific procedures) can be of different nature and are activated differently depending on the circumstances of the communicated information. Not all of these procedures are linked to communication at the same degree, social cognition and language production or parsing among others are decisive for the inferential process of comprehension[34]:

> Most languages also have a cluster of procedural items (e.g. punctuation, prosody and various types of discourse particles) which are indeed intrinsically linked to communication, and whose function is to guide the comprehension process in one direction or another. (Wilson 2011:20)

During the inferential comprehension process different cues are activated in order to guide the hearer through the comprehension process, as for instance, the informative structure of an utterance, the prosody, elements that allow to relate to referents; and there are also procedural elements as discursive particles that have the primarily function to guide the hearer through interpretation, restricting the lexical and contextual adjustment and facilitating the interpretation of the implicatures.

The function of elements with procedural meaning is to guide the hearer, by providing instructions on how to relate the elements with conceptual meaning of an utterance and by implying these rules to facilitate the inferential process. Thus, elements with procedural meaning are characterized by two basic properties[35]: *asymmetry* and *rigidity* (cfr. Leonetti and Escandell Vidal 2004:1729, Escandell Vidal and Leonetti 2011:§ 2.2., Nadal *et al.* 2016:58-60). The fundamental asymmetric relation between both types of meaning is characterized by the fact that conceptual elements are flexible and malleable and moreover highly context dependent (cfr. § 1.2.) whereas the procedural elements are mostly resistant to any conceptualization and are not adaptable to the context (lack of an encyclopedic entry). The elements with procedural meaning require elements with conceptual meaning upon which they can display

[34] For further discussion of the different domain-specific procedures see Wilson (2011:19-20).
[35] For a theoretical approach see Leonetti and Escandell Vidal (2004), Escandell Vidal and Leonetti (2011), Escandell Vidal *et al.* (2011), Wilson (2011) and for an experimental approach on both properties see Nadal *et al.* (2016, 2017), Loureda *et al.* (2013), Loureda *et al.* (2019).

their instruction. It is the procedural meaning that acts as a guide during the inferential processes and displays the instruction on how to interpret the conceptual meaning. During comprehension the conceptual meaning can or cannot satisfy the inferential processes by deriving the correct assumptions through the instructions of the procedural elements (cfr. Leonetti and Escandell Vidal 2004:1729). In cases, in which the conceptual and procedural meaning generate a combinatorial conflict (e.g. coercion phenomenon, world knowledge or context conflicts) different conflict-resolutions strategies can take place, in which usually the procedural meaning imposes its instruction upon the elements with conceptual meaning (cfr. Leonetti and Escandell Vidal 2004:1732).

The property of flexibility and malleability of the elements with conceptual meaning occur, because the conceptual representation are files in the memory that require to be contextually enriched by confirmation, cancellation or modification. They have to be adjusted to the needs of the context, whereas the elements with procedural meaning are mostly "*rigid*, monolithic and untransformable" (Leonetti and Escandell Vidal 2004:1731).

> They cannot enter into the mutual adjustment process, nor can they be modulated to comply with the requirements of conceptual representations either linguistic communicated or not. The instructions encoded by items must be satisfied at any cost for interpretation to succeed. (Escandell Vidal and Leonetti 2011:86)

In other words, the intrinsic encoded instruction cannot be cancelled even if the instruction leads to an incoherent match between conceptual and procedural information in an utterance: the derived information "will always be solved obeying the constraints imposed by procedural ones [elements]" (Escandell Vidal and Leonetti 2011:85-86). Thus, the examples (10) – (12) and (14) are adaptable to the context and to our world knowledge, but (13) and (15) are perceived as pragmatically strange (cfr. Portolés 2001 [1998]:22, Montolío 1998:32-33):

(10) Mary is from Wales, therefore she is posh.
(11) Mary is from Wales, nevertheless she is posh.
(12) Marcelo is from Brazil, therefore he is a good football player.
(13) #Marcelo is from Brazil, nevertheless he is a good football player.
(14) David speaks English and even Chinese.
(15) #David speaks Chinese and even English.

The meaning in (10) and (11) is adaptable to the procedural instruction of the connectives *therefore* and *nevertheless*, since in our knowledge being from Wales is not *a priori* a conse-

quence of being posh. Whereas example (13) is usually perceived as pragmatically strange and it is costly to comprehend due to the fact that it is hardly adaptable to the world knowledge (it is assumed that in Brazil there are a lot of good football players). Same scheme can be observed in the example (15), where the FO even evokes a scale (*English* is more difficult to speak than *Chinese*) that contradicts the world knowledge. In our world knowledge *Chinese* will be higher rated in a scale of difficulty than English.[36] The instructions of *therefore*, *nevertheless* and *even* do not vary depending on the context of the utterance, they maintain their instruction rigid, independently whether the assumptions of the given relation between on the one hand the two discursive segment (in the case of therefore and nevertheless) or the two concepts (*English* and *Chinese*) hold the previous formed premise (as in (12) and (14)) (cfr. Portolés 2001 [1998]:22). The instruction of a procedural meaning tends to be rigid, however this rigidity does not necessarily hold for the interaction between conceptual and procedural elements (asymmetric relation). The procedural meaning could impose its condition to the conceptual meaning and provoke that an assumption have to be created *ad hoc* to the needs of the context. The creation of the possible assumption (in (13) and (15)) can be felicitous (probably with major processing effort) or can be cancelled (because the processing effort is too high, the relevance principle cannot hold, and thus no positive cognitive effects are created). If the assumptions hold the hearer/reader initiates an *accommodation process* in order to satisfy the interpretation determined by the procedural meaning (cfr. Escandell Vidal and Leonetti 2011:91).

Accommodation is here understood as a repair-strategy (cfr. Beaver and Zeevat 2007:505): The hearer recognizes that the conceptual meaning in relation to the procedural meaning are not immediately adaptable to the common ground. In order to satisfy the interpretative process, the hearer initiates an accommodation-process that is "a move a hearer can make in order that the cooperative intent of the speaker is realized". This strategy is motivated by the necessity of the interlocutor to "adjust the conversational record to eliminate obstacles to the detected plans of your interlocutors" (Beaver/Zeevat 2007: 4).

In example (15), the FO *even* can trigger an accommodation process, in which the hearer/reader makes an attempt to create an assumption, in which speaking *English* is more difficult than *Chinese* (cfr. Portolés 2001 [1998]:§ 5., 2007). Thereby, the interlocutor acts by two principles: i) they accommodate what seems most appropriate to fulfil the instruction, but ii) fallowing relevance, they will accommodate what is needed (cfr. Thomason 1990, Beaver and

[36] As long as you part from an eurocentristic view.

Zeevat 2007:505-506). The processing effort needed to fulfil the instruction determines the accommodation process; in other words, if the processing effort surpasses the principle of optimum relevance, the created assumptions can be abandoned. The decision to opt for an abandonment or an accommodation process underlies a primer conflict-resolution evaluation "if it is clear what must be accommodated in order to repair the context it will be done unless they have grounds to object, cooperative interlocutors will accommodate these presuppositions as necessary" (Roberts 2012: 29).

If the accommodation process is felicitous it must be assumed that the interlocutors invested more processing effort than in the cases where no accommodation process must be initiated (as in (14)). The instruction of *even* (in (14), to create a scale between the elements and to highlight *Chinese* as more difficult than *English*) does not contradict the world knowledge and, therefore, the instruction facilitates the interpretation of the utterance. Conceptual and procedural meaning point in the same direction, whereas in (15) both types of meaning are anti-oriented regarding the common ground, i.e. the mutual world knowledge of the interlocutors (cfr. Escandell Vidal and Leonetti 2011:98). If no accommodation process is initiated and the interlocutor adopts an abandonment strategy the processing effort may be less than in the cases where no accommodation process take place due to a possible processing breakdown.

However, any accommodation-process does not necessarily lead to the integration of adaptable material in the common ground. The new created assumption to accommodate the propositional content and fulfil the instruction, can *a posteriori* be not acceptable for the hearer according to the assumptions stored in the memory and can lead to a cancelation of the previous build assumption (cfr. Portolés 2001 [1998]:§ 5., and § 7.3.).

2. THE INFORMATION STRUCTURE OF UTTERANCES IN SPANISH

We communicate constantly modifying the reality, and communication can be defined as a trespassing of information. Individuals *inform* when the information that is conveyed is assumed to be relevant to the addressee. With the information the speaker aims to modify the state of mind of the addressee. This leads to an informative principle: Each communicative act is developed under some "behavior rules" that determine the way we communicate (cfr. Gutiérrez Ordóñez 2000 [1997]:18). Two types of behavior rules can be distinguished (cfr. Roberts 2012:3): conventional rules (e.g. syntactic, semantic and phonological) and conversational rules. Conversational rules can be described by the informative function of communication and are not primarily linguistic. Thus, it is assumed that an utterance, as in:

(16) Mary Quant inventa la minifalda en 1969.
('Mary Quant invents the miniskirt in 1969.')

The interpretation of the utterance does not consist of the mere sum of the single words [Mary Quant] + [invented] + [miniskirt] + [in 1969], moreover, the distribution of the elements of the utterance is also determined for interpretation (cfr. Gutiérrez Ordóñez 2008:438):

(17) La minifalda fue inventada por Mary Quant en 1969.
('The miniskirt was invented by Mary Quant in 1969.')
(18) En 1969 Mary Quant inventa la minifalda.
('In 1969 Mary Quant invents the miniskirt.')

All utterances contain the same information, they have the same truth-conditions, one of the utterances cannot be true if the others are negated. They formulate the same representation of the world, but they do not represent the information identically. The different word order imposes a strategy to process the meaning of the utterance, this same meaning is related to the interpretation of the mind of the addressee by the speaker (cfr. Portolés 2004:275). The speaker organizes the discourse in order that the information can be integrated by the hearer in the common ground (cfr. Lambrecht 1994:XIII, Krifka 2008:245).

> [...] with the term information structure we understand aspects of natural language that help take into consideration the addressee's current information state, and hence to facilitate the flow of communication. (Krifka and Musan 2012:1)

The *information structure*[37] is interpreted as the result of the integration process during discourse where the intention to inform conditions the structure of the utterance (cfr. Lambrecht 1994, Portolés 2010:283).

> *Information structure* is that cognitive domain that mediates between the modules of linguistic competence in the narrow sense, such as syntax, phonology, and morphology, and other cognitive faculties which serve the central purpose of the fixation of belief by way of information update, pragmatic reasoning, and general inferences processes aspects. (Zimmermann and Féry 2009:1[38])

What is studied within the information structure is how the information is distributed in an utterance, as to say, what patterns exist to construct relevant information.

> Thus, it is an essential linguistic mechanism of "context adaptation" that provides instructions about how to integrate linguistic information in a set of information that is accessible to the interlocutors –the context in order to optimize the cognitive processes during language processing and comprehension. (Leonetti 2014-2015:5-6, own translation[39])

2.1. Information management and common ground

Communication, as interchange of information is based on knowledge that is mutually shared between the interlocutors. Therefore, the speaker whose intention is to inform of something presupposes certain information: "In other words, by organizing the discourse, the speakers not only have in mind what they want to communicate, they also consider the mental states of

[37] Although the concept is much older, the term *information structure* was introduced by Halliday (1967-1968) and followed by the notion of *information packaging* of Chafe (1976). Both approaches established the modern theory of the semantic macrostructural phenomena, that affects the distribution of information at different levels. Since then different approaches were developed, as from the Prague School, among others Mathesius (1929), Daneš (1970), Firbas (1992) that developed the functional sentence perspective, focusing on the distribution of information at sentence level. Other functional approaches as the Functional Grammar proposal of the Amsterdam School, among others Dik (1989), as well as the approaches of Halliday (1967-1968) integrated the information structure in their systemic functional grammars. For an pragmatic approach see Givón (1984), Lambrecht (1994), Gundel (2012). More recently the proposals of information structure embrace the notion of focus, as proposals from É. Kiss (1998), Hidalgo Downing (2003), Molnár and Winkler (2006), Kenesei (2006) and Portolés (2010). Nowadays there is no clear consensus of the definition of *information structure* since it is studied from different theoretical and empirical perspectives.

[38] Emphasis in the original.

[39] Original citation in Spanish: "Es, pues, una pieza esencial de los mecanismos lingüísticos de "adaptación al contexto", en el sentido de que contiene instrucciones sobre cómo integrar la información lingüística en el conjunto de informaciones accesibles para los interlocutores –el contexto-, con el fin de optimizar el uso de los recursos cognitivos en el procesamiento y en la comprensión." (Leonetti 2014-2015:5-6)

the interlocutor […].” (Portolés 2010:283-284, own translation[40]) The information that is presupposed guides the speaker, through the selection process of explicit information and the hearer through how to interpret the communicated stimuli (cfr. Stalnaker 2002:701).

According to Dik (1989) all what is presupposed is embraced in the *pragmatic information* of any individual. The pragmatic information is compounded by three subcomponents:

– *general*: World knowledge with all social, cultural, natural characteristics, etc.
– *situational*: includes all information that is derived during the communicative act.
– *contextual*: embraces what is derived from the linguistic expressions during the communicative act.

The pragmatic information of any individual is highly subjective and can differ from individual to individual. Nevertheless, the individuals share also a high amount of common knowledge. Furthermore, every individual presupposes what the interlocutor might know about the issue he wants to communicate (cfr. Escandell Vidal 1993:31-32).

What is presupposed has received the denomination of *common ground*, *mutual knowledge, mutual background information, mutual beliefs* and *mutual assumptions*, among others, but every concept follows the *mutual knowledge hypothes*is. All these notions have one property in common: *mutuality.* This central notion of common ground is based on the fact that the independent information of each interlocutor is not sufficient in conversation.[41] Moreover, it is not only the shared information, it is the information that the interlocutors assume to be shared by both interlocutors (cfr. Clark 1992:3). Because of this reason, common ground is described as a process of continuous modification[42] (cfr. Stalnaker 1974, 1991, Karttunen 1974, Lewis 1979, Clark 1992). According to the communicative principle, communication is also a transfer of information where “its optimization is relative to the temporary needs of the interlocutors” (Krifka 2008:245) and based on the assumption that the common ground is in a constant updating process, it has to be differentiated between the *common*

[40] Original citation in Spanish: “Dicho con otras palabras, los hablantes al organizar un discurso no sólo tenemos en cuenta aquello que queremos comunicar, sino también los estados mentales que prevemos en nuestros interlocutores […].” (Portolés 2010:283-284)
[41] For detailed theoretical discussion of the notion of common ground see Karttunen (1974), Lewis (1979), Stalnaker (2002) among others; for an empirical approach on common ground see among others Horton and Keysar (1996), Keysar *et al.* (1998), Hanna *et al.* (2003), Barr (2008b), mostly studies, on how demonstrative and definite references effect common ground. See also Loureda *et al.* (in press) for incongruencies between conceptual and procedural information regarding the common ground, as well as § 7.3.
[42] Since the common ground is mainly a set of concepts it can be argued that it shares the same properties as conceptual elements. It is expected that common ground is as well flexible and malleable to the context and in infinite continuous change process (cfr. § 1.2.).

ground content and *common ground management*. *Common ground content* reflects the set of assumptions stored in the common ground that have truth-conditional impact, whereas the *common ground management* reflects aspects on the pragmatic interface, i.e. how the common ground content has to be interpreted (cfr. Krifka 2008:246).

The information that should be conveyed in an utterance has to be packed and structured according to the common ground. According to its property of constant updating it is expected that (19) sounds logical, but (20) is perceived as pragmatically strange (cfr. Krifka 2008:245):

(19) I have a scooter, and I have to change the wheels of my scooter.

(20) #I have to change the wheels of my scooter, and I have a scooter.

In (19) the speaker introduces the information that he has a scooter and the presupposition of the second clause adds some new information to the previous generated information. Both types of information build up on another, whereas in (20) the information of the first clause entails the information of the second clause. Utterances as (20) are perceived as pragmatically strange, because they do not rely on the principle of optimal relevance with less processing effort. The information is not constructed economically and the effect can most likely be counterproductive. The utterance is not structured in a way that it minimizes the processing effort. On the contrary, utterances that exceed the information load by using complex construction or overloading the information by presenting the same information more than once, are expected to require more processing effort, since the speaker will initiate an accommodation process in order to try to infer why the information was given in the presented form.

The information stored in the common ground is not exclusively a set of propositions that is mutually accepted by the interlocutor, moreover it contains a set of entities that were introduced before (cfr. Krifka 2008:246). These entities, e.g. NP or linguistic elements can be explicitly given (cfr. § 1.2.), as in:

(21) John and Ann write novels and even poems.

where the information *John and Ann write novels* is introduced before the unexpected and highlighted information is presented: *John and Ann write poems*; or the information can also be implicitly communicated, as in:

(22) John and Ann write even poems.

where it is presupposed (by the procedural instruction of *even*) that John and Ann write something else, besides of poems.

The notion of common ground is not free of criticism: the main argument is that it is impossible to set the limits of what is actually mutual knowledge and to what extent the speaker can be sure what the hearer will know. Therefore, Sperber and Wilson (1995 [1986]:§ 1.3.) proposed the concept of *mutual cognitive environment*, i.e. the set of assumptions that both interlocutors accept to be true. But, this concept is also insatisfactory, because it is too restrictive, in the sense that interpretations can also be based on shared assumptions that are not manifested mutually (cfr. Escandell Vidal 1993:32). The speaker always creates hypotheses about the knowledge of the hearer: Even though communication is not felicitous, this does not signify that the assumptions were not true, but that the hypotheses of the speaker was too broad.

In this sense, this work assumes a more impermeable definition of common ground without strict delimitations and it will be defended that the common ground depends highly on the context, the situation and the hypotheses the interlocutors made from each other.[43] It is assumed that interlocutors share a core of common ground where the probability of the mutual knowledge hypothesis should be nearly certain, but from the center of the core to the knowledge that the speaker presupposes that the hearer does not know there cannot be strict limitations, but more diffused areas.

To sum up, the information packaging conveyed in an utterance is an immediate and necessary communicative need of the speaker (cfr. Krifka 2008:244). For felicitous communication the speaker has to have in mind what he wants to communicate, presuppose what the hearer already knows according to the common ground and he has to pack the information as relevant as possible in an accessible context. Therefore, the speaker has at his disposal different syntactical, semantic and informative mechanisms (cfr. Leonetti 2014-2015:6).[44]

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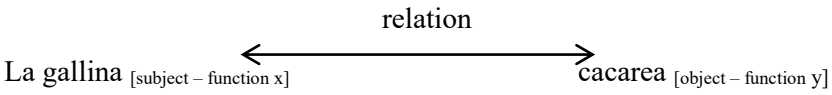
[43] Any new information can enter the common ground, if it can be related to some known information, in other words, any new information needs an anchor to be stored in the common ground content in order to become part of the mutual shared knowledge (cfr. van der Auwera 1981, Escandell Vidal 1993).

[44] The informative function cannot be considered free of criticism and other authors as the functional Amsterdam school opt for the distinction: *syntactic, semantic* and *pragmatic functions.* Following the approach of Gutiérrez Ordóñez (2000 [1997]) and Roberts (2012) the informative function can be assumed to be also a pragmatic phenomenon sharing essential aspects with the Gricean cooperative principle or the Relevance Theory.

2.2. Typology of concepts: Giveness*,* Topichood *and* Focus

With the application of syntactic and semantic functions[45], the speaker is able to construct information to represent issues of the world (cfr. Gutiérrez Ordóñez 2008:439). The syntactic functional structures, due to their formal character, do not contain meaning; they are combinatory relations and are defined as roles. At formal level the functions act as "placeholders", since they are pure constructive elements (e.g. subject and object). Their function is to organize the hierarchical structure of an utterance (cfr. Gutiérrez Ordóñez 2000 [1997]:12-13):

(23) La gallina cacarea.
('The chicken clucks.')



The syntactic functions relate two elements to each other and establish a relation between the constituents. It is not until Fillmore (1968) that a syntagmatic relation of semantic nature is incorporated in the functions of language. The elements that constitute a linguistic item produce syntagmatic relations. Due to their syntactic function any noun could be the subject of a verb, but as Fillmore pointed out, this is not always the case, as in the examples:

(24) La gallina cacarea.
('The chicken clucks.')
(25) #El pez cacarea.
('The fish clucks.')

Not any noun can constitute the subject of any verb. There are some strict limits[46]. The semantic functions act as roles, but on the contrary to the syntactic functions, they contain meaning, they refer to entities anchored in the world. They represent a functional organization, but not a formal one and rely exclusively on meaning. Any semantic constituent is relat-

[45] For detailed discussion of syntactical and semantic functions see Gutiérrez Ordóñez (2000 [1997]).
[46] This phenomenon does not only occur with nouns, but also with other elements, such as adjectives, etc. For further discussion see Fillmore (1968, 2006) and for Spanish see Gutiérrez Ordóñez (2000 [1997]), Escandell Vidal (2007).

ed to a syntactic constituent and vice versa. They rely on strict formal conditions, whereas the informative functions depend on other criteria (cfr. Gutiérrez Ordóñez 2000 [1997]:24).
In any communicative act[47], the speaker has to have in mind what he wants to communicate and, thus, has to prepare the utterance in an adequate way to satisfy the informative needs of the interlocutor. Thereby, the speaker follows primarily one intention: *the intention to inform*.

> *To inform* is a semiological activity by means of which a *speaker* (S) addresses an *addressee* (A), to modify its state of knowledge, transmitting to it, by means of some significant tool, data that supposes that it is somehow new to the addressee. (cfr. Gutiérrez Ordóñez 2008:439, own translation[48])

Therefore, the speaker has to vary the linguistic form according to what he wants to inform about (informative principle, in Relevance Theory terms), and what he wanted the audience to focus on (communicative principle). Thereby, he selects what he considers to be relevant (relevant principle) according to the different types of information, as e.g. what is considered mutual knowledge, what is background information and what is the most important information.

The informative function constrains the linguistic form and depends on the conveyed type of information (cfr. Chafe 1976, Lambrecht 1994, Krifka 2008), it acts upon the syntactical and semantic functions, and not the other way around. The informative intention of the speaker determines the formal construction of the utterance, leading to the assumption that a *superior reorganization* has to be conducted:

> They are a «superior» reorganization of those same materials destined to satisfy the informative needs of the addressee, either separating what he knows from what he doesn't know (*given/new informatio*n), or highlighting a constituent (*focus*), or setting referential and/or truth-conditional limits of the sequence (*topic/comment*). (Gutiérrez Ordóñez (2000 [1997]:17, own translation[49])

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[47] As Gutiérrez Ordóñez (2000 [1997]:17), own translation, emphasis in the original) pointed out, " […], when, in a communicative act, the speaker addresses its addressee, not only the components of the *langue*, the *competence* or the *code* come into account, but a whole series of factors that make up the communicative scheme [...]." Therefore, successively the functional and structural linguistic approaches incorporate an informative function of discourse.
Original citation in Spanish: "[…], cuando en un acto comunicativo, un emisor se dirige a su destinatario entran en funcionamiento no sólo los componentes de la *langue,* de la *competencia* o del *código,* sino toda una serie de factores que configuran el esquema comunicativo […]." (Gutiérrez Ordóñez (2000 [1997]:17)

[48] Empasis in the original. Orginal citation in Spanish: "*Informar* es una actividad semiológica por medio de la que un *emisor* (E) se dirige a un *destinatario* (D) para modificar su estado de conocimientos, transmitiéndole, por medio de algún instrumento Significativo, datos que supone que de algún modo le son nuevos." (Gutiérrez Ordóñez 2008:439)

[49] Emphasis in the original. Original citation in Spanish: "Son una reorganización «superior» de esos mismos materiales destinada a satisfacer las necesidades informativas del que le escucha, bien separando lo que conoce

Considering this superior reorganization, communication is oriented to information, to "say things of the world" to the addressee, assuming that the speaker considers all available material, not only conventional material (syntactic, semantic and phonological functions), but also conversational material (informative functions). Following Fuentes (1999:9) it is assumed that the informative organization of an utterance is motivated by the suitability of the speaker to the addressee. The communicative act does not represent exactly what the speaker wants to say, but what he believes the addressee does not know. In order to satisfy this communicative need, he arranges his linguistic material hierarchically.

To conclude, syntactical, semantic and informative functions are all functions of the linguistic organization of an utterance underlying one main characteristic: the asymmetric relation between them. The informative organization acts upon the syntactical, semantic and phonological functions and imposes its restriction to them, and not inversely. The informative function does not only display is restriction at sentence level, but also on a macrostructural and microstructural level (cfr. Fuentes 1999:9). Any information in an utterance can be split by a question-answer set. Any utterance could be the answer of a fictive or real question:

(26) Quién inventó la minifalda?
La minifalda la inventó Mary Quant.
('Who invented the miniskirt?')
The miniskirt was invented by Mary Quant.')

(27) Qué inventó Mary Quant?
Mary Quant inventó la minifalda.
('What invented Mary Quant?
Mary Quant invented the miniskirt.')

The question can be previously and explicitly formulated, or implicitly constructed by the speaker (cfr. Gutiérrez Ordóñez 2000 [1997]:21, Portolés 2010:284). In communication it is assumed that an asked question leads to the immediate intention of answering by following the cooperative principle. The intention of immediate answer relies on relevance as an organizing principle in discourse processing. This same principle facilitates the processing and storage of information (cfr. Roberts 2012:4). The new information given by an answer will be

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de lo que desconoce (*soporte/aporte*), bien resaltando un constituyente (*foco*), bien marcando los límites referenciales y/o veritativos de la secuencia (*tópico/comentario*)." (Gutiérrez Ordóñez (2000 [1997]:17)

added to the common ground content, if it is accepted by the interlocutors.[50] At the same time, the addition of new information reduces the context set of the common ground. How and which assertion inferred by the communicated information will be stored in the common ground content is highly context dependent. In this sense, it is reasonable to assume that the inferences that are drawn are not only triggered by the discourse segmentation (question-answer set) but also that the information structure can facilitate the processing of inferences (cfr. Sperber and Wilson 1995 [1986], Roberts 2012). Thus, differences at the informative structure level can assist or impede the addressee in processing specific information in a given context, and it is assumed that information structure is also a pragmatic phenomenon (cfr. Gundel 2012:586). Based on the question-answer set, the information structure of utterance relies on different factors:

– *Givenness*: relation between *given* and *new* information; interpreted in the sense that givenness is essentially entailed by the context and establishes a binary division between the new information for the addressee and the given information, understood as already present in the common ground. The distinction between given and new information relates the discourse with the context and establishes a hierarchical structure of the information in the utterance (cfr. Chafe 1976, Prince 1981, Fuentes 1999, Gutiérrez Ordóñez 2000 [1997], Krifka 2008, Rochemont 2016)
– *Topichood*: relation between topic and comment. The distinction between what is the information about (topic or theme) and what is communicated (comment or rheme), interpreted in the sense of Schwarzschild (1999), Gutiérrez Ordóñez (2000 [1997]), Rochemont (2016).
– *Focus*: understood as a semantic-pragmatic notion expressing that a linguistic item is selected from a set of alternatives, and that a specific structure is generated in discourse, following Rooth (1985, 1992, 1996), Lambrecht (1994), Portolés (2006, 2007).

The distinction *givenness/newness*[51] is defined as linguistic property of a linguistic expression. Givenness represents the information that is already present in the discourse, it could be

[50] A distrnction is made here to other authors that assume that the new information is only integrated in the hearers' common ground. Krifka (2008) and Roberts (2012) argue that the new information modifies the common ground of both interlocutors. The presented study follows the proposals of Krifka (2008) and Roberts (2012). For an epistemic distinction see Carlson (1983).
[51] Information structure was firstly associated to the binary set of given and new information. There exists some heterogeneity in how the information is formally expressed in an utterance and about the terminology of each distinction. For further discussion of the distinction between given and new information see among others

explicitly given in an utterance or it could be implicit, e.g. present in the common ground or stored in the long-term memory. On the contrary, the new information represents the information that was not assumed by the speaker that it was known by the addressee and must be always explicitly given in an utterance[52] (cfr. Reyes 1985:570, Mendenhall 1990:77, Gutiérrez Ordóñez 2000 [1997]:20-21, Gundel 2012:585):

> The proper definition of givenness must be such that it allows us to say that an expression is given to a particular degree e.g. whether it is maximally salient in the immediate common ground or just present there, or whether it is given in the general common ground or not given at all. (Krifka 2008:262)

What is new and what is given is always a subjective perspective by the speaker. By interacting with the common ground, the speaker decides what patterns to choose in order to construct a relevant stimulus for the addressee. With the received new information the addressee can confirm, modify or correct previous mental representations he has in mind (cfr. Chafe 1976:41, Prince 1981:232, Krifka 2008:262, Rochemont 2016:41). Given and new information have syntagmatical properties and are related to each other in a discourse. The new information acts as attribution that is based upon the given information leading to the argument that there cannot be new information without given[53] (cfr. Gutiérrez Ordóñez 2000 [1997]:21, Krifka 2008:262).

Following the intuitive question-answer set, the given information in the question constitutes what the addressee knows, and the interrogative mark condensates the actual new information, that is what the addressee wants to know (1a-3a). Thus, different questions can evoke different answers according to what the speaker assumes is given and new information for the addressee:

Halliday (1967-1968), Chafe (1976), Prince (1981), Gundel (1999), Rochemont (2016) and for Spanish Gutiérrez Ordóñez (2000 [1997], Fuentes (1999), Portolés (2010).

[52] Gundel (1999, 2012) differentiates between relational and referential givenness. Referential givenness indicates new information as a linguistic expressing with non-linguistic information that is established in the addressee's mind, whereas relational givenness refers to linguistic expressions in which the new information is new in relation to the given information.

[53] Other authors as Rylov (1989:11) sustain that there can exist new information without given ("monorémicas"). Following Carlson (1983) and Gutiérrez Ordóñez (2000 [1997]) it is assumed that at the informative level given information is always present, but in some cases implicitly given in the common ground, as well as in the question/answer relation were the question can only be inferred by the context.

Question set

new information	*given information*
1a) ¿A quién *To whom*	le regaló un coche María? *did Mar give a car.*
2a) ¿Qué *what*	le regaló María a Juan? *does María give to Juan?*
3a) ¿Quién *who*	le regaló un coche a Juan? *gave Juan a car?*

Answer set

Given information	*New information*
1b) María le regaló un coche *Mary gave a car*	a Juan. *to John.*
2b) María le regaló a Juan *Mary gave to John*	un coche. *a car.*
3b) A Juan le regaló un coche *John was given a car*	María. *by Mary.*

The different word order in (1b-3b) is conditioned intuitively by the informative function given by the question. The answers present the given information at the beginning of the utterance (left side) and the new information to the end of the utterance (right side) (cfr. Reyes 1985:577, Núñez Ramos and Teso Martín 1996:95, Gutiérrez Ordóñez 2000 [1997]:20-23).[54]

From a syntactical and semantic perspective, the utterances (1b-3b) have an unmarked structure, but they inform differently about the issue. On the one hand, in (1b) the new information is *John* and in (2b) the new information is *car*. From an informative perspective, the free word order in Spanish is not at all arbitrary. This is why it would seem strange, that (2b) constitutes the answer for the question (1a). The new information is always oriented to the informative needs of the addressee, since the constituents obey always the communicative necessities of communication (cfr. Gutiérrez Ordóñez 2000 [1997]:23-24).

A notion related to the distinction between given and new information is the distinction between *topic* and *comment*.[55] Following Krifka (2008:265) the term "topic is the entity that a

[54] Reyes (1985:577) denominates the distinction between given and new information: "tema/rema", points out that in Spanish according to the natural word order the given information or "theme" corresponds mostly with the subject of the utterance and the "rheme" (the new information) with the predicate, that is not always the case, but can be seen as an unmarked word order structure.

[55] The first intention to separate the information in *topic* and *comment* was made by von der Gabelentz (1869) who proposed the terms "psychological subject" and "psychological predicate". Today "psychological subject" mostly refers to *given information, topic, ground* or *theme*: referring to the object that the speaker wants to communicate. In contrast, "psychological predicate" is today defined as *new information, comment, focus* or *rheme* referring to what the speaker is thinking about the object (cfr. Krifka 2008:264).
As happens with the distinction between given and new information, the terminology used for the notion *topic/comment* is not at all clear. Chafe (1976) defined the term *topic* as subject of the utterance, creating confusion with the grammatical distinction. Whereas the terms *theme/rheme* of the functional school of Amsterdam (cfr.

speaker identifies about which then information, the comment, is given". This definition about topic presupposes that communication is specifically organized insofar that the interlocutors can actually answer the question *What is the utterance about?* Furthermore, this definition leads to the conclusion that there must be a coherence relation between the topic and the utterance (cfr. Dik 1989:177-178).

According to Reinhart (1982) the topic is strictly related to the notion of common ground. New information is added to the common ground following a file-card system of entities, whereas the topic would represent the headline of the entity under which new information would be stored in the common ground content (cfr. Krifka 2008:265).

(28) Zidane$_{[topic]}$ jugó con Beckham$_{[comment].}$
('Zidane$_{[topic]}$ played with Beckham$_{[comment].}$')

(29) Beckham$_{[topic]}$ jugó con Zidane$_{[comment].}$
('Beckham$_{[topic]}$ played with Zidane$_{[comment].}$')

The examples (28) and (29) present the same propositions (both football players played together in a team) but the informative structure is different and the new information will be stored differently in the common ground. Whereas in (28) the new information would be stored under the topic ZIDANE, in (29) it would be stored under the topic BECKHAM. Following Reinhart (1982) the term topic is further defined by Krifka (2008:265) as: "The topic constituent identifies the entity or set of entities under which the information expressed in the comment constituent should be stored in the common ground content." In a question-answer set, the topic[56] will be the headline: what the explicit or implicit question is about, whereas the comment will be the answer to the question:

Dik 1989) are very similar to what is here called *topic/comment*, in order to not establish confusion with the Prague School approaches that denominate *theme/rheme* to given and new information. Other authors as Vallduví (1992), Vallduví and Engdahl (1996) denominated the notion of *topic* "link". The *topic/comment* distinction here fallows the early definition of Hockett (1958), developed by Krifka (2008). For a detailed discussion of the notion *topic/comment* see Gundel (1974), Gundel and Fretheim (2004), and for Spanish among others Gutiérrez Ordóñez (2000 [1997]), Fuentes (1999), Hidalgo Downing (2003), Portolés (2010).

[56] Topic is sometimes put on a level with given information, due to the fact that it can be inferred by the context. Even though this occurs in some cases, there are also cases of new topics. Furthermore, utterances normally contain just one topic, but utterances with more topics are possible as well. The selection of a topic is a mere informative function: the informative functions act upon the topic selection (cfr. Krifka 2008:267).

Utterance	Zidane fue centrocampista. *Zidane was a midfielder.*
Topic	Zidane's Football position
Topic question	Qué posición tenía Zidane? *Which position had Zidane?*
comment	centrocampista *midfielder*

The topic/comment distinction is not a mere distinction at sentence level, but at discursive level. The topic can be extended to a paragraph or the whole textual unit and can lead to more than one comment for each topic (cfr. Portolés 2010:289).[57]

The notion of *focus* is also related to the distinction of given and new information. Focus information presents new or unexpected information that the speaker wants to enhance. In the literature of information structure, the focus phenomenon has received different definitions and a variation of semantic and grammatical properties (cfr. among others, Rooth 1985, Lambrecht 1994, Kenesei 2006, Escandell Vidal and Leonetti 2009, Portolés 2010). The most common definition of focus is based on Rooth's (1985) Alternative Semantics Theory: *Any focus evokes alternatives that are relevant for the interpretation of utterances* (cfr. Rooth 1985, 1992, 1996). Based on this theory, a focus establishes a relation between the selected focus information and a set of possible alternatives that previously could be – implicitly or explicitly – activated in the discourse (cfr. Rooth 1992, 1996, Kenesei 2006, Selkirk 2007, Escandell Vidal and Leonetti 2009, Portolés 2009, 2011, Leonetti 2014-2015, and § 3.2.). Hence, the focus is a specific type of comment, that is selected among a set of alternatives that could also have been the answer of a same type of question, such as the focused element (cfr. Portolés 2010:294, 2011:3). As a consequence, a focus relates to a certain type of information status and represents pragmatically the most informative element (*informativeness*, cfr. Bolinger 1961, Beaver and Clark 2008:xi, Portolés 2007, 2009, 2010).

Further, the distinction between focus and alternative has to be differentiated from the distinction between focus and background. Both are related to different focus approaches. The term *background* relates to the propositional skeleton proposed by Jackendoff (1972), whereas the term *alternatives* refers to the Alternative Semantic approach by Rooth (1985). As Portoles (2010:302) pointed out, alternative and background can co-occur. Particularly, in struc-

[57] For a detailed discussion of topic variation in Spanish see Hidalgo Downing (2003) and for the notion of topic in relation to discourse particles and informative structure see Portolés (2010, 2011).

tures that present a propositional complement, in which an explicit alternative and a focus element can be contrasted to a background information[58], as in:

(30) Además de por la boca$_{[explicit\ alternative]}$, la aspirina puede administrarse$_{[background]}$ por vía tópica$_{[focus].}$ (CREA, El Mundo, 01/05/1997; Portolés 2010:302)
('In addition to the mouth$_{[explicit\ alternative]}$ aspirin can be given$_{[background]}$ as a topical treatment$_{[focus].}$')

[58] Other authors have denominated the counterpart of focus also *contextual propositions* (Kay 1990), or, from generative perspective *presupposition* distinguishing between shared information between the interlocutors (presuppositions) and information that is not presupposed (focus). For a wider view of this dichotomy cf. among others Molnár and Winkler (2006).

3. THE NOTION OF FOCUS

According to the focus definition by Rooth (1985, 1992, 1996), the focus constituent is an explicit element that is highlighted in an utterance as the most informative element. Highlighting an element might also evoke alternatives. The relation between the focus element and the alternative can be of different semantic nature. If no explicit device evokes a contrastive relation (as in marked structures triggered by a FO), an additive relation is created (as in unmarked structures, cfr. § 3.1.). Rooth (1985) indicates that alternatives only evoke in cases of focus structures that are marked by prosody, word order or other linguistic focus-sensitive elements. Notwithstanding, this thesis argues, that in principle, any focus, independently if it is marked by a focus-sensitive mechanism or unmarked presenting the most neutral information structure, may evoke alternatives (cfr. Portolés 2010, 2011, Loureda *et al.* 2015, Cruz and Loureda 2019).

3.1. Different kinds of focus: unmarked and marked

Two main types of focus structure can be distinguished: *Unmarked* and *marked focus structure*. In a specific information structure an unmarked focus[59] may exist "by default", as in:

> Context:
> David was born in Spain and he is a foreign language teacher in Madrid, where he has been teaching for many years. He has travelled a lot and speaks different languages, such as English and French.

(31) David habla chino$_{[\text{unmarked focus/new information}].}$
('David speaks Chinese$_{[\text{unmarked focus/new information}].}$')

[59] The unmarked focus has received different denominations in the literature according to different theoretical perspectives: among others, *neutral focus* (cfr. Zubizarreta 1999, Gutiérrez Ordóñez 2000 [1997]), *informational or information focus* (cfr. Jackendoff 1972, Roberts 1998, É. Kiss 1998, Kenesei 2006), *presentational focus* (cfr. Rochemont 1986), *emotional focus* (cfr. Bolinger 1961) *verum focus* (cfr. Höhle 1988, Escandell Vidal and Leonetti 2009), *broad focus* (cfr. Selkirk 1984), *psychological focus* (cfr. Gundel 1999) or *completive focus* (cfr. Dik 1989, Andorno 2000). Even though they are all based on slightly different properties they all rely on the main unmarked focus function: introducing new or unexpected information that was assumed not to be shared between the interlocutors. Some of the named authors include prosodic marking within the notion of unmarked focus. However, following Portolés (2007, 2010) and Leonetti (2014-2015), in Spanish it is differentiated between an unmarked and a marked prosodic structure and the latter is associated to marked focus structure.

The unmarked focus[60] widens and extends the common ground, since a focus constitutes the information that is assumed by the speaker not to be shared by him and the hearer (cfr. Jackendoff 1972:230, Selkirk 1984, Rooth 1985:10-15, Rochemont 1986, É. Kiss 1998:245-246, Kenesei 2006:139-144, Escandell Vidal and Leonetti 2009:14). The focus is the element that could be the answer to a question related to the topic WHICH LANGUAGES DOES DAVID SPEAK? and the background information is condensated in this topic question (cfr. van Kuppevelt 1996:394, Gutiérrez Ordóñez 2000 [1997]:40, Gundel and Fretheim 2004:176, Portolés 2010:284, 294, Beaver and Clark 2008:xii, Leonetti 2014-2015:7). According to the topic, the unmarked focus (*Chinese*) presented as new information can establish an additive relation with the known information given in the previous context (*English, French*) (cfr. Portolés 2010:294, 2011:53).[61]

Any unmarked focus has primarily identificational value, that can be understood as additional value to the focus. By recognizing an element as focus the identificational values ensure that a relation between the constituents within an utterance is established (cfr. Jacobs 1983:128, König 1991:29, Kenesei 2006:139, Cruz and Loureda 2019). "The identification can subsist only between items of certain kind: those which have extensions in the world, i.e. things, actions, properties and propositions" (Kenesei 2006:139). All elements of the relation have to be subordinate to one specific set. Therefore, the identification in this focus structure does not exclude all other possible alternative elements of the relevant set, it has an additive identificational value, in other words, if the focus element changes, as in:

(32) David habla inglés$_{[focus].}$
('David speaks English$_{[focus].}$')

[60] In Spanish a focus is defined as unmarked if it is presented in an utterance in the most neutral word order (order by default (SVO-Structure); cfr. Leonetti 2014-2015:3). The natural position of an unmarked focus in an utterance is the right side, as to say, the final position. Besides of introducing information with an unmarked nuclear stress and having an identificational value, the unmarked focus does not combine any other focusing properties (cfr. Gutiérrez Ordóñez 2000 [1997], Fuentes 1999, 2012, Portolés 2010, Leonetti 2014-2015:8). The neutral structure does not present specific contextual conditions and can be compatible with mostly every potential context. From a prosodic perspective, the most neutral form of an utterance has a continuous melodic structure without any emphasize, stress or specific pitch accent. An unmarked word order structure must therefore be the most frequent structure in any language. Acting as baseline, any unmarked structure of an utterance can be modified in order to satisfy communicative needs (cfr. Leonetti 2014-2015:3).

[61] Without a specific given context, the focus projection can vary in the sense that the focus changes according to the questions that could have been asked, e.g. *which languages does David speak? What happened?* Nevertheless, the given answers will be syntactically identical. Only the focus projection would change, ranging from focusing the whole utterance to only considering the direct object, focus of the utterance. The syntax does not impose any restriction to the construction of focus structure at an informative level. The different possible interpretations of focus are not codified by grammatical restrictions. They have to be inferred pragmatically by interpreting the utterance in the respective context. The hearer/reader has to select *ad hoc* which focus interpretation is the correct one in the specific context (cfr. Leonetti 2014-2015:9).

the answer to the topic *WHICH LANGUAGES DOES DAVID SPEAK*? would be still true, because

English (or Chinese) ∈ A, where A: languages that David speaks

All possible elements belong semantically to the same set of alternatives (David speaks X), and the set has to be interpreted according to the context and the common ground of the interlocutors during the communicative act (cfr. Rooth 1992:2, Portolés 2006:11). The set can be composed by an indefinite number of elements or a smaller number, but it has to contain at least one element (cfr. Kenesei 2006:144).

Moreover, in Spanish, any constituent within an utterance can also be presented as *marked focus*[62] by implementing a focus-sensitive mechanism (cfr. Escandell Vidal and Leonetti 2009, Portolés 2010, Leonetti 2014-2015): prosodic (cfr. Fant 1986), or syntactical mechanisms (cfr. Leonetti 2014-2015:3) or specific linguistic devices, as FOs (cfr. Portolés 2010).

In terms of prosodic mechanisms, the emphatic stress over one constituent is the most common indicating a focus structure:

(33) David habla CHINO$_{[focus].}$
('David speaks CHINESE$_{[focus].}$')

(34) DAVID$_{[focus]}$ habla chino.
('DAVID$_{[focus]}$ speaks Chinese.')

In the cases of focus structure marked by prosody, the focus has to be processed by the hearer on the basis of prosodic enrichment. He has to contrast the focus element (e.g. in (33) *Chinese* to the implicit given alternatives (possible languages that could speak David).[63]

In terms of syntactical mechanisms, the modification of an unmarked word order can lead to a focus structure with a focus constituent that implies as well a prosodic stress (emphatic element).[64] The most common word order to mark a focus structure locates the object

[62] In the literature the marked focus is also called *identificational focus* (cfr. É. Kiss 1998) and more over *contrastive focus* (cfr. Roberts 1998, Kenesei 2006, Selkirk 2007), since the relation between alternative and focus is considered as a contrastive relation. The term *marked focus* is used here, in order to adopt the most neutral definition.

[63] For further discussion of prosodic marked focus structure see Fant (1986), Toledo (2008), Escandell Vidal and Leonetti (2009), Estebas Vilaplana and Prieto (2008), and for an overview of prosody and focus on different European languages see Zubizarreta (1998).

[64] The word order change to the initial position can lead to misleading interpretations since it can be ambiguous and can be interpreted as topic of the utterance. If the word order contains a focus structure it has to be combined

of an utterance at the beginning, as in:

(35) Juan: David habla inglés[focus].
María: Es CHINO[focus] lo que habla David.
('John: David speaks English[focus]
Mary: It is CHINESE[focus] what David speaks.')

Further, also lexical mechanisms, as e.g. FO as in English: *even, only;* in Spanish: *incluso*, *hasta* or in German: *sogar* may evoke a specific focus structure in utterances and establish a focus-sensitive relation (cfr. Jackendoff 1972) that is a specific informative focus structure that modifies the truth-condition of an utterance (cfr. König 1991, Beaver and Clark 2008, Cruz and Loureda 2019).

> Focus operators may contribute to the exact identification and delimitation of their focus. Focus particles are thus one of the formal exponents of focus structure, in addition to prosodic prominence, morphological markers, word order and specific syntactic constructions which consistently identify the focus. (König 1991:13)

By inserting a FO as *incluso* in an utterance, the additive FO presupposes that the statement is true for at least one of the elements of the set of alternatives and expresses that the proposition holds for the focused element as well (cfr. König 1991), as in:

(36) David habla incluso[FO] chino[focus].
('David speaks even [FO] Chinese [focus].')

The adverb *incluso* syntactically modifies the focus *Chinese* that is presented as its scope and is informatively highlighted in the sense that the hearer/reader has to evoke a set of alternatives[65]. Since one of the main functions of a focus is its identificational value; one of the functions of the FO must be to clarify the established conventional relation between alternative and marked focus (cfr. Kenesei 2006:139, Beaver and Clark 2008, Gotzner 2016:17).

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with a marked intonation in order to avoid ambiguity (cfr. Gutiérrez Ordóñez 2000 [1997]:36-38, Escandell Vidal and Leonetti 2009:14).

[65] Focus and scope may or may not coincide in an utterance. Utterances with FO present normally a narrow scope over one constituent of the utterances, nevertheless, they also can widen their scope over several constituents or even a complete utterance. In the experimental stimuli of the presented study, focus and scope always coincide in one lexical element of the respective utterances. For a wider discussion on the topic focus and scope see König (1991).

Thus, the marked focus structure englobes the properties of the unmarked focus, but also has some different characteristics.[66] Both foci, unmarked or marked, share the identificational value in the sense that both evoke a relation between the given constituents of the utterance. But, while the unmarked focus primarily indicates new information, the marked focus also "exhibits an explicit contrast" (cfr. Selkirk 1985, 2007, Kenesei 2006:240) between the focalized element (*Chinese*) and a complementary subset of alternatives (cfr. Rooth 1985, 1992, 1996, É. Kiss 1998:245, Gundel and Fretheim 2004, Kenesei 2006:241).[67] Contrast is understood here as function of generating an evaluation of two elements with informative value. The focus could be contrasted with a potential subset in a given context or with a subset of a paradigm that can be explicitly given in the discourse (cfr. Kenesei 2006, Portolés 2009, 2010, Krifka and Musan 2012), as in:

(37) David habla inglés$_{[alternative]}$ e incluso$_{[FO]}$ chino$_{[focus].}$
('David speaks English$_{[alternative]}$ and even$_{[FO]}$ Chinese$_{[focus].}$')

Furthermore, following Kenesei (2006:142) the marked focus englobes the function of "'exclusion by identification' interpreted on some set of individuals in the universe of discourse". It is assumed that any focus – unmarked or marked – may evoke an alternative (cfr. Rooth 1985). Nevertheless, the difference between both foci lies in the relation they establish with their respective alternatives. In marked focus structure the contrastive relation between focus and alternative is given conventionally, whereas in unmarked focus structures, by introducing new information the contrast relation is of a different semantic nature which can only be recovered by a conversational implicature (cfr. Grice 1975, Kenesei 2006,

[66] The marked focus is always a narrow focus in the sense that there is an explicit distribution between narrow focus and background information. This was not the case in the unmarked focus structure, where the ambiguity of focus projection has to be solved by the context (cfr. Leonetti 2014-2015:15).

[67] In the literature the notion of contrast is also understood as exhaustiveness of the focus: what is true in regard to the focus has to be negated for the alternative. This difference arises by comparing different focus structures. In additive focus structures the focus receives a specific informative status among the other potential alternatives and is selected as the most informative element of the utterance. However, that does not imply that a contrast is necessarily established in the sense that it negates the alternatives. On the other hand, in exclusive focus structures (e.g. with an exclusive FO as "only"), a contrast takes place including the negation of the alternative set. Following Molnár (2006:201-203), the notion of contrast will be understood here as evaluation strategy between possible alternatives and the marked focus. Additionally, contrast is understood as a binary distribution at the informative level between focus and alternatives; "(i) contrast always operates on alternatives independently of the character of the set (open vs. closed) and the presence of alternatives in the linguistic context and in the situation; (ii) contrast is always connected to highlighting independently of the accent type […]" (Molnár 2006:212-213). The comparison of two elements with informative value can occur as a contrast with a subset of a paradigm that is given in the language or it can also be given as a potential subset in the context (cfr. Molnár 2006:212-213).

Portolés 2007). That is the reason, why unmarked focus structures can be cancelled out syntagmatically, as in:

(38) David habla inglés y chino, sin que hablar chino le resulte más complicado que hablar inglés.
('David speaks English and Chinese, without speaking Chinese being more complicated than speaking English.)

The conventional implicature presented by the marked focus structure englobes not only an identificational, but also a contrastive and scalar value and cannot be cancelled out, as in:

(39) #David habla inglés e incluso chino, sin que hablar chino le resulte más complicado que hablar inglés.
('#David speaks English and even Chinese, without speaking Chinese being more complicated than speaking English.)

In general, any focus establishes the same operation. It indicates the presence of alternatives that are relevant for the interpretation of the utterance. By marking the focus, the interpretation of the utterance becomes more determined. The marked structure is selected because there were no other (unmarked) mechanisms to construct the intended relevant information by the speaker. Opting for a marked focus structure is combined with the relevance principle: the speaker opts for a marked structure, because he assumes that he cannot create an optimal ostensive stimulus with an unmarked structure. Thus, marked focus structures serve different proposes, such as correction, cancelation and modification of the intended assumptions. On the other hand, the hearer/reader tries to accommodate the focus information and to satisfy at any cost the focusing instruction by relying on the information of the context. Even though there are no appropriate assumptions to contrast with, the hearer tries to accommodate *ad hoc* the information in the common ground (cfr. Leonetti 2014-2015:17).

3.2. Alternatives

The relation between alternative and focus is asymmetric, since it is the focus that establishes the relation with the set of alternatives, and not vice versa.[68] The alternative is only labeled alternative if a focus is present in an utterance. The focus in combination with the discursive and situational context determines the interpretation of the set of alternatives (cfr. Portolés 2010:297). Furthermore, alternative and focus are related to the same topic:

> The alternative denotations have to be comparable to the denotation of the expression in focus, that is, they have to be of the same type, and often also of the same ontological sort, and they can be more narrowly restricted by the context of the utterance. (Krifka and Musan 2012:8)

Likewise, a focus, either unmarked or marked, necessarily evokes a set of alternatives, upon which a relation can be estabished. This relation can be additive in the cases of an unmarked focus structure or, in cases of marked focus structure, it can be contrastive (cfr. Cruz and Loureda 2019). According to their appearence in an utterance, the alternatives can be implicitly given in the discourse or explicitly given in the utterance (cfr. König 1991, Gutiérrez Ordóñez 2000 [1997], Portolés 2007, 2009, 2010, 2011).[69]

If the set of alternatives is implicit, the set of alternatives, that has to be recovered through the context, can adopt different properties. In the case of an unmarked focus structure, the focus (A) is a subset of a set of alternatives (B), determined by a relation A ⊆ B where the subset of the focus does not have to correspond totally with the set of alternatives, but they could also be identical (a total inclusion A = B) (cfr. Kenesei 2006), as in:

(40) David habla chino.
('David speaks Chinese.')

The unmarked focus (the subset *Chinese*) can differ of the set of alternatives (David could also speak any other language, as e.g. *English*) or could correspond with the set of alternatives

[68] Since the properties of the set of alternatives and the relation between focus and alternative are crisscrossed with other notions implicated by focus, as e.g. *scalarity* or properties of different FOs, this chapter aims to provide a general overview of the properties of the set of alternatives and will refer to other chapters.
[69] Note that the distinction between explicit and implicit alternative in marked focus structure as e.g. with the FO *incluso* does not hold for the whole paradigm of particles. Particles with propositional complement, as e.g. *además de, aparte de* exhibit necessarily an explicit alternative. For further discussion of these particles in relation to the notion of alternative, see Portolés (2009:50-51).

(David does not speak another language). On the contrary, in a marked focus structure (as in (41)) the relation is presented as A ⊂ B[70], where A is always a proper subset of B and therefore the subsets can never be identical.

(41) David habla incluso chino.
('David speaks even Chinese')

The instruction of the FO obliges the hearer/reader to interpret that, besides the focus element, David necessarily has to speak another language, and necessarily, at least one more. An informative scale has to be constructed, in which the focused element is less expected and has to be related with possible alternatives that have to be derived from the context.

If the alternative is explicitly given in the utterance (as in (42)) the relation between the alternative and focus is always presented as a proper subset (A ⊂ B), no matter if the focus is unmarked or marked in an utterance. In both cases, the explicit given alternative can be related to the focus directly and has not to be inferred from the context.

(42) David habla inglés e incluso chino.
('David speaks English and even Chinese')

The explicit given alternative can be composed by one element (*explicit single alternative*) (as in (42)) or it can be composed by several elements (*explicit complex alternative*, up to an indefinite number), as e.g. in (43):

(43) David habla inglés, francés, italiano y [e incluso] chino.
('David speaks English, French, Italian and [even] Chinese')

From a cognitive perspective it can be assumed that utterances with explicit alternative require less processing effort, since the whole information for the interpretation of the focus structure is presented explicitly and has not to be inferred by the discursive context.[71]

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[70] Also A ⊊ B, the annotation depends from each author. Here we opt for ⊂ as symbol for a proper subset. Annotation taken from Halliday (1967).

[71] Sometimes the set of alternatives can be explicitly restricted to a number of two possible elements, as in
Juan: María, ¿Qué te apetece tomar, vino tinto o blanco?
Maria: Tinto, por favor.
('John: Mary, what do you want to drink, red or white wine?
Mary: White wine, please.')

Moreover, the set of alternatives has other characteristics. According to the topic a set can be pragmatically relatively open as in (43), where the topic (LANGUAGES) of the set of alternatives is compound by a wide range of elements. In contrast, in closed sets of alternatives the elements are limited, as e.g. in (Portolés 2007:136):

(44) Alicia sabe sumar, restar, multiplicar y [e incluso] dividir.
('Alicia can add, subtract, multiply and [even] divide.')

The set of alternatives is denominated closed, in the sense that the topic ARITHMETIC RULES THAT ALICIA KNOWS is composed by a close set of identities, in which the element *divide* constitutes an extreme value on an informative scale (cfr. Portolés 2007:136).

To sum up, alternative and focus are related to each other and can be distributed informatively in an utterance, either being informatively equal (unmarked focus structure) or being informatively differently distributed (marked focus structure). In the latter case, the alternative is always less informative than the focused element (cfr. König 1991:32, Cruz and Loureda 2019, and § 3.3.).

Another notion that is related to alternatives is *exhaustiveness.*[72] The exhaustiveness of the focus indicates whether the alternatives are negated or included while affirming the focus element (cfr. § 4.2.). In cases where the focus is presented as exhaustive, the affirmation of the focus negates the presence of alternatives (cfr. É. Kiss 1998, Portolés 2009). In Spanish, this is introduced by relative clauses, prosodic marked structures or structures with exclusive operators, as in[73]:

(45) David habla solo chino$_{[focus].}$
('David speaks only Chinese$_{[focus].}$')

The utterance indicates that David only speaks Chinese and no other language. The exclusive FO *solo* ('only') obliges the hearer/reader to reject all other possible alternatives and presents the utterance as exhaustive implicature that is conventionalized by the operator. Whereas in utterances with non-exhaustive focus the alternative is added and not negated. A non-

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This binary presentation of alternatives is often used in order to correct a previous assumption or in polarity questions.

[72] The notion of exhaustiveness is often referred to as including and excluding alternatives (cfr. Portolés 2009:52-53).

[73] For further discussion of different types of exhaustiveness in focus structures see Portolés (2010).

exhaustive additive focus structure can be presented with an inclusive FO as *incluso* that indicates that one element is selected from the set as the most informative element. Thereby, the focus element is informatively added to the (implicit or explicit) alternative(s) (cfr. Portolés 2010:296-297, and § 4.2.).[74]

3.3. Scalarity

From an informative perspective alternative and focus can be ranged on a scale under one topic (cfr. van Kuppevelt 1996:403, Portolés 2007:136).[75] For instance, the utterance in (46) embedded in the discursive context (adapted from Portolés 2007:136) is based on the question *what arithmetic rules does Alicia know?*

Context:
Alicia is seven years old and in first grade primary school.

(46) Alicia sabe dividir.
('Alicia can divide.')

This question, in turn, evokes the topic ARITHMETIC RULES THAT ALICIA KNOWS. The possible set of alternatives can be composed by e.g. add, subtract, multiply and divide. On the one hand, these elements constitute the comment to the topic and, on the other hand, the elements can be ordered due to their informative strength, as e.g. <multiply \ DIVIDE>[76]. Following our world knowledge, to *divide* is more informative than the other arithmetic rules, since it is known that the arithmetic rules are learned in a specific order (addition, subtraction, multipli-

[74] The different relations between focus and alternative indicate that in the case of non-exhaustiveness focus structures with relative clauses are acceptable with exclusive operators as *only*, but cannot be conducted with inclusive operators (cfr. Moreno Cabrera 1999:4275, Portolés 2010:296). The notion of exhaustiveness is treated in the literature under different denominations: Within the paradigm of FOs distinctions are made between restrictive and additive particles (cfr. König 1991), or excluding or including quantifiers (cfr. Sánchez López 2006, see also Fuentes 1987).

[75] Focus and scalarity are studied since the thesis of Horn (1972) about scalar implicatures and the studies on argumentative scales by Ducrot (1980), as well as the numerous studies on pragmatic scales by Fauconnier (1975a, 1976, 1977). For studies of scalar implicatures in the framework of experimental pragmatics see Noveck (2001), Noveck and Posada (2003), Noveck (2018). For studies on different kinds of scales in Spanish from a pragmatic perspective cfr. the numerous works of Portolés (2004, 2007, 2009). For a detailed perspective on argumentative scales see García Negroni (1998, 2003, 2006) and from the perspective of different FOs and their influence on scalarity see Schwenter (2000, 2002), Schwenter and Vasishth (2000).

[76] The left element presents the less informative element and the right element corresponds to the most informative element of the scale. Annotation adopted from Portolés (2007).

cation and division). In consequence, there may be children that are able to multiply, but not yet to divide (cfr. Portolés 2007:136). The contrast between alternative and focus can be established by the shared world knowledge between the interlocutors or it can be evoked by the insertion of a FO, as in (47) with single explicit alternative:

(47) David habla inglés e incluso chino.
('David speaks English and even Chinese.')

The instruction of the operator obliges to assume that speaking *English* is less informative than speaking *Chinese*. In consequence, this informative relation modifies, if necessary, the existing suppositions of the mental representations of the interlocutor (cfr. Portolés 2009:56).

The notion of informative scales described by van Kuppevelt (1996) allows to isolate three subtypes: pragmatic scales, semantic scales and scales evoked by FOs, whereby the scales evoked by the FO can occur combined with pragmatic and semantic scales. Additionally, from the perspective of informativeness and argumentation, informative scales can be differentiated from argumentative scales. Furthermore, from the point of view of the relation between the values: additive and substitutive scales can be distinguished.

Semantic and pragmatic scales

In semantic scales[77] the intern order of the scale occurs due to lexical or grammatical paradigms of the language, as e.g. with quantifier, as in the scale < some \ ALL > or < something \ EVERYTHING >. The information is given by the lexical content of the elements, so the element on the left can always be included in the element of the right side, which at the same time, is the superior element of the scale (cfr. Horn 1972, 1979). Portolés (2007, 2009) visualizes the scales as follows:

STRENGTH +	STRENGTH +
all –	everything –
some –	something –

[77]Semantic scales correspond to the so-called *Horn scales* and were the first scales studied within the theoretical framework of generalized conversational implicatures based on the quantity maxim. They include also scalar implicatures and negation. This distinction between semantic and pragmatic scales stems from the description of conversational generalized and particularized implicatures and conventional implicature. Semantic scales correspond to the generalized conversational implicatures (due to the fact that they arise from various linguistic elements) and the pragmatic scales correspond to the particularized conversational implicatures (since they are determined by the context) (cfr. Horn 1969, 1972, 1989, Levinson 2000 [1983]).

In consequence, Horn (1972) stated that if the weaker element is affirmed, the stronger element is negated. So, if it is said *Some came to the party last night* it implicitly is stated +> *not all came to the party last night.*[78] On the contrary, if the stronger element is affirmed the weaker element is implicitly given. At the same time, it cannot be affirmed that *All came to the party last night* and negated *Some came to the party last night* (cfr. Horn 1972).[79] Semantic scales exist by default, since the scalar value is inferred by the semantic content of the elements, as e.g. certain conceptual classification quantifiers, intensifiers, etc. A logical relation between the elements take place and the use of one element always implies inclusion or exclusion of the other elements of the paradigm (cfr. Horn 1972, 1979, Levinson 2000 [1983]), Portolés 2007:136-137).

In pragmatic scales, on the other hand, a scale is an informative structure that emerges from the possibility to order different elements corresponding to the same topic according to their informative value that is anchored in the world knowledge of the interlocutors (cfr. Portolés 2006, 2007, 2009). In the following example:

Context:
Peter is a student and lives in Dresden. He likes to travel.

(48) Peter puede viajar a Fráncfort y a Moscú.
('Peter can travel to Frankfurt and to Moscow.')

We could apply the pattern:

STRENGTH +
Peter can travel to Moscow -
Peter can travel to Frankfurt -

The elements presented in the utterance (with informative value) are comments to the topic WHERE DOES PETER TRAVEL TO*?* They form a part of the scalar predication that corresponds with the world knowledge: < Frankfurt \ MOSCOW >. According to our world knowledge, it can be assumed that travelling from Dresden to Moscow is higher rated in a difficulty scale than travelling to Frankfurt. However, in contrast to semantic scales, it would be possible to

[78] Annotation form adopted from Portolés (2007).
[79] Schwenter (1999:187) argues that in semantic scales the construction of scales where the stronger element is affirmed but the weaker element is negated, as e.g. *#All came to the party last night, but some did not come* or *#This car is huge, but does not have a normal size* are linguistically not acceptable.

imagine an accessible context, where the strong element is affirmed, and the weak element is negated, as in:

Context:
Peter is a Student in the seventies. He lives in Dresden and likes to travel.

(49) Peter puede viajar a Moscú, pero no puede viajar a Fráncfort.
('Peter can travel to Moscow, but he cannot travel to Frankfurt.')

In this example, the context implies that Germany is separated in East and West (before 1989). Thus, for someone living in East-Germany it was easier to travel to Moscow than to Frankfurt in West-Germany. Relying on the context the information in pragmatic scales can be accommodated according to our world knowledge in the common ground. Accessible assumptions can be activated in the common ground to get the communicated scalar implicature. The informative value of the elements is not lexically predetermined, but has to be enriched by the world knowledge that associates a minor or major informative value to the elements.

By inserting a FO in a specific structure, however, the informative order changes. The scale order does not depend exclusively on the language itself, as in the case of semantic scales, neither from the world knowledge anchored in the common ground, as in the case or pragmatic scales. The procedural meaning of the FO forces the reader/hearer to create a specific scalar structure. Scales evoked by a FO can occur with a semantic structure, as in:

(50) Este ajuste puede ser bueno, incluso perfecto, pero no es garantía de la corrección del producto final. (CREA, Geofocus, 2003)[80]
('This adjustment may be good, even perfect, but it is no guarantee of the correction of the final product.')

or with a pragmatic structure[81], as in:

[80] All examples obtained by the Spanish CREA Corpus are provided with a translation. The translations are not part of the corpus and serve only comprehension purposes.
[81] Not all FO, as *incluso*, can occur in pragmatic scales and in semantic scales, others, as e.g. *también.* can only operate in pragmatic scale. To compare:

(51) En las calles del centro se instalan carpas en las que, desde la tarde hasta altas horas de la madrugada se baila al ritmo del vals, salsa, rock o incluso rap. (CREA, La Vanguardia, 30/12/1995)
('In the streets of the center are set up tents in which, from the afternoon until the early hours of the morning it was danced to the rhythms of waltz, salsa, rock or even rap.')

In both structures the insertion of a FO reinforces the information that is given by the lexical elements and strengthens the scalar relation in an utterance that necessarily has to be established (cfr. Portolés 2007:138).[82] Moreover, if a conflict is generated between the conceptual meaning of the lexical elements and the procedural meaning of a FO in relation to the context, the contradiction becomes more pertinent in scales of semantic nature, since the logical relation of the elements is altered, as in:

(52) #Este ajuste puede ser perfecto, incluso bueno, pero no es garantía de la corrección del producto final.

A generated conflict between the two types of meaning in pragmatic scales (as in (53)) can lead to an accommodation-process in the common ground, since a possible accessible context could be constructed. Furthermore, the conceptual meaning of the lexical elements can also determine the accommodation of the assumption to the common ground.[83]

(53) # En las calles del centro se instalan carpas en las que, desde la tarde hasta altas horas de la madrugada se baila al ritmo del rap, salsa, rock o incluso vals.

Additive and substitutive scales

The values that are ordered on a scale can have different relations between each other, depending on how the interaction of the elements in the comprehension of the implicature oper-

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David habla inglés y incluso chino. David habla inglés y también chino.	Ese vestido es feo, incluso horroroso. #Ese vestido es feo, también horroroso.
('David speaks English and even Chinese. David speaks English and even Chinese.')	('This dress is ugly, even horrific. #This dress is ugly, also horrific.')

[82] Whereas, in utterances without FO the scalar relation can only be interpreted by means of a conversational implicature.
[83] Therefore, it can be expected that closed sets of alternative demand more effort for the accommodation-process than open sets of alternative (cfr. Portolés 2007, and §§ 3.2. and 3.3.).

ates. Within the paradigm of informative scales, the relation can be additive or substitutive. Semantic scales are usually defined as substitutive[84] (as in (54)), where the stronger element substitutes the weaker element.[85]

(54) *Este ajuste puede ser bueno, incluso perfecto,* pero no es garantía de la corrección del producto final. (CREA, Geofocus, 2003)
('This adjustment may be good, even perfect, but it is no guarantee of the correction of the final product.')

However, in (55) the focus contrasts with the possible alternative in an excluding mode according to one determined set of alternatives.

(55) Juan trajo solo dos panes a la barbacoa.
('John only brought two breads to the barbecue.')

The element with the major strength substitutes the rest of the set (< *two breads \ three BREADS* >); thus, interpreting the scale as a semantic scale. This scale can be perceived as substitutive, because the numbers are semantically anchored in the lexicon. Nevertheless, we could imagine a context in which John was requested to bring two breads and six chicken fillets. In this case, the lexical paradigm is dominated by the world knowledge and, therefore, the scale turns out to be additive and pragmatic (cfr. Portolés 2007:141):

STRENGTH +
Two breads and six chicken filets -
two breads -

[84] The Horn scales are usually interpreted as substitute scales: <some \ ALL>, where the values of the scale substitute one another and the strongest element implies the weakest element. Van der Auwera (1997:178) argues that additive scales can be interpreted as basic scales, since substitute scales can also be interpreted as additive. On the contrary Portolés (2007:139) convincingly pointed out that the distinction between additive and substitutive scales should be maintained, since the distinction depends on the interpretation of the set of alternatives and at least on the context.

[85] Portolés (2007) argues that the substitutive relation in semantic scales can occur because of a reformulation-process, in which the speaker corrects the linguistic expression when considered necessary, as e.g. in (56) (cfr. Portolés 2007, López Serena and Loureda 2013), In this example, the speaker may presuppose that the information *Este ajuste puede ser bueno* was not sufficient to evoke the correct inference. Therefore, the speaker reformulates the argument by adding *incluso perfecto*. The added argument substitutes the informative inferior element on the scale to obtain the preferred inferences < Este ajuste puede ser bueno / ESTE AJUSTE ES PERFECTO > (cfr. Portolés 2007:141-143).

The hearer/reader has to interpret an addition of both elements, where the element *two breads* is more informative. The inferior value is part of a possible major set (n+1) from the element (n), that is to say, the highest element includes the inferior value (in an addition), but does not present a substitution (cfr. Portolés 2007:141-143).[86]

Open and closed pragmatic scales

The set of lexical elements in an informative scale can either be open or closed. The majority of pragmatic scales are composed by an open set of lexical elements implying that no intern order is established within the lexical elements of the scale (cfr. Portolés 2007, 2009), as in:

(56) También existieron las "Tardes Deportivas", destinadas a la organización de campeonatos de deportes que se pudieran practicar en lugares cerrados, y muy particularmente en el "hogar", así se jugaba a las damas, al parchís, al ajedrez e incluso al ping-pong. (CREA, Revista Internacional de Medicina y Ciencias de la actividad física y deporte, nº 4, 03/2002)
(There also existed the "Sports Evenings", in which sports activities were organized, that could be practiced inside, and very particularly at "home", thus it was played checkers, parcheesi, chess and even ping-pong.)

In this specific example, the elements of the scale (*damas*, *parchis*, *ajedrez, ping-pong*) are interchangeable without provoking an informative alteration. The elements of the alternative build a unit which is contrasted to the focus element. Although, the alternatives are usually not ordered internally according to their informativeness (cfr. Portolés 2009), there are cases where the change of one alternative element in a set causes pragmatic strangeness, as in (57) and (59) in which the world knowledge obliges an intern-closed specific order of the lexical elements (*closed scales*):

(57) #Alicia sabe multiplicar, restar, sumar e incluso dividir.
(‘Alicia can multiply, subtract, add and even divide.’)

(58) Alicia sabe sumar, restar, multiplicar e incluso dividir.
(‘Alicia can add, subtract, multiply and even divide.’)

[86] Pragmatic scales are not always additive, as e.g. *John is only a politician +> John is not a senator*. Here the instruction of the exclusive FO can be interpreted as a substitutive relation (*John is nothing else but a politician*) (cfr. Portolés 2007:141-142).

(59) # Juan tenía una mano imbatible, tenía caballo, sota y rey.
('John had an unbeatable hand, he had king, queen and even ace.')

(60) Juan tenía una mano imbatible, tenía sota, caballo y rey.
('John had an unbeatable hand, he had queen, king and even ace.')

Summing up, scales are primarily understood by a binary order, alternative (single or complex) vs. focus (cfr. Portolés 2007, 2009). The intern order of the elements of a complex alternative seems to be secondary in communication, except in the cases, in which the conceptual meaning of the elements of the alternative is highly determined by the world knowledge and imposes a rigid intern order of the scale (as in (58) and (60)) or in the cases in which the context imposes to process an increasing scale (cfr. § 3.2.).

Additive culminative and non-culminative scales

The informative value of the elements that constitute a scale can be differently distributed. Thus, additive relations between alternative and focus can be culminative or non-culminative. In non-culminative scales a mere addition takes place in which

> […] the upper value of the scale consists of adding a new element to a lower value. In a specific context, the appearance of the lower value (n) implies that the upper value is negated (+ > 'not given n + 1') and the upper value (n+1) pragmatically implies the lower value (⇒ 'n'). (Portolés 2007:145, own translation[87])

In the example (61) the scale conventionally introduced by the relative adverb *también* ('also') is arranged in the way that the superior value is the result of the addition of the other elements, that is why the elements of the scale can be interchangeable (as in (62), cfr. Portolés 2007:145, Loureda *et al.* 2013:82):

(61) [La nutria] Se alimenta de ciprínidos, truchas$_{[alternative]}$ y también devora cangrejos y serpientes de agua$_{[focus]}$. (CREA, La Vanguardia, 30/10/1995)
('[The otter] It feeds on cyprinids, trout and also devours crabs and water snakes.')

[87] Original citation in Spanish: "En las escalas aditivas no culminativas, el valor superior de la escala consiste simplemente en añadir un nuevo elemento a un valor inferior. En un contexto determinado, la aparición del valor inferior (n) implicita que no se da el superior (+> 'No se da n+1') y el valor superior (n+1) entraña pragmáticamente que se da el inferior (⇒ 'n')" (Portolés 2007:145)

(62) Se alimenta de cangrejos y serpientes de agua[alternative] y también devora ciprínidos y truchas[focus].
('It feeds on crabs and water snakes and also devours cyprinids and trouts.')

In (61) it is not indicated that *devora cangrejos y serpientes de agua* is informatively more relevant than *ciprínidos, truchas,* but that both elements together are informatively more relevant than *ciprínidos, truchas:*

STRENGTH +
ciprínidos, truchas + cangrejos y serpientes de agua –
ciprínidos, truchas –

In (62) the strength-scheme has the same pattern (but inversed), since there is no indication that assigns different informative values to the elements of the scale.

On the contrary, if the additive FO *también* is replaced by a FO that indicates culminativity, as e.g. *incluso* or *hasta,* as in:

(63) Se alimenta de ciprínidos, truchas[alternative] e incluso/y hasta devora cangrejos y serpientes de agua[focus].
('It feeds on cyprinids, trout and even devours crabs and water snakes.')

the scale pattern changes informatively. The conventional instruction of the adverb *incluso* or *hasta* assigns different informative values to the elements of the scale. Besides the additive value, as in the case with *también*, *incluso* and *hasta* add a culminative value to the scale. It indicates that the focused element is also more informative than the set of alternatives, that is *cangrejos y serpientes de agua* is more informative than *ciprínidos y truchas*. Therefore, in additive culminative scales two syncretic orders take place: the additive value (n + 1) and the culminative value (the last element of the scale is more informative than the other given elements. The elements in culminative scales are not interchangeable without modifying the informative strength pattern (cfr. Portolés 2007:145-146, Loureda *et al.* 2013:82):

STRENGTH + ciprínidos, truchas + cangrejos y serpientes de agua – ciprínidos, truchas –	+	STRENGTH + CANGREJOS Y SERPIENTES DE AGUA – ciprínidos, truchas –	=	STRENGTH + ciprínidos, truchas + CANGREJOS Y SERPIENTES DE AGUA – ciprínidos, truchas –

Further, in Spanish, culminative scales can be interpreted as endpoint-marking scales or non-endpoint-marking scales, due to the fact that culminative scales can be introduced by different FOs, as *incluso* and *hasta* (cfr. Schwenter 2002:3).[88] *Incluso* is defined as a *relative*-operator and non-inherently-endpoint-marking, as in:

(64) El delantero del Santos y de la selección de Brasil Neymar despierta el interés de muchos equipos en Europa, como el Real Madrid, Barcelona e incluso el Chelsea. (La Republica, 2011)
('Santos and Brazil striker Neymar has aroused the interest of many teams in Europe, including Real Madrid, Barcelona and even Chelsea.')

In this example *incluso* marks the focused element (*el Chelsea*) as more informative in a scale (Real Madrid, Barcelona), but does not have to present it as the last element of a scale. It can be expected that there exist other football clubs that were also interested in the football player Neymar. Thus, an endpoint and a non-endpoint marking combination is possible, as in:

(65) El delantero del Santos y de la selección de Brasil Neymar despierta el interés de muchos equipos en Europa, no solo del Real Madrid o del Barcelona, incluso el Chelsea y hasta el Paris St. German muestran interés.
('Santos and Brazil striker Neymar has aroused the interest of many teams in Europe, including Real Madrid, Barcelona, even Chelsea, and even Paris St. German.')

Whereas, the FO *hasta*[89], defined as *absolute*-operator that inherently marks an endpoint does not allow a repetition of the operator, since *hasta* "absolutely" marks the endpoint of a scale (cfr. Schwenter 2002:3).[90]

(66) #El delantero del Santos y de la selección de Brasil Neymar despierta el interés de muchos equipos en Europa, no solo del Real Madrid o del Barcelona, *hasta* el Chelsea y *hasta* el Paris St. German muestran interés.

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[88] Other languages do not have the distinction between end-point and non-end-point-marking scales, as e.g. English where *incluso* and *hasta* are commonly considered translations of *even* and "*Even* in English may, but need not, mark an endpoint of a pragmatic scale." (Schwenter 2002:2).
[89] *Incluso* and *hasta* share some properties. Both particles have an additive (all elements of a scale have to be added) and a scalar value (the last element of the scale is presented as more informative). The difference between them lies in the endpoint-marking property (cfr. Schwenter 2002:4). For an overview of the FO-paradigm see § 4.
[90] The *absolute value* marks – depending on the context – the last element of the scale. However, this element does not have to be identical with the absolute possible element of a scale (cfr. Schwenter 2002, Portolés 2006).

(67) El delantero del Santos y de la selección de Brasil Neymar despierta el interés de muchos equipos en Europa, como el Real Madrid, Barcelona y hasta el Chelsea.

By marking a focus structure with *hasta*, only an absolute endpoint-marking can be interpreted in relation to the context since the instruction of *hasta* does not allow another interpretation. In general, relative operators essentially mark an element as more informative than another within the paradigm of a pragmatic scale. Whereas, absolute operators not only mark an element as more informative, they also mark the position of the focused element in the pragmatic scale, marking the element always as endpoint-element (cfr. Schwenter 2002:9-10).

Informative and argumentative scales

Informative and argumentative scales present a theoretical problem, since the informative scales are based on the informativeness and argumentative scales are constructed relying on the argumentative strength of the elements (cfr. Ducrot 1980, Anscombre and Ducrot 1983, Portolés 2007).[91] Following the framework of the Argumentation Theory not all arguments have the same argumentative strength: in the same context, a certain linguistic expression can be sufficient to guide the argument to a determined conclusion, while another expression can be insufficient or lead to an anti-oriented direction (cfr. Israel 1996:629, Portolés 2007:146). Within the discursive dynamic, the arguments can point in the same direction, but present different kinds of strength and therefore affect the information structure, as in:

(68) Rosa tiene hambre. Se va a preparar un bocadillo.
('Rose is hungry. She is going to prepare a sandwich.')

The arguments can also be anti-oriented. In such a case the presence of a discourse particle, as e.g. Spanish: *pero*; would be appropriate to mark the argumentative orientation, as in:

(69) Rosa tiene hambre, pero no se va a preparar un bocadillo.
('Rose is hungry, but she is not going to prepare a sandwich.')

[91] Informative and argumentative scales are based on different theoretical approaches. Informative scales are defined in the framework of the Gricean model and studied from the perspective of generalized conversational implicatures relying on paradigmatic relations (cfr. Grice 1975, Horn 1979). Argumentative scales rely on syntagmatic relations in order to describe possible discursive continuity. For a wider discussion of argumentative scales see Ducrot (1980) and for Spanish García Negroni (1998, 2003, 2006) and Portolés (2007).

In general, argumentative scales are presented when various arguments with the same orientation and the same topic are ordered according to their argumentative strength (cfr. Ducrot 1980:19). Regarding a specific topic, different arguments can be expressed to guide the prosecution of a discourse in one direction. These phenomena affect the use of some particles, especially argumentative markers (cfr. Portolés 2001 [1998]:89-93, 2007:146-147), but can also determine FOs, as *incluso* in:

(70) Aseguró que los primeros pobladores del mundo, al consumir hongos sin saber de sus efectos en el organismo humano, sufrieron alucinaciones, intoxicaciones e incluso la muerte. (CREA, ABC, 04/10/1982)
('He assured that the first inhabitants of the world, when consuming mushrooms without knowing their effects on the human organism, suffered hallucinations, intoxications and even death.')

The conclusion of the utterances could be "Without expertise, mushrooms can be dangerous" and each element on its own points in this specific direction:

a. He assured that the first inhabitants of the world, when consuming mushrooms without knowing their effects on the human organism, suffered hallucinations. Without expertise, mushrooms can be dangerous.
b. He assured that the first inhabitants of the world, when consuming mushrooms without knowing their effects on the human organism, suffered intoxications. Without expertise, mushrooms can be dangerous.
c. He assured that the first inhabitants of the world, when consuming mushrooms without knowing their effects on the human organism, suffered death. Without expertise, mushrooms can be dangerous.

Each of the arguments point to the same conclusion, but the strength changes between them. It is considered to be more dangerous to suffer death than hallucinations. *Incluso* obliges to recognize the focused element (*suffered death*) as the element with major argumentative (and also informative) strength (cfr. Portolés 2007:146-147).

From an informative perspective, not all utterances, lexical units or linguistic constructions have the same degree of informativity according to the contextual effects of determined linguistic segment. As a consequence, the informative strength highly depends on the context and it is the context that sets limitations to the informativity of the elements. The informative strength can correspond to a lexical paradigm or can be conditioned by the world knowledge

and the mental representations that are accessible during the communicative act in the common ground. As indicated by Portolés (2001 [1998]:96-97, 2007:146-150), the notions of argumentative scales and informative scales do not exclude each other. Both perspectives are licit. The decision to adopt an informative or an argumentative perspective depends on whether syntagmatic relations and the discursive prosecution or paradigmatic relations and their contextual effects are examined (cfr. Portolés 2007:146-150).

4. THE FOCUS OPERATOR PARADIGM IN SPANISH

4.1. Focus operators and the paradigm of discourse particles

Theoretical approaches and classifications of discourse particles are especially complex due to the diversity of elements that compose this group. Throughout the history of modern Spanish grammars, discourse particles have become more and more the center of attention while moving from the linguistic surface to the text as a unit, and to communication itself (cfr. Martín Zorraquino and Montolío 2008 [1998]). In consequence, Discourse Analysis and Textlinguistics propose several approaches to the classification of these units emphasizing mainly the theoretical functions of different connectives. Early pragmatic approaches define discourse particles as coherence markers (cfr. Schiffrin 1987, Fraser 1990, Schourup 1999) and try to classify particles according to their connective function they could adopt in discourse (cfr. Fraser 2006:200-201). These approaches define the functions and the combinatory relations between particles and their interaction with the discourse, but they do not clarify how these units affect inferential processes. FOs, as well as other particles were not considered, since they do not connect discursive segments and do not exclusively operate beyond sentence level.

From a relevantist perspective, units that encode inferential routes are defined relying on their main property: *procedural meaning* (cfr. § 1.2.). Recent works that assume a functional approach attribute to these units the role of inferential restriction in communication (cfr. among others, Portolés 2001 [1998], Blakemore 2002, Loureda and Acín 2010, Borreguero Zuloaga and López Serena 2011, Aschenberg and Loureda 2011). According to this perspective, discourse particles due to their fundamental procedural meaning encode an inferential route that is more efficient in order to obtain a relevance stimulus during the communication-process (cfr. Sperber and Wilson 1995 [1986], Wilson and Sperber 2002, Blakemore 2002) [92]:

[92] That does not mean that discourse particles may not appear at textual level as coherence markers (cfr. Martín Zorraquino and Montolío 2008 [1998]:26). Moreover, discourse particles and other units with procedural meaning act in the interface between pragmatic, semantic and grammar. Levinson (2000 [1983]:143) (from a neogricean perspective) argues that the pragmatic instruction of discourse particles acts upon the linguistically encoded information. Thus, different aspects of discourse markers, as the dimension of connective function or the fact, that some particles also have residual conceptual meaning interfering with the discourse ensures that many factors have to be considered in order to study these types of units (cfr. Murillo 2010). For a theoretical discussion on which types of units can be considered particles (markers), and the different classifications following a grammar or a relevantist analysis, see Murillo (2010:254-256).

> Since the degree of relevance increases with the number of cognitive effects derived and decreases with the amount of processing effort required for their derivation, the use of an expression which encodes a procedure for identifying the intended cognitive effects would be consistent with the speaker's aim of achieving relevance for a minimum cost in processing. (Blakemore 2002:79)

Thus, discourse particles guide the communicative processes that are necessary to reach the communicated assumption. They assure an inferential route and guarantee a major efficiency in the attainment of relevance. However, Blakemore (2002:2-7) further defends that a purely cognitive theoretical framework, such as Relevance Theory, cannot fully justify a study that is solely concentrated on the functional classification according to their discursive connection (cfr. Blakemore 2002:2-7).[93] Relevance Theory does not provide an adequate argument for the differences that may occur between particles of the same paradigm (e.g. FO-paradigm: *también, incluso, hasta*), since in the same utterance they can lead to very different implicatures. Moreover, it does also not provide arguments on how the same particle can activate different inferential routes in different discursive units and different contexts (*polyfunctionalism*) (cfr. Murillo 2010:259).[94]

Consequently, in order to classify the particles as conventionally encoded inferential elements, it becomes necessary to enrich the relevantist approach with other semantic and discursive theories (cfr. Portolés 2001 [1998]:76-77). Following Portolés (2001 [1998]), Argumentation Theory[95] seems capable to fill this gap in the study of discourse particles. The main objective of Argumentation Theory is to demonstrate that it is not only the aspects behind the linguistic signs that condition the progression of the discourse, but that the use of one or another linguistic unit influences the continuation of the discourse (cfr. Anscombre and Ducrot 1983), as e.g. in the following examples:

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[93] The intention of Blakemore was to connect the conventional implicatures of Grice with Relevance Theory and to attribute to discourse particles an inferential instruction. Since propositions are linked to inferential processes, there must be elements that restrict the inferential processes in order to guide and to minimize the processing effort (cfr. Blakemore 1987, 1997, 2000, 2002).

[94] For a wider discussion of the limitations of Relevance Theory and their repercussion in the literature especially in interaction with discourse particles see among others Blakemore (2002), Carston (2002, 2004), Wilson (2004), and for Spanish Portolés (2001 [1998], 2004), Escandell Vidal (1993), Escandell Vidal and Leonetti (2000), Pons (2004).

[95] The Argumentation Theory of Anscombre and Ducrot (1983) as a semantic and linguistic theory focuses on the syntagmatic relations between utterances or discursive segments and could therefore act as a complementary approach to cognitive and communicative pragmatic theories. Within the framework of Argumentation Theory different aspects of argumentation are of relevant interest, as e.g. the orientation of arguments, the argumentative strength, argumentative operators or argumentative scales among other (cfr. Anscombre and Ducrot 1983).

(71) Rosa tiene mucha hambre. Se va a preparar un bocadillo.
('Rose is very hungry. She is going to prepare a sandwich.')

(72) #Rosa tiene mucha hambre. No se va a preparar un bocadillo.
('#Rose is very hungry. She is not going to prepare a sandwich.')

The example of (72) provoke strangeness due to the fact that the topic progression does not fit with the discursive continuation evoke by the first discursive segment of the utterance, since its linguistic content is oriented towards an argument which contradicts the second segment (cfr. Portolés 2001 [1998], 2007). However, if the linguistic expression changes (without changing truth-condition), as e.g. *mucha hambre* ('very hungry') to *un poco de hambre* ('a bit hungry') the argumentation pattern of the utterance does not result in complete strangeness (cfr. Portolés 2007:146):

(73) Rosa tiene poca hambre. No se va a preparar un bocadillo.
('Rose is a bit hungry. She is not going to prepare a sandwich.')

In consequence, any linguistic material conditions the continuation of discourse. A discursive segment with a certain linguistic form favors some other discursive segments and backgrounds others. Therefore, discursive segments can act as co-oriented or anti-oriented argumentative relations. These argumentative structures can be determined by the lexical material itself (as in (73)) or, they can be marked by different linguistic mechanisms (lexical, syntagmatical or syntactical), such as, certain discourse particles that due to their instructional character can co-orient or anti-orient the discourse. This becomes evident, e.g. in (74) where the introduction of *sin embargo* ('however') does not result as a pragmatic strange utterance, since the instruction of the particle marks the relation as counter-argumentative (cfr. Portolés 2007:146-148):

(74) Rosa tiene mucha hambre. Sin embargo, no se va a preparar un bocadillo.
('Rose is very hungry. However, she is not going to prepare a sandwich.')

In the framework of Argumentation Theory not only the argumentative orientation is relevant for the continuation of the discourse, but also the argumentative strength of the discursive arguments (cfr. § 3.3.). During discourse, argumentation occurs because, while constructing the first assumption of an utterance, certain propositional continuations are activated more

automatically than others. Subsequently. the assumptions, following the Relevance Principle, have most contextual effects, which in turn determines the communicative continuation.

As Portolés (2001 [1998]:76) pointed out, both theories, Relevance and Argumentation Theory, share the argumentative nucleus of human inferential capacity, and emphasize the importance of this type of processes in order to generate the assumptions in the mind. The differences between them lie in the analysis: While Relevance Theory is concerned with examining the inferential processes from proposition to implicature, Argumentation Theory analyzes the impact of the linguistic material pursuit of discourse (cfr. Portolés 2001 [1998]:76-77).

Based on these two theories, different types of classifications arouse for Spanish discourse particles.[96] Most of them rely on the common accepted definition of Portolés (2001 [1998]:25-26; own translation[97]):

[96] In Spanish, most of the common classifications classify these units according to their instructional character, as e.g. The Dictionary of Spanish Discourse particles (*Diccionario de partículas discursivas del español* [online] http://www.dpde.es). Briz *et al.* (2006) define four basic categories: a) Connectives: *argumentative connectives* (as e.g. *además, encima*); *reformulation markers* (e.g. *es decir*); *structural markers* (e.g. *por un lado… por otro lado*); b) *modal markers,* as e.g. intensification or atenuation (e.g. *bueno, tío*); c) *focusing,* understood as highlighting-strategy (as e.g. *también, incluso, ni siquiera*); d) *control of contact between speaker and hearer* (e.g. *¿eh?).*
Based on this approach Pons (2006) classifies these units in three more general functional categories: *interactional level, modal markers* and *connectives* (argumentative function and metadiscursive function).
The functional approach of Loureda and Acín (2010) combines a linguistic and a cognitive approach and three categories are defined: *modality*; modal markers can intensify, attenuate, show what has been said as evident or be committed to the fidelity of what has been said.“ […] *Markers* that englobe all tasks that organize the discourse (structural, formulative, argumentative and informative) in order to communicate the hearer a given mental state” (Loureda and Acín 2010:24, own translation. Original citation in Spanish: “[…] *marcadores*, que asumen tareas de organización (estructural, formulativa, argumentativa e informativa) del discurso para comunicarle al oyente un estado mental dado.”). Discourse markers can operate at different levels: at formulation level (e.g. *es decir*), at structural level (e.g. *por un lado/por otro lado*), at argumentative level (as e.g. connectives or argumentative operators, as *sin embargo, por tanto* and at informative level (as e.g. FOs, as *incluso, hasta*) and *control of contact*; articulating the conversational control between speaker and hearer.
Discourse particles are also classified against the background of written and spoken language. Following Bazzanella (1995), Borreguero Zuloaga and López Serena (2011) define three categories (partial similar to the categories of Pons (2006)): *interactional level* that includes all particles that occur in oral discourse in order to guide the conversation; *metadiscursive units*, subordinate in units that structure the discourse and units that formulate the course of the conversation; *cognitive function,* divided in three subcategories: a) logical-argumentative function, b) referential function, c) modality function.
For a wider overview beyond the Spanish paradigm, see Fischer (2006). For the denomination discussion of these units see Portolés (2015:692-694) and Blühdorn *et al.* (2017).

[97] Emphasis in the original. Original citation in Spanish: “Los *marcadores del discurso* son unidades lingüísticas invariables, no ejercen una función sintáctica en el marco de la predicación oracional y poseen un cometido coincidente en el discurso: el de guiar, de acuerdo con sus distintas propiedades morfosintácticas, semánticas y pragmáticas, las inferencias que se realizan en la comunicación.” (Portolés 2001 [1998]:25-26)

> *Discourse markers* are invariable linguistic units, they do not exercise a syntactical function at utterance level and they possess a determined role in discourse: to guide, according to their different morphosyntactic, semantic and pragmatic properties, the inferences realized in communication.

This definition is based on the semantic criterion of procedural meaning since these elements primarily guide the inferences in discourse (cfr. Portolés 2001 [1998], Escandell Vidal *et al.* 2011, and § 1.2.). From a morphological perspective, particles are invariable linguistic units, in the sense that particles usually transform to one lexical unit, as e.g. *además*, etc. They proceed two processes: lexicalization and grammaticalization, as e.g. *incluso*, where a new added value based on the original meaning *to include* is attributed. Another criterion in this definition is of syntactic nature. It is commonly accepted that discourse particles are not integrated at sentence level since there are marginal elements. Particularly, FOs cannot fulfill this last criterion since due to its adverbial value they are integrated in the utterances and can modify the truth condition of utterances. The adverbial value of FOs constrains the integration in a propositional content provoking that the FO does not have full sentence independency. FOs, as e.g. *incluso* modify the syntagma of an utterance, as in (75) where *chino* is the direct object of the verb:

(75) David habla incluso chino.
('David speaks even Chinese.')

Thus, FOs have to be differentiated from other particles, since they are more integrated in an utterance structure, than e.g. connectives. Nevertheless, they share also some notable properties with other discourse particle groups and are, furthermore, considered in this study a subgroup of discourse particle. Following Portolés (2010:297-298) FOs, such as *incluso*, *hasta* or *solo* act as invariable units that guide due to their fundamental procedural meaning and constrain the inferential processes in communication aiming to guide the hearer/reader by minimizing processing efforts to the expected assumptions (cfr. Sperber and Wilson 1995 [1986], Blakemore 1987, 1992, Portolés 2001 [1998], Carston 2002, 2004, Murillo 2010, Escandell Vidal and Leonetti 2011, Nadal *et al.* 2016). According to that definition, FOs, as well as modal adverbs or connectives can be considered as subtypes of discourse particles (cfr. Portolés 2010:297-298), even though they operate on the edge of a functional category, but they trigger and guide the inferences necessary to reconstruct the implicit meaning of the utterance.

4.2. Characteristics of focus operators

FOs can encode different operations in a focus structure, and thus, inhibit different characteristics.[98] All FOs of the FO-paradigm, either exclusive or inclusive, have three main characteristics in common (cfr. König 1991:33):

A. Informativity

FOs add new or unexpected information to an utterance with a specific degree of informativity. Thereby, the FO changes the informative strength of an utterance and evokes a specific information structure that activates an informative scale[99]. However, by adding a FO, as e.g. *incluso*, a difference is generated in the interpretation of the utterance (cfr. Jacobs 1983:8-10, König 1991:10, Iten 2002:119-120, Portolés 2010:294-295, Cruz and Loureda 2019). To compare:

(76) La abuela sabe utilizar un móvil.
('Grandma can use a mobile phone.')

(77) *Incluso* la abuela sabe utilizar un móvil.
('*Even* Grandma can use a mobile phone.')

Utterance (76) may not convey more than the literal given information that the mentioned Grandmother can use a mobile phone. Utterance (77), in turn, additionally conveys some extra information: a) other people apart from the grandmother can use a mobile phone; b) it is not likely that the Grandmother uses a mobile phone, and also c) the information that the

[98] FOs are studied since the thesis of Horn (1972) followed by other numerous publications in this research field, see among others, Fauconnier (1975a, 1975b, 1976, 1977), Horn (1979), Ducrot (1980), Anscombre and Ducrot (1983), Jacobs (1983). Kay (1990) was one of the first authors describing the phenomenon for one single element, *even,* followed by Lycan (1991) and Iten (2002). For a wider overview of FOs across languages see König (1991), Guerzoni (2003), Giannakidou (2007), Gast and van der Auwera (2011). For Spanish, see Schwenter and Vasishth (2000), Schwenter (2002), Portolés (2007, 2009, 2010), Borreguero Zuloaga (2014), Loureda *et al.* (2014), Loureda *et al.* (2015), Nadal *et al.* (2016), Cruz and Loureda (2019).
Within the adverb paradigm, FOs can be distinguished as a subclass and have received different denominations through literature, as *focus particles* (cfr. König 1993, Schwenter 2002, Iten 2002), *focus adverbs* (cfr. Portolés 2007, 2009), *scalar (additive) operators* (cfr. Kay 1990, Gast and van der Auwera 2011) and *focus-sensitive particles* (cfr. Krifka 2008, Beaver and Clark 2008). This work opts for the term *focus operator* following Gast and van der Auwera (2011:4): "We prefer the more general term 'operator' because many of the relevant items do not exhibit properties typical to adverbs, and even the term 'particle' is too specific, as it entails that the items in question are (uninflected) words."

[99] FOs activate a specific relation between alternative and focus in a pragmatic informative scale. Depending on the semantic nature of the FO it either activates an exclusive relation or an additive (culminative or non-culminative) relation (cfr. § 4.2.).

Grandmother uses a mobile phone is contrary to the expectations of the hearer/reader (cfr. Iten 2002:119-120). The information conveyed in (77) is anchored in the instruction of the operator. Henceforth, any utterance with FO entails informatively the same utterance without FO. Consequently, the utterance *Grandma can use a mobile phone* is semantically underdetermined in relation to the utterance with FO (*Even Grandma can use a mobile phone*) (cfr. Portolés 2004:145-147). The FO endows the focus element the ability to add *ad hoc* a new information to the common ground, to modify or to correct informatively the previous assumptions (cfr. Portolés 2004, Krifka 2008).[100]

B. Procedural meaning

What all FOs, as other discourse particles, have in common is their fundamental *procedural meaning* (cfr. Loureda *et al.* 2013:77-78, Loureda *et al.* 2015, Nadal *et al.* 2016). According to Blakemore (1997:95) the procedural meaning in an utterance represents the information on how to process the lexical elements with conceptual meaning, and how to constrain the inferential computations carried out when processing the discourse sequence. Although, the utterances with FO entail more information, they restrict the inferential process in order to guide the hearer/reader to the expected cognitive effects while at the same time regulating the processing effort (cfr. Sperber and Wilson 1995 [1986], Blakemore 1987, 1992, Portolés 12001 [1998], Escandell Vidal and Leonetti 2000, Carston 2002, and § 1.2.).

C. Positional variability

FOs share also the property of *positional variability* in an utterance structure. This property is correlated to another: *FOs interact with the utterance interpretation*:

> It is a striking property of the relevant expressions that the contributions they make to the meaning of a sentence varies with their position in a sentence and with the location of the sentence stress (nuclear tone). In other words, these expressions interact with the focus-background structure of a sentence. (König 1993:978)

Different positions of the operator combined with a nuclear stress lead to different possible interpretations[101] (cfr. Jacobs 1983:8-10, König 1991:10), as in:

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[100] The alternative can adopt different characteristics (cfr. § 3.2.).
[101] This interaction with the utterance structure is precisely the property that differs FOs from discourse particles (cfr. § 4.1.).

(78) *Hasta* la ABUELA sabe utilizar un móvil.
('Even Grandma can use a mobile phone.')

(79) La abuela *hasta* SABE UTILIZAR UN MÓVIL.
('Grandma even can use a mobile phone.')

(80) La abuela sabe utilizar *hasta* UN MÓVIL.
('Grandma can use even a mobile phone.')

In (78) it can be interpreted that it was not expected that the Grandmother would have a mobile phone (being a possible set of alternatives: *father, mother, uncle,* etc.), since *Grandma* constitutes the endpoint of a possible informative sale, whereas, in (80), the interpretation of the utterance leads to another set of alternatives. Due to the position of the FO only the direct object *mobile phone* is marked as focus element and has to be contrasted to a different possible set of alternatives as e.g. *radio, TV,* etc. The examples illustrate that "[FO's] position in a sentence depends to a certain extent on that of the focus, and the contribution they make to the meaning of a sentence is equally affected by the selection of focus." (König 1991:12) In the examples illustrated so far, the prosodic prominence and the focus element are located in the same element and are correlated to each other. However, FOs not always act upon a single focus element. They can be associated to more than one focus:

(81) Incluso la ABUELA [focus marked by FO] sabe utilizar un MÓVIL [focus marked by a prosodic mechanism].
('Even GRANDMA [focus marked by FO] can use a MOBILE PHONE [focus marked by a prosodic mechanism].')

In this case, besides of the focus marked by the operator (*Grandma*), the nuclear stress highlights the contrastive focus (*mobile phone*) (cfr. König 1993:978, Portolés 2006:13).
Usually, the FO highlights the whole following syntagma as the focus, as in

(82) Sarah incluso [juega al rugby]$_{focus.}$
('Sarah even [plays rugby]$_{focus.}$')

(83) Sarah incluso juega al [rugby]$_{focus.}$
('Sarah even plays [rugby]$_{focus.}$')

Relying on a neutral prosodic mechanism, the focus usually corresponds to the maximum category that is determined by the operator, as in (82), where the set of alternatives can be composed by *write poems, learn Spanish,* etc. However, some FOs, as *incluso*, allow that the focused element does not constitute the most proximate element, as in (83), where *rugby* is

presented as focus within the syntagma. By modifying the focus element, the set of alternatives changes: the possible set of alternatives can be composed by *football, basketball*, etc. Thus, the focus constitutes only a part of the syntagma that is determined by the operator. The text portion *played rugby* constitutes the scope of the utterance. Scope is understood as "portion of the sentence which expresses one of the two propositions related by the semantic translation of the operator" (Kay 1990:93). The scope sets the limitations which a focus structure can reach. It can also determine the focus interpretation and does not have to correspond with the marked focused element (cfr. Karttunen and Karttunen 1977, Karttunen and Peters 1979, Horn 1979, Jacobs 1983, Taglicht 1984, Kay 1990, König 1991).[102] In this sense, FOs identify and delimit the focus of an utterance.[103]

However, FOs have also differing characteristics. The first distinguishing criterion within the FO-paradigm constitutes whether the FOs encode an inclusive (as e.g. *también*, *incluso* or *hasta*) or an exclusive relation (as e.g. *solo* or *ni siquiera*). Within the inclusive operators, it can be differentiated between culminative (scalar, as *incluso* and *hasta*) and non-culminative (non-scalar, as *también*) FOs. The culminative operators can further be divided into relative operators, when the FO does not inherently mark the end-point of an informative scale (*incluso*), and absolute operators, when the FO does inherently mark the end-point of an informative scale (*hasta*).

D. Inclusive and exclusive operators

Additive or inclusive operators include the alternatives as part of the focus paradigm. The alternative elements can be considered as possible values that interact with the focus, as e.g. *también* ('also') in (84) where the elements of the alternative and the focused element constitute an additive relation, in which all values are valid.

[102] Since the present study will not discuss the distinction between focus and scope from an empirical and experimental perspective, no further discussion will be provided. For a more detailed discussion on this subject see Taglicht (1984), Kay (1990), König (1991:§ 3.1.), Portolés (2010) In this study the term scope is implemented as stated in König (1993:979): "The focus of a particle can be defined as that string of expressions which is set off from the rest of the sentence by prosodic prominence and which is specifically affected semantically by the particle […]. It is, however, not only the focus that the contribution made by particle to the meaning of a sentence depends on. Focus particles are also scope-bearing elements, so that their contribution to sentence meaning also depends on the scope they take within a sentence."

[103] Besides, to prosodic prominence, word order morphological markers that could also identify a focus structure, FO seems to be the clearest devices in order to identify a focus element (cfr. Rochemont 1986:109, König 1991:13-14).

(84) [Sartre y Camus] Ambos tenían el mismo público. Camus era más moralista, más poeta, más idealista, y también más humano; amaba la vida […]. (CREA, El País, 15/05/1980)
('[Sartre y Camus] Both had the same audience. Camus was more of a moralist, more of a poet, more of an idealist, and also more of a humanist; he loved life [...].')

STRENGTH +
más moralista, más poeta, más idealista –
más humano –

Whereas restrictive or exclusive operators reject any possible alternative, that is, it has to be interpreted that none of the possible alternatives can be considered for the focus interpretation, as e.g. *solo* ('only'), in:

(85) Hijo de notario, se quedó sin madre a los siete años y detestaba a su padre. […] De su padre sólo le interesaba la herencia. (CREA, 22/11/1994, La Vanguardia)
('Son of a notary, he was left without a mother at the age of seven and hated his father. […] His father's inheritance was the only thing that interested him.')

E. Scalar value: culminative and non-culminative operators

Inclusive operator can possess a scalar value, and can be distinguished between culminative FOs (*hasta, incluso*) and non-culminative FO (*también*) as illustrated in the following examples (cfr. König 1991:37, Portolés 2006:16-17, Loureda *et al.* 2013). In Portolés (2006:6):

(86) Alicia sabe multiplicar e incluso dividir.
('Alicia can multiply and even divide.')
(87) #Alicia sabe dividir e incluso multiplicar.
('#Alicia can divide and even multiply.')

the FO *incluso* marks an element (the focus, *dividir* in (86) and *multiplicar* in (87)) as higher rated than the alternative in an informative scale. In (87) the strength pattern is displayed, as

STRENGTH +
Dividir –
Multiplicar –

The strangeness provoked in (87) lies in the instruction of the operator *incluso* that obliges the hearer/reader to create an informative scale that is contrary to the assumption that are based on our world knowledge:

STRENGTH +
Multiplicar –
Dividir –

If in the example (89) the culminative operator is replaced by a non-culminative operator (*también*), the strangeness dissolves. Non-culminative operators do not force the hearer/reader to create an informative scale, where one element is higher rated than the other (only an additive relation is evoked) and therefore, both elements are interchangeable.

(88) Alicia sabe multiplicar y también dividir.
('Alicia can multiply and also divide.')
(89) Alicia sabe dividir y también multiplicar.
('Alicia can divide and also multiply.')

F. Relative and absolute operators

All culminative operators possess an additive value, since they add information to the common ground. Furthermore, they also have a scalar (culminative) value, since the focused element is presented as more informative than the alternative, as in:

(90) David habla inglés e incluso chino.
('David speaks English and even Chinese.')
(91) David habla inglés y hasta chino.
('David speaks English and even Chinese.')

In both examples the same strength pattern can be found:

STRENGTH +
Inglés +
CHINO –
Inglés –

But whereas in (90) the focus element (*Chinese*) is the element of the utterance that was not expected, it does not necessarily constitute the last element of the scale. It could be the case that David speaks another language that is even less expectable than *Chinese* (as e.g. Nahuatl). On the contrary, in the utterance with the FO *hasta* the focused element is necessarily marked as the last element of the informative scale (cfr. Schwenter and Vasishth 2000, Schwenter 2002, and § 3.3.).

Schwenter and Vasishth (2000) differentiate between relative FOs (*incluso*) and absolute FOs (*hasta*). They point out that *incluso* requires a contextual proposition (in terms of Kay 1990) and requires a referent in the contextual discourse. *Hasta*, on the contrary, does not require this condition. *Hasta*, because of its property of *end-point marking* can occur in unspecified contexts. Scales evoked by *incluso* present the focus in an expectable context (without a *surprising effect*), whereas in scales evoked by *hasta* the *surprising effect* is indispensable. The element marked as focus is less expectable and surprising for the hearer/reader and further, corresponds with the end-point of an informative scale (cfr. Portolés 2006), as in:

(92) No nos la podemos jugar porque nos puede pasar lo de la reciente Eurocopa y hasta Raúl es capaz de enviar un penalti a las nubes. (CREA, 2001, La Razón)
('We cannot risk it, because it can happen to us as in the recent European Championship and even Raúl is able to send a penalty to the clouds.')

In this example Raúl, best striker of the Spanish national football team, constitute the last element of the informative scale without the necessity of a referent in the preceding context, whereas in (93) the scalar model with *incluso* fails informatively because no referent is given in the preceding discourse (cfr. § 3.3.).[104]

(93) #No nos la podemos jugar porque nos puede pasar lo de la reciente Eurocopa y incluso Raúl es capaz de enviar un penalti a las nubes.
('We cannot risk it, because it can happen to us as in the recent European Championship and even Raúl is able to send a penalty to the clouds.')

4.3. Specific properties of incluso

From an informative perspective, *incluso*[105] as focus-sensitive operator[106] has a primarily additive and scalar value. It is additive in the sense that its instruction indicates that the infor-

[104] Another difference between *incluso* and *hasta* is affected in substitutive scales, where *incluso* can eliminate the lower value in a substitutive scale, but *hasta* cannot (cfr. § 3.3.). Example adopted by Portolés (2006:85):

Los datos del paro son malos, incluso/#hasta muy malos.
('The unemployment data are bad, even very bad.')

[105] In the study of *incluso* different definitions have arisen from different theoretical perspectives, among others Fuentes (1987), Herrero Blanco (1987), García Negroni (1998), Cuartero Sánchez (2002), Santos Río (2003),

mation of the utterance is valid for all elements of the paradigm, including the focused element. Furthermore, its scalar value denotes that some kind of order or scale is evoked among all the elements of the paradigm (cfr. König 1991, Portolés 2007, Schwenter and Vasishth 2000, Ferrari *et al.* 2011).

> "[Incluso] highlights one element of the discourse as less expected than another (explicitly given or, more often, implicit) and, consequently, creates a scale on which the highlighted element is understood as more informative." (*DPDE* online, s.*v. incluso*, own translation[107])

Thus, *incluso* marks one element of the discourse as less expected than another. The other elements (alternative) are not excluded (as in the case of restrictive FO, as e.g. *solo* ('only')). Thereby, the focus element is added to the alternative elements (additive value), that can be explicit (as in (95)), or implicit (as in (94)) in the context (cfr. Portolés 2007, 2009, *DPDE* online), as in:

(94) David sabe incluso chino.
('David speaks even Chinese.')

(95) David sabe inglés e incluso chino.
('David speaks English and even Chinese.')

Portolés (2006, 2007, 2009, 2010, 2011) and Yates (2006). For a more detailed overview of different definitions and dictionary entries see Yates (2006).

[106] *Incluso* operates within the limits of the functional category of discursive particles. They function as discursive particles insofar as they guide the way information is interpreted, and summon a pragmatic scale and a given informational-argumentative structure. However, they also bare an adverbial value, a fact that conditions its integration in the propositional content of the utterance. As a consequence of this, the particle may not manifest as much independence as in other cases where either prosodically, or graphically (by means of punctuation marks) the unit in which *incluso* appears is delimited (cfr. § 4.1.). This leads to two different types of *incluso* (cfr. Fuentes 1987, Herrero Blanco 1987, Cuartero Sánchez 2002). On the one hand, *incluso* as a connective, where it is detached from its host member, usually separated from it by a comma, and forms an independent intonational group, and, on the other hand as studied in this work, as FO. In this case, *incluso* is syntactically integrated in the utterances and modifies the phrase or clause under its scope, with which it shares a melodic contour (cfr. Portolés 2004, 2007, 2009, *DPDE* online, Fuentes 2009). Due to the extent of this study, the work exclusively concentrates on *incluso* as a FO, not on its use as a connective. For the connective use of *incluso* see Fuentes (1987), Flamenco García (1999), Montolío Durán (1999).
From a diachronic perspective *incluso* as FO is a modern discourse particle (Cano 1982), since this definition of *incluso* is not existent in the Academic dictionary of 1884 and Andrés Bello does not mention *incluso* as adverb function. It is not until 1970 that the dictionary *Diccionario de la Real Academia Española* incorporates the use of *incluso* as adverb. In former editions *incluso* was only presented as participle of the verb *incluir*. The use of *incluso* does not become frequent until the second half of XIX century. For a diachronic perspective see Yates (2006:77), Cuartero Sánchez (2002).

[107] Original citation in Spanish: "[Incluso] destaca un elemento del discurso como menos esperable que otro (expreso o, lo que es más frequente, sobrentendido) y, en consecuencia, crea una escala en la que ese elemento destacado se comprende como más informativo." (*DPDE* online, s.*v. incluso*)

Consequently, *incluso* always evokes a scale between the focused element and the alternative in which the focus element is informatively higher rated than the alternative element(s) (cfr. § 3.3.). The focused element can eliminate or strengthen the existing assumptions in the common ground of the interlocutors, or even force them to create a new contextual effect *ad hoc* which could not have been established without the lower value of the scale (cfr. Portolés 2006:45).

Besides of the informative function described sofar, other different features can be defined for the FO *incluso*:

A. Argumentative function

Incluso can adopt an argumentative function. This function is additive and the introduced syntagma confirms the expectation of the hearer/reader (cfr. Anscombre 1973, Portolés 2006):

(96) Se roban los datos de los clientes sin su conocimiento para poder manipularlos mejor, a veces incluso con fines políticos perversos, como acabamos de saber a través del escándalo Facebook. (CREA, El País, 06/05/2018)
('Customers' data is stolen without their knowledge in order to manipulate it, sometimes even for perverse political ends, as we just learned from the Facebook scandal.')

The syntagma *for perverse political ends* confirms the expectation: *data was manipulated*; and represents an argument that is stronger than its preceding segment. Both arguments lead to the same conclusion (*stolen data is problematic*) and can be ranged in an argumentative scale (cfr. § 3.3.).

B. Violation of expectations

Usually the information introduced by *incluso* confirms the expectations an interlocutor has in mind, but in exceptional cases it can also violate them, as in:

(97) El espectáculo se llama "Barcelona, París, Caracas", hora y media ininterrumpida de trapecismo interpretativo que invita a lanzarse al vacio, incluso sin red. (CREA, La Vanguardia, 30/01/1995)
('The show is called "Barcelona, Paris, Caracas", an uninterrupted hour and a half of interpretative trapeze that invites one to throw oneself into the void, even without a net.')

It is expectable that people who are not trapeze artists most likely do not risk their lives, and thus the focused information violates the expectations of the hearer/reader[108].

C. Contextual effects

In some cases, the introduced element by *incluso* does not confirm or violate the expectations, but rather evokes some contextual effects that are not possible without the introduced information by the operator (cfr. Portolés 2006):

(98) La cena contó con un agradable ambiente y se vio acompañada incluso con baile. (CREA, El Diario Vasco, 31/01/2001)
('The dinner had a pleasant atmosphere and was even accompanied by dancing.')

Without the inserted element there is no expectation that a dinner necessarily includes dancing. The introduced element evokes some contextual effects that the hearer/reader has to process additionally. This specific use of the FO is frequently applied for determining elements that depend on the context. Consequently, it gives access to a specific context and leads to the construction of *ad hoc* concepts (cfr. Portolés 2006:27).

Besides these instructional functions, *incluso* has some further syntactical and semantic properties:

a) Incluso *can occur in any position in an utterance* (cfr. Cuartero Sánchez 2002).
This positional variability is correlated to another property: the interaction with the utterance interpretation. Different positions of the FO lead to different interpretations (cfr. Jacobs 1983:8-10, König 1991:10, and § 4.), to compare:

(99) Incluso la abuela habla inglés.
('Even grandma speaks English.')
(100) La abuela habla incluso inglés.
('Grandma speaks even English.')

[108] The concepts of *violation of expectations* proposed by Fillmore (1965) is not free of criticism. Anscombre (1973) proposes a more argumentative meaning for *meme* in French. The violation of expectations is not a main function of *incluso*, but in some contexts *incluso* can assume this function. For a more detailed discussion of this property and FOs see Fraser (1969, 1971), Horn (1969), Cuartero Sánchez (2002), Yates (2006).

In these examples, the topic changes according to the FO-position. Example (199) leads to the interpretation that not only the grandmother can speak English (e.g. topic FAMILY MEMBERS), and in (100) the topic is changed to: LANGUAGES GRANDMOTHER SPEAKS.

b) Incluso *can be eliminated without changing the syntactic order of the utterance* (cfr. Cano 1982, Portolés 2006).
The utterance with *incluso* always informatively entails the utterance without the FO.

(101) La abuela habla incluso inglés.
('Grandma speaks even English.')
(102) La abuela habla inglés.
('Grandma speaks English.')

By inserting the FO, additional information is added to the interpretation process. The FO conditions the semantic interpretation, but not the grammatical structure of the utterance. This is why, the FO does not determine the syntagma, but only modifies it. This is proved, in the sense, that by eliminating the FO the utterance does not become ungrammatical (cfr. Portolés 2006:42-43).

c) Incluso *can occur in postposition regarding the focus element* (cfr. Fuentes 1987:169, Cuartero Sánchez 2002:69, Portolés 2006:42, and § 7.2.).
From a syntactical perspective *incluso* usually precedes the syntagma it modifies, as in:

(103) De entrada, se le relacionó con los avestruces; más tarde se le vinculó con los buitres, cisnes, gallináceas e incluso con el pájaro bobo; […]. (CREA, Biológica, nº24, 09/1998)
('At first, he was related to ostriches; later he was linked to vultures, swans, gallinaceae and even to the booby bird; […].')

Even though, more rarely, *incluso* can be postponed to its focus (cfr. Fuentes 1987:169)[109], as in:

[109] The postposition of the FO is the less frequent and it is often used for reformulation strategies (cfr. Fuentes 1987, López Serena and Loureda 2013).

(104) [daño cerebral] Con la corteza prácticamente intacta, la joven veía, oía, olía incluso. (CREA, El Mundo, 26/05/1994)
[Brain damage] With the cortex practically intact, the young woman saw, heard, even smelled.

d) Incluso *cannot be negated* (cfr. Martínez 1992, Portolés 2006).

(105) #La abuela ni incluso sabe inglés.
('Grandma not even speaks English.')

Ni siquiera is considered the negative counterpart of *incluso*. It inhibits also a scalar value, but creates an inversed informative scale, as in:

(106) La abuela ni siquiera sabe inglés.
('Grandma not even speaks English.')

e) Incluso *can occur isolated in a conversational turn* (cfr. Cuartero Sánchez 2002, Portolés 2006).
This use of the FO *incluso* is rarely use in oral conversation.[110] Example from (Portolés 2006:39):

(107) R: En un debate parlamentario vivo y tenso se pueden producir abucheos, pasa en todos los parlamentos.
P: Hablamos de insultos.
R: Incluso. También ocurre en todos los Parlamentos (en El Pais Domingo, 22/5/1994)
('R: In a lively and tense parliamentary debate there can be booing, it happens in all parliaments.
Q: We are talking about insults.
A: Even. It also happens in all parliaments.')

f) Incluso *does not have to be the most proximate element to the focus* (cfr. Portolés 2006). Usually the focus marked by an operator follows syntactically the operator, but *incluso* does not necessarily require this characteristic (cfr. § 4.2.). Only in cases in which the

[110] Fuentes (1987:168) does not consider this function as a proper function of *incluso*.

FO is postponed to the focus element, necessarily the operator has to be the most proximate element to the focus.

(108) Ana y Marta visitan Sevilla e incluso en invierno GRANADA$_{[focus].}$
('Anne and Martha visit Seville, and even in winter GRANADA.')

(109) Ana y Marta visitan Sevilla y en invierno GRANADA$_{[focus]}$ incluso.
('Anne and Martha visit Seville, and in winter GRANADA even.')

(110) #Ana y Marta visitan Sevilla y GRANADA$_{[focus]}$ en invierno incluso.
('#Anne and Martha visit Seville, and GRANADA in winter even.')

g) Incluso *admits an incisor with a coordinate sentence* (cfr. Yates 2006:89).

(111) Alemania y México son socios cercanos en la construcción de cuestiones globales del futuro, incluso, y sobre todo, en el G20, bajo la presidencia de Alemania. (Centro Alemán de información para Latinoamérica, June 2017)
('Germany and Mexico are close partners in developing future global issue, even, and above all, in the G20, under the chairmanship of Germany.')

h) Incluso *can occur as independent phonic unit with its own melodic contour and can be separated by pauses from the adjacent sequence* (cfr. Yates 2006:83).

(112) Hemos viajado en avión para un par de desplazamientos largos -tan largos como de Madrid a Moscú-, pero básicamente hemos circulado en tren, sin dejar de probar el barco fluvial, la bicicleta e, incluso, el carro tirado por un burro. (CREA, La Vanguardia, 02/09/1995).
('We have travelled by plane for a couple of long journeys – as long as from Madrid to Moscow – but basically we have travelled by train, while still trying out the river boat, the bicycle and even a wagon pulled by a donkey.')

i) Incluso *is often introduced by the copulative conjunction* y *('and')* (cfr. Cano 1982:250).

(113) La fortaleza de la peseta ha contribuido entre otros motivos a desplazar el turismo a estas islas a nuevos destinos como Grecia, Turquía, Portugal, Túnez e incluso el Caribe. (CREA, ABC, 06/08/1989)

('The strength of the peseta has contributed, among other reasons, to the circumstance that the tourism to these islands is displaced to new destinations, such as Greece, Turkey, Portugal, Tunisia, and even the Caribbean.')

j) Incluso *admits different grammatical units as focus elements* (cfr. Yates 2006:93-96). Different grammatical units can compose a focus to *incluso* as among others, noun phrases, adjective phrases or gerunds[111].

Noun phrase

(114) Por esta razón, las hormigas tejedoras, […] eligen presas bastante grandes, como pájaros, ranas, lagartos, culebras e incluso murciélagos. (CREA, Muy Interesante, nº 192, 05/1997)
('For this reason, weaver ants, […] choose fairly large preys, such as birds, frogs, lizards, snakes and even bats.')

Adjective phrase

(115) Yo he llevado desde entonces una vida normal e incluso agradable […]. (CREA, Javier Marías, Corazón tan blanco, Barcelona, Anagrama, 1994)
('I have since then lived a normal and even pleasant life […].')

Gerund

(116) Durante los primeros veinte minutos, la iniciativa del juego estuvo repartida, sin un claro dominador, pero con la sorpresa de ver a los gallegos incluso presionando. (CREA, La Vanguardia, 30/10/1995)
('During the first twenty minutes, the game was balanced, without a clear dominator, but with the surprise that the Galicians were even pressing.')

[111] For a detailed overview of grammatical units which admit *incluso* as focus see Yates (2006:93-96).

5. METHODOLOGY

5.1. Eye movement approach

Studying eye movement behavior provides insight into cognitive processes since it is assumed that eye movements are directly related to mental activity, and therefore reflect cognitive effort during a specific task. Eye movement studies allow to observe *when* and *how* different processing and comprehension strategies take place (cfr. Just and Carpenter 1980, Sandra 2009a, 2009b). The relation between eye perception and cognition rests on two basic assumptions (cfr. Just and Carpenter 1980:330):

– *Immediacy Assumption.* Eye movements depend on the cognitive environment. In normal conditions, the eyes fixate the elements that are informative for the individual. "[…] A reader tries to interpret each content word of a text that is encountered, even at the expense of making guesses that sometimes turn out to be wrong. Interpretation refers to processing at several levels such as encoding the word, choosing one meaning of it, assigning it to the referent, and determining its status in the sentence and in the discourse." (Just and Carpenter 1980:330). The interpretation of text constituents starts immediately while starting the fixation of the area.
– *Eye-mind assumption*. The fixation on an area of interest is limited by the processing time needed for that area. The eyes remain fixated on a stimulus until it is processed, considering also the information that was processed during previous stimuli or context depending factors.

Taking under consideration both assumptions, eye movements can be linked to mental activity during language processing. They provide an optimal indicator of different levels of information processing from word identification to processing of sentence structures and allow to establish conclusions on complex cognitive processes (cfr. Sandra 2009b:306). In this sense, two main different eye movements are differentiated: *fixations*, i.e. moments where the eyes remain relatively still on a stimulus, and *saccadic movements*, i.e. the movement between two

fixations that can be executed forwards or backwards (cfr. Rayner 1978, Duchowski 2007, Holmqvist *et al.* 2011, Figure 1).[112]

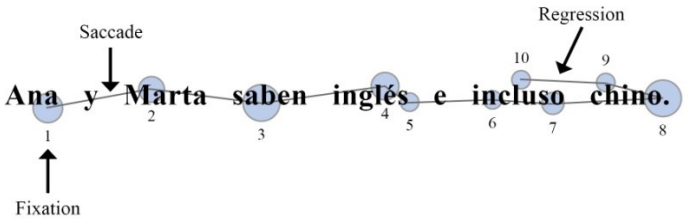

Figure 1: Eye movements during reading

The human eye can reach a visual field of about 200°, but perceives only 2° with the highest acuity. To compensate the limited degrees of acuity, humans have to move their eyes very quickly over a stimulus (cfr. Richardson *et al.* 2007:323). By looking straight on an stimulus (e.g. an utterance or text) the visual field can be divided into three regions (cfr. Rayner and Sereno 1994:58, Rayner 1998:374, Figure 2):

– *Foveal region*: the region with the highest acuity, equivalent to 2° of the visual angle around the point of fixation. This region permits the most detailed processing of information.
– *Parafoveal region*: equals 5° of the visual angle at each side of the foveal region. During reading, readers can still extract some useful information, as e.g. the identification of the next word to the right of the actual fixation.
– *Peripheral region*: region that lies beyond the parafoveal region. In this region the perception of information during reading is minimal. The reader cannot extract any useful information for the comprehension, except some formal characteristics as punctuation, end of line, etc.[113]

[112] Eye movements can differ if the text is read in silence or aloud. In reading aloud fixations are longer and saccades tend to be shorter (Rayner 1998:375). The descriptions and definitions of the majority of factors described in the following chapter are mainly for silent reading.
[113] In this work, the regions of the visual field are based on the cognitive task of reading. For other visual aspects, the different regions can gather different value, e.g. in other research fields, as face recognition or danger detection during driving, where the peripheral region is of great interest.

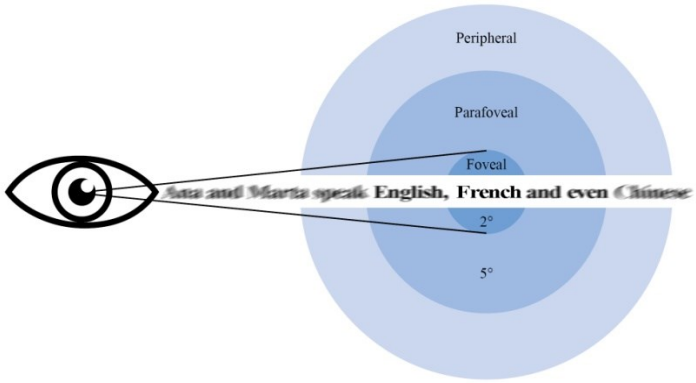

Figure 2: Visual field

In reading research, the *perceptual span*[114] refers to the amount of useful information that can be extracted from one single fixation (cfr. Rayner 2009:1462-1465).[115.] "When reading, for instance, the perceptual span is asymmetric, stretching 3 degrees from the point of fixation into the direction of reading, and hardly 1 degree backwards." (Holmqvist *et al.* 2011:381) In European languages, the degrees equal 3 to 4 letters to the left and 14 to 15 letters to the right of the fixation (cfr. McConkie and Rayner 1975, 1976, Rayner *et al.* 1980, Figure 3).[116]

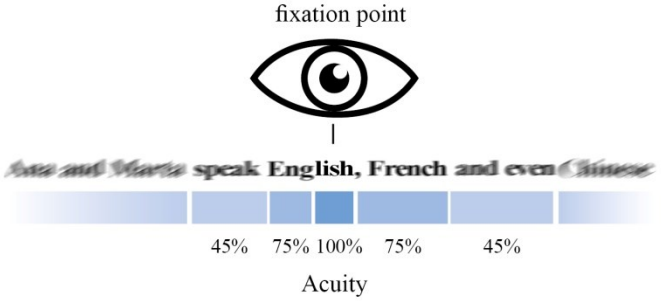

Figure 3: Perceptual span

[114] Also called *functional field of view, useful visual field, functional visual field* or *visual span*. In reading research, the term *perceptual span* is the most common (cfr. Rayner 1975, Holmqvist *et al.* 2011:381, Rayner *et al.* 2012).

[115] In order to define the amount of useful information different experimental studies were realized using the *gaze-contingent moving-window paradigm* consisting in that the reader can only extract information from the *window-area* and all other text portions are substituted by xxx. The extension of the *window-area* changes in order to prove when the reading task is interrupted. Different experimental studies lead to various conclusions about the perceptual span during reading.

[116] By modifying the moving-window paradigm (*parafoveal magnification*) Miellet *et al.* (2009) proved that the extension of the perceptual span does not vary (maximum of 14 letters), even if the size of the letters increases (to compensate the acuity loss in the parafoveal region) beyond the foveal region of the fixation. The limitations of the perceptual span result from the difficulty to maintain the sufficient attention during ongoing processing constraints, and do not derive from an acuity loss in the visual field (cfr. Rayner 2009:1464-1465). Nevertheless, the 14-15 characters of perceptual span to the right of a fixation hold mostly for skilled readers. The actual *word identification span* is more limited reaching only from 7-8 characters, and is sufficient to completely identify a word (cfr. Keating 2014:73).

The perceptual span is oriented horizontally and not vertically. Therefore, no previous information from other lines is accessed through a fixation (cfr. Inhoff and Briihl 1991, Inhoff and Topolski 1992, Pollatsek *et al.* 1993). The dimension of the perceptual span depends on different factors, as e.g. different writing systems (cfr. Rayner 2009:1465). [117] Reading skills as well as reading difficulties (e.g. dyslexia) and text complexity influence the dimension of the perceptual span.

Fixations and saccadic movements

"Fixations are eye movements that stabilize the retina over a stationary object of interest" (Duchowski 2007:44), that is, when the eye maintains the visual gaze relatively still on a stimulus[118]. Normally, 90% of reading is spent on fixations and the remaining time belongs to saccadic movements (cfr. § 5.1.). Fixations reflect the cognitive effort during a mental task. The assumption is that a higher number of fixations and/or longer duration times of fixations are an index of processing difficulties (cfr. Hyönä *et al.* 2003, Rayner and Liversedge 2004, Coulson and Matlock 2009). Typically, fixations on a word are about 225-250 ms long, but can range also between 50-600 ms depending on various oculometric and linguistic factors (cfr. Rayner 2009:1460). Normally each word is fixated, but short words (less than three characters) have a higher probability to be skipped and longer words (more than seven characters) have a higher probability to be fixated more than once. Fixations are the main indicator of cognitive processing during reading since they are correlated to engagement of attention and cognitive effort (cfr. Rayner 2009, Rayner *et al.* 2012, Eckstein *et al.* 2017).[119]

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[117] As e.g. for Hebrew, Arabic systems that are read from right to left being as well asymmetric to the left side of the fixation (cfr. Rayner 2009:1465). For further discussion of factors that influence the dimension of the perceptual span, see, for different writing and reading systems among others Pollatsek *et al.* (1981), Liu *et al.* (2002), Rayner *et al.* (2009). For an overview of the influence of different reading skills see Häikiö *et al.* (2009), for dyslexic readers see Rayner *et al.* (1989), and for the influence of age in reading see Laubrock *et al.* (2006), Rayner *et al.* (2006).

[118] The eyes are never completely still while fixating a stimulus. In order to prevent that the stimulus becomes blur the eyes are in a constant movement. Three types of micromovements can be distinguished: *tremor*, also called *nystagmus*, that seems to be needed to maintain the retina cells constantly activated. *Drifts* and *microsaccade* are longer movements that are related to control mechanisms of the oculomotor system conducted by the nervous system. To avoid drifting the eye conducts microssacades to return to the last eye position (cfr. Rayner 1998:374).

[119]However, there is an ongoing debate whether during a saccade information is processed or not. It is often argued that since a saccadic movement is so fast that the visual input during the movements is nearly suppressed (*saccadic suppression*) and therefore new information can only be acquired during fixations. Nevertheless, this does not mean that cognitive processing is interrupted during saccadic movements (cfr. Irwin and Carlson-Radvansky 1996, Irwin 1998, Rayner 2009:1458).

During reading constant movements are made, called *saccades*[120]. The velocity of these movements can reach up to 500° per second and the saccades have a duration of approximately 30-50 ms, extending between 7 to 9 characters.[121] The main function of saccades is to move the eyes between areas of interest: if during a fixation the necessary information is processed, a saccadic movement will be started in order to fixate the next target (cfr. Rayner 1978, 1998). "The primary function of a saccade is to bring a new region of text into foveal vision for detailed analysis […]" (Rayner and Balota 1989:265). *Regressions* or *regressive saccadic movements* fulfill this function, while conducting movements in the contrary direction to normal reading. The majority of saccadic movements are progressive saccades, only 10% to 15% are regressive. They are conducted to reread more efficiently passages or target words that were already read once. Two main regression movements exist: a) in-word regression, short regressive movements within a word, and b) between word regressions, backward movements that go beyond a word limitation, to a previous fixated word (cfr. Holmqvist *et al.* 2011:264). Since regressions are normally a few characters long, those who are beyond 10 characters space and beyond a word limitation indicate cognitive processing difficulty (cfr. Rayner 1998:375, Richardson *et al.* 2007:330). Diverse studies have shown that high-skilled readers can accurately isolate the location that causes the difficulty and make very precise regressive movements to that position (cfr. Kennedy and Murray 1987, Murray and Kennedy 1988).

The control and quality of eye movements is determined by two main decisions: *when to move the eyes?* and *where to move the eyes?* During reading it was shown that "across large segments of text, there is typically no correlation between how long the eyes remain fixated and how far they move (cfr. Rayner and McConkie 1976). This has generally been taken to suggest that these two decisions are made somewhat independently." (Rayner 2009:1468-1469) The decision where to move the eyes next is mainly determined by long-level properties of the text, whereas the decision when to move they eyes to continue reading

[120] Saccadic eye movements are not the only oculometric movements. Three other types have to be distinguished: *Pursuit eye movements* that can occur when the eyes follow the target on the screen. They are usually notably slower than saccades. *Vergence eye movements* are inward oriented, i.e. directed towards each other, helping to fixate a nearby target. *Vestibular eye movements* stabilize the stimulus on the retina. However, saccadic movements are the most relevant parameter in reading research, since they reflect the main movement during two fixations (cfr. Rayner 1998:374).

[121] The mentioned properties of saccades are exclusively described for reading tasks. The velocity, duration and span of saccades vary between tasks, e.g. reading task or visual task. During scene perception the duration of fixations and saccadic movements increases (cfr. Rayner 1978).

is influenced by lexical properties of the fixated target word (cfr. Rayner 1998:384, 2009:1469).[122]

Where to move the eyes? In most alphabetic languages the landing position of the next fixation is highly driven by low level properties as e.g. word length and space information and not by semantic properties. The saccade length is determined, on the one hand, by the length of the fixated word, and, on the other hand, by the word to the right of the ongoing fixation (cfr. Just and Carpenter 1980:337, Juhasz *et al.* 2008, Rayner 2009:1469). The most extended saccades are registered if the word to the right of the current fixation is either very long or very short. If the word next to the fixation is short (2 to 4 letters), a *skipping effect* can occur prolonging the next saccade to the word n + 2 (the word n + 1 is processed by parafoveal vision). If the next 11 characters to the right of a fixation are composed by one single word the saccade will be longer, as when the 11 characters consists of two words (5 letters each with a space between, cfr. Juhasz *et al.* 2008, Rayner 2009).[123] The main effects associated with the decision of *where to move the eyes* are:

– *Landing position effect.* The information obtained by the demarcation of words during parafoveal vision influences the landing position of the next fixation. In reading research two main positions can be distinguished (cfr. Holmqvist *et al.* 2011:358): The *preferred viewing location* tends to be between the beginning and the middle of a word

[122] These determined questions in eye moving research lead to different *serial attention* models. As Reichle *et al.* (2003:459) pointed out, "Historically, the models have most often been classified as being either oculomotor or cognitive/processing; that is, with respect to whether or not language processing plays a prominent role in guiding the eyes during reading. Proponents of the oculomotor models claim that properties of the text (e.g., word length) and operating characteristics of the visual (e.g., acuity) and oculomotor systems (e.g., saccade accuracy) largely determine fixation locations. An auxiliary assumption of this view is that fixation durations are determined largely by where in a word the eyes have fixated. In contrast, proponents of the processing models tend to emphasize the role of language processing in guiding eye movements during reading. According to this view, the decision about how long to fixate is determined by ongoing linguistic processing, whereas the decision about where to fixate is jointly decided by linguistic, visual, and oculomotor factors." For reading research the currently used model is the *EZ-Reader* model (cfr. Reichle *et al.* 2009) that underlies the assumption that eye movements are influenced by cognitive processes (cfr. Reichle *et al.* 2003:450). The described factors for eye movements in this work for the paradigm of *where and when to move the eyes* are based on this model (cfr. Reichle *et al.* 1998). For a more detailed discussion of the *EZ-Reader* and other types of models see Reichle *et al.* (2003) and Reichle (2011).

[123] The demarcation of words is another property that influences the landing position of the next saccade. Spaces between words act as guides in order to control the mechanism of the saccadic movements. Reading is always more effective if the text is presented with spaces between the words. Removing those spaces, decreases the reading speed by 30-50% (cfr. Pollatsek and Rayner 1982, Morris *et al.* 1990, Rayner 1998). Even in reading systems that are not provided with spaces between words, as Thai or Chinese, it was proved that the insertion of spaces would facilitates reading (cfr. Kohsom and Gobet 1997, Bai *et al.* 2008). This goes in the same line as studies with three-lexeme compound words in German that demonstrate that if the lexemes are separated by spaces the total reading speed increases (cfr. Inhoff *et al.* 2000).

(cfr. Rayner 1979:24). It was proven that readers try to fixate the center of a word in order to reach the *optimal viewing position*: landing position in a word where the processing time is minimized (cfr. Rayner 1979, O'Regan and Lévy-Schoen 1983, McConkie *et al.* 1988, O'Regan and Jacobs 1992). Nonoptimal position landing is normally corrected by two mechanisms: a) either the word is refixated, or b) the current fixation tends to be longer (cfr. Vitu *et al.* 1990, Rayner and Well 1996, Reichle *et al.* 2003:449).[124]

– *Skipping effects.* If words are skipped, it can be assumed that they are processed by parafoveal vision (cfr. Rayner and Morrison 1981, Kliegl *et al.* 2007, Rayner 2009:1471). The skipping effect is mainly driven by word length and contextual constraints: Words, shorter than 4 letter and with a high predictability are much more likely to be skipped (cfr. Drieghe *et al.* 2004, Drieghe *et al.* 2005, Drieghe *et al.* 2007).

When to move the eyes? The decision *when to move* is highly dependent of the current duration of the fixation. It was shown that the "the ease or difficulty associated with processing the fixated word strongly influences when the eyes move" (Rayner 2009:1472). In turn, the duration of a fixation is mainly driven by the complexity of the word or fragment that has to be processed, but also other lexical factors can influence the fixation duration. The lexical factors that highly influence processing time are (cfr. Rayner 2009:1472):

– *Word frequency.* A high frequency word facilitates the cognitive effort during processing and fixation durations tend to be shorter (cfr. Inhoff and Rayner 1986, Schilling *et al.* 1998, Rayner *et al.* 2006).
– *Age of acquisition.* Words that are acquired and stored in the mental lexicon at an early age, are more frequent in their use and therefore these words receive shorter fixations durations (cfr. Juhasz and Rayner 2006).
– *Word predictability.* The predictability of word is driven by the context and the semantic relations between the fixated word and the prior words. The higher the predictability

[124] Another effect that is correlated with the *optimal viewing position* is the *inverted optimal viewing position effect*: If only a single fixation is realized on a target word at the *optimal viewing position*, this fixation tends to be longer than if the fixation falls at the end of the target word. This counter-intuitive effect could occur due to mislocated fixations and parafoveal processing (cfr. Rayner 2009:1471).
Moreover, not only *undershoots of the oculomotor system* (fixation at the end of a word) or *overshoots* (fixation at the beginning of a word) affect the landing position of single fixations on a word. Word frequency also affects single fixations of a target word, independently where the single fixation falls. High-frequency words always receive longer fixations than low-frequency words. For further discussion of the inverted optimal viewing position effect see Nuthmann *et al.* (2005, 2007), Rayner *et al.* (2006), Vitu *et al.* (2007).

the shorter is the fixation (cfr. Ehrlich and Rayner 1981, Carroll and Slowiaczek 1986, Morris 1994, Kliegl *et al.* 2004).

- *Word familiarity*. The higher the familiarity of words the higher the probability that the word receives shorter fixation durations (cfr. Chaffin *et al.* 2001, Williams and Morris 2004).
- *Phonological properties of words*. The phonological properties on a word that are highly influenced by word familiarity and frequency can produce differences in the fixation durations (cfr. Jared *et al.* 1999, Ashby *et al.* 2005).
- *Ambiguity.* The number of meaning of a word can produce variation during their processing. The smaller the number of possible meanings of a word the shorter fixation duration will be (cfr. Binder and Morris 1995, Binder *et al.* 2001).[125]

5.2. Previous experimental findings on focusing

The aim of this review of experimental eye movement studies that are concerned with focus and focusing operation during online sentence processing is to provide a panoramical view of results that precise not only what effects are conducted by focus structures, but also at what stage of processing the focusing operation is detected and carried out.

A considerable number of experimental studies have investigated the role of focusing at different levels: from individual word level to complex sentence processing and comprehension (mostly silent reading studies). Concluding results relying on different offline studies prove *processing benefits* associated to focus structures (cfr. Filik *et al.* 2011:926) [126]:

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[125] Besides, the mentioned lexical factors, different syntactic factors as well as the integration of information in the discourse can affect fixation duration, as e.g. words that are crucial for syntactic disambiguation, as well as high order text comprehension tend to have higher fixation durations, shorter saccades and frequently regressive saccadic movements (cfr. Rayner 2009:1473, Rayner *et al.* 2012:569).

[126] Since this dissertation is concerned with the effects that a FO may adopt during online sentence processing, it will not provide a detailed overview on FO acquisition studies or studies in speech comprehension. For acquisition the studies conducted by Berger *et al.* (2007), Höhle *et al.* (2009), Berger and Höhle (2012) should be mentioned. The main finding of these studies is that the acquisition of FOs starts early in language acquisition and that children (under 4 years) are able to express exclusivity or inclusivity by using correctly different FOs. Speech comprehension results reveal that comprehension is easier when focused information is marked by prosody and the prosodic contour of focus influences the interpretation of ambiguous utterances. For a detailed discussion see Bock and Mazzella (1983), Birch and Rayner (1997), Birch and Clifton (2002).

– *Focus information is more easily perceived than non-focused information.* The studies conducted by Cutler and Fodor (1979) were among the first that proved that focusing structures guide the reader during processing. In the *phoneme monitoring experiment,* the participants were able to detect phonemes faster when the information was presented in focus position. Consequently, they conclude that the attention is directed more effectively to the focus information. IF there is no other guidance, as e.g. a FO, the processing is driven by the focused element.[127] Following studies also have proven this effect as Langford and Holmes (1979), Sturt *et al.* (2004), Lowder and Gordon (2015).
– *Anomalies are more likely to detected when they occur in focus position.* Based on the previous works of Cutler and Fodor (1979) newer studies found out that readers detect faster and more often grammatical, syntactical and semantical anomalies when they occur in focus position (cfr. Baker and Wagner 1987, Bredart and Modolo 1988). Furthermore, Sturt *et al.* (2004) proved with a *text-change detection task* that participants more easily detect a semantically similar word replacement, when the change occurs in focus position.
– *Information in focus is recalled better.* Studies on syntactically marked focus structures using *recognition tasks* indicate that focus strengthens the memory trace of concepts (cfr. McKoon *et al.* 1993, Birch and Garnsey 1995, Birch *et al.* 2000, Osaka *et al.* 2002, Sturt *et al.* 2004). Furthermore, other studies claim that by marking a focus syntactically or prosodically not only the focus item is enhanced, but all elements of the focusing operation, that is, also the set of alternatives (cfr. Fraundorf *et al.* 2010, Gotzner 2016).[128]

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[127] Different eye movement studies (mostly *change-detection tasks*) are conducted at word level in order to examine the influence of syntactical focus and non-focus information with confronting results (cfr. Birch and Rayner 1997, Morris and Folk 1998, Ward and Sturt 2007, Birch and Rayner 2010). However, Birch and Rayner (2010) found out that controversial focus effects were due to confounding variables of the experimental design. By controlling confounding variables, the focused items received shorter fixations than non-focused items (on the contrary to other studies, where the focus items either received longer fixation durations or no differences could be detected between the conditions). Concluding, it can be argued that shorter fixations on focus indicate that the syntactical marking of is accessed more quickly during reading and that focus operations are detected early (during first-fixation duration), but affect also regressive eye movements at a later stage of processing. See Filik *et al.* (2011) for further discussion of how syntactically marked focus influences processing at word level.

[128] Focus always leads to a more fine-grained interpretation of an event, since focus information guides the hearer more precisely to the correct assumption. In this regard, an ongoing debate discusses whether in focus structures the focus element is enhanced and therefore, leads to a more shallow processing of the background information (the possible alternatives, *granularity account*, Sanford *et al.* (2006)) or whether the focus structure encounters all elements of the focus operation (focus and alternatives), in other words, that focus marking not only identifies the focus itself, but also the alternatives (as presumed by alternative semantics theories, *contrast representation account,* Fraundorf *et al.* (2010)). The granularity account holds for all studies that examined that information in focus position is remembered better than in non-focus position (cfr. Osaka *et al.* 2002, Sturt *et al.* 2004, Ward and Sturt 2007), since in these studies the focus activation leads to less activation (e.g. higher fixation durations) of alternatives. Nevertheless, these studies investigate at word level by providing one sample in which the information is in focus position (marked syntactically) or in non-focus position. Therefore, these stud-

By conducting *delayed recall experiments* Spalek *et al.* (2014) and Gotzner (2016:§§ 3.2. and 3.3.) found out that a) explicitly given alternatives are recalled better when a FO (in these cases, German *nur* ('only') and *sogar* ('even')) is inserted in the utterances, and b) the focused element is remembered better than the alternative elements.

– *Focus guides ambiguity resolution, ellipsis processing, and referent identification.* Findings show that presenting the information with a marked focusing structure facilitates processing during disambiguation, ellipsis processing and referent identification (cfr. Gordon and Hendrick 1997, 1998, Klin *et al.* 2004, Foraker and McElree 2007, Almor and Eimas 2008).
– *FOs not only facilitate focus detection, but also influence the activation of set of alternatives.* By employing a *lexical decision paradigm,* it was demonstrated that the reader a) detects faster the focus as a word when the focused element is marked by a FO, and b) the set of alternatives is activated not only by the focusing operation itself, but also by contextual information (cfr. Byram-Washburn 2013:§ 2.4., Gotzner 2016:§ 3.2.).

On the basis of these studies and results it becomes clear that focus can generate a processing benefit. But so far, it was not examined how focusing structures that are marked by a FO influence actual *sentence* reading processing by observing eye-movement behavior.

FOs, such as *only*, *also* or *even* are focus-sensitive items that are associated to the focus by marking it precisely as marked focus of an utterance. Consequently, any FO exerts its effect over all constituents of the focusing operation by redefining their informative values and thus, it evokes a specific information structure in the utterance. Furthermore, the exact focus operation depends on the respective instruction of each operator (cfr. § 4.).

Much of the existing research on FOs and their influence during sentence online processing is realized for English for the exclusive operator *only*, especially in the area of structural ambiguities. It is assumed that the insertion of an operator leads to a better guidance during processing of ambiguities (cfr. Ni 1996, Paterson *et al.* 1999, Clifton *et al.* 2000, Liversedge *et al.* 2002, Filik *et al.* 2005). The studies examined whether using a FO indicates a contrastive relation in an utterance, and whether it reduces the comprehension difficulties by restricting

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ies do not consider the contrastive effect a focus can reach within a sentence. On the contrary, the *contrast representation account* assumes that all elements of the focusing operation are encoded and activated more richly. By contrasting various prosodically marked foci they conclude that the encoded information (when highlighted by a contrastive pitch accent) focus and alternatives are encoded and stored in the long-term memory. For the contrast representation account see also the studies carried out by Braun and Tagliapietra (2010), and Husband and Ferreira (2016).

the possibilities during partly syntactical ambiguous utterances (cfr. Filik *et al.* 2011:932-933), as in:

(117) The businessmen loaned money at low interest were told to record their expenses.
(118) Only the businessmen loaned money at low interest were told to record their expenses.

In both cases the phrase *loaned money at low interest* is ambiguous and the disambiguation cannot be realized until *were told.* Frazier and Rayner (1982) argue that in utterances without FO readers normally use a main clause analysis to process the ambiguity. Further, the reader is confronted with difficulties while processing the disambiguation area, since they have to change to a relative clause construction in order to derive correctly the presented assumption. However, by inserting a FO as *only* the disambiguation difficulties are reduced to a minimum, due to two main factors: a) the utterance with the FO becomes much more determined at semantic level, and b) it is assumed that the reader will interpret and contrast two different sets of *businessmen* and anticipate the disambiguation by modifying the focus item. Consequently, readers will initiate directly a relative clause analysis to resolve the ambiguity (cfr. Ni 1996). The studies presented so far are not free of criticism, as e.g. Paterson *et al.* (1999) argue that the critical stimuli were not consistent through the experiment and that the disambiguation region were too large (two words, *were told*) and, therefore could provoke confounding results. In reaction Paterson *et al.* (1999) replicated the experiment hypothesis, but with redesigned critical stimuli, using only one word in the disambiguation region, as e.g. *invited* in:

(119) Only teenagers allowed a party invited a juggler straightaway.
(120) Only teenagers who were allowed a party invited a juggler straightaway.

The results of the experiment show that readers have difficulties resolving the ambiguity which results in longer fixation duration for the area that provokes the disambiguation (*invited*) independently of the presence of *only*. However, this does not signify, that no FO-effect was found. Higher fixation durations during reanalysis were found for the area following the disambiguation in utterances without FO. Concluding, they argued that the insertion of *only* facilitates at least the reanalysis of ambiguous utterances. For the disambiguation of utterances, it seems that the FO provokes a late *effort-saving effect* during processing.

The different studies have shown that the disambiguation of utterances is tied to more processing effort and depends on which analysis (main clause or relative clause) is adopted by the reader. When the critical items are manipulated, in the sense that only one analysis is ac-

cessible, then the *focus benefit effect* occurs late during processing and facilitates reanalysis. The less predisposed an analysis is for the reader, the more immediate is the focus benefit effect in order to facilitate the structural decision. The insertion of *only* creates a contrastive focus structure in an utterance and reveals a relevant effect during online sentence processing. These findings give rise to the hypothesis that other focus-sensitive operators could also provoke processing benefits.

Moreover, Filik *et al.* (2009) conducted a study to examine the influence of *only* and *even* in order to compare their instructive function under the variable of *congruency*. They investigated how processing changes when the instruction of the FO in relation to the lexical items is co-oriented (congruous relation) or anti-oriented (incongruous relation) to the common ground, as in:

(121) Only students taught by the best teacher passed the examination in the summer.
(122) #Only students taught by the worst teacher passed the examination in the summer.

According to the world knowledge and without any discursive context, the reader interprets that it is more likely to pass the examination when the students are taught by the best teacher (as in 121). The information given in (121) is more felicitous in relation to the world knowledge than in (122). Whereas by inserting *even*, the felicitous relation is reversed:

(123) #Even students taught by the best teacher passed the examination in the summer.
(124) Even students taught by the worst teacher passed the examination in the summer.

The insertion of *even* varies the interpretation of utterances. *Even* indicates that the following information is unexpected, and according to the instruction of *even* utterance (124) becomes now felicitous in relation to the common ground. The utterance becomes pragmatically more acceptable, since the accommodation to the common ground can be realized with less processing effort. Different eye movement evidence could be gathered from this study (cfr. Filik *et al.* 2009:682):

– In utterances containing *only* or *even*: Shorter reading times are observed when the information of the utterance is congruous with the instruction given by the FO and the common ground.

- Utterances with *only*: The incongruency is detected already during an early stage of processing (first pass reading time) on the area of interest *passed the examination* (which is the first area in the utterance where the incongruency can be detected).
- Utterances with *even*: The incongruency emerges also during first-pass reading time, but seems to be detected more slowly during processing, since effects can only be observed at the area of interest (*in the summer*) that is post-positioned to the target area of interest *passed the examination* (*spill-over effects*). If the utterance was congruous the reader tends to execute regression to the FO. The authors assume that this late effect of reanalysis of the operator may be due to higher-order language processing that is provoked by the instruction of the operator. *Even* evokes a re-evaluation of all elements of the utterance in order to build the correct assumption. It is argued that this re-evaluation is only made when the information has a possibility to be felicitously interpreted.
- Utterances without FO: In order to validate the findings utterances without *only* or *even* are considered as control variable. No differences are observed in reading times and no regression effect is found leading to the conclusion that the observed effects in utterances with FO are due to the insertion of the operator.

The spill-over effect in utterances with the inclusive operator is also observed in a study conducted by Gerwien and Rudka (2019) with the German inclusive operator *sogar* ('even'). They perform a two-alternative *force choice task* to examine how *sogar* impacts participants' expectations about the focus; and subsequently, they observe viewing behavior in a *visual world paradigm* experiment. The experiment is based on four conditions resulting from crossing the factors a) presence/absence of the FO, and b) magnitude of expectation change (high/low) induced by *sogar*, as e.g. in

(125) Sie hat Hunde, Katzen und [sogar/niedliche] Meerschweinchen.
('*She has dogs, cats, and [even/cute] Guinea pigs.*')

(126) Er behandelt Hunde, Schildkröten und [sogar/kranke] Elefanten.
('*He treats dogs, turtles, and [even/sick] elephants.*')

In the visual world experiment participants receive an auditory input, as (125) and (126) that was combined with a visual input, as illustrated in Figure 4:

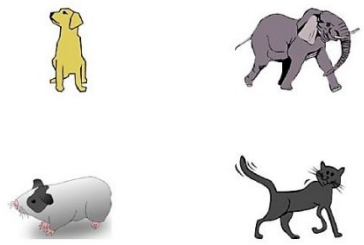

Figure 4: Stimulus example
(adapted from Gerwien and Rudka (2019)

Results of the visual world experiment show that the instruction encoded in *sogar* is integrated into a situation model immediately, but that updating an initially built model becomes cognitively more demanding in the presence of *sogar* as the degree of expectation changes. Filik *et al.* (2009) and Gerwien and Rudka's (2019) findings reveal relevant parallel behavior. In both studies, the effect of the FO is detected early and integrated, but its effect is conducted *a posteriori* (higher reanalysis or more attention in the area of the second noun of the alternative).

The presented results show that a) different FOs possess different procedural information, leading to different focusing strategies (cfr. Filik *et al.* 2009). Furthermore, the insertion of a FO has a relevant effect during online processing, not only at an early stage of processing, but, moreover, during the reconstruction of the previous assumption (reanalysis) (cfr. Filik *et al.* 2009, Gerwien and Rudka 2019).

Within focusing structures another recent research field is concerned with the role of the alternative and how alternatives are affected by focus and different FOs and to what extend different contextual factors influence the construction of a set of alternatives (cfr. Kim 2012, Byram-Washburn 2013, Gotzner 2016).

Kim's (2012) experimental study employs a visual world paradigm (similar to the experiments conducted by Gerwien and Rudka (2019), in which different auditory stimuli with and without the FO *only* are presented to the participants, as e.g.

(127) Mark has some candy and apples.
(128) Jane [only] has some oranges.

While listening to the auditory stimulus a visual display with four items is presented on the screen. The visual display contains pictures of oranges, a cohort competitor with the same phonological onset (oars) and two other unrelated pictures (pencils and gloves). The participants are asked to choose and click on the element that Jane has according to the auditory

stimulus. Findings show that when the FO *only* is inserted in the auditory stimulus, participants disambiguate faster the target element form the competitor. The author argues that the participants are using the semantic alternatives (candy and apples) from the preceding context to predict the upcoming focus. However, it could also be argued that the instruction of the operator restricts the interpretation possibilities in the sense that *only* guides in relation with the conceptual information of the context the expectations of the reader and, therefore, a faster detection of the focused element can be executed (cfr. Kim 2012:§ 3.2.).

Moreover, Kim (2012) contrasts two different FOs: *only* and *also*. Results of the eye movement patterns demonstrate that in the stimuli with *only* participants fixate more frequently a subset member of a semantic category (apple: *fruit*), whereas in the case of *also* participants are more likely to fixate the superset of a category (*picture with different fruits*) (cfr. Kim 2012:§ 4.2.). To sum up, different eye gaze patterns are related to the different instructions attributed to *only* and *also* that are manifested in the different expectations they evoke concerning the upcoming focus. While reading the FO, independently of its instruction, participants activate a set of alternatives that have to be contrasted in different ways (according to the instruction of the FO) with the focused element of the utterance.

In particular, various eye tracking studies in Spanish have investigated the procedural impact of discourse particles (cfr. § 1.2.). Three main arguments can be attributed to the theoretical described characteristics of the procedural meaning of these units (cfr. Loureda *et al.* in press):

- *The insertion of a discourse particle provokes different processing patterns.* It was observed that particles control the processing acting as inferential guide of the utterance.
- *Discourse particles reassign the values of the other elements.* Different experiments have shown that the instruction of any particle conditions the value of the other elements by redistributing their relative values within the limits of a superior function.
- *The insertion of a discourse particle does not provoke higher processing effort for the utterance.* The insertion of the particle does not signify that the processing effort are elevated in comparison to the same utterance without particles.

Eye tracking experiments conducted on FOs demonstrate that the insertion of a FO as e.g. *hasta* or *incluso* does not elevate the processing effort of the utterance since no relevant effects in the comparison of the means per word of the utterances are observed (under 4%, trivial effects, cfr. Cruz and Loureda 2019, Torres Santos 2020, Loureda *et al.* in press, and §

6.6.). Moreover, it was also demonstrated that the insertion of a FO provokes an effect at the element under its scope, while reducing always the processing effort for the focus element:

Total reading time (mean per word)	areas of interest		
	mean of the utterance	**focus operator**	**focus**
Ana y Marta saben inglés, francés y chino.	234.37 ms	–	**262.44 ms**
*Ana y Marta saben inglés, francés e **incluso** chino.*	225.07 ms	239.04 ms	244.33 ms
Difference	3.97% trivial effect		6.90% medium effect
Ana y Marta saben inglés, francés y chino.	304.18 ms	–	**368.94 ms**
*Ana y Marta saben inglés, francés y **hasta** chino.*	312.07 ms	360.84 ms	307.12 ms
Difference	-2.53% trivial effect		20.13% very large effect

Table 1: Comparison of areas of interest – total reading time
(adapted from Loureda *et al.* (in press)

In concordance with the study realized by Filik *et al.* (2009), this feature is particularly relevant and demonstrates three main findings. Under normal conditions (congruency between procedural instruction of the operator and common ground, without syntactical ambiguities and embedded in preceding context (cfr. Loureda *et al.* in press)[129]:

- The insertion of an operator does not provoke more cognitive effort in the processing of the whole utterance, even though the utterance with operator is informatively more complex as the same utterance without *hasta* or *incluso*.
- In utterances in which elements of conceptual meaning are conducted to interact with elements with procedural meaning, the FO not only selects the focus as highlighted element (cfr. Rooth 1995, Portolés 2007, 2010, *DPDE ss.vv. incluso* and *hasta*), it also determines how the conceptual representations have to interact informatively with each other.
- The instruction of the FO restricts the processing effort of the marked focus in contrast to an unmarked focus. In utterances without FO the assumption is primarily recovered through the focus element (higher processing effort for the unmarked focus, Table 1). On the contrary, when the FO is inserted in the utterance, it is the area of the FO from which the assumption is recovered, minimizing at the same time the processing effort of the marked focus (cfr. § 6.1.2.).

[129] See Loureda *et al.* (in press) for a detailed overview discussion of these phenomena for other discourse particles.

This overview has shown that focus structures have a wide-ranging influence throughout different stage of processing. Summarizing three main benefits can be attributed to focus structures:

- Focus information *activates* a processing benefit.
- FOs *control* online utterance processing.
- Alternatives *contribute* to focus prediction, and consequently facilitate processing.

The actual research is not only concerned about the resulting benefit effects of using a focusing structure, it is also interested in *how* and *when* a determined focusing structure effects utterance processing. Diverse eye movement studies, either using the reading paradigm or the visual world paradigm have demonstrated, by investigating different variables (among others, presence/absence, congruency/incongruency), that focusing operations tend to be detected early during processing, but display their complete effect at a later stage of processing (during reanalysis).

The presented study in this thesis aims to contribute to this research field by considering all main elements of the focusing operation. Mostly the studies concentrate on how one single element of the focusing operation (either focus, operator or alternatives) influences the focusing operation, but not on how the interplay of these three components act during utterance processing. Additionally, the study aims to investigate focusing structure from a different theoretical approach and opts for a pragmatic-relevantist perspective in the interpretation of the findings.

Furthermore, from this review it becomes apparent that most investigations are conducted for English (some for German), but, only eye movement studies realized within the research group *Discourse particles and cognition* are published so far for Spanish FOs. This thesis aims to contribute to the preceding research relevant findings on how the Spanish FO *incluso* (‘even’) influences online processing during reading. Finally, the challenge is to integrate the findings into the existing research.

6. EXPERIMENTAL STUDY

In Pragmatics, the experimental approach is a recent method in order to gather quantitative observations about a specific linguistic feature[130]:

> […] two general remarks with respect to experimental methodology are in order. First, each experiment is an attempt to understand a particular phenomenon by marking a highly controlled design for collecting data on that phenomenon. In this design, researchers manipulate one or more factors that they assume to affect a mental representation or the access speed to that representation […]. (Sandra 2009b:304-305)

In this sense, the use of quantitative methods in the present study of experimental research and the use of inductive statistical analysis of data has three goals (cfr. Gries 2013:3-4):

- *Description*. The data and the results must be reported as accurately as possible.
- *Explanation*. Hypotheses are created from existing theories which then serve as the basis for the interpretation of the results.
- *Prediction*. Parting from the data it should be possible to predict whether new data, obtained under the same experimental conditions in an enlarged participant sample, will show the same effects and, thus, the results will be generalizable to the whole population.

The aim of this study is to prove experimentally whether different focus structures demand different cognitive patterns; and whether there are existing correlations between the morpho-syntactic, semantic and pragmatic properties of the Spanish FO *incluso* and the informative structure of utterances. Additionally, it will be described to what extend the presence of the FO *incluso* determines the processing effort of utterances and the recovery of inferences.

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[130] Experimental Pragmatics uses psycholinguistic methods to create an experimental approach to pragmatic theories, which try to explain "how linguistic properties and contextual factors interact in the interpretation of utterances." (Noveck and Sperber 2004:1) In a broader sense, the experimental turn in Pragmatics aims to investigate how communication works cognitively and to test hypotheses that until then rely heavily on intuition (cfr. Sperber and Noveck 2007). Early studies concentrate mostly on scalar implicatures (cfr. Noveck 2001, Papafragou and Musolino 2003, Noveck and Reboul 2008). Although, there is still today an ongoing debate on this issue, other research objects have become of interest in the Experimental Pragmatics approach, including irony, metaphor, metonym, reference and word learning (cfr. Noveck 2018). More recently, studies on how procedural meaning can determine utterance processing and comprehension has become center of interest (cfr. Nadal *et al.* 2016, Recio Fernández *et al.* 2018, Cruz and Loureda 2019, Nadal and Recio Fernández 2019). See Noveck (2018) for a broader discussion of different research areas in Experimental Pragmatics and also Loureda *et al.* (2019).

Therefore, two different experimental methods are implemented: an *online* method using the eye tracking technique (self-paced-reading experiment) and an *offline* comprehension test.

The online method *eye tracking* is an indirect technique[131] that allows to observe cognitive activity while performing a specific task, as e.g. during reading[132] by recording the eye movements (cfr. Keating 2014:69). The main assumption in regard to eye movements (more specifically fixations) is that they are unconscious and happen automatically (cfr. § 5.1.). In this regard, they reflect ongoing mental processes with a minimal delay of time via chronometric parameters, as e.g. reading times (cfr. Richardson *et al.* 2007:5, Sandra 2009b:307). Eye tracking allows to obtain data of any individual designed area (e.g. words, utterances or paragraphs) And, thus, it provides a useful technique to visualize "cognitive processes that cannot be directly accessed." (Keating 2014:69).

However, the main limitations of online eye tracking studies are that they do not provide any evidence about the comprehension of a specific stimulus. Offline methods, as comprehension tasks, can provide a complementary method, since they are mainly oriented towards the result of a communication process. This method involves a conscious decision task and does not reflect sensible and immediate effects during processing, since it is conducted with a certain time delay (cfr. Keating and Jegerski 2015:2, Mertins 2016:17).

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[131] *Offline/online* methods indicate to what extend mental and/or neuronal processes are involved during a task activity. *Offline* methods do not reflect directly mental processes, but the result of a communication process. The task usually consists of a conscious decision with a temporal delay, and therefore it indicates a consequence after an immediate automatized process. Likewise, *online* methods have an immediate access to mental processes and reflect unconscious and automatized processes. The time delay of online processes can be minimal or inexistent, dividing the online methods in two types of techniques: direct, neuroscience-based techniques for the immediate recording of brain activity (brain imaging, as e.g. fMRI, EEG, ERP and PET) (cfr. Coulson and Matlock 2009:96, Sandra 2009b:307), and indirect, chronometrically-based techniques in which brain activity is observed by parameters or indicators that underlie the perceptual systems (as e.g. eye tracking, reaction time studies) (cfr. Sandra 2009a:166, 2009b:307, Loureda *et al.* in press). For a detailed discussion of advantages and disadvantages of offline and online methods see Kintsch and Rawson (2005:213).
The experimental study of this thesis relies on the online technique eye tracking, where the registered eye movements reflect the processing effort during the reading of critical items in real time, and on an offline task, where the comprehension test provides information on how the participants derive the implicatures of the critical items. The implementation of both techniques in the study ensures *qualitative* and *quantitative* data on how different focus structures have an effect at cognitive level. Both data, qualitative and quantitative, are useful in experimentation. Quantitative data supports pre-formulated theoretical claims that are, likewise, obtained by qualitative research (cfr. Kintsch and Rawson 2005:214, Lowie and Seton 2013:4).

[132] This also can be scene perception or visual search. For a detailed overview description of these research fields in relation with the eye tracking technique see Duchowski (2007), Rayner (2009), Holmqvist *et al.* (2011). In Language research two main modalities are developed with the eye tracking technique: Reading experiments, where the participants read in silence or aloud word or text stimuli and experiments with the *visual world paradigm*, where participants sees real or ficticious objects on a screen while being exposed to auditory stimuli. In both modalities, the eye tracker records eye movement during the task and records where and how long the participant's gaze is fixated on the areas on interest (cfr. § 5.2.).

Both methods are used complementary in this study, since the convergence of these two methods provides a more accurate picture of cognitive behavior during processing and for comprehension (cfr. Kintsch and Rawson 2005:213, Sandra 2009b:305,).

6.1. Independent Variables and hypotheses

The online and offline experimental studies of this dissertation encompass four independent variables (IV): IV A – *Extension of the alternative* (cross-variable), IV B – *Focus marking*, IV C – *Position of the focus operator in relation to the focus,* IV D – *Degree of informativity*. The aim is to investigate to what extent the cognitive effort changes, whether a FO is present or absent in an utterance (IV B), whether the position of the FO in relation to the focus (preposition or postposition of the FO) evokes different processing patterns (IV C), and whether the processing load varies when the degree of informativity is altered in an utterance (IV D). These three independent variables are crossed with the IV A in order to examine whether the processing patterns change according to the extension of the alternative (cfr. Appendix A.).

6.1.1. Extension of the alternative – Independent Variable A (cross-variable)

The aim of the IV A is to assess to what extent the processing of utterances differs when the alternative is not syntagmatically given (*implicit alternative*) and has to be derive throughout the discursive context; or the alternative is explicitly given and has to be contrasted directly with the focus element in order to derive the conventionally marked pragmatic scale. In the case of explicit alternative, the alternative can be composed by one element (single alternative) or by two elements (complex alternative).

Context

> Ana y Marta son profesoras de lenguas extranjeras en Madrid, donde llevan muchos años dando clase. Han viajado mucho juntas y hablan distintas lenguas, como el inglés y el francés.
>
> ('Anne and Martha are foreign language teachers in Madrid, where they have been teaching for many years. They have travelled a lot together and speak different languages, such as English and French.')

Critical item with implicit alternative (a1)

Ana y Marta saben incluso chino.

('Anne and Martha know even Chinese.')

Critical item with explicit single alternative (a2)

Ana y Marta saben inglés e incluso chino.

('Anne and Martha know English and even Chinese.')

Critical item with explicit complex alternative (a3)

Ana y Marta saben inglés, francés e incluso chino.

('Anne and Martha know English, French and even Chinese.')

The IV A is designed as cross-variable of the experimental study and is an integral component in all other IVs. The three conditions of the IV A are investigated in order to prove two main structures: implicit structures that are assumed to require more processing effort according to their semantical underdeterminacy, and explicit focus structures that are expected to demand less processing effort due to the informative guidance of the conceptual and procedural elements of the utterance. The results of the cross-variable IV A are not discussed isolated, but always in combination with the other IVs. Nevertheless, general hypotheses can be formulated.

Processing

The insertion of an alternative determines semantically the utterances and, hence, processing will also be determined, since the explicit given alternative is contrasted more directly to the focus element in order to create an informative pragmatic scale. By extending the elements of the alternative (complex alternative or lexical chain) the processing of utterances will even be more facilitated. On the contrary, if the alternative is implicit the contrast has to be established based on the mental representations[133] that are stored in the memory and have to be activated by the discursive context.

[133] *Mental representations* are understood as an internal cognitive representation of the external environment. During information processing, mental representations are units that relate the memory system and the human mind. They are the final result during processing and likewise, they are the material that ensures the ongoing communication. The construction of a mental representation depends on the combination of an external input (in language comprehension visual or auditory) and the internal cognitive information of the individual, as to say, the stored assumption in the mind (cfr. van Dijk and Kintsch 1983:5, Portolés 2007:60-63).

This phenomenon can be applied primarily to the conditions that present focus structures in which the manipulation mainly affects the procedural device (cfr. §§ 6.1.2. and 6.1.3.). When the manipulation of the independent variable also affects the conceptual elements of the utterance (cfr. § 6.1.4.), the explicit alternative (single or complex) may be obstructive, since the interaction between the alternative information and the focus element leads to a contrastive relation that is anti-oriented to the common ground.

Hypothesis IV A-1a[134]***:*** *The presence of alternatives facilitates the construction of the ostensive communicated assumption in the IV B and IV C.*

It is expected that the processing decreases with the increase of conceptual information (as in the a3-conditions). This will be observable specially in the total mean of the utterance (global level) across parameters.

Hypothesis IV A-1b: *The presence of alternatives hampers the construction of the ostensive communicated assumption in incongruous condition of the IV D.*

It is expected that the processing increases with the increase of conceptual information (a2 and a3 conditions). This will be observable specially in the total mean of the utterance (global level) across parameters.

Comprehension

As during processing, the insertion of an alternative will encourage the comprehension process in order to facilitate the deduction of the inferences in the focus structures that are co-oriented to the mental representations. If the information of the utterance contradicts the world knowledge comprehension will became more obstruct.

Hypothesis IV A-2a: *The insertion of an alternative will not hamper the comprehension process in the variables IV B and IV C.*

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[134] All formulated hypotheses represent the alternative hypotheses (H_1), the respective null hypotheses (H_0) are not formulated here, but they constitute always the logical opposite of H_1. If the result confirms H_1 a dependency is established between the conditions of the independent variables and the dependent variables, that is, the distribution of the observed data for both conditions is not due to random factors. If H_0 rejects H_1 than there is no assurance that the obtained data at the dependent variables are linked to the differences described in the independent variables (cfr. Gries 2013:18-19).

Hypothesis IV A-2b: *The insertion of an alternative will hamper comprehension in the variable IV D.*

6.1.2. Focus marking – Independent Variable B

The IV B – Focus marking aims to assess to what extent processing and comprehension of utterances differ when the utterance has an unmarked focus (b1, absence of FO) or a marked focus (b2, presence of FO). Moreover, in the case of marked focus it will be also investigated to what extent the procedural meaning of the FO *incluso* guides the reader towards the intentionally communicated assumptions. The IV B is tested in combination with the three cross-conditions of the IV A – Extension of the alternative:

IV A – Extension of the alternative / IV B – Focus marking	*a2 - explicit single alternative*	*a3 - explicit complex alternative*
b1 - absence of the focus operator	b1a2 - Ana y Marta saben inglés y chino.	b1a3 - Ana y Marta saben inglés, francés y chino.
b2 - presence of the focus operator	b2a2 - Ana y Marta saben inglés e incluso chino.	b2a3 - Ana y Marta saben inglés, francés e incluso chino.

Table 2: Conrete token set – utterances with explicit alternative IV B/IV A[135]

When the alternative is explicitly given (explicit single or explicit complex alternative, Table 2), in the utterances with unmarked foci (b1a2 and b1a3) a mere addition has to be made between the explicit alternative and the focus, whereas in utterances with marked foci (b2a2 and b2a3) the insertion of a procedural mark evokes a contrastive relation between the elements of the utterance. Within a discursive context in utterances with unmarked focus, a focus can exist "by default" (b1a2 and b1a3), and relying on the topic WHAT LANGUAGES KNOW ANA AND MARTA? new information can be identified (unmarked focus *chino*) (cfr. van Kuppevelt 1996:394, Gutiérrez Ordóñez 2000 [1997]:40, Gundel and Fretheim 2004:176, Portolés 2010:284, Cruz and Loureda 2019, and § 3.1.). In regard to this topic, a mere additive relation is established between the known information given explicitly in the previous context and the new information, the unmarked focus (cfr. Kenesei 2006:137).

On the contrary, in utterances with marked foci, the inserted FO activates a contrastive relation and highlights an element belonging to a paradigm as the most relevant in a specific and accessible context (cfr. Rooth 1985, König 1991, Rooth 1996, Portolés 2007, 2010). An evaluated pragmatic scale has to be built to generate a comparison of two elements with in-

[135] The presented examples belong to one concrete token set belonging to a set of 15 concrete token set. See § 6.4., and Appendix B. for an overview of all types of experimental items.

formative value which in the case of the utterances with explicit alternative is presented as a subset of a paradigm that is given in the discourse (cfr. Rooth 1985, 1992, 1996, É. Kiss 1998:245, Gundel and Fretheim 2004, Kenesei 2006:241, and § 3.1.).

The main difference between implicit and explicit alternative concerns the set relation of a paradigm to the focus. If the alternative is explicit (a2, a3), the set of the alternative is presented as a subset of a paradigm in which all items of the set are of the same kind and could have been focused as well, whereas, if the alternative is implicit (a1, Table 3), the alternative has to be derived from the context. The insertion of a FO obliges to generate a contrast between the focus element and a potential subset of the given context (cfr. Kenesei 2006, Krifka and Musan 2012, and § 3.2.).

IV A – Extension of the alternative / IV B – Focus marking	*a1 – implicit alternative*
b1 - absence of the focus operator	b1a1 - Ana y Marta saben chino.
b2 - presence of the focus operator	b2a1 - Ana y Marta saben incluso chino.

Table 3: Concrete token set – utterances with implicit alternative IV B/IV A

Descriptive and theoretical arguments ensure the idea of two main focusing structures: unmarked (b1) and marked (b2, cfr. Cruz and Loureda 2019): Unmarked focus structures encourage a primarily identificational function, that is, new information is identified and related to an explicit subset of alternatives (a2 and a3) or to a potential subset given in the discourse (a1, cfr. § 3.1.). Furthermore, marked focusing structures present more informative load due to the insertion of a conventional device and evoke a paradigmatic contrast in addition to the identificational function of unmarked structures. However, it is expected that the possible extra processing effort that can derive from the additional informative load in marked structures will be compensated due to a more guided inferential process.

Hypothesis IV B-1: *If the FO generates a control and acceleration effect in a marked focus structure, compensating the possible additional effort, then utterances with marked focus structure will not register higher total processing effort than unmarked utterances.*
No higher differences for the marked utterance will be registered in the AOI lexical mean per word in the total reading time.

Hypothesis IV B-2: *Unmarked and marked focus structures are considered two types of focusing operations, implying two different intern processing patterns: one conceptual*

(additive relation, all b1 conditions) and one procedural pattern (contrastive relation, all b2 conditions).

Hypothesis IV B-2a: *Conceptual patterns will be oriented to the right-side of the utterance, since the assumptions are constructed based on the conceptual elements and no explicit contrast has to be made between alternative and focus.*

The assumption will be recovered with major processing effort for the focus element across parameters. Since focusing is detected early higher processing times are expected for the focus area already during the first-pass reading time that could be transferred to the second-pass reading time and to the accumulative parameter total reading time (cfr. § 5.2.).

Hypothesis IV B-2b: *Procedural patterns are expected to be determined by the instruction of the FO. The FO articulates the information in the marked utterance while demanding more processing effort than all other conceptual elements of the utterance, but also by regulating the processing of the construction of the assumption* (cfr. Loureda *et al.* 2015, Cruz and Loureda 2019).

The regulation effect of the FO will facilitate processing. The FO absorbs processing effort from the other conceptual elements and requires higher processing effort in order to regulate the interpretation of the utterance. The impact of the conventional device will be visible in the comparison of the lexical mean, where the procedural element and the subject were excluded. It is expected that if the FO redistributes the values of the other conceptual elements of the utterances, there will be processing differences in the lexical mean between the conditions. Further, in the comparison of the focusing areas the elements of the marked utterances will require less processing effort than the elements of the unmarked utterance across parameters. Independently whether the utterances are processed as conversational implicature (b1) or conventional implicature (b2) it is expected that differences appear regarding the implicit or explicit alternative.

Comprehension

It is assumed, that the FO guides the inferential process conventionally by restricting the interpretation possibilities of the utterance during comprehension. In consequence, not only different processing patterns will be expected, but also different inferential processes during comprehension.

Hypothesis IV B-3: *Unmarked utterances do not conventionally lead to a contrastive implicature, i.e. this type of utterances does not present a sufficient minimum stimulus to automatically activate an inferential contrastive process, in contrast to marked utterances that will lead to a contrastive implicature.*

In this regard, this will be reflected in a major heterogeneity between the answer possibilities (*yes/no/unable to say*), whereas for the b2-conditions a higher proportion of yes-answers is expected, independently of the extension of the alternative. On the contrary, for the b1-conditions a major homogeneity is expected between the answer possibilities due to increasing interpretation variety and the absence of a procedural mark.

6.1.3. Position of the focus operator in relation to the focus – Independent Variable C

The IV C – Position of the FO regarding the focus has as its objective to analyze to what extend a position-shift of the FO (c1) effects the processing and comprehension of utterances. Therefore, two positions (b2, preposition of the FO, and c1, postposition of the FO) are isolated and tested in combination with the three cross-conditions of IV A – Extension of the alternative.

Since a position shift of a FO in an utterance can provoke a difference of the scope and consequently change the meaning of the whole utterance (cfr. Cuartero Sánchez 2002:68, *NGLE* 2009-2011:§ 40.4, § 40.8h, Loureda *et al.* 2014:99, DPDE online*, s.v. incluso*), this variable only isolates two positions of *incluso*. Thereby, it is controlled that the change of position does not include a change of scope. In all cases, the operator displays solemnly its instruction to the object of the utterance and has an unambiguous semantic scope (cfr. Loureda *et al.* 2014, and § 4.2., Table 4)[136]:

IV A – Extension of the alternative / IV C – FO-Position	*a1 – implicit alternative*	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
b2 – preposition of the FO	b2a1 - Ana y Marta saben incluso chino.	b2a2 - Ana y Marta saben inglés e incluso chino.	b2a3 - Ana y Marta saben inglés, francés e incluso chino.
c1 – postposition of the FO	c1a1 - Ana y Marta saben chino incluso.	c1a2 - Ana y Marta saben inglés y chino incluso.	c1a3 - Ana y Marta saben inglés, francés y chino incluso.

Table 4: Concrete token set IV C/IV A

[136] The b2-conditions is considered the neutral structure with FO. They correspond with the unmarked position in IV C and in IV D-Degree of informativity with the structure where the instruction of the FO does not contradict the world knowledge (cfr. § 7.3.).

Although both positions, unmarked and marked, introduce the same instruction, in which the presented informative structure has to be interpreted as contrastive scale, it is expected that the marked position will demand more processing effort (independently of the extension of the alternative), since this position is syntactical and informative less common and the focus operation cannot be processed *ad hoc*, but has to be processed *a posteriori* after reading all the conceptual elements belonging to the focusing operation.

Utterances with preposition of the FO	*Utterances with postposition of the FO*
processing effort for the construction of the first assumption	processing effort for the construction of the first assumption
+	+
	additionally, processing effort for the reidentification and reevaluation of the elements of the focusing operation (during second-pass)
	+
confirmation, modification or cancelation of the previous build assumption	confirmation, modification or cancelation of the previous build assumption

Figure 5: Processing route IV C

Hypothesis IV C-1: *A postposition of the focus operator in relation to the focus leads to more processing effort.*

Differences in the dependent variables will be observable in the area of the total mean (global level of the utterance) with increasing values in the marked structure. Since FOs are syntactically more embedded in the utterance differences will already be observable during the first-pass reading time at utterance level, and display also their effects at the later stage of processing (second-pass reading time). Further, this will be reflected in the cumulative parameter total reading time. Differences are also expected to arise in the local areas of the elements belonging to the focusing operation, with higher processing effort for these areas in the utterance with postpositional FO. These differences will also be observable across the three parameters.

Comprehension

In both positions, the FO introduces the same instruction and obliges the reader to interpret a contrastive scale. Although, this can lead to different processing patterns, in comprehension no differences should be observable, since the offline comprehension test only reports the product of a specific task.

Hypothesis IV C-2: *The instruction of the focus operator in both conditions evokes a contrastive implicature, and, thus, no differences will be observable between the conditions.*

In both utterances, similar answer-distributions will be observable with a major heterogeneity between the answer possibilities (*yes/no/unable to say*). The heterogeneity will exhibit higher portions of yes-answers.

6.1.4. Degree of informativity – Independent Variable D

The IV D – Degree of informativity aims to assess to what extent the processing of utterances differs when the relation between procedural and conceptual information in an utterance are co- or anti-oriented to the context information and the common ground. Two conditions are differentiated: b2, utterances where the conceptual elements and the procedural device point to the same informative direction (congruous relation) and do not contradict the contextual information and d1, utterances where the conceptual units and the instruction of the FO are opposed to each other and, therefore, present an incongruous relation regarding the contextual information. Moreover, this variable intents to investigate to what degree the property of rigidity of the FO determines the processing and the comprehension of utterances (cfr. § 1.2.). As in all other IVs, the tested conditions are combined with the cross-variable IV A.

In both utterances, the grammatical and semantic structure not only codify the relation between the constituents that where necessary to build up the propositional content, it is also codified, anchored in the FO, the exact way in which the different elements have to be related to each other within a discursive model. In the b2- and d1-conditions the instruction of the FO is the same and the different organization of the conceptual elements have to be adjusted to the instruction, thus creating two different pragmatic scales in which the elements have to be ranged according to their informative value (Table 5):

IV A – Extension of the alternative / IV D – Degree of informativity	*a1 – implicit alternative*	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
b2 –congruous relation	b2a1 - Ana y Marta saben incluso chino.	b2a2 - Ana y Marta saben inglés e incluso chino.	b2a3 - Ana y Marta saben inglés, francés e incluso chino.
d1 – incongruous relation	d1a1 - Ana y Marta saben incluso inglés.	d1a2 - Ana y Marta saben chino e incluso inglés.	d1a3 - Ana y Marta saben chino, francés e incluso inglés.

Table 5: Concrete token set IV D/IV A

In both conditions, the instruction of the FO conducts to the construction of an informative scale. The difference between the conditions lies in the relation between conceptual and procedural information according to the provided context. Assuming that the utterances of the b2-conditions are adaptable to the context (*Chinese* is more difficult than *English*) and that the utterances of the d1-conditions contradict the information stored in the common ground (*English* is more difficult than *Chinese*), it is expected that two different strategies will be conducted in order to integrate the information in the common ground (cfr. Portolés 2007:146, Loureda *et al.* 2013:82). While the information of the b2-conditions will be integrated by activating adaptable assumptions in the common ground (or if necessary creating an assumption *ad hoc*) (cfr. Beaver and Zeevat 2007, Escandell Vidal *et al.* 2011), another pattern will arise for the d1-conditions, in which a different inferential route has to be constructed based on an accommodation-process that leads to a modification or a cancelation of the assumptions (cfr. Portolés 2001 [1998]:262-263, and §§ 1.2. and 2.1., Figure 6):

Utterance with congruous relation	*Utterance with incongruous relation*
processing effort for the construction of the first assumption	processing effort for the construction of the first assumption
+	+
	repair strategy by modification or cancelation of the first assumption
	+
integration of the final assumption to the context	integration or rejection of the final assumption to the context

Figure 6: Processing route IV D

Hypothesis IV D-1: *Utterances with incongruous information in relation to the context require more reanalysis effort than congruous utterances.*

Differences in the dependent variable will become visible in the area of the total and lexical mean of the utterance with increasing values for the utterances with incongruous relation. Since it is assumed that repair-processes are executed at a later stage of processing differences between the conditions will become more apparent during the second-pass reading time. Nevertheless, it is not excluded that differences will be reported also at the first-pass and the total reading time. Further, local differences are expected for the elements of the focusing operations (FO, focus and also alternative) between the conditions, demanding more processing effort for the focusing areas of the utterance with incongruous relation. The differences in the d1-conditions are expected to vary in relation to the cross-variable IV A where major differences will be observed if the conceptual information is extended (a3) in contrast to utterances

with single alternative (a2) or implicit alternative (a1), since more information has to be considered during the accommodation-process.

Comprehension

Even though in this variable in one condition the conceptual meaning and the procedural meaning are anti-oriented according to the context, it is assumed that the rigidity property of *incluso* will oblige the reader to the deduction of inferences. The comprehension task asks specifically for the instruction of the operator, therefore if the instruction of the FO is rigid it will determine the comprehension process by guiding the reader to the communicated inferences, independently whether the in the utterance is co- or anti-oriented regarding the common ground.

Hypothesis IV D-2: *The rigidity of the focus operator conditions the comprehension of utterances. The deduction of inferences is determined by the instruction; hence no differences will be observable between the conditions.*

Similar answer-distributions will be observable for both conditions. The answer distribution will be heterogeneously with a higher portion of yes-answers (similar to IV C).

6.2. Dependent Variables and areas of interest

In the presented eye tracking study fixations are used as principal metric of processing effort. The observed fixation times are analyzed in different ways to gather a more fine-grained overview of the cognitive behavior during reading. Therefore, *dwell times* are calculated to obtain different cumulative eye tracking parameters that are used as dependent variables of the current research: *Total reading time*, (Figure 7), *first-pass reading time* (Figure 8) and *second-pass reading time* (Figure 9, cfr. Hyönä *et al.* 2003, Holmqvist *et al.* 2011:190).

The *total reading time*[137] corresponds to the sum of the duration of all fixations on an area of interest (from now on AOI; cfr. Holmqvist *et al.* 2011:389) and, therefore reflects the total time that is needed to extract the whole information of a specific AOI (Figure 7, sum of fixation 6+7+10 on the AOI *incluso*).

[137] *Total reading time*, also called *total dwell time, gaze duration, cumulative dwell time, glace duration, total viewing time, total viewing time, total fixation time, fixation cycle,* and *also time in zone*, see Holmqvist *et al.* (2011) for further discussion of differences in terminology and specific definitions of these parameters.

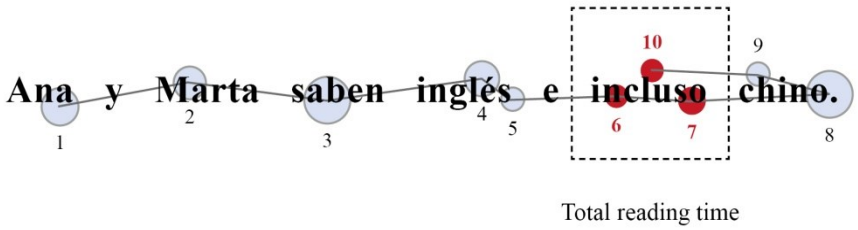

Figure 7: Total reading time

Assuming that processing during reading (lexical, syntactical, semantical and pragmatic information) is realized via parallel mechanisms and not serial mechanisms (cfr. Escandell Vidal 2004, Escandell Vidal 2005, Egorova *et al.* 2013), this measure encompasses not only the construction of the first assumption (at microstructural level), but also the recovery of the assumption during reanalysis. This measure reunites early and delayed effects, and provides an overview of the cumulative cognitive effort during reading. It reflects the effort needed to complete the assumption given by an ostensive stimulus (cfr. Inhoff and Radach 1998). Thus, the total reading time does not allow to distinguish between the effort needed for the construction of the initial assumption and the reanalysis in which the initial assumption has to be confirmed, enriched or corrected:

> Total dwell time seems to be sensitive to linguistic processes that operate after the word has been identified, the measure should be refined by separation dwell time during first reading from dwells on the same word in subsequent readings (Holmqvist *et al.* 2011:389).

First-pass and second-pass reading times are more fine-grained measures and reveal detailed information about the construction and the reanalysis of the communicated assumption (cfr. Inhoff and Radach 1998, Hyönä *et al.* 2003, Holmqvist *et al.* 2011).

The *first-pass reading time*[138] encompasses the duration of all fixations on an AOI before the reader leaves this AOI, in other words, it corresponds to the first visit or first reading on an AOI (Figure 8, sum of the fixations 6+7 at the AOI *incluso*):

[138] *First-pass reading time* is also known *as first pass dwell time, first pass gaze duration, first-pass fixation time* or *duration of the first fixation* (cfr. Holmqvist *et al.* 2011:309).

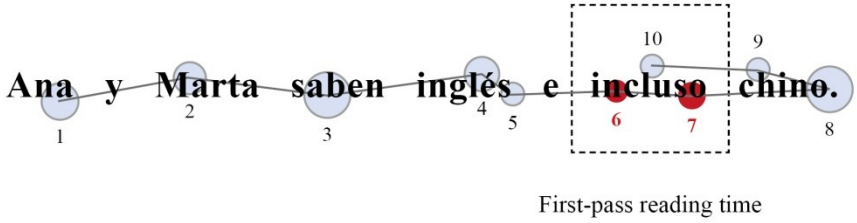

Figure 8: First-pass reading time

During first-pass reading time the construction of the assumption at an early state of processing takes place. The reader constructs an assumption based on the lexical recognition of words, the search for matches with entries in the mental lexicon, the syntactic and semantic analysis of the utterance and the enrichment of the logical form (cfr. Escandell Vidal 2004:81, Holmqvist *et al.* 2011:390). In this way, the reader forms an assumption on the basis of which an inferential process can be carried out.

The *second-pass reading time*[139] corresponds to the re-reading time of an AOI once it first has been abandoned (cfr. Hyönä *et al.* 2003:316, Figure 9, fixation 10 on the AOI *incluso*):

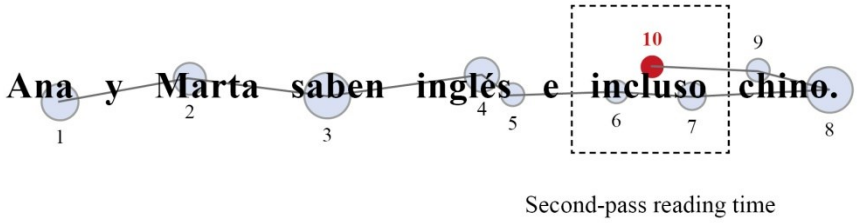

Figure 9: Second-pass reading time

The second-pass reading time is a measure that acts as indicator of possible difficulties during reading (cfr. Rayner and Sereno 1994, Hyönä *et al.* 2003, Holmqvist 2011). It reflects the time needed for confirmation and readjustment of the communicated assumption because second-pass reading movements were made voluntary, when necessary for the interpretation of the communicated assumption.

Even though, no symmetrical correlation between the measures and processing levels can be defended (cfr. Escandell Vidal 2004, Pulvermüller *et al.* 2009, Egorova *et al.* 2013), many authors argue that subsequent reading times after the first-pass reading time reflect

[139] Also referred to as *second-pass dwell time, look-back fixation time* or *second-pass fixation time* (cfr. Holmqvist *et al.* 2011:309).

delayed effects of processing (cfr. Rayner and Sereno 1994, Rayner 1998, Hyönä *et al.* 2003, Holmqvist *et al.* 2011, Nadal *et al.* 2017, Cruz and Loureda 2019), as to say, they reflect the reconstruction or reanalysis of the assumption: a confirmation, modification or cancelation of the previous assumption realized with the aim of optimizing the effort of the inferential process.[140] In Figure 10 it can be observed how higher-order processing affects eye movement when the presented information in the utterance contradicts the common world knowledge:

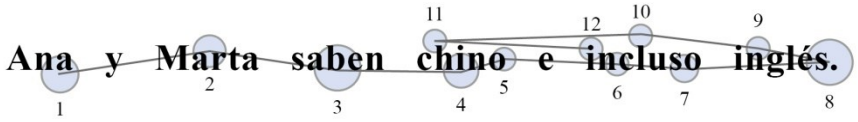

Figure 10: Regression path

The FO *incluso* forces the reader to adapt the conceptual meaning to the instruction. The adaptation evokes numerous regressions to the areas that are involved in the focusing operation (mostly regressions back to the alternative and to the FO). The higher effort demandes (retrieved from the second-pass reading measure) is attributed to the reconstruction of the communicated assumption (cfr. § 7.3.).

The assignment of AOIs[141] is relevant in order to extract and calculate correctly the different measures to analyze the eye movement behavior of different conditions. Each AOI represents a region of the critical stimulus (condition of independent variable) about which information is gathered using the dependent variables (cfr. Holmqvist *et al.* 2011, Hessels *et al.* 2016). The selection of the AOIs of this study is chosen according to the research hypothesis and other specific factors (cfr. Holmqvist *et al.* 2011:188-189, Hessels *et al.* 2016:1695):

- each AOI is a homogeneous semantic area;
- between each AOI there is a margin of one-character space;

[140] The EZ-Reader model also supports this idea (cfr. Reichle *et al.* 1998, Reichle *et al.* 2003, Reichle *et al.* 2009). They argue that low-order ongoing cognitive processes influence eye movement during reading and are executed somehow via serial mechanism, but "posit that higher-order processes intervene in eye movement control only when "something is wrong" and either send a signal to stop moving forward or a signal to execute a regression." (Reichle *et al.* 2003:450). Therefore, it is assumed that delayed measures as second-pass reading time, or other measures that include regression durations reflect the time needed for reanalysis in order to derive correctly the communicated assumption.

[141] As it happens with various eye tracking terminology there is also no standard terminology for the term *areas of interest*. They are also known as *region of interest, interest areas or zone*s. Following Holmqvist *et al.* (2011:187) the term *areas of interest* is used in this study, since it is the most established in eye tracking reading studies.

- there are no overlaps between the AOIs;
- the minimal AOI size is measured according to oculometric acuity and the precision of the recorded data;
- arbitrary AOIs are avoided;
- In order to achieve comparability between the AOIs, each area is calculated for an average word with a fixed average number of characters (cfr. § 6.6.).

The precise assignment of AOIs provides a clear scheme of different focusing patterns according to different experimental conditions. In this study, two global and three local AOIs are defined. The local AOIs represent the main focusing areas in an utterance: *alternative, FO* and *focus*. In relation to the AOI *alternative*, the utterance could be composed by a minimal set: an explicit single alternative (one lexical element), as in:

Ana y Marta saben inglés[alternative] e incluso[FO] chino[focus].
('Anne and Martha know English[alternative] and even [FO] Chinese[focus].')

or by an explicit complex alternative (two lexical elements), as in:

Ana y Marta saben inglés, francés[alternative] e incluso[FO] chino[focus].
('Anne and Martha know English, French[alternative] and even [FO] Chinese[focus].')

In cases with complex explicit alternative a mean was calculated between both lexical elements to ensure that all areas can be compared regardless of the number of words.

Furthermore, to the analysis of the focusing areas, two global AOIs are isolated: times for an average word of the utterance (*total mean*) and for an average word with conceptual meaning (*lexical mean*).[142] Both means are legitimate, but allow different observations. The total mean takes into account all elements of the utterance and allows a global view of the processing of focusing structures, as e.g. the global differences of a position-shift of the FO (cfr. § 7.2.) or when the degree of informativity is manipulated (cfr. § 7.3.). The lexical mean, however, excludes the processing time observed for the procedural element during the

[142] In both means, elements with purely designatory value (as proper names, subject of the utterances) are excluded from the calculation. They do not have a logical entry and do not have the capacity to represent a reality. Thus, their function during the construction of a communicated assumption is merely identificatory (cfr. § 1.2.). Further the conjunction y/e was also excluded. Words under 4 characters have a high probability to be skipped (cfr. Drieghe et al. 2004, Drieghe et al. 2005). Indeed, during data treatment it was observed that the conjunction y/e was skipped 92% of the cases (cfr. § 5.2.).

construction of a mental representation and reflects the processing effort of the conceptual elements providing the net lexical value of an utterance (cfr. Cruz and Loureda 2019). Therefore, this mean provides insights of the effect that the procedural mark may have on the conceptual elements. For the analysis of the IV B – Focus marking where utterances with and without procedural mark are compared, the lexical mean is of special interest, since it allows a neat comparison of utterances with different number of words (cfr. § 7.1.).

AOI	*Example*	*Description*
single explicit alternative (ALT) complex explicit alternative (ALT)	**inglés** **inglés, francés**	Element that precedes the focus operator
focus operator (FO)	**incluso**	procedural element that marks the focus as marked focus
Focus (F)	**chino**	Element that could be unmarked or marked by the operator
total mean (TM)	**Ana** [y] **Marta saben inglés** [e] **incluso chino**	Average of all words of the utterance
lexical mean (LM)	[Ana y Marta] **saben inglés** [e incluso] **chino**	Average of all words of the utterance (except subject element and focus operator)

Table 6: Overview of the areas of interest

6.3. Pre-test – Norming study

The aim of the experimental study is to prove to what extent the focusing structures marked by the FO *incluso* influences processing during reading. Therefore, two norming studies were designed in order to corroborate previous linguistic intuition (cfr. Sperber and Noveck 2007, Noveck 2018) and to select the definitive and most clear critical stimuli for the eye tracking reading study and the comprehension test (cfr. Appendix E.).

In order to prove the adaptability of the pragmatic scales in relation to the world knowledge, in a first step, 30 different scale topics were tested. 50 participants[143] were asked to order elements of a list according to their world knowledge, i.e.,

> *Ordene los elementos, según su conocimiento del mundo.*
> *('Classify the given elements according to their difficulty in learning.')*

[143] All native Spanish speakers and of the same population as the actual participants of the eye tracking reading experiment and comprehension test (cfr. § 6.5.). The study was executed with the application *LimeSurvey 2.0* and distributed electronically via email.

(Rango: 1=menos presente en el conocimiento del mundo - 5=más presente en el conocimiento del mundo)

('(Range: 1=less present in the world knowledge – 5=more present in the world knowledge)')

inglés	francés	chino	italiano	alemán
1	3	5	2	4

The results were statistically analyzed using the χ^2 - squared test to discard the possibility that different given answers were due to chance (cfr. § 6.6.). The most homogenous scale order results were selected across participants. From 30 different scale topics, 20 final scale topics were chosen. Furthermore, each scale was reduced to three items that correspond to the alternative elements and the focus item.

The second norming study[144] (again, sample size: 50 participants, Spanish native speaker) was conducted to verify the scale orders of the 20 selected scales of the first norming study and to select the 15 final stimuli. In this study, the participants were asked to range the items according to a given context (cfr. Appendix E.), as i.e.,

Ordene los elementos: Ana y Marta son profesoras de lenguas extranjeras en Madrid, donde llevan muchos años dando clase. Han viajado mucho juntas y hablan distintas lenguas como…

('Classify the elements: Ana and Marta are foreign language teachers in Madrid, where they have been teaching for many years. They have travelled a lot together and speak different languages such as...')

inglés	chino	francés
1	3	2

Again, after a the χ^2 - squared analysis, the final selection of the experimental items was carried out due to three categories: It was differentiated between scales that are evoked by the FO and have little to no world knowledge, which means that without the instruction of the particle no significant order was established by the participants; and scales with predominant world knowledge, which means that, even without the instruction of the particle, these scales

[144] In both norming studies the participants received instructions and were told afterwards of the purpose of the test. Both studies were designed using a counterbalancing model and pseudo-randomization (cfr. Arunachalam 2013:224, Keating and Jegerski 2015:18).

were ordered internally by the participants. Moreover, the test revealed that some scales do not follow a specific internal order, but one element of the scale is recognized as more informative. There were no significant results for an internal pre-order of the elements of the alternative, even though one element was always labelled as focus. We decided to add to the binary division of Portolés (2007)[145] a third group of scales that could be adapted to world knowledge. However, in the statistical analysis of the eye tracking results the scale-variable is treated as random effect, since no statistical differences could be detected between the three scale-groups, as to say, no differences in the eye movement behavior could be observed analyzing the eye movements across the three established groups (cfr. § 6.6.). This leads to the conclusion that pragmatic scales are processed similar independently of the relation of the conceptual information to the world knowledge.

6.4. Material and design

The experimental study[146] has been designed according to conventional guidelines of experimental research in psycholinguistics to avoid undesirable noise in the data and to obtain statistically analyzable results (cfr. Sandra 2009a, Arunachalam 2013, Gries 2013, Keating and Jegerski 2015, Seltman 2018). Therefore, the experiments fulfill three main requirements (cfr. Gries 2013:47):

- *Knowledge of the object of research.* The experiments were designed in order that the participants do not know or capture during execution what is being investigated (learning effect).
- *Control of undesirable effects.* The design was controlled for any possible undesirable or confounding effects.
- *Statistically analyzable and interpretable results.* The design was accomplished in order that the observable values are generalizable after statistical treatment.

[145] Portolés (2007) argues that in pragmatic scales the intern scale order is either binary, generating a contrast between the element of the alternatives (independently how many they are) and the focus element, or no order is established between the elements that constitute the scale (cfr. § 3.3.).
[146] For both studies, eye tracking reading study and comprehension test, the same experimental design was used to guarantee the comparability of the two complementary studies.

The experimental material was provided as follows. Each condition of the independent variable is composed by two items: one critical item and one consecutive item to control wrap-up effects (cfr. Keating and Jergerski 2015:5)[147]:

Ana y Marta saben inglés e incluso chino. Les gusta hablar en sus lenguas extranjeras.

critical item *consecutive item*

The utterances are presented in simple present tense and had a plural subject.[148] All critical items have similar world knowledge and evoke an informative pragmatic scale (cfr. Portolés 2007, 2009, 2010). Furthermore, each item presents the most possible neutral syntactic SVO-structure and an informative focus structure. In this focus structure, the focus element always presents new information (cfr. Portolés 2010). Each focus structure can be provided with three different types of alternative extension): *Implicit alternative*, *explicit single alternative or explicit complex alternative* (cfr. § 6.1.1.). The alternative, implicit or explicit, had already been presented to the participants previously by a first slide that provided the participants with some context acting as background information for the critical item.[149] All experimental items have the same syntactical and informative structure that allows to attribute the cognitive overload that can occur e.g. in the second-pass reading time to the difficulties that can arise during the reconstruction of the communicated assumption.

Other possible hidden variables and undesirable effects at utterance level are controlled to avoid false results, such as *word frequency* (all words in the utterance belong to high or very high frequency ranges (all words were among the 5,000 most frequent words in Spanish[150], cfr. Almela *et al.* 2005) or *word length* (all words had between two and three syllables, cfr. § 5.2.). Furthermore, there was no possibility of ambiguity (polysemic and

[147] Since the latter region of the critical item also coincides with the focusing area, the necessity of implementing a consecutive utterance was even more crucial to minimize possible wrap-up effects (cfr. Just *et al.* 1982, Keating and Jegerski 2015). The wrap-up effect (longer fixations at the end of an utterance or a paragraph) leads to different intra- and inter-clause integration processes, such as connection of proposition or searching for referents (cfr. Just *et al.* 1982:345). No data or analysis will be provided of the consecutive utterance, but it was previously proven that no spill-over effects are atached to this region that could correspond to the critical item.

[148] Simple Present to avoid confounding variables due to past or future tenses. Plural subject is implemented in order to guarantee that the participants are already guided in their eye movements when starting to read the focusing structure (starting at the alternative). (cfr. § 5.2.).

[149] In order to seek a natural situation and to control every feature of the environment, all critical stimuli are embedded in a discursive context. It was proven that reading times differ in regard to utterances that are read with and without context. Utterances without a preceding context require more processing effort since the integration in the common ground has to be made *ad hoc* (cfr. Altmann and Steedman 1988, Grodner *et al.* 2005).

[150] Low frequency words can provoke longer or more fixations that can be observed already in early measures (as in first-pass reading time), therefore, high frequency words are selected in this study to ensure that the results between conditions were not due frequency factors (cfr. § 5.2.).

homonymous words are also avoided) within the utterances because of the specific context provided (cfr. Clifton *et al.* 2007, and § 5.2.). All words have a simple morphology and belong to general Spanish (to avoid diatopical effects).

The experiment study was created as within-subject design[151] and was designed with three independent variables (IV): IV B – *Focus marking;* IV C – *Position of the focus operator*; IV D – *Degree of informativity*. Each of them was crossed with a fourth independent variable: IV A – *Extension of the alternative*. IV B has three experimental conditions[152], IV C and IV D have two experimental conditions, and, IV A has three experimental conditions. Each *condition* is represented by one *experimental item* that corresponds to one level of the independent variable (as e.g. in IV B *Focus marking*: absence (b1) or presence (b2) of the FO). Two experimental items that are experimentally contrasted and analyzed in one independent variable constitute an *experimental set* and are lexically matched, that is, they differ only in one element (cfr. Arunachalam 2013:222, Gries 2013:48, Keating and Jegerski 2015:8, Loureda *et al.* in press, and § 6.1.).[153]

The number of conditions determines the number of *versions* of the experiment (*the experiment should have as many versions as it does conditions*, Gries 2013:48) The presented experiment is designed with a total amount of 15 conditions. All conditions of a version constitute a *token set* (cfr. Gries 2013:46-48).[154] Concluding, 15 conditions lead to 15 versions and to a total amount of 225 experimental items (cfr. Appendix C.). These 225

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[151] In contrast to a between-subject design in which it is relevant how the different participant groups behave under one specific condition and where each participant is exposed to just one condition. Whereas, in a within-subject design it is not relevant to analyze the particular differences between participant groups, but moreover, the differences between conditions. Within-subjects design has the advantage that the hidden variable of the participant's behavior does not influence the data. The data obtained between the conditions can be attributed to the research hypotheses (cfr. Arunachalam 2013:223).

[152] IV B has three experimental conditions: *absence/presence of the FO* and *adjective restriction.* The third condition allows to investigate to what extend the insertion of a conceptual restriction by an adjective determines the inferential processes during communication in comparison to an unmarked focus (condition absence of FO) and a marked focus (condition presence of FO). The insertion of the third condition was part of a substudy and will not be reported in this work. See Cruz and Loureda (2019) for a detailed discussion of the findings.

[153] The *experimental set* is lexically matched, because they have the same lexical elements and e.g. in IV B only the insertion of the FO *incluso* manipulates the critical item. The lexical matching preserves the internal consistency of the critical items and guarantees the comparability of the experimental set (cfr. Keating and Jegerski 2015:8).

[154] A *token set* encompasses all conditions of one version, that is, all experimental items of one topic or theme (e.g. world languages, beverages, etc.). Gries (2013:46) distinguishes between *schematic token set* which is a schematic tabular representation of all experimental conditions (cfr. Appendix A.) and *concrete token set* which represents the same scheme as the schematic token set, but with concrete items (cfr. Appendix C.). Normally, any study has one schematic token set and at least as many concrete token sets as the experiment has conditions (15 concrete token sets, in this study).

critical experimental items are distributed in 15 different *experiment lists* with a *counterbalanced design* (*Latin square design*[155], cfr. Winer 1962, cfr. Appendix B.).

The counterbalanced design ensures that each experiment list is organized in a way that no condition or version (*token set*) is repeated in any experimental list in order to avoid order-learning effects, and to prevent that participants develop specific reading strategies or become aware of the purpose of the research (cfr. Sandra 2009a:171-173, Gries 2013:47, Keating and Jegerski 2015:8-9).

In each experimental list the 15 critical items are balanced with 30 *filler items* in a ratio 1:2.[156] "The purpose of these noncritical items is to obscure the critical items and thus the specific research objectives from participants." (Keating and Jegerski 2015:15). They minimize task effects by misleading the participants attention, i.e. showing different syntactical structures to avoid that specific utterance structures become predictable. The filler items[157] belong to the same token set and are thus topic related to the critical items, but are presented in different syntactical structures. Besides the filler items, each critical item is contextualized. The context is composed by a photograph of the subjects of the critical item and provides a short description (cfr. § 6.4.). This context slide also accounts as distractor item. Context, critical item and filler items are embedded in a *sequence block* (cfr. Arunachalam 2013:224, Gries 2013:51, Keating and Jegerski 2015:18; Figure 11)[158]:

Figure 11: Sequence block

[155] Latin Square present an *n x n* array that is composed by *n* different elements. Each *n* occurs exactly once in each row and column (cfr. Winer 1962)

[156] It was proven that if the number of filler items is less than 50%, then the predictability of the experiment increases notably. Therefore, in this study opts for a 1:2 ratio and doubles the filler items in relation to the critical items.

[157] All filler items are kept constant across experiment lists, since they are not manipulated or analyzed and to control possible hidden effects due to lexical features.

[158] To avoid undesirable eye-related technical effects, such as visual corrections in the first fixation of each utterance, all critical items have a previous fix-cross. The fixation cross is set at the same position where the first letter of the first word of the stimulus is presented in order to prevent misleading fixations due to landing position effects (cfr. Keating and Jegerski 2015).

The sequence blocks were shown to the participants in a *pseudo-randomized*[159] order to avoid undesirable effects with regard to the participants' reading attention (cfr. Arunachalam 2013:224, Sandra 2009a:171). Before the experiment starts with the actual experiment sequence blocks, the participant is provided with instruction (cfr. § 6.5.) and three practice sequence blocks that are topically unrelated to the experimental items.

6.5. Participants, apparatus and procedure

Participants

Data was gathered from 300 participants accurately (20 participants for each experiment list, see cap Experiment Design).[160] The participant-variable was controlled for (cfr. Arunachalam 2013:225, Keating and Jegerski 2015:5, 27)[161]:

- *Native language*. All participants are Spanish native speakers.
- *Age*. All participants are between 18 and 40 years (mean age: 21.4, median: 20).
- *Gender*. male (42.32%) and female (57.68%).
- *Education*. All participants have a high level of education. At the time of the experiment, they all were university graduates or students so as to guarantee a homogenous group.[162]

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[159] That is, the experiment lists were manipulated so that the same sequence block always appears in a different position in the list, but the internal order of the sequence block remains untouched. That was provided, because "[…] data from any cognitive task are potentially affected by both (lack of) task familiarity and fatigue effects, which would most likely occur towards the beginning and the end of an experimental session respectively." (Keating and Jegerski 2015:17). The pseudo-randomization is realized with the software program *Mix* (cfr. van Casteren and Davis 2006) to avoid repetition priming.

[160] The experiment was conducted with a total amount of 348 participants from whom 48 were discarded before saving the experiment-run due to technical problems or because they do not fulfill the participants requirements (as e.g. age, education, etc.): 23 participants were discarded due to bad calibration values, 18 were discarded for non-possible eye recording due to oculometric factors (as extreme myopic or hyperopic glasses) and 7 participants because they did not fulfill the requirements (cfr. Holmqvist *et al.* 2011:141).

[161] The homogeneity of the participant variable is crucial for the success of the study. The aim of the homogeneity is that characteristics of the participants do not influence as hidden variable the outcome of the study. Therefore, according to each experiment properties, the sample should be controlled for undesirable effects, as e.g. reading techniques (cfr. Baddeley *et al.* 1975), different linguistic skills (cfr. Keating and Jegerski 2015:27) or all kind of sociocultural and personal differences (cfr. Arunachalam 2013:225, see also Loureda *et al.* in press for an overview).

[162] All experiment lists were carried out at the Faculty of Philology, Translation and Communication of the University of Valencia, Spain, between 1st of February until 30th of march 2015 and 1st of September until 14th of October 2015.

- *Naivety.* All participants have naïve character, i.e. they did not know or could not predict the purpose of the study. Furthermore, they were no researchers in the linguistic field.
- *Reading speed*. The individual reading speed of each participant was controlled by statistical methods.
- *Visual disorder*. None of the participants present extreme visual disorders that could interfere with the eye tracking technique (normal or minimal corrected to normal vision).

Personal information (as name, age, gender, origin, language skills, etc.) was collected, but treated as random effect for the data analysis. All participants gave their written consent to participate in the study. After the experiment was concluded they were told about the actual purpose of the study.[163]

Eye tracking

Data was recorded with a remote *EYE TRACKER RED 500* from *SMI Research* (Sensomotoric Instruments). The trails are shown on a computer screen where three characters equal 1° of visual angle. The system records eye movements with a sampling rate of 500 Hz and an accuracy of 0.4°. The experiment was programmed with the software SMI Experiment Suite 360° and for running the experiment the software iView X was used. The data export was conducted by the software SMI BeGaze (including the Reading package, needed for elaborating reading experiments). In the laboratory the participants sat approximately 70 cm away from the monitor and the recording was binocular (an average was automatically calculated).

Eye tracking data is very sensitive to external factors, therefore the laboratory was settled in order to avoid possible undesirable effects: only artificial neon light was used to minimize the effect on data recording, since with the lightness the pupil size may change and for optimal data recording, brightness and small pupils are required (cfr. Holmqvist *et al.* 2011:140). Furthermore, the critical items were presented in a specific font and size, because eye lids and lashes could sometimes occlude the pupils; and eye movements are then recorded

[163] Before the experiment started the participants were informed of the procedure they had to perform and that they could leave the experiment at any time if they feel uncomfortable. They were also informed that the results gained in the study will be published, but that no individual eye movement behavior will be analyzed across participants and that only means of all participants are relevant for publication. Finally, they were also told that their personal information remains confidential. All participants were compensated with a monetary payment. As Bowen and Kensinger (2017) show participant *expenses allowance* has to main advantages: On the one hand, it motivates to actually participate in the study, and, on the other hand, it maintains the concentration during the experiment performance at a constant high-level.

with less accuracy (cfr. Holmqvist *et al.* 2011:119-121). In a previous study, different fonts and sizes were tested in order to provide the stimuli in an optimal manner. The results reveal that the critical items can be recorded with an optimal accuracy if presented in Font Calibri, size 72 pt. and with a margen between the lines of 28 pt[164].

The task was designed as neutral as possible regarding the experimental and control conditions (cfr. Holmqvist *et al.* 2011:132). Participants were asked to read silently the presented items on the screen and to move on after reading the stimuli.

The instructions were presented to the participants on the screen before the practice trials started.[165] Four main instructions were given to the participants:

- Information about the reading experiment
- Silent reading, at natural pace
- Continuation by pressing the space bar. Each participant decided independently when to move on to the next stimulus in order to reduce inferences from the person conducting the experiment (*self-paced reading method*).[166]
- No unnecessary moves, chin and forehead rest was used

After the instructions and successful calibration[167], the participants were shown three practice sequence blocks. After reading the practice trials they had an opportunity to ask final comprehension questions. Then, after a quick validation of the calibration the actual experiments started. The duration of the experiments was between 20-30 minutes, depending of the reading speed of each participant.

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[164] The margin between lines is particular necessary for the AOI design to provide that the AOI margins do not overlap.

[165] This guarantees that all participants read the same instructions and that the experiment is not influenced by possible different instruction given by the experimenter. Thus, all possible experimenter effects can be negated (cfr. Holmqvist *et al.* 2011:77).

[166] To prevent that the participants, spend too much time at a stimulus, a time threshold was programmed. After 5000 ms the stimulus will disappear automatically and the experiment continues. When a time threshold was activated, the stimulus was considered an outlier.

[167] Calibration is used to guarantee the exact recording of the pupil and corneal reflection. A nine-point calibration was done automatically by the software iView X. The nine points are distributed on the screen in the areas where the stimulus would appear (cfr. Holmqvist *et al.* 2011:129). A two-colored strategy (white point with intern red point) was used to facilitate calibration and provide the most accurate recording. The camera calculates the accuracy between the calibration point and the actual eye fixation. The average deviation should not differ more than 0.5° to guarantee accurate landing positions during reading. The validation guarantees the accuracy. A maximum of three calibration procedure were conducted for each participant; and the best calibration was always used. Only when calibration and validation was successful the experiment was started.

Comprehension test

While the eye tracking experiment permits to observe the decoding strategies of the utterance and the reconstruction of the communicated assumption, the complementary comprehension test allows to analyse participants' comprehension of the considered utterances.

For the comprehension test the exact same material with the same experiment design was used as for the eye tracking experiment. 15 counterbalanced and pseudorandomized experiment lists are created and programmed with the open-source software *LimeSurvey 2.0.* (cfr. Appendix F.)

The purpose of the experiment was to verify whether the critical item read in the eye tracking study was understood correctly. After reading the context trial and the critical stimuli (e.g. *Ana y Marta saben inglés e incluso chino/ ('*Anne and Martha *know English and even Spanish')*) the participants were asked to answer a question, e.g.

> *Según la frase, es menos probable saber chino que inglés.*
> ('According to the sentence, it is less probably to know Chinese than English')

Sí	No	No puede saberse
('yes')	('no')	('unable to say')
☐	☐	☐

This type of question asks whether there is a sufficient minimum ostensive stimulus to trigger a scalar contrastive implicature according only to the explicit given information in the utterance. By using the mouse, the participant selects only one of the possible answers:

- *yes*, which is equivalent to recognizing a contrastive implicature in the stimulus;
- *no*, which is equivalent to not recognizing a contrastive implicature in the utterance;
- *unable to say*, which is equivalent to recognizing an insufficient or weakly determined conventional stimulus in the utterance to achieve the contrast.

To determine the association or independence of two qualitative variables we use the the χ^2 - squared test, which contrasts two hypotheses of an independent variable: a null hypothesis or hypothesis of independence of the variables (H_0) and an alternative hypothesis or hypothesis of association of the variables (H_1, cfr. § 6.6.). The data and the results are presented after each discussion of the respective independent variable of the eye tracking study.

6.6. Data handling and statistical treatment

After data collection a first quality check was made by examining the recorded data in the BeGaze Software in order to prepare the data for the export and thus for statistical analysis. All trials of the experiment in which track loss occurred were discarded or manipulated before the data analysis started. If the track loss occurs during the first-pass reading time the cells in the data report are left blank as missing data and discarded for the analysis. In contrast, missing values in the second-pass reading time are replaced with zeros to reflect that no rereading was made (cfr. Keating 2014:82). When the data was not accurately recorded the complete trails were removed before statistical analysis.

The exported data files (one Excel file per experiment list) contain much more information than needed for the analysis of the independent variables and data segmentation was realized to conduct and facilitate a precise statistical analysis. After data segmentation some necessary information has to be added manually to the files, as token set information, more detailed condition information, or AOI adjustments in the complex alternative and other metric parameters (first-pass reading time, first fixation, etc.).

In a second step, a statistical outlier handling was conducted. After a first consistency check where no consistencies in the data could be found, the detected extreme values were excluded by implementing a specific outlier handling. Based on theoretical evidence extreme values are excluded when (cfr. Pickering *et al.* 2000, Reichle *et al.* 2003, Recio Fernández *et al.* 2018):

a) *Any first skip.* The mean per word was = 0 ms
b) *Any fast reader.* When the mean per word was < 80 ms in the first-pass reading time and the second-pass was also < 80 ms;
c) *Any slow reader*[168]. The mean per word was > 800 ms in the total reading time.

The total amount of AOI observations was 19,915. The outlier handling was based on the AOI condition *total mean of the utterance* (4,454 observations). Of these observations, 564

[168] The terms *fast reader* and *slow reader* correspond to a specific observation. In these cases, only the observations are discarded that belong to fast or slow reader, rather than all observations of the respective participant are discarded. This method ensures, that only specific data observation is eliminated and the data loss is minimized.

observations are considered extreme values (12.7%), most of which are due to technical problems related to the eye tracking software. Of the 564 extreme values:

a) *91 observations (2%) were attributed to first skip,*
b) *559 observation (12.5%) to fast readers*
c) *8 observation (0.2%) to slow readers*

The statistical analysis[169] of the study was carried out using *generative additive mixed models* (GAMM)[170].The models were computed with the statistical software R (R Core Team 2018, cfr. Baayen 2008, Baayen *et al.* 2008, Fahrmeier *et al.* 2013, Bates *et al.* 2015, Kuznetsova *et al.* 2016). GAMM assume that the linear predictor depends on (unknown) smooth functions of some predictor variable and focuses on these smooth function inferences. Thus, the model correlates a univariate response variable Y, to a predictor variables X (cfr. Wood 2017). Therefore, GAMM are more flexible in terms of repeated measures (*missing-at-random definition*), since the data does not have to be perfectly balanced allowing missing values and outlier handling.[171] Additionally, the analysis allows to include both, *random* and *fixed effects* (cfr.Barr 2008a:457, Holmqvist *et al.* 2011:93, Cunnings 2012:370).[172]

In this study, nine models were fitted for each dependent variable (total reading time, first-pass reading time, second-pass reading time, total amount of models: 27). The data reflects the values that are assigned by the GAMM for cumulative processing times per word in each area under consideration, so that all AOIs per condition are defined as fixed effects. The incorporated *random effects* (in order to guarantee that the found effects are due to the manipulation of the independent variable) to control hidden variables that could arise, e.g., because of repeated measurements, are:

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[169] Developed in collaboration with the statistical consulting Laboratory (StabLab) of the Ludwig-Maximilian University of Munich.
[170] The generative additive models are estimated using the R function "gam" and "predict.gam" from the package "mgcv" (cfr. Wood 2017).
[171] In contrast e.g. to ANOVA analysis that requires a normal distribution. For mixed models a normal distribution is not necessarily required, since the model holds for unbalanced data (cfr. Cunnings 2012:372). Currently, it is settled as the most appropriate statistical treatment for different psycholinguistic reading data analysis (cfr. Bowden *et al.* 2010, Baten *et al.* 2011).
[172] "A random factor is one for which we sample non-exhaustively from a larger population, with the goal of generalizing to that population […]. A fixed factor is an independent variable that we want to include in our analysis, that is, the manipulation of interest." (cfr. Arunachalam 2013:226)

- *participant-variable* (individual reading speed). Variance of the participant variables is controlled to minimize the heterogeneity of the participants (cfr. Holmqvist *et al.* 2011:85).
- *token-set.* To ensure that the different topics of the sets do not interfere.
- *word length*. Each AOI was predicted assuming a fixed average number of characters per word of 6.35 to guarantee the comparability between different AOIs.

For each model one hypothesis is tested: whether the reading times between the total mean of the utterance differ between conditions. According to the high number of hypothesis tests across models all p-values are corrected using the Holm-Bonferroni Method to reduce the possibility of getting erroneous results (i.e., Type I error, cfr. Holm 1979, and Appendix D.).

The fact that each computed model contains more than one pairwise comparison and the fact that p-values do not reflect the magnitude of the differences between two tested conditions (Type M(agnitude) error) encourages an analysis for an interpretation of the data based on the effect magnitude and estimated relevance (cfr. Vasishth *et al.* 2018:2). In order to interpret the obtained estimate values, an effect-scale was developed based on theoretical, empirical and statistical evidence (Table 7). The minimum magnitude for differences between conditions is set on 5%. However, based on empirical evidence of different reading studies (cfr. Cruz and Loureda 2019, Nadal and Recio Fernández 2019, Loureda *et al.* in press) a margin of 1% is given to describe small tendencies of differences between conditions. Upon 5% to 9,99% are taken as a medium effect, those from 10% to 19,99% indicate large effects and differences over 20% are considered very large effects.

Scale	Effect
> 20%	Very large effects
10% – 19.99%	large effects
5% – 9.99%	medium effects
4 – 4.99%	small effects
< 3.99%	trivial effects

Table 7: Effect scale – Magnitude

Comprehension test

For the statistical analysis of the comprehension task a χ^2 test was applicated. The statistical hypothesis test assumes that the sampling distribution of the test statistic represents a χ^2 distribution when H_0 is true. The χ^2 test was implemented to determine whether there are significant differences between two qualitative conditions of one variable, that is, whether there are significant differences between the observed answer frequencies comparing two conditions,

e.g. b2a2 vs. c1a2. If the observed results differ significantly from the theoretical defined conditions, H_0 is rejected and H_1 can be affirmed true concluding that the compared conditions are related to each other. On the contrary, the veracity of H_0 is confirmed and it is affirmed that the variables are independent. As it is standard in social science, for the study an alpha value of .05 was taken as reference with a critical value for the rejection of H_0 of 5.991 ($=X^2_{crit}$; being H_1 affirmed at a value equal or superior to 5.991($X^2_{obt} \geq X^2_{crit}$), cfr. Pagano 2011:452).

7. Results and discussion

The analysis of the results encompasses the three main IVs: IV B – *Focus marking* (cfr. § 6.1.2.), IV C – *Position of the focus operator in relation to the focus* (cfr. § 6.1.3.) and IV D – *Degree of informativity* (cfr. § 6.1.4.). The cross-*variable A – Extension of the alternative* will be examined in each of the main IVs (cfr. § 6.1.1.), starting always with the analysis of the utterances with explicit alternatives (single and complex alternative) and, henceforth, presenting the data for the utterance with implicit alternative. In each discussion of the IVs the data of the processing (eye tracking study) will be treated first and subsequently the data for comprehension will be discussed.

7.1. Focus marking

The analysis of the *IV B – Focus marking* aims to assess to what extent utterances with unmarked (b1) and marked focus (b2), with the same SVO-Structure, but with different informative schemes, differ during processing and comprehension. It will be also examined to what extent the insertion of the FO guides, according to its properties, the reader towards the intentionally communicated assumptions and the recovery of inferences (cfr. § 6.1.2.).

Regarding the cross-variable IV A it will be examined whether implicit and explicit alternative structures interfere in the processing of utterances. It is assumed that implicit structures require more processing effort due to their semantical underdeterminacy, and that explicit focus structures demand less processing effort due to the informative guidance of the conceptual and procedural elements of the utterance.

7.1.1. Utterances with explicit single alternative

b1a2 – Ana y Marta saben inglés y chino.
b2a2 – Ana y Marta saben inglés e incluso chino.

When the alternative is explicitly given in form of a minimal set in the utterances, the focus information has to be related directly to the background information in order to construct an additive relation in the utterance with unmarked focus, or a contrastive relation in utterances with marked focus. The insertion of the FO *incluso* evokes a direct contrastive relation be-

tween the focus and the explicit alternative, i.e. the FO activates a pragmatic scale between two informative values in which the alternative is presented as a subset of a paradigm that is given in the discourse (cfr. Rooth 1985, 1992, 1996, É. Kiss 1998:245, Gundel and Fretheim 2004, Kenesei 2006:241).

Global Comparison

By examining the cumulative reading values of the total reading time of each utterance, globally no relevant differences were registered for the lexical mean (< 4%, trivial effect, Table 8) which reflects the processing effort of the conceptual elements and provides the net lexical value of the utterances allowing the direct comparison between both conditions (cfr. Cruz and Loureda 2019 and § 6.2.). This result reveals a relevant finding: Even though unmarked and marked structures present different informative relations that theoretically rely on different syntactic and semantic processes, they globally require analogous processing times. Adding a FO implies adding more procedural information, but this added information does not lead to more cognitive effort for the whole utterance.

AOI	Unmarked condition (b1a2)	Marked condition (b2a2)	Difference ms	Difference %
Lexical mean	234.55 ms	243.46 ms	8.91 ms	3.80% trivial effect

Table 8: Total reading time – global comparison – IV B with explicit single alternative

In order to get a more differentiate picture of the processing effort during reading the time corresponding to the construction of the first assumption (*first-pass reading time*) can be separated from the reconstruction or reanalysis (*second-pass reading time*). The analogous processing effort that was observed in the total reading time is also found during the first-pass reading time (< 4%, trivial effect, Table 9), indicating that during the construction of the first assumption none of the structures demand more cognitive effort.

AOI	Unmarked condition (b1a2)	Marked condition (b2a2)	Difference ms	Difference %
Lexical mean	181.75 ms	185.14 ms	3.39 ms	1.87% trivial effect

Table 9: First-pass reading time – global comparison – IV B with explicit single alternative

Re-reading strategies (second-pass reading time) of the whole utterance draw a different picture: The data observed for the lexical mean present a large increase for the marked

utterance, which means that 10.68% more processing effort is required for marked structures (Table 10).

AOI	Unmarked condition (b1a2)	Marked condition (b2a2)	Difference ms	Difference %
Lexical mean	52.36 ms	57.95 ms	5.59 ms	10.68% large effect

Table 10: Second-pass reading time – global comparison – IV B with explicit single alternative

In particular, the findings indicate that a marked structure triggers higher reanalysis effort of the conceptual elements of the utterance, what can be considered as an indicator of contrast, since the parameter of the lexical mean during the second-pass reading time reveals precisely the cognitive effort during the processes of confirmation, enrichment or correction of the conceptual elements that were driven by a procedural mark.

The insertion of the FO *incluso* conventionally evokes a contrast relation between the explicit alternative and the focus element. The added procedural information to the utterances activates more cognitive effort during the reanalysis of the assumption (large increases in the second-pass reading time, Table 10) in relation to an unmarked structure. The findings are theoretically justified, because the insertion of *incluso* conventionally affects, due to its properties of asymmetry and rigidity (cfr. § 1.2.) the contrast relation between the lexical elements of the utterance (alternative and focus). A contrastive scale is tied to more reanalysis since a scale is not constructed "by default" by the reader: An explicit instruction is required to subsequently reidentify the lexical elements: The reader reevaluates the elements of the focusing operation in order to establish a contrastive relation.

Nevertheless, the higher processing effort for the marked structure during the reanalysis is not reflected in the total reading time, which leads to the conclusion that this processing effort can be considered as "additional regulatory effort" to establish a contrastive scale triggered by the FO. The insertion of the FO adds more procedural information to an utterance, but, simultaneously, the instruction guides the reader to the correct assumption while minimizing the processing effort at global level to the effort of an unmarked structure (cfr. Cruz and Loureda 2019).

Comparison of focusing areas

The analogous reading times in the global comparison do not necessarily mean that the interpretation of the utterances is derived according to similar processing strategies. The insertion of the FO provokes a redistribution of the informative values for the areas of the focusing

operation (alternative and focus) in the cumulative parameter, showing medium increases for the focusing elements in the marked utterance: The marked alternative (225.90 ms) requires 6.29% more processing effort than the unmarked alternative (212.54 ms, medium effect). Likewise, the marked focus (245.78 ms) demands 7.27% more processing effort than the unmarked focus (229.13 ms, medium effect, Table 11):

AOI	Unmarked condition (b1a2)	Marked condition (b2a2)	Difference ms	Difference %
Alternative	212.54 ms	225.90 ms	13.36 ms	6.29% medium effect
Focus operator	-	263.37 ms	-	-
Focus	229.13 ms	245.78 ms	16.65 ms	7.27% medium effect

Table 11: Total reading time – focusing areas – IV B with explicit single alternative

By way of explanation, the relative values of the respective marked focusing areas increase if a conventional device affects directly the elements. Thus, the utterance with unmarked focus constitutes a minimal form for an unmarked focusing operation (additive relation) that is processed without major cognitive effort for the local areas, whereas the processing of an utterance in which a procedural regulation acts upon other elements tends to generate local major cognitive effort. According to the focusing areas, the findings reveal three relevant claims:

– **Focus**. The relative effort for a focus increases if there is a procedural instruction that acts upon it (Table 12). The additional effort indicates that in utterances with marked focus a contrastive scale has to be built in order to derive the correct assumption. The conventional mark displays its instruction directly upon the focus element and obliges to reevaluate the element to fulfil the instruction.
– **Focus operator**. In marked structures the FO, being the most demanding element displays its regulatory function to determine the processing effort of alternative and focus (contrast activation). Both conceptual elements are processed in relation to the instruction of the FO. The balancing effect of the FO on the focusing areas ensures a guided processing of a contrastive inferential route in marked structures, whereas in unmarked structures it is assumed that no contrastive implicature is activated and a simple additive operation is performed. Concluding, in normal focusing conditions without further remarks, at global level the processing value of the FO constitutes the maximum limit for the processing effort for the focus and the alternative (see also similar studies,

Loureda *et al.* 2013, Loureda *et al.* 2015, Cruz and Loureda 2019, cfr. Table 8 and Table 11).

– **Alternative**. As occurs in the focus area, in marked structures, the role of the alternative is more relevant than in unmarked structures, suggesting that the instruction of the FO is also displayed to the area of the alternative. This is theoretically sustainable because it is assumed that a marked alternative is only activated in structures, in which the FO obligatorily activates a contrast. Only in these cases, the alternative is labelled effectively as "marked alternative", whereas in unmarked structures the "unmarked alternative" is only activated if other contextual factors trigger it (Table 11).

During the construction of the first assumption, the comparison of both foci presents a medium effect (192.79 ms vs. 182.23 ms, -5.48%, medium effect). Considering that already during the construction of the first assumption the FO is the most effort demanding area, it can be argued that the instruction of the conventional device produces an immediate regulatory-effect upon its scope in order to fulfil the contrastive relation exhibit by its instruction, suggesting that the instruction of the focusing operation is displayed early during processing.

AOI	Unmarked condition (b1a2)	Marked condition (b2a2)	Difference ms	Difference %
Alternative	163.35 ms	169.30 ms	5.95 ms	3.64% trivial effect
Focus operator	-	217.38 ms	-	-
Focus	192.79 ms	182.23 ms	-10.56 ms	-5.48% medium effect

Table 12: First-pass reading time – focusing areas – IV B with explicit single alternative

On behalf of the alternatives no relevant effects are found (163.35 ms vs. 169.30 ms; < 4%, trivial effect, Table 12) during the first-pass reading time. This finding is also theoretically defendable, since the alternative, either conventional or possible as a conversational implicature, can only be labelled as alternative *after* the processing of the focus or *in relation to* the instruction of the FO. The data of the first-pass reading time only reveal the processing of the first reading and does not include re-reading times. Therefore, possible effects at the alternative area are mainly displayed during later measures (second-pass reading time) or cumulative parameters (total reading time, see also Cruz and Loureda 2019).

The major processing effort for the elements of the marked structure that become apparent during the total reading time is mostly due to higher processing effort generated in the

second-pass reading time in which the alternatives (48.54 ms vs. 55.99 ms) differ 15.35% from each other (large effect) and the foci (35.59 ms vs. 44.16 ms) 24.08% (very large effect, Table 13):

AOI	Unmarked condition (b1a2)	Marked condition (b2a2)	Difference ms	Difference %
Alternative	48.54 ms	55.99 ms	7.45 ms	15.35% large effect
Focus operator	-	46.01 ms	-	-
Focus	35.59 ms	44.16 ms	8.57 ms	24.08% very large effect

Table 13: Second-pass reading time – focusing areas – IV B with explicit single alternative

In both focusing areas (alternative and focus) the elements of the unmarked structure require notably less processing effort than the elements of the marked structure. These results support the findings of the total reading time and argue that in unmarked utterances a compensation strategy ("check and balances"-strategy) is performed: the reader seems to re-read the focusing areas to check whether the function initially assigned during the first-pass still holds in order to recover properly the information for a mere additive relation. Furthermore, during the recovery of a contrastive relation a different strategy seems to be carried out in utterances with marked focus (Table 13). The additional effort for the alternative and focus area originates at the FO[173]: the conventional function forces an integration towards the procedural instruction. Therefore, the reader, induced by the FO, pursues a different strategy ("check and reevaluate"-strategy) during the second-pass reading time. The focusing areas affected by the instruction are reconsidered to check and reevaluate background and scope of the contrastive relation.

[173] The early activated instructional value of the FO arises due to its rigid characteristic, since the instruction is not a flexible element it is not exposed to changes and, therefore, is faster accessible. The FO constitutes the most effort demanding area (already during first-pass reading time), but also reflects its impact during later measurements. The fact, that differences between the other focusing areas are observable during second-pass reading time (for the focus already slightly during first-pass reading time) demonstrate that the FO is the element that conventionally marks a contrastive relation and is a starting point from which an inferential process is activated (see also Cruz and Loureda 2019).

7.1.2. Utterances with explicit complex alternative

b1a3 – Ana y Marta saben inglés, francés y chino.
b2a3 – Ana y Marta saben inglés, francés e incluso chino.

The informative scheme of utterances with explicit complex alternative is analogous to the scheme of utterances with explicit single alternative. Consequently, two different processing patterns are expected: One, conventionally marked by the instruction of the FO, and, another unmarked pattern, that underlies an additive relation. As in utterances with single alternative, the explicit alternative is presented as a subset of a paradigm in discourse (cfr. § 7.1.1.). It is assumed that the conceptual enrichment of the alternative determines the processing of the focusing operations, depending on the informative utterance structure. In unmarked structures a complex additive relation is evoked in which the insertion of new information in a set of alternatives can be tied to higher processing effort. Whereas the conceptual enrichment in marked utterances interplaying with the co-oriented instruction of the FO can facilitate the processing effort for the recovery of a contrastive implicature.

Global comparison

The increase of conceptual information in form of a complex alternative in the respective utterances provokes slightly different results at the global level of processing (total reading time) in comparison with utterances with single alternative. The values of the lexical mean present a small effect in the comparison (-4.97%, small effect, Table 14), supporting a theoretical claim: The insertion of a FO, implying that more procedural information is introduced to an utterance, not only does not add extra effort to the utterance, but, in combination with a lexical chain-alternative, it can actually minimize the processing effort of the other conceptual elements of the focusing operation (approx. 5%).

AOI	Unmarked condition (b1a3)	Marked condition (b2a3)	Difference ms	Difference %
Lexical mean	242.37 ms	230.33 ms	-12.04 ms	-4.97% small effect

Table 14: Total reading time – global comparison – IV B with explicit complex alternative

The differences observed in the lexical mean during the total reading time are also observable in the first-pass reading time (-6.31%, medium effect, Table 15). During the construction of

the first assumption, the conventionally evoked contrastive relation in utterances with high semantic saturation (given by the explicit set of alternatives) is realized with minor processing effort in comparison to utterances where the assumption can only be derived by the conceptual elements. The findings indicate that in utterances with marked focus the construction of a complex additive relation is activated at an early stage, since the integration of new information within a set of alternatives in a paradigm generates major processing effort (Table 15). In utterances with marked focus, in turn, the FO activates an immediate "processing-benefit effect" during the construction of the first assumption. In line, with the conceptual information of the complex alternative, the instruction displays its function *ad hoc* upon the conceptual elements under its scope and provokes a saturated guided processing minimizing to a maximum the processing effort of the whole utterance (observable during the total reading time, Table 14).

AOI	Unmarked condition (b1a3)	Marked condition (b2a3)	Difference ms	Difference %
Lexical mean	196.49 ms	184.09 ms	-12.40 ms	-6.31% medium effect

Table 15: First-pass reading time – global comparison – IV B with explicit complex alternative

The effects observed in the first-pass reading time (and partly in the total reading time), are levelled out during the recovery of the first assumption (second-pass reading time). No differences are registered for the lexical mean (< 4%, trivial effect, Table 16):

AOI	Unmarked condition (b1a3)	Marked condition (b2a3)	Difference ms	Difference %
Lexical mean	45.49 ms	45.94 ms	0.45 ms	0.99% trivial effect

Table 16: Second-pass reading time – global comparison – IV B with explicit complex alternative

The insertion of more conceptual information in combination with a procedural mark does not signify more processing effort neither during the construction of the first assumption (Table 15) nor for the recovery of the assumption during second-pass reading time (Table 16). If the conceptual information and the procedural instruction are co-oriented to the world knowledge, a processing-benefit is activated.[174] This is theoretically sustainable since both linguistic

[174]These findings are divergent to the results provided by the analysis of utterances with explicit single alternative (cfr. § 7.1.1.). In utterances with explicit single alternative, the insertion of a FO generates higher processing effort for marked utterances during second-pass reading time. The processing effort is attributed to the instruction of the FO, that affects conventionally the contrast relation between the constituents and obliges to reevaluate the elements in order to fulfil the instruction. The single alternative cannot be considered a device that facilitates

devices are not opposed to the mental representations that are stored in the memory and, thus, guide the reader to the same scalar interpretation, so that only slight confirmation of the assumption becomes necessary during the reanalysis (cfr. § 7.3.).

A similar reanalysis pattern is found for unmarked utterances: Even though, the integration of new information in the background information provokes immediately higher processing effort in order to process a complex additive relation (Table 15), no higher reanalysis effort is required, since no modification or cancellation of the first assumption has to be made. During the recovery of the assumption, the reader is guided, either by a conceptual device (unmarked structure) or by the combination of a conceptual and procedural device (marked structure). The added procedural mark ensures guided processing in order to recover correctly the communicated assumption and minimizes the processing effort to the levels of an unmarked structure.

Comparison of focusing areas

The comparison of the lexical mean already gave a hint that the insertion of *incluso* in these types of utterances provokes different processing values for the focusing areas (Table 14). In fact, the insertion of a FO in utterances with complex alternative provokes a processing benefit for the areas of the focusing operation in the total reading time. The marked alternative (226.35 ms) requires 4.04% less processing effort (small effect) than its counterpart in unmarked utterances (235.87 ms, Table 17), likewise the marked focus (244.33 ms) needs 6.90% less processing effort than the unmarked focus (medium effect, Table 17):

AOI	Unmarked condition (b1a3)	Marked condition (b2a3)	Difference ms	Difference %
Alternative	235.87 ms	226.35 ms	-9.52 ms	-4.04% small effect
Focus operator	-	239.04 ms	-	-
Focus	262.44 ms	244.33 ms	-18.11 ms	-6.90% medium effect

Table 17: Total reading time – focusing areas – IV B with explicit complex alternative

A FO affects directly the elements of the focusing operation by determining their processing effort. If the conceptual information of these areas is co-oriented to the contextual information and to the instruction of the FO (in marked utterances), the processing effort of these areas

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the processing, since it has to be reevaluated in order to be redefined as part of a focusing operation. Even though, the instruction of the FO is the same in the comparison of the utterances with complex alternative, processing patterns are reversed, indicating that the increase of conceptual information in combination with the presence of the FO leads to a more guided processing already during the construction of the assumption resulting in minimized reanalysis effort.

decreases, in comparison either to utterances without a procedural mark (Table 17) or either, to utterances with less conceptual information (cfr. § 7.1.1., Table 11). In other words, in combination with the conceptual information of the alternative, the additional procedural information of the FO does not mean extra cognitive effort for the focusing areas (neither at global level, Table 14) in comparison to an unmarked structure. The FO (239.04 ms) displays its regulatory function and determines the processing effort of alternative and focus in order to establish a contrast relation in which a marked focus not only has to be integrated in a given set of alternatives, but the reader has to interpret its scalar value. The effect of the FO and the co-oriented lexical information of the alternative ensure a guided processing to construct and recover the communicated assumption with less processing effort. On the contrary, by absence of a conventional device, the interpretation of an additive relation is tied to more processing effort for the constituents of the utterance (Table 17), which is an indicator that the integration of new information (unmarked focus) constitutes a complex cognitive operation.

During first-pass reading the patterns of the total reading time for the focusing areas are repeated: Again, the alternative of the marked utterance (184.71 ms) demands 4.21% less processing effort than the unmarked alternative (192.82 ms, small effect), and the marked focus (199.61 ms) even demands 10.47% less processing effort than the unmarked focus (222.95 ms, large effect, Table 18):

AOI	Unmarked condition (b1a3)	Marked condition (b2a3)	Difference ms	Difference %
Alternative	192.82 ms	184.71 ms	-8.11 ms	-4.21% small effect
Focus operator	-	189.85 ms	-	-
Focus	222.95 ms	199.61 ms	-23.34 ms	-10.47% large effect

Table 18: First-pass reading time – focusing areas – IV B with explicit complex alternative

The elevated processing effort for the alternative and the focus in unmarked structures reveals that complex additive operations are executed early during processing and that the integration of new information in a given set of alternatives is realized *in situ* while processing the unmarked focus. This major processing effort in the focusing areas is trespassed to the whole processing of the utterance. The lexical chain of the complex alternative acts thereby as

device in order to construct the complex additive relation and, hence, requires more processing effort.[175]

Contrarily, in marked structures, the insertion of the FO seems to regulate and control the processing effort of the focusing areas ("regulatory-effect" of the FO) leading to the construction of the first communicated assumption with minor processing effort for both areas in comparison to unmarked structures. With the results of the analysis of the utterances with explicit single alternative in mind (cfr. § 7.1.1., Table 13), it can be hypothesized that the instruction of the FO will display its whole function during later stages of processing, since the instruction of the FO obliges the reader to modify the assumption by re-evaluating the informative value of the focusing elements in order to interpret the contrastive scale.

AOI	Unmarked condition (b1a3)	Marked condition (b2a3)	Difference ms	Difference %
Alternative	42.48 ms	41.15 ms	-1.33 ms	-3.13% trivial effect
Focus operator	-	49.23 ms	-	-
Focus	38.78 ms	44.10 ms	5.32 ms	13.72% large effect

Table 19: Second-pass reading time – focusing areas – IV B with explicit complex alternative

The insertion of the FO in an utterance with complex alternative produces an immediate global effect during first-pass reading time (no higher values for the marked utterances (Table 18), that remains also during the reanalysis. The instruction forces the construction of a contrastive scale and this operation is tied to slightly more processing effort at the area that is directly affected by the FO: the focus. Further, the alternatives do not differ from each other during reanalysis: (42.48 ms vs. 41.15 ms, -3.13%, trivial effect, Table 19), that is, both require the analogous processing effort in order to be recovered.

The marked focus (44.10 ms), otherwise, seems to play a decisive role during the recovery of the communicated assumption: It demands 13.72% more processing effort than the unmarked focus (38.78 ms, large effect, Table 19). The higher processing effort for the marked focus originates in the instruction of the FO, the most effort demanding area during the second-pass reading time. The FO entails the instruction to articulate the phoric relation

[175] While processing the second element of the alternative it is assumed that parafoveally the reader already detects the following conjunction and possibly part of the focus (interpreted by higher processing effort for the second element of the complex alternative), i.e. while processing the complex alternative already an additive relation has to be performed triggered by the syntactical and semantic structure of the complex alternative resulting in higher processing effort for this area during first-pass reading time. These findings are not detected in utterances with single alternative; it is assumed that a single alternative does not solemnly constitute a sufficient stimulus to trigger an additive relation on its own. In order to perform an additive relation, the processing of alternative and focus are required.

between alternative and focus and, thus, obliges the reader to insert a marked focus within a set of alternatives.[176]

The different processing patterns observed in the analysis of utterances with complex alternative across parameters support the theoretical claim that was already formulated in the analysis of the utterances with single alternative. Independently of the extension of the alternative, two main focusing patterns can be described: unmarked and marked.

It can also be defended that during reanalysis, a compensatory strategy ("check-and-balances-strategy") is performed in unmarked structures. Re-reading is only executed to check whether the complex additive relation assigned during first-pass reading time, still holds for the recovery of the communicated assumption. On the contrary, marked structures execute a different strategy of reanalysis. The additional extra effort for the marked focus is triggered by the instruction of the FO. It forces an integration towards the procedural instruction and obliges to redefine and reevaluate the informative values of the focusing areas (check-and-reevaluate-strategy), and, when necessary, modifies or corrects the first assumption. However, this reanalysis effort is only produced at the focus area and do not transcendent to the utterances level.

The difference between explicit single and complex alternative lies precisely in the function that inhibit the conceptual information. Findings reveal that extending the conceptual information can produce two different effects, according to the presence or absence of the FO. Without FO the extended complex alternative evokes a complex additive relation that is tied to major global processing effort, whereas in combination with a procedural mark it supports the instruction of the FO and minimizes the processing effort of contrastive relations.
In conclusion, the results obtained across the three parameters, support relevant theoretical claims for utterances with explicit alternative (single and complex):

a) The added procedural information provokes a regulatory-effect that minimizes the processing effort in marked utterances to the level of an unmarked structure (during total reading time, Table 11 and 18)

[176] In the analysis with explicit single alternative the reader relies primarily on the two constituents (mainly on the alternative) to recover the contrastive assumption. The FO forces to reevaluate both constituents and contrast them with each other (alternative and focus demand higher processing effort, Table 13). In utterances with complex alternative the operation seems slightly different. The reader does not contrast two single elements to each other, but integrates a marked focus in an already given set of alternatives (only local higher processing effort for the focus, Table 13).

b) (Complex) additive relations are activated early (Table 18), whereas contrastive relations seem to be recovered mainly at later processing stages (Table 19).

7.1.3. Utterances with implicit alternative

b1a1 – Ana y Marta saben chino.
b2a1 – Ana y Marta saben incluso chino.

Considering that utterances with implicit alternative are semantically highly underdetermined, it is expected that they present different processing patterns of focusing operations according to the absence or presence of the FO that differ from the patterns observed in the utterances with explicit alternatives.

In unmarked structures, new information has to be identified and integrated within the discursive context in order to establish an additive relation, whereas in marked utterances additionally a scalar structure has to be codified as conventional implicature.

Global comparison

By comparing the values of the lexical mean in the total reading time relevant effects are detected. The marked utterance requires 9.40% less processing effort than the unmarked utterance (medium effect, Table 20).

AOI	Unmarked condition (b1a1)	Marked condition (b2a1)	Difference ms	Difference %
Lexical mean	254.69 ms	230.74 ms	-23.95 ms	-9.40% medium effect

Table 20: Total reading time – global comparison – IV B with implicit alternative

These first findings of the total reading time reveal that in utterances with implicit alternative, unmarked and marked utterances with different informative schemes present different processing patterns. It demands less processing effort to establish a contrastive relation between a marked focus and the mental representations that are activated by the discursive context. These findings partly corroborate the results of the analysis of the comparisons with utterances with explicit alternatives (cfr. §§ 7.1.1. and 7.1.2.): inserting a FO implies adding more procedural information, but this added information does not lead to more cognitive effort for the whole utterance. Considering the utterance with single explicit alternative as a baseline pattern for focusing operations, the processing patterns vary according to the lexical

saturation of the utterance. The construction of an additive relation, either as integration in a given discursive context (Table 20) or either as integration in an explicit set of alternatives (lexical chain, Table 14) is tied to more processing effort at utterance level. The insertion of a FO, on the contrary, provokes in these conditions a processing benefit (approx. 10%) by regulating the processing effort of the respective focusing elements at global level.

In both implicit structures, the reader has to draw on his mental representations and rely on the discursive context in order to construct, either an additive relation or a contrastive relation. The different informative schemes lead to different processing patterns at the total reading time, that are also repeated during the construction of the first assumption: The marked utterance (173.40 ms) demands 14.37% less processing effort than its unmarked counterpart (202.51 ms, large effect, Table 21).

AOI	Unmarked condition (b1a1)	Marked condition (b2a1)	Difference ms	Difference %
Lexical mean	202.51 ms	173.40 ms	-29.11 ms	-14.37% large effect

Table 21: First-pass reading time – global comparison – IV B with implicit alternative

The insertion of new information in a underdetermined utterance is tied to more processing effort, suggesting that the construction of an additive relation is an *ad hoc* process.[177] In marked utterances, the FO (169.05 ms, Table 24) activates its "regulatory-effect" in order to minimize the processing effort of the whole utterance providing a guided processing.

Independently of the extension of the alternative, the findings so far reveal that the processing effort of contrastive relations becomes apparent mostly during reanalysis, indicating that contrastive focusing operations are mainly operations of later processing stages. The results of the second-pass reading time of utterances with implicit alternative corroborate this finding. Once more, the added procedural information activates more processing effort during second-pass reading time. The marked utterance requires more reanalysis of the assumption, observable in the lexical mean (51.84 ms vs. 57.05 ms, 10.11% large effect, Table 22). The FO (70.41 ms, Table 25) acts as axis from where a specific focus relation has to be processed and restricts the interpretation possibilities for the assumption. Therefore, it demands the most processing effort during reanalysis in comparison with the

[177] These findings are, as well, analogous to the findings of the comparison with complex alternative (Table 15). In both comparisons (implicit and complex alternative) the unmarked utterance requires more processing effort during the first-pass reading time indicating that additive relations are more processing intense than contrastive relations during the construction of the first assumption.

other constituents, while implying its "regulatory-effect".[178] Without explicit conceptual information the reader concentrates his attention to the area of the instruction, since there is no other anchor (conceptual or procedural) to recover the information and to establish a contrastive relation.

AOI	Unmarked condition (b1a1)	Marked condition (b2a1)	Difference ms	Difference %
Lexical mean	51.84 ms	57.05 ms	5.21 ms	10.11% large effect

Table 22: Second-pass reading time – global comparison – IV B with implicit alternative

The cognitive higher processing effort for marked structures during the recovery of the assumption is theoretically justified. The additional reanalysis effort can be defined as light "additional regulatory effort" that is required to establish the contrastive scale. The results confirm the regulatory-effect of the FO, since the major processing effort during reanalysis does not transcend to the global processing of the utterance. Thus, the instruction of the FO guides the reader to process the correct assumption, while minimizing the processing effort at global level.

Comparison of focusing areas

In the study of utterances with implicit alternative the analysis of the focusing areas is limited to the area of the focus. The insertion of a FO provokes a "regulatory-effect" at utterance level, and further, triggers a redistribution of the elements implicated in the focusing operation. The first finding of the comparison between foci reveals that an unmarked focus demands more processing effort than a marked focus. By identifying and processing the focus as unmarked focus of the utterance the reader does not interpret more than the informative constituents of the utterances excite. In an utterance as *Ana and Marta speak Chinese*, the reader has to process that Ana and Marta speak one language. He has to add new information to his common ground relying on the discursive context. The high underdeterminacy allows wide-ranged interpretation possibilities, that is, the construction of an additive relation between the

[178] The FO of the marked utterance with implicit alternative is not only the most effort demanding area within the utterance structure, but also in comparison to the respective FO of the utterances with explicit alternative. The FO of the implicit structure demands at least 40% more processing effort than the FO of the explicit structures (to explicit single alternative: 46.01 ms vs. 70.41 ms, 52.16%; and to explicit complex alternative 49.23 ms vs. 70.41 ms, 42.21%, both very large effects). These data indicate that without further conceptual remarks, the reader relies mainly on the area of the instruction in order to recover the contrastive relation. Contrarily, if the alternative where explicitly given, the reader distributes the processing effort between the focusing areas (cfr. §§ 7.1.1. and 7.1.2.)

unmarked focus and the background information of the context can be executed in different ways. Thus, this complex additive relation is performed with major cognitive effort in the total reading time at utterance level, but also at local level of the focus area (246.84 ms vs. 210.84 ms, -14.58%, large effect, Table 23) indicating that if no other linguistic mark exhibits a specific informative structure, the focus becomes the area from where the relation is processed.[179] Whereas, in the utterances with marked focus, the FO becomes the axis from where the focusing operation is processed; and activates a "regulatory-effect" upon the focus (minimizing its effort).

AOI	Unmarked condition (b1a1)	Marked condition (b2a1)	Difference ms	Difference %
Focus operator	-	240.34 ms	-	-
Focus	246.84 ms	210.84 ms	-36.00 ms	-14.58% large effect

Table 23: Total reading time – focusing areas – IV B with implicit alternative

The pattern observed in the total reading time for the foci is repeated during the construction of the first assumption in the first-pass reading time (205.17 ms vs. 171.69 ms, -16.32%, large effect, Table 24) and, further, during reanalysis in the second-pass reading time (40.98 ms vs. 38.52 ms, -6.00%, medium effect, Table 25).

AOI	Unmarked condition (b1a1)	Marked condition (b2a1)	Difference ms	Difference %
Focus operator	-	169.95 ms	-	-
Focus	205.17 ms	171.69 ms	-33.48 ms	-16.32% large effect

Table 24: First-pass reading time – focusing areas – IV B with implicit alternative

AOI	Unmarked condition (b1a1)	Marked condition (b2a1)	Difference ms	Difference %
Focus operator	-	70.41 ms	-	-
Focus	40.98 ms	38.52 ms	-2.46 ms	-6.00% medium effect

Table 25: Second-pass reading time – focusing areas – IV B with implicit alternative

The observations of the first-pass reading time correspond to the results found in utterances with complex alternative: during the construction of the first assumption the unmarked focus

[179] The same pattern can be observed in complex alternative utterance (cfr. § 1.2.). The absence of lexical information, as well as a high semantical saturation evokes complex additive structures. The integration of an unmarked focus in background information that is given by the context, as well as the insertion of this new information in an already explicit given lexical chain are tied to local and partly also to global effort.

demands more processing effort than the marked focus. Analyzing these findings jointly it can be argued that without a procedural device the construction of a complex additive structure is a) a relation that is established early during processing, and b) tied to more cognitive effort for the unmarked focus. Otherwise, the insertion of a conventional mark that can directly act upon the focus during first-pass reading time, regulates and, subsequently, minimizes the processing effort of the focus element.

The "regulatory-effect" of the FO becomes apparent during the second-pass reading time: The FO (70.41 ms, Table 25) as the most effort demanding area, displays its instruction upon the other conceptual elements of the utterance (higher processing effort for the marked utterance in the lexical mean, Table 22). It forces the reader to readjust the conceptual elements that are necessary to establish the contrastive relation. However, this readjustment-process is not performed at the focus area, but at the area of the FO, since without further conceptual information the FO is the area that dominates the specific focusing information structure.[180] The minimal higher processing effort during the reanalysis attributed to the FO does not have either a global nor local impact in the result of the whole utterance processing. This finding corroborates the results of the analysis of the explicit alternative that different informative schemes lead to different processing strategies. Thereby, the focusing operation can be executed by different strategies: one conceptual (unmarked additive relation) and one procedural (marked contrastive relation).

7.1.4. Comprehension

The comprehension test provides some evidence of the participants' comprehension of the experimental utterances and is considered complementary to the eye tracking reading study. When unmarked and marked structures evoke different informative assumptions and pursue different strategies during processing, it is expected that both types of structures would lead to different comprehension patterns, independently whether the alternative is implicit or explicit in the utterance (cfr. § 6.1.2.). Whereas, in marked structures the contrastive scalar

[180] These findings are divergent to the results obtained by the analysis of utterances with explicit alternative (single or complex, cfr. §§ 7.1.1. and 7.1.2.). By inserting explicitly more conceptual information that has to be contrasted with the focus, the reader distributes its attention to all focusing areas to recover the contrastive relation. The reader redefines and reevaluates the constituents of the focusing operation (mainly the alternative, but also the focus) to establish an informative contrast. By absence of an explicit alternative the reader returns to the instruction to recover the contrastive relation between the focus and the information given in the discursive context.

implicature is conventionally marked by the FO, in unmarked utterances the contrastive relation can only be recovered as conversational implicature.

During the comprehension test the particpants, after reading the critical stimulus, have to answer to a question that asks exactly about the interaction between procedural and conceptual meaning. The answer possibilities are *yes*, indicating that the stimulus is sufficient to recover a contrastive implicature; *no*, indicating that the stimulus is not sufficient; and *unable to say*, which is equivalent to recognizing an insufficient or weakly determined conventional stimulus in the utterance to achieve a contrastive relation.

The results show that independently whether the alternative is explicit (single or complex alternative) or implicit, the utterance with marked focus presents a sufficient stimulus to derive a contrastive implicature (mostly yes-answers: 90% yes-answers for the single alternative, 88% for the complex alternative, and 87% for the implicit alternative, Table 26), while those with unmarked foci do not constitute a minimum stimuli that activate a contrastive inferential path (see yes-proportion in the unmarked utterance, Table 26):

b1a2	**b2a2**
Ana y Marta saben inglés y chino. (‘Anne and Martha know English and Chinese.’)	Ana y Marta saben inglés e incluso chino. (‘Anne and Martha know English and even Chinese.’)

Según la frase, es menos probable saber chino que inglés.
(‘According to the sentence, it is less probably to know Chinese than English’)

explicit single alternative	yes	no	unable to say
unmarked utterance	7%	**73%**	20%
marked utterance	**90%**	7%	3%
χ^2 test	**309.5 > 5.99; p < .05**		

b1a3	**b2a3**
Ana y Marta saben inglés, francés y chino. (‘Anne and Martha know English, French and Chinese.’)	Ana y Marta saben inglés, francés e incluso chino. (‘Anne and Martha know English, French and even Chinese.’)

Según la frase, es menos probable saber chino que las otras lenguas mencionadas.
(‘According to the sentence, it is less probably to know Chinese than the other mentioned languages’)

explicit complex alternative	yes	no	unable to say
unmarked utterance	3%	**83%**	14%
marked utterance	**88%**	7%	5%
χ^2 test	**307.47 > 5.99; p < .05**		

b1a1	**b2a1**
Ana y Marta saben chino. (‘Anne and Martha know Chinese.’)	Ana y Marta saben incluso chino. (‘Anne and Martha know even Chinese.’)

Según la frase, es menos probable saber chino que otras lenguas.
(‘According to the sentence, it is less probably to know Chinese than other languages’)

implicit alternative	yes	no	unable to say
unmarked utterance	13%	**60%**	27%
marked utterance	**87%**	9%	4%
χ^2 test	**312.9 > 5.99; p < .05**		

Table 26: Comprehension test results – IV B/IV A

The comprehension strategies of both types of utterances support the findings of the eye tracking study concluding that marked focus structures and unmarked focus structures constitute different explicatures, which activate different inferential paths. The procedural meaning of the FO conventionally imposes its instruction on the lexical elements of the utterance and guides the reader to a scalar implicature (heterogenous answer proportions with a major yes-answer proportion), whereas in unmarked utterances the communicated stimulus is not sufficient to interpret a contrastive relation (more homogenous answer distribution). The results lead to the conclusion that a FO is indispensable, in case interlocutors want to communicate a contrastive scale. The enrichment of the conceptual information in utterances with complex alternative does not constitute an independent sufficient stimulus to evoke a contrastive relation.

7.1.5. Final Discussion

The analysis of this independent variable has shown that alongside with descriptive and theoretical arguments, there are experimental arguments, that support the claim that structures with semantic and syntactic different properties lead to different processing strategies.

The confirmation of the first hypothesis of the IV B (cfr. § 6.1.2., confirmation of the hypothesis IV B-1) leads to a first focusing conclusion: *An utterance with marked focus does not present major global processing effort than an utterance with unmarked focus.* The FO generates a regulation and acceleration effect that compensates the additional effort for the insertion of the procedural information. This effect can either equal the processing effort between unmarked and marked structures (cfr. §§ 7.1.1. and 7.1.2.) or either facilitate the processing of marked structures insofar that unmarked utterances become even more processing effort demanding. (cfr. § 7.1.3.).

Furthermore, at the macro level two different processing strategies can be defended: one conceptual (unmarked) structure and one procedural (marked) structure (cfr. § 6.1.2., confirmation of the hypothesis IV B-2)

Unmarked structure. In unmarked structures an additive relation has to be constructed between the constituents. Additive relations tend to be constructed early by generating higher processing effort during early measures. During the construction of the first assumption, at utterance level, unmarked structures require more or similar processing effort than marked structures indicating that additive relations are resolved *in situ*. Further, it is observed that the management operation of the common ground that have to be performed in order to interpret an additive relation starts and is resolved mostly at the focus area (cfr. § 6.1.2., confirmation of the hypothesis IV B-2a). During reanalysis, unmarked structures do not claim above-average cognitive effort. In utterances with explicit alternative (single or complex) a compensation strategy is performed during reanalysis. The reader activates a "check-and-balances-strategy" between alternative and focus in order to confirm whether the first assumption still holds to recover the correct assumption.

Depending of the extension of the alternative, additive relations can become more or less complex. Without explicit background information or when the conceptual information is presented as lexical chain, the assumption is recovered with major processing effort for the focusing areas and/or at the areas of the lexical mean. On the contrary, in utterances with single explicit alternative, in which a simple addition has to be established between the alternative and the focus, the processing of the unmarked utterances decreases.

Marked structure. The procedural pattern is determined by the instruction of the FO. The FO articulates the information in the utterances. Albeit, more procedural information is added, the processing effort of the other conceptual focusing areas becomes more controlled. In order to confirm, enrich or correct the lexical elements that are triggered by the instruction, the reader affords more time during reanalysis in marked structures, by implementing a "check-and-reevaluate-strategy" (cfr. § 6.1.2., confirmation of the hypothesis IV B-2b).[181] However, all possible additional effort is levelled out over the course of utterance processing (comparison of the total mean). Therefore, the additional effort generated by the FO is defined as "additional regulatory-effort", which are used to control the quality of the first assumption and to ensure a guided processing in order to interpret a contrastive relation with the minimal effort. Subsequently, the findings sustain another theoretical described claim, namely, that perform-

[181] The conventionally triggered contrast between the alternative and the focus becomes mainly apparent in the utterance with single explicit alternative, where the marked utterance is more effort demanding in all AOIs (cfr. § 7.1.1.). If the lexical information is semantically more saturated, the additional effort for the reanalysis becomes apparent only in the area of the focus (cfr. § 7.1.2.), and if the background information is only implicitly given the additional reanalysis effort transcend to the lexical mean (cfr. § 7.1.3.).

ing a contrastive relation is an operation that can start early (FO acts immediately upon the focus during first-pass reading time), but is executed mostly at later processing stages (during second-pass reading time). The FO is the element that affects the lexical relation between the conceptual elements and this process can only be activated after the processing of the FO. Nevertheless, an additional property was observed regarding the FO leading to another conclusion: *The focus operator generates a regulation and acceleration effect that compensates the additional processing effort that the lexical contrast of the affected units (alternative and focus) produces. The processing effort of the focus operator constitutes the maximum limit for the processing of the implicated elements at the focusing operation*.

The "regulatory-effect" of the FO is observable in the lexical mean and in the relation between alternative and focus, where the FO being the most effort demanding area reduces the processing effort of the other focusing constituents. These effects underlie the theoretical claim of FOs, namely, that the procedural value (asymmetry and rigidity property) serve as processing guidance and regulate the processing of the whole utterance. In the utterances under consideration, alternative and focus require less processing effort than the FO during the whole processing. Otherwise, in unmarked structures the most effort demanding element constitutes the focus area.

Regarding the cross-variable *IV A – Extension of the alternative* results have proven that utterances where the focus has to be contrasted with an explicit subset of alternatives (single or complex alternative condition) require slightly less processing effort than if the relation has to be constructed with a potential subset given in the discourse (implicit alternative condition). Extending or restricting the conceptual information is tied to slightly higher processing effort. Consequently, a base focusing operation (single alternative condition) can be defended relying on the data. In utterances with single explicit alternative the relation (either additive or contrastive) is balanced between the constituents. It is assumed that the reader has to perform a relation that consists in evaluating two explicit single elements (alternative and focus) that have to be resorted according to the instruction of the operator or according to the function that is given by the set of conceptual elements. However, extending or reducing the set of alternatives leads to increased processing, mainly for the unmarked focus conditions. Therefore, the hypothesis that the insertion of more conceptual information would facilitate processing con only partly be confirmed, i.e. only when the complex alternative co-occurs with a procedural mark; an acceleration effect can be attributed to the complex alternative (cfr. § 6.1.1., partly confirmation of the hypotheses of the IV A-1a).

Regarding comprehension it is assumed, that the FO guides the inferential process conventionally by restricting the interpretation possibilities of the utterance. Consequently, marked utterances lead to a contrastive implicature, whereas unmarked utterances do not conventionally present a sufficient minimum stimulus to automatically activate an inferential contrastive process.

During processing it was shown that the insertion of a FO ensures a guided processing, and that the construction of the assumption is conventionally controlled. The inferential route becomes more restricted and unambiguous. This is also reflected in the analysis of the comprehension test, in which both structures do not provide equally optimal stimuli that lead to a contrastive implicature (cfr. § 6.1.2., confirmation of the hypothesis IV B-3). These findings are observable in the different answer-proportions for unmarked and marked utterance, in which the marked structures provide the higher yes-answers proportions revealing a final conclusion of this independent variable (cfr. § 7.1.4.): *A contrastive relation is not processed "by default". The insertion of a focus operator in unmarked focus structure becomes indispensable if a contrastive relation is intended*. The conceptual information (not even in the complex alternative conditions) does not constitute a sufficient minimum stimulus to establish a contrastive relation.

7.2. Position of the focus operator in relation to the focus

The analysis of the *IV C – Position of the focus operator in relation to the focus* has at its objective to examine to what extent processing and comprehension varies by altering the distributional word order regarding the FO in marked utterances structures (cfr. § 6.1.3.). Thereby, two main positions are under consideration, preposition of the FO regarding the focus, in which *incluso* precedes and modifies directly its nucleus; and postposition of the FO regarding the focus, in which the relation is inversed. Independently of the extension of the alternative (IV A) it is assumed that utterances with the FO in postposition demand more cognitive effort, since this position constitutes the less frequent position in discourse.

7.2.1. Utterances with explicit single alternative

b2a2 – Ana y Marta saben inglés e incluso chino.
c1a2 – Ana y Marta saben inglés y chino incluso.

The analysis of the IV B has shown that the processing of structures with explicit alternative and the presence of the FO is triggered mainly by the conventional mark, that regulates and minimizes the processing of utterances in comparison to utterances without FO. However, it is assumed that a manipulation of the FO-position in relation to the focus leads to elevated processing effort, since when the FO is in postposition to the focus, the focus operation cannot be processed *ad hoc*, but *a posteriori,* after reading all the conceptual elements belonging to the focusing operation. This results in the hypothesis that different positions of the FO activate two different processing routes.

Global comparison

The values of the cumulative reading measure (total reading time) indicate that processing a syntactical alteration additionally to the semantic relation of a pragmatic scale can accumulate higher processing effort for the whole utterance. A postposition of the FO generates slightly higher processing effort, reflected in the differences of the total mean (236.52 ms vs. 247.19 ms, 4.51%, small effect, Table 27). Nevertheless, this small effect is not observable in the lexical mean (243.46 ms vs. 246.23 ms, 1.14%, trivial effect, Table 27), suggesting that the higher processing effort for the utterances with postpositional FO originates in the processing of the procedural mark. This is a first indicator that an utterance with a syntactically

postpositional FO not only demands more cognitive effort for the whole utterance, but also that the postpositional FO itself plays a decisive role during the processing of these structures (Table 30). This relevant finding reveals that although both structures have identical informative relations, a less common position of a FO can alter the cognitive effort of utterances.

AOI	preposition of the FO (b2a2)	postposition of the FO (c1a2)	Difference ms	Difference %
Total mean	236.52 ms	247.19 ms	10.67 ms	4.51% small effect
Lexical mean	243.46 ms	246.23 ms	2.77 ms	1.14% trivial effect

Table 27: Total reading time – global comparison – IV C with explicit single alternative

The results of the first-pass reading time present analogous processing patterns at global level, since both utterances present the same information structure. No relevant differences are registered neither for the total mean (182.90 ms vs. 183.52 ms, 0.45% trivial effect, Table 28), nor for the lexical mean (185.14 ms vs. 186.35 ms, 0.65%, trivial effect, Table 28). Results of the IV B already have shown that the insertion of a FO immediately activates a contrastive relation and, subsequently can generate a first processing benefit by controlling early the processing of the focusing elements under its scope (cfr. § 7.1.). However, this immediate activation becomes visible in the analysis of the focusing areas, but do not trespass to the utterance level in the first-pass reading time. Further, the whole impact of the FOs in different positions should emerge during reanalysis (second-pass reading time), when redefinition and re-evaluation of the lexical elements (triggered by the FO) becomes apparent.

AOI	preposition of the FO (b2a2)	postposition of the FO (c1a2)	Difference ms	Difference %
Total mean	182.90 ms	183.52 ms	0.82 ms	0.45% trivial effect
Lexical mean	185.14 ms	186.35 ms	1.21 ms	0.65% trivial effect

Table 28: First-pass reading time – global comparison – IV C with explicit single alternative

During reanalysis the differences between the conditions are analogous to the findings of the total reading time, but become even more pertinent: At global level (total mean), the syntactically marked utterance (63.44 ms) demands 18.25% more processing effort than the utterance with frequent FO-position (53.65 ms, large effect). However, the lexical means, again, do not differ from each other (57.95 ms vs. 59.84 ms, 3.26%, trivial effect, Table 29).

These findings further support, that if a distributional alteration is produced in an utterance with single explicit alternative the procedural mark will play a decisive role during the recovery of the communicated assumption.

AOI	preposition of the FO (b2a2)	postposition of the FO (c1a2)	Difference ms	Difference %
Total mean	53.65 ms	63.44 ms	9.79 ms	18.25% large effect
Lexical mean	57.95 ms	59.84 ms	1.89 ms	3.26% trivial effect

Table 29: Second-pass reading time – global comparison – IV C with explicit single alternative

Concluding, based on the analysis of IV B the insertion of the FO generates a "check and reevaluate-strategy" that implies "additional regulatory effort" for the recovery of a contrastive relation in comparison to utterances without procedural mark (cfr. § 7.1.). Thus, in the two conditions under consideration of IV C, the FO exactly evokes this "check and reevaluate"-strategy. The reader redefines and reevaluates the lexical elements of the focusing operation according to the explicit instruction in order to confirm, enrich or modify the previous assumption during reanalysis. Since in both utterances, the focusing operation is semantically the same, it could have been expected, that no differences would be observable between the two conditions. Nevertheless, the findings have proven that a syntactically marked position of a FO leads to a higher global cognitive effort, not only during reanalysis, but also at the total processing level (total reading time, Table 27).

The higher processing effort during the second-pass reading time for the utterance with postpositional FO can also be considered "additional regulatory effort". But, this regulatory-effort is executed differently, since the reader not only has to process the semantic relation of the constituents, he also has to resolve the syntactical alteration of the instruction in order to integrate the information in the common ground. Thus, the findings conclude that different syntactical positions are resolved cognitively through different processing patterns strengthening the claim of a cognitive preferred FO-position.

Comparison of focusing areas

The differences at global level of the utterance foreshadows that different local patterns will be found at the focusing areas, and, in fact, across parameters differences are found in all focusing areas indicating different informative distributions in both conditions.

The values of the cumulative parameter demonstrate that the syntactical alteration affects mainly the FO and the direct object upon it incites. The postpositional FO (289.59 ms)

requires 9.96% more processing effort than the prepositional FO (263.37 ms, medium effect, Table 30), and the focus of the utterance with postpositional FO (294.80 ms) demands even 19.94% more processing effort than the focus of the other condition (245.78 ms, large effect, Table 30). On the contrary, the results of the alternative draw an inverse pattern: The alternative in the utterances with postpositional FO (205.94 ms) needs 8.84% less processing effort than the respective alternative of the other condition (225.90 ms, medium effect, Table 30).

Analyzing these results jointly a relevant finding can be formulated: The position-shift of the FO provokes that FO and focus constitute a functional unit in which the focusing operation is performed. The reader dwells in the areas of FO and focus, whereas the alternative becomes sidelined. In other words, the distributional alteration that has to be resolved additionally, relativizes the semantic relation that has to be processed in order to interpret the contrastive pragmatic scale.

AOI	preposition of the FO (b2a2)	postposition of the FO (c1a2)	Difference ms	Difference %
Alternative	225.90 ms	205.94 ms	-19.96 ms	-8.84% medium effect
Focus operator	263.37 ms	289.59 ms	26.22 ms	9.96% medium effect
Focus	245.78 ms	294.80 ms	49.02 ms	19.94% large effect

Table 30: Total reading time – focusing areas – IV C with explicit single alternative

The results of the construction of the first assumption reveal slightly different patterns in comparison to the total reading time. In the analysis of the IV B it was proven that FO tend to display their instruction immediately upon the implicated focusing areas. However, according to the position of the FO, this effect is executed differently during the construction of the first assumption. In the utterance with preposition of the FO, the FO can immediately act upon the focus and redefine its informative value. This immediate contrast activation is tied to local higher processing effort for the FO (217.36 ms vs. 199.63 ms, -8.16%, medium effect, Table 31), but also minimizes the processing of the focus element (182.23 ms vs. 212.22 ms, 16.46%, large effect). Moreover, in the utterances with postpositional FO regarding the focus, it is assumed that the area of the FO (last element of the utterance) is abandoned quickly in

order to redefine and redistribute the areas implicated in the focusing operation (during second-pass reading time).[182]

AOI	preposition of the FO (b2a2)	postposition of the FO (c1a2)	Difference ms	Difference %
Alternative	169.30 ms	161.79 ms	-7.51 ms	-4.44% small effect
Focus operator	217.36 ms	199.63 ms	-17.73 ms	-8.16% medium effect
Focus	182.23 ms	212.22 ms	29.99 ms	16.46% large effect

Table 31: First-pass reading time – focusing areas – IV C with explicit single alternative

Any focusing operation in utterances with explicit single alternative is recovered through the focusing areas in order to establish a contrastive pragmatic scale evoked by the FO. During reanalysis, a re-evaluation of the conceptual elements takes place in order to successfully interpret the information of the communicated assumption. Results so far argue that the instruction of the FO indicates how this re-evaluation has to be performed (cfr. § 7.1.), however, a syntactical alteration can interfere in this re-evaluation process.

The informative distribution that becomes apparent during the total reading time originates mainly from the processing patterns of reanalysis. Hence, the differences are much more pertinent during the recovery of the former assumption.

AOI	preposition of the FO (b2a2)	postposition of the FO (c1a2)	Difference ms	Difference %
Alternative	55.99 ms	43.56 ms	-12.43 ms	-22.20% very large effect
Focus operator	46.01 ms	89.90 ms	43.89 ms	95.39% very large effect
Focus	44.16 ms	81.88 ms	37.72 ms	85.42% very large effect

Table 32: Second-pass reading time – focusing areas – IV C with explicit single alternative

The most relevant findings of the second-pass reading time regard the FO and the focus. Both elements of the utterance with postpositional FO nearly double the processing effort of the respective elements of the utterances with prepositional FO. The postpositional FO (89.90 ms) demands 95.39% more processing effort than the prepositional FO (46.01 ms, very large

[182] Additionally, the different positions of the FO also generate a small effect between the alternatives: The alternative of the utterance with prepositional FO (169.30 ms) demands 4.44% less processing effort than the alternative of the utterance with postpositional FO (161.79 ms). Two reasons can originate this effect: On the one hand, the reader detects parafoveally the FO and dwells longer at the alternative in utterances with prepositional FO and/or the alternative of the utterances with postpositional FO is processed with notably less processing effort since no conventional element is detected parafoveally.

effect, Table 32). Likewise, the focus of the utterance with postpositional FO (81.88 ms) claims 85.42% more processing effort than the focus that is preceeded by the FO (44.16 ms). The comparison of the alternatives show that the recovery of the background information is also processed differently, revealing an inverse pattern. The alternative of the utterance with postpositional FO (43.56 ms) gathers 22.20% less processing effort than the alternative of the utterances with prepositional FO (55.99 ms, very large effect, Table 32).

In order to perform the semantic operation and to establish the contrastive relation, the reader activates a "check and reevaluate"-strategy, while homogenously re-reading all the focusing areas ("additional regulatory effort" for all areas).[183] If a syntactic operation (induced by the position-shift of the FO) is added to this semantic operation, the strategy remains the same, but the additional effort is differently distributed. The postposition of the FO evokes that the attention of the reader remains mainly at the area of FO and focus (establishing a functional unit between them)[184], whereas the alternative becomes marginalized.[185] In light of these results two theoretical claims can be formulated for utterances with explicit single alternative under the conditions:

a) A position shift evokes major global and local processing effort (Table 27 and Table 30). Therefore, from a cognitive perspective, a preferable FO-position (preposition of the FO) can be defended.
b) The syntactical alteration is recovered mainly by the functional unit: FO + focus, whereas the alternative is marginalized.

The results reveal that the positional variability of *incluso* in relation to the focus also leads to two different cognitive patterns for utterances with explicit single alternative: preposition (unmarked) and postposition (marked) of the FO. Thus, it can be argued that two theoretically distinguished patterns according to their different distributional order are not only differently

[183] These findings are observable in the IVB where alternative and focus are the most effort demanding areas in the second-pass reading time.
[184] The composition of the functional unit in relation to the alternative is theoretically sustainable, since the adverb *incluso* acts as a modifier of the marked direct object.
[185] Moreover, both FOs do not demand less processing effort than the other conceptual elements of their respective utterances, supporting again the theoretical claim regarding the instructional character of FO. The properties of the procedural meaning of *incluso* (asymmetry and rigidity) assure a regulatory-effect that minimizes the processing effort of the other focusing elements independently of the FO-position and therefore, underlies the argument previously formulated in the analysis of the IV B: The FO constitutes the maximum processing limit of the utterance.

frequent in discourse, but, from a cognitive perspective, a preferred position can be assigned.[186]

7.2.2. Utterances with explicit complex alternative

b2a3 – Ana y Marta saben inglés, francés e incluso chino.
c1a3 – Ana y Marta saben inglés, francés y chino incluso.

Comparing utterances with explicit complex alternative should prevail similar results than the analysis of utterances with explicit single alternative. Results of the IV B have shown that the insertion of more conceptual information can facilitate processing in utterances in which the FO is in preposition regarding the focus, since both, conceptual and procedural devices are oriented towards the contextual information. However, it is not expected that the conceptual enrichment constitutes an acceleration effect that relativizes the effort provoked by a postpositional FO in an utterance. Thus, it can be assumed that a distributional alteration activates more cognitive effort at global and local level independently of the lexical information.

Global comparison

Globally speaking, the increase of conceptual information does not provoke differences between the conditions under consideration. The processing of an utterances with complex

[186] Studies conducted by Lopez Serena and Loureda (2013) defend that different FO-positions could encode slightly different communicative needs. It is argued that the insertion of a postpositional *incluso* triggers – additionally to the focusing operation– an *ad hoc* reformulation process. Nevertheless, the conducted studies examined utterances in which the FO and the focus are presented as independent syntactical unit, as e.g. in *Ana and Martha speak English, French, Italian, even Chinese. vs. Ana and Martha speak English, French, Italian, Chinese even*. The unit {*even Chinese/Chinese even*} depends syntactically (juxtaposed) from the segment {*Ana and Martha speak English, French, Italian*}. Moreover, these structures present also a semantic relation in which the elements have to be ranged according to their informative value. In the presented utterances by Lopez Serena and Loureda (2013) it can be defended that in the utterances with postpositional FO a reformulation process has to be performed additionally. This reformulation process implies that during reanalysis a major re-evaluation process is conducted in order to interpret the specific informative structure (*contrastive relation*) in comparison to utterances with common FO-position. Elevated effort at total reading time is found at the area directly affected by the FO: the focus. The results are theoretically justified since the higher effort affects the element of the independent unit, in particular the element that is triggered by the instruction. Further, the results suggest that *incluso* is syntagmatically polyfunctional in order that it can activate a *discursive reformulation* when it appears in postposition of an independent unit. The utterances under consideration in the IV C share the semantic relation with the utterances of the other studies, but present a different syntactical pattern: The two independent segments are conjunctively connected and the adverbial value of the FO provokes that *incluso* is integrated in the propositional content of the utterance, that constitutes one single segment {Ana and Martha speak English and even Chinese/Chinese even}. Besides, the semantic relation, no syntactical dependency is established. Therefore, no added reformulation process should underlie the focusing operation in the conditions of the IV C.

alternative in which the FO is introduced postponed to the focus element is tied to higher global effort (225.07 ms vs. 240.57 ms, 6.89%, medium effect[187], Table 33). Again, this effect is not found in the lexical mean (230.33 ms vs. 236.92 ms, 2.86%, trivial effect, Table 33) reiterating the findings of the comparison with explicit single alternative: a) a distributional alteration implies more cognitive effort, and b) the higher processing effort seems to originate in the element in which the alteration is manifested.

AOI	preposition of the FO (b2a3)	postposition of the FO (c1a3)	Difference ms	Difference %
Total mean	225.07 ms	240.57 ms	15.50 ms	6.89% medium effect
Lexical mean	230.33 ms	236.92 ms	6.59 ms	2.86% trivial effect

Table 33: Total reading time – global comparison – IV C with explicit complex alternative

During the construction of the first assumption at global level no differences are registered either for the total mean (180.16 ms vs. 185.49 ms, 2.96%, trivial effect, Table 34) nor for the lexical mean (184.09 ms vs. 185.94 ms, 1.00%, trivial effect, Table 34) indicating that possible major processing effort at local level does not imply a major impact at utterance level, sustainable since both utterances present identical informative structures. These results are analogous to the results of the utterances with explicit single alternative, arguing that the increase of lexical information in these structures whether facilitates nor hampers the processing during the first construction of the assumption.

AOI	preposition of the FO (b2a3)	postposition of the FO (c1a3)	Difference ms	Difference %
Total mean	180.16 ms	185.49 ms	5.33 ms	2.96% trivial effect
Lexical mean	184.09 ms	185.94 ms	1.85 ms	1.00% trivial effect

Table 34: First-pass reading time – global comparison – IV C with explicit complex alternative

Re-reading strategies of the whole utterance provide a different picture. The whole impact of the procedural mark (pre- or postposition) in utterances with complex alternative emerges during reanalysis. The observed data presents a very large increase for the utterances with postpositional FO in the total mean (44.79 ms vs. 54.81 ms, 22.37%, very large effect, Table

[187] The effect of the total mean is even more pertinent in utterances with complex alternative (6.89%, medium effect) than in the comparison with explicit single alternative (4.51%, small effect), suggesting that the conceptual information does not constitute an acceleration effect if the distribution is altered in the information structure.

35). This effect is also manifested in the lexical mean: The utterance with the distributional alteration (50.52 ms) demands 9.97% more processing effort than the utterance with unmarked position (45.94 ms, medium effect, Table 35).

AOI	preposition of the FO (b2a3)	postposition of the FO (c1a3)	Difference ms	Difference %
Total mean	44.79 ms	54.81 ms	10.02 ms	22.37% very large effect
Lexical mean	45.94 ms	50.52 ms	4.58 ms	9.97% medium effect

Table 35: Second-pass reading time – global comparison – IV C with explicit complex alternative

In utterances, in which the reader has to fulfill the instruction of the FO (pre- or postposition), again a "check-and reevaluate"-strategy is effectuated. The "additional regulatory effort" for this strategy is heterogeneously distributed demanding more processing effort for the syntactical marked utterances. From a theoretical perspective, this is sustainable, because in utterances with postpositional FO, the reader can perform the focusing operation (triggered by the FO) only after reading all the lexical elements and the instruction of the FO (last element of the utterance). In contrast to utterances with prepositional FO, in which the reader can immediately execute the instruction upon the following element (marked focus, already during the first-pass reading time). Therefore, the "additional regulatory effort" during reanalysis is much slighter in the latter case while in utterances with postpositional FO, the reader has to redefine and reevaluate all the conceptual elements in order to fulfill the FO instruction, and consequently, a modification of the first assumption (that could have been a complex additive structure until reading the FO) must be carried out.[188]

Comparison of focusing areas

Analyzing the functional areas of the focusing operation between the conditions points out that a different distributional order in a specific information structure evokes also different local cognitive patterns.

[188] In contrast to utterances with explicit single alternative, the conceptual enrichment in these conditions provokes a difference at global level (total and lexical mean). In utterances with single alternative the analogous values of the lexical mean indicate that the instruction of the FO does not influence the processing of the conceptual elements, and further, that the effort in the total mean of the utterances with postpositional FO is exclusively attributed to the procedural mark. Whereas, the higher processing effort in both global AOIs in the comparison of utterances with complex alternative suggest that the integration of a marked focus (that was labeled as marked *a posteriori*) in an explicit set of alternatives entails a major reanalysis for the conceptual elements of the focusing operation.

Results of the total reading time demonstrate that the global major processing effort for the utterances with postpositional FO originates from the additional effort that is required for the conventional device and the focus in these conditions. Both elements present very large increases in comparison to their respective counterparts. The postpositional FO (303.93 ms) demands 27.15% more processing effort than the prepositional FO (239.04 ms). Likewise, the focus of the postpositional structure (297.75 ms) needs 21.86% more processing effort than its counterpart (244.33 ms, Table 36).

AOI	preposition of the FO (b2a3)	postposition of the FO (c1a3)	Difference ms	Difference %
Alternative	226.35 ms	218.26 ms	-8.09 ms	-3.57% trivial effect
Focus operator	239.04 ms	303.93 ms	64.89 ms	27.15% very large effect
Focus	244.33 ms	297.75 ms	53.42 ms	21.86% very large effect

Table 36: Total reading time – focusing areas – IV C with explicit complex alternative

Adding the results of the alternatives that do not differ from each other (226.35 ms vs. 218.26 ms, -3.57%, trivial effect, Table 36), the findings of the analysis of the utterances with single alternative are reiterated[189]: A distributional alteration provokes a local impact at the FO and the focus. Both areas form a functional unit in order to recover the contrastive relation, whereas, again, the alternative becomes cognitively marginalized. The processing distribution between the areas of the focusing operation loses its balance and provokes a dislocation of the processing to the right side of the utterance, i.e. to the areas directly affected by the position shift of the FO.

The elevated local processing effort for the FO and the focus observed in the total reading time originates already at the microstructural level of the utterance. During the construction of the first assumption the postpositional FO (207.74 ms) claims 9.42% more processing effort than the prepositional FO (189.85 ms, medium effect, Table 37). Likewise, the foci differ 6.91% from each other (199.61 ms vs. 213.41 ms, medium effect), and, again, the alternatives

[189] The insertion of more conceptual information provokes an effect in comparison to the analysis between the single alternatives (225.90 ms vs. 205.94 ms, -8.84%, medium effect, Table 30). Throughout processing, both complex alternatives are levelled out and do not present any differences (226.35 ms vs. 218.26 ms, -3.57%, trivial effect, Table 36). Summarizing the results, it is argued that more conceptual information is less affected by a positional alteration of the FO between the conditions. Further, these results prove that independently of the extension of the alternative, the alternative of a structure with postpositional FO does not demand more processing effort than an alternative in a structure with prepositional FO across parameters.

are processed with analogous processing times (184.71 ms vs. 181.08 ms, -1.97%, trivial effect, Table 37).

AOI	preposition of the FO (b2a3)	postposition of the FO (c1a3)	Difference ms	Difference %
Alternative	184.71 ms	181.08 ms	-3.63 ms	-1.97% trivial effect
Focus operator	189.85 ms	207.74 ms	17.89 ms	9.42% medium effect
Focus	199.61 ms	213.41 ms	13.80 ms	6.91% medium effect

Table 37: First-pass reading time – focusing areas – IV C with explicit complex alternative

The conceptual information of the complex alternative co-oriented towards the instruction of the FO ensures a guided processing from the start[190]. However, the processing benefit obtained from the interplay between the conceptual and the procedural device cannot equal the effort produced by the distributional alteration in the utterance with postposition of the FO.

Results of the global comparison demonstrated that a postpositional FO generates higher processing effort for the whole utterance in comparison to utterances with preposition of the FO during reanalysis (Table 35). At local level, during the informative reconstruction of the assumption, the postpositional FO and the focus under its scope are again the most effort demanding areas in comparison to utterances with prepositional FO. The postpositional FO (96.07 ms) nearly doubles the processing of the prepositional FO (49.23 ms, 95.15%, very large effect), and the focus in the utterance with postpositional FO (83.58 ms) demands 89.52% more processing effort than the focus of the utterance with prepositional FO (44.10 ms, very large effect. Table 38). The described dislocation of the processing effort to the right of the utterance (provoked by the distributional alteration) is also trespassed to the second-pass reading time. The alternative of the utterance with postpositional FO (36.52 ms) becomes sidelined in contrast to the alternative of the utterance with prepositional FO (41.15 ms, -11.25% large effect, Table 38).

[190] The conceptual enrichment provokes differences in comparison to the results obtained from utterances with single explicit alternative (Table 31). In utterances with complex alternative the conceptual information acts as independent device that in relation with a FO minimizes the processing of the alternative itself and of the FO. On the contrary, the results given by utterances with single alternative indicate that the alternative does not constitute a sufficient stimulus in order to generate a processing benefit.

AOI	preposition of the FO (b2a3)	postposition of the FO (c1a3)	Difference ms	Difference %
Alternative	41.15 ms	36.52 ms	-4.63 ms	-11.25% large effect
Focus operator	49.23 ms	96.07 ms	46.84 ms	95.15% very large effect
Focus	44.10 ms	83.58 ms	39.48 ms	89.52% very large effect

Table 38: Second-pass reading time – focusing areas – IV C with explicit complex alternative

The results of the alternative combined with the findings for the FO and focus, indicate that the distributional alteration triggers the "check-and-reevaluate"-strategy performed by the reader during the recovery of the communicated assumption. In the utterances with postpositional FO the recovery is dislocated to the areas of the FO and the focus, whereas in the position that is not altered the reader balances the processing effort between all focusing areas. The distributional alteration provokes a major local impact that in different ways affect all focusing elements and trespasses the higher processing effort to the global level of the whole utterance. The increase of the conceptual information can produce a processing benefit, but this benefit cannot compensate the processing effort that is necessary for the interpretation of the contrastive relation triggered by a postpositional FO.

7.2.3. Utterances with implicit alternative

b2a1 – Ana y Marta saben incluso chino.
c1a1 – Ana y Marta saben chino incluso.

As in utterances with explicit alternatives (cfr. §§ 7.2.1. and 7.2.2.) it is expected that a distributional alteration in these structures under consideration leads to two different cognitive patterns. The interpretation of a conventionally codified implicature by relating the marked focus with the mental representations that are stored in the memory and have to be activated by the discursive context, should, therefore, also be determined by the position of the FO. Utterances with a postpositional FO in relation to its scope are expected to demand more processing effort at global level of the utterance, as well as at the local level of the focusing areas.

Global comparison

In utterances, in which the alternative is not explicitly given and needs to be recovered by the discursive context, the distributional alteration leads to discrepancies in the cognitive effort

between the conditions under consideration. Both global AOIs, total and lexical mean present higher values for the utterances with postpositional FO-position. The impact of the postpositional FO implies that the whole utterance (253.71) requires 10.71% more processing effort than the utterance with prepositional FO (229.16 ms, large effect, Table 39). The impact of the postpositional FO is also observable in the other conceptual elements of the utterance since in the lexical mean the utterance with postpositional FO (253.98 ms) demands 10.07% more processing effort than the counterpart utterance (230.74 ms, large effect, Table 39).

AOI	preposition of the FO (b2a1)	postposition of the FO (c1a1)	Difference ms	Difference %
Total mean	229.16 ms	253.71 ms	24.55 ms	10.71% large effect
Lexical mean	230.74 ms	253.98 ms	23.24 ms	10.07% large effect

Table 39: Total reading time – global comparison – IV C with implicit alternative

The results of the total reading time corroborate the findings of the analysis of the utterances with explicit alternative (cfr. §§ 7.2.1. and 7.2.2.). Two informative identical structures provide two different cognitive patterns according to the position of the FO. Thus, from a cognitive perspective, a preferable FO-position can be defended. Utterances in which the FO precedes the focus element ensures a guided processing with a minimal cognitive effort.[191]

During the construction of the first assumption, the patterns observed during the total reading time are repeated. Relevant differences are registered for the total mean (172.24 ms vs. 189.43 ms, 9.98%, medium effect, Table 40) and for the lexical mean (173.40 ms vs. 183.01 ms, 5.54%, medium effect, Table 40).

AOI	preposition of the FO (b2a1)	postposition of the FO (c1a1)	Difference ms	Difference %
Total mean	172.24 ms	189.43 ms	17.19 ms	9.98% medium effect
Lexical mean	173.40 ms	183.01 ms	9.61 ms	5.54% medium effect

Table 40: First-pass reading time – global comparison – IV C with implicit alternative

[191] Nevertheless, the results of the lexical mean diverge form the findings of the utterances with explicit alternative. The results of the utterances with explicit alternative (single or complex) point out that during the whole processing the local impact of a postpositional FO is trespassed to the total mean of the utterances, but this does not become apparent in the lexical mean; cfr. 1.1.1 and 1.2.1.). These findings indicate that it is the processing for the FO itself that generates major processing effort for the whole utterance, but also minimizes the processing effort of the other focusing areas. In contrast, in utterances with implicit alternative, the instruction of the FO can only display its instruction upon the focus element.

In utterances that are semantically underdetermined in comparison to utterances with explicit alternative a distributional alteration provokes an early impact during the processing of the first assumption. The local impact triggered by the postpositional FO (Table 41) is trespassed to the whole utterance.

AOI	preposition of the FO (b2a1)	postposition of the FO (c1a1)	Difference ms	Difference %
Total mean	172.24 ms	189.43 ms	17.19 ms	9.98% medium effect
Lexical mean	173.40 ms	183.01 ms	9.61 ms	5.54% medium effect

Table 41: First-pass reading time – global comparison – IV C with implicit alternative

In both structures under consideration, the reader has to draw on his mental representations and rely on the discursive context in order to construct a contrastive relation. Results of the total reading time and the first-pass reading time demonstrate that a distributional alteration is tied to global higher processing effort. These results are also validated during reanalysis. Re-reading strategies reveal that a postpositional FO leads to major processing effort for the whole utterance in the total mean (56.78 ms vs. 63.92 ms, 12.57%, large effect, Table 42) and also in the lexical mean (57.05 ms vs. 70.56 ms, 23.68% very large effect, Table 42).

AOI	preposition of the FO (b2a1)	postposition of the FO (c1a1)	Difference ms	Difference %
Total mean	56.78 ms	63.92 ms	7.14 ms	12.57% large effect
Lexical mean	57.05 ms	70.56 ms	13.51 ms	23.68% very large effect

Table 42: Second-pass reading time – global comparison – IV C with implicit alternative

As in the utterances with explicit alternative, it can be defended that the reader performs a "check and reevaluate"-strategy in order to recover the contrastive relation between the focus element and the implicit alternative. Again, the "additional regulatory effort" for both conditions is heterogeneously distributed evoking higher processing effort for the syntactically marked structure (Table 42) The heterogonous distribution is theoretically justified, since the focusing operations are performed at different stages. Whereas, the prepositional FO can display immediately its instruction upon its scope (already during first-pass reading time), in the utterance with postpositional FO-position, the reader has to conduct a readjustment-process after reading all the focusing constituents. Subsequently, this procedure leads to major reanalysis effort of the utterance with postpositional FO-position.

Summarizing, the findings support that independently of the extension of the alternative, adding a distributional alteration to the procedure of a semantic relation that establishes a contrastive relation produces global higher processing effort during reanalysis.

Comparison of focusing areas

As in the analysis of the utterances with explicit alternative the data obtained for utterances with implicit alternative reveal that a distributional alteration implies more cognitive effort for the focusing areas of the postpositional FO and its focus. The postpositional FO (311.10 ms) demands 29.44% more processing effort than the prepositional FO (240.34 ms, very large effect, Table 43). Furthermore, the focus in the postpositional structure (252.57 ms) requires 19.79% more processing effort than its counterpart in the prepositional structure (210.84 ms). Thus, the data corroborate previous findings: The insertion of a FO in utterances with implicit structure provokes that the assumption is mainly processed relying on the FO. However, by altering the word order in informative structures the cognitive effort of FO and focus increases notably, supporting the claim that in these types of structures, FO and focus form a functional unit in order to facilitate the interpretation of the contrastive relation.

AOI	preposition of the FO (b2a1)	postposition of the FO (c1a1)	Difference ms	Difference %
Focus operator	240.34 ms	311.10 ms	70.76 ms	29.44% very large effect
Focus	210.84 ms	252.57 ms	41.73 ms	19.79% large effect

Table 43: Total reading time – focusing areas – IV C with implicit alternative

The results of the first-pass reading time present a slightly different pattern. Again, the FOs differ from each other (169.95 ms vs. 220.10 ms, 29.51%, very large effect, Table 44) revealing notable effort for the postpositional FO. Contrarily, the comparison of the foci does not register differences (171.69 ms vs. 176.17 ms, 2.61%, trivial effect, Table 44). During the construction of the first assumption, in utterances, in which *incluso* modifies directly its nucleus, the instruction of the FO can display immediately its function upon the focus element, and subsequently regulate and control its processing, whereas in utterances with postpositional FO, the FO cannot display its instruction until all elements are read. The reader abandons quickly the area of the focus and dwells longer on the postpositional FO.[192]

[192] These results are divergent with the findings obtained in the analysis of utterances with explicit (single or complex) alternative, in which the focus in the structure with postpositional FO always requires more processing effort. Despite that, it can be theoretically defended that by absence of further conceptual information in form of

AOI	preposition of the FO (b2a1)	postposition of the FO (c1a1)	Difference ms	Difference %
Focus operator	169.95 ms	220.10 ms	50.15 ms	29.51% very large effect
Focus	171.69 ms	176.17 ms	4.48 ms	2.61% trivial effect

Table 44: First-pass reading time – focusing areas – IV C with implicit alternative

The major processing effort for the focusing areas of the structure with postpositional FO observable during the total reading time (Table 43) is repeated during the reanalysis. The postpositional FO (90.92 ms) claims 29.13% more cognitive effort than the prepositional FO (70.41 ms, very large effect, Table 45). Moreover, the differences between the foci are more pertinent. The reader nearly needs twice as much processing time for the focus of the postpositional structure in comparison to the focus in the utterance with prepositional FO (38.52 ms vs. 75.70 ms, 96.52%, very large effect, Table 45).

AOI	preposition of the FO (b2a1)	postposition of the FO (c1a1)	Difference ms	Difference %
Focus operator	70.41 ms	90.92 ms	20.51 ms	29.13% very large effect
Focus	38.52 ms	75.70 ms	37.18 ms	96.52% very large effect

Table 45: Second-pass reading time – focusing areas – IV C with implicit alternative

The absence of further explicit conceptual information in these utterance structures presents a complexity in itself. The reader has to draw on his mental representations in order to interpret the contrastive relation between the focus element and the alternative given in the discursive context. The additional alteration of the FO-position influences notably the construction of the contrastive relation transforming local processing effort into effort for the whole utterance. As observed in utterances with explicit alternative the "check and reevaluate"-strategy performed in utterances in which a FO incites, is triggered by the syntactical alteration. The presented findings of utterances with implicit alternative underlie the previous formulated claim: A position-shift of a FO implies more cognitive effort leading to two different cognitive patterns.

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an explicit alternative the utterances become more semantically underdetermined, and thus, in utterances that present a distributional alteration the area of the instruction becomes more determined in order to construct the first assumption and to perform the contrastive relation.

7.2.4. Comprehension

In both conditions (pre- and postposition of the FO) the instruction of *incluso* evokes a conventional implicature in which a contrastive relation has to be established between the focus element and the alternative implicitly given in the discursive context. Since the procedural meaning of the FO is rigid, comprehension should not be affected by the position-shift independently of the extension of the conceptual information. The observed data reveal similar results for all three condition-pairs under consideration:

b2a2	**c1a2**
Ana y Marta saben inglés e incluso chino. ('Anne and Martha know English and even Chinese.')	Ana y Marta saben inglés y chino incluso. ('Anne and Martha know English and Chinese even.')
Según la frase, es menos probable saber chino que inglés. ('According to the sentence, it is less probably to know Chinese than English')	

explicit single alternative	yes	no	unable to say
preposition of the FO	**90%**	7%	3%
postposition of the FO	**81%**	13%	6%
χ^2 test	**3.27 < 5.99; p > .05**		

b2a3	**c1a3**
Ana y Marta saben inglés, francés e incluso chino. ('Anne and Martha know English, French and even Chinese.')	Ana y Marta saben inglés, francés y chino incluso. ('Anne and Martha know English, French and Chinese even.')
Según la frase, es menos probable saber chino que las otras lenguas mencionadas. ('According to the sentence, it is less probably to know Chinese than the other mentioned languages')	

explicit complex alternative	yes	no	unable to say
preposition of the FO	**88%**	7%	5%
postposition of the FO	**83%**	10%	7%
χ^2 test	**1.12 < 5.99; p > .05**		

b2a1	**c1a1**
Ana y Marta saben incluso chino. ('Anne and Martha know even Chinese.')	Ana y Marta saben chino incluso. ('Anne and Martha know Chinese even.')
Según la frase, es menos probable saber chino que otras lenguas. ('According to the sentence, it is less probably to know Chinese than other languages')	

implicit alternative	yes	no	unable to say
preposition of the FO	**87%**	9%	4%
postposition of the FO	**82%**	11%	7%
χ^2 test	**0.96 < 5.99; p > .05**		

Table 46: Comprehension test results – IV C/IV A

Results reveal that no major differences are observed between the conditions independently of the extension of the alternative. In all conditions the answer with the highest proportion was *yes* indicating that in both conditions a contrastive implicature is interpreted (Table 46); justified since both conditions have identical informative schemes. The FO introduces the same

instruction and obliges the reader to interpret conventionally a contrastive scale. The findings reveal that, even though a distributional alteration evokes two different processing patterns, comprehension is not determined by the position-shift in any utterance, validating the rigidity of the FO.

7.2.5. Final Discussion

The difference between the conditions, independently of the extension of the alternative lies in the position of the FO in relation to its scope. The prepositional *incluso* as modifier precedes its nucleus, and in the other case this relation is inverted. However, the FO evokes in both conditions a contrastive implicature. Upon the semantic relation that has to be established creating a contrastive relation, a distributional alteration has to be resolved in utterances with postpositional FO. This operation implies major global and local cognitive effort during the whole processing. Thus, the analysis of this IV C – *Position of the FO in relation to the focus* – confirms its main hypothesis (cfr. § 6.1.3., confirmation of the hypothesis IV C-1) and leads to a conclusion regarding the positional variability: *A preposition of the focus operator in relation to the focus is the optimal position. Any positional alteration produces more cognitive effort.* Concluding, two informative identical structures lead to two different cognitive patterns. Further, from a cognitive perspective a preferable FO-position (preposition) can be defended. This preferable FO-position is consistent with the theoretical and descriptive arguments regarding the two possible positions of a FO in relation to its scope corresponding the most frequent and common position with the less effort demanding cognitive pattern (cfr. § 4.2.).

The different processing patterns observed during the whole processing originate mainly from the reanalysis, since this is the processing stage in which the impact of the FO is maximally displayed upon all the focusing elements. At the macrolevel of the utterance, results of the IV B have proven that the insertion of a FO generates a regulation and acceleration effect that compensates the additional effort for the insertion of the procedural information. This effect holds if the FO precedes its focus. (cfr. § 7.1.). However, if the position of the FO is altered, and the FO is postponed to the focus, the processing pattern changes. The "check and reevaluate"-strategy is effectuated in both conditions during reanalysis, nevertheless, the structure with postpositional FO does not only require major "additional regulatory effort", but also that this effort is differently distributed. The findings lead to the conclusion that a distributional alteration provokes a dislocation of the processing to the right side of the utterance. In all conditions with postpositional FO, FO and focus

constitute a functional unit provoking a processing gap between the functional unit and the alternative (explicit or implicit).[193] Since the distributional alteration is a manipulation at word order level the dislocation-effect is already observable during the construction of the explicature. However, the postpositional FO displays its whole function during the second-pass reading time provoking that the dislocation-effect runs through all parameters.

Regarding the cross-variable IV A – *Extension of the alternative* results have proven that extending or restricting the conceptual information is tied to higher processing effort. These findings can also be validated in the utterances with postpositional FO. Again, the structures with explicit single alternative present the most balanced processing. Whereas, when the contrastive relation has to be established between a focus and an explicit complex subset of alternatives, or when it has to be established with a potential subset given in the discourse (implicit alternative) processing increases (cfr. 6.4.1., partly confirmation of the hypotheses of the IV A-1a)

Summarizing the findings reveal that although both structures have identical informative relations, a less common position of a FO can alter the cognitive effort. From a cognitive perspective, a preferable FO-position exists that ensures a guided processing with a minimal cognitive effort. Further, the differences at global level between the conditions stem from a dislocation-effect provoked by position-shift of the FO. However, the different processing patterns do not affect the comprehension process. The FO (pre- or postpositional) conventionally guides (due to its rigid property) the inferential process in order to recover a contrastive implicature. Thus, both structures provide equally optimal stimuli for the interpretation of a scalar implicature (cfr. § 6.1.3., confirmation of the hypothesis IVC-2).

[193] This effect is primarily observable in the utterances with explicit alternative (cfr. §§ 7.2.1. and 7.2.2.). Nevertheless, it can also be defended that in order to recover a contrastive relation in structures with postpositinal FO a functional unit is also established between FO and focus in utterances with implicit alternative (cfr. § 7.2.3.).

7.3. Degree of informativity

The analysis of the IV D – *Degree of informativity* aims to assess to what extent the cognitive effort varies when the information given by the conceptual and procedural elements are congruous or incongruous to the contextual information anchored in the common ground. From a theoretical point of view, accommodating incongruous utterances to a specific context (d1-condition) implies more cognitive effort than integrating information of utterances that are informatively adaptable to the common ground (b2-condition). In both conditions under consideration, the procedural meaning of the FO *incluso* conditions the conceptual meaning of the other elements in order to construct an evaluative pragmatic scale. According to the degree of informativity in an utterance and thus, their degree of adaptability to the context, it is expected that two different processing-strategies will be conducted during mental processing and comprehension (cfr. § 6.1.4.).

7.3.1. Utterances with explicit single alternative

b2a2 – Ana y Marta saben inglés e incluso chino.
d1a2 – Ana y Marta saben chino e incluso inglés.

In utterances with explicit single alternative, in which a FO incites, the focus information has to be related directly to the background information to construct a contrastive pragmatic scale. In common conditions (b2a2) the presented information triggered by the instruction of the FO in an utterance leads to a scalar implicature which is adaptable to the mental representations stored in the memory (Chinese is more difficult than English). On the contrary, if the conceptual information is altered, i.e. the lexical elements of the alternative and the focus are reversed, the conceptual information presented in the utterance and the instruction of the FO *incluso* leads to a scalar implicature that contradicts the mental assumptions based on the world knowledge (*English* is more difficult than *Chinese*). In the latter cases the conventional instruction of *incluso* obliges the reader to readjust the information of the conceptual elements (single alternative and focus), and subsequently, the reader has to perform an accommodation-process that implies more processing effort in order to construct the scalar implicature. Thus, two different processing patterns are expected according to the degree of informativity in an utterance.

Global Comparison

The analysis of the total reading time does not report any relevant differences between the conditions, neither for the total mean (236.52 ms vs. 243.50 ms, 2.95%, trivial effect, Table 47), nor for the lexical mean (243.46 ms vs. 241.87 ms, -0.65%, trivial effect, Table 47). These first results point out that in these specific information structures, to accommodate incongruous information to the context by adding new information to the common ground does not require more global processing effort. In both conditions, in which the same informative scheme is encoded, the instruction of the FO *incluso* evokes a scalar implicature. The reader is forced to fulfil the instruction of the FO and integrates the information to the context with analogous cognitive effort.

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Total mean	236.52 ms	243.50 ms	6.98 ms	2.95% trivial effect
Lexical mean	243.46 ms	241.87 ms	-1.59 ms	-0.65% trivial effect

Table 47: Total reading time – global comparison – IV D with explicit single alternative

During the construction of the first assumption both utterances also present analogous processing patterns, in the total mean (182.70 ms vs. 183.91 ms, 0.66%, trivial effect, Table 48), and in the lexical mean (185.14 ms vs. 179.84 ms, -2.86%, trivial effect, Table 48). This is plausible, because from a syntactical and semantical perspective both utterances present identical SVO-structures, and in utterances with explicit single alternative, the reader does not detect the incongruency of the utterance until the focus element is processed in relation to the FO.[194] Concluding, the possible local processing effort at the focusing areas with unexpected focus is not trespassed to the global utterance level during the construction of the first assumption. Moreover, integration- or accommodation-processes can only be performed by taking all elements under consideration, i.e. after the construction of the first assumption. Thus, the whole cognitive impact of incongruous utterances is reflected in the second-pass reading time.

[194] Before reading the FO and the focus element a congruous utterance is expected by the reader (*Ana and Marta know Chinese and xxx*), i.e. an adaptable assumption could be activated. On the contrary to utterances with explicit complex alternative where the incongruency can be detected already in the alternative element, since the lexical chain (*Chinese, French* (and even *English*)) itself can be interpreted as incongruous to the context.

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Total mean	182.70 ms	183.91 ms	1.21 ms	0.66% trivial effect
Lexical mean	185.14 ms	179.84 ms	-5.30 ms	-2.86% trivial effect

Table 48: First-pass reading time – global comparison – IV D with explicit single alternative

During reanalysis, the processing patterns diverge notably from the patterns in the total and first-pass reading time. The data observed for the total mean present a large increase for the utterance with unexpected focus, i.e. 10.57% more processing effort is required to accommodate information that is incongruous to the context (53.65 ms vs. 59.32 ms, large effect, Table 49). The processing effort for the total mean is also reflected in the lexical mean: the conceptual elements of the incongruous utterance (61.57 ms) demand 6.25% more processing effort than those of the congruous utterance (57.95 ms, Table 49).

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Total mean	53.65 ms	59.32 ms	5.67 ms	10.57% large effect
Lexical mean	57.95 ms	61.57 ms	3.62 ms	6.25% medium effect

Table 49: Second-pass reading time – global comparison – IV D with explicit single alternative

The data of the second-pass reading time reveal that even though at global level both utterances are processed identical (Table 47), different processing-strategies are conducted during reanalysis according to their degree of informativity. While in the congruous utterance a "check and reevaluate"-strategy is conducted in order to confirm the first assumption and to integrate the information to the context; in incongruous utterances the accommodation-process implies a modification of the assumption in order to adapt the pragmatic scale to the context. The reader not only has to reidentify the conceptual elements as elements of a contrastive relation and reevaluate them according to the instruction of the conventional mark, he also has to modify the whole assumption in order to add new unexpected information to the common ground. This accommodation-strategy entails more global reanalysis effort. However, this higher processing effort does not transcend to the whole processing at utterance level (Table 47).

From a theoretical perspective, the data of the reanalysis provides a crucial claim: The impact of a lexical alteration of the conceptual information that in relation to the procedural information is anti-oriented to the common ground becomes notably apparent during later

measures. The activated accommodation-process implies major processing effort supporting the claim that different reanalysis-strategies are performed according to the degree of informativity.

Comparison of focusing areas

Results at utterance level demonstrate that two different conditions that differ in their congruency regarding the context are processed with global analogous times (Table 47), but that does not entail that they present the same internal pattern. Analyzing the focusing areas separately provides evidence for two different processing paths.

In the total reading time, the FO of the incongruous utterance (296.52 ms) is the most effort demanding area and requires 12.59% more cognitive effort than the FO of the congruous utterance (263.37 ms, large effect, Table 50). The higher processing effort for the instruction encoded in *incluso* that generates the contradiction between the conceptual elements and the context is trespassed to the focus area, where the unexpected focus (incongruous condition, 270.90 ms) demands 10.22% more processing effort than the expected focus (congruous condition, 245.78 ms, large effect, Table 50).

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Alternative	225.90 ms	229.55 ms	3.56 ms	1.62% trivial effect
Focus operator	263.37 ms	296.52 ms	33.15 ms	12.59% large effect
Focus	245.78 ms	270.90 ms	25.12 ms	10.22% large effect

Table 50: Total reading time – focusing areas – IV D with explicit single alternative

Thus, analyzing the focusing areas, it can be defended that two different cognitive routes are applied in order to integrate congruous or incongruous information to the context. If the information is expected the operator guides the reader to the correct assumption by regulating the processing of the other constituents ("check and balance"-strategy). However, if the information in an utterance is incongruous to the context and the rigid instruction of the FO obliges to construct an evaluated scale that is informatively conflictive in regard to the common ground, the processing of the conventional mark itself and the direct object under its scope increases. The major processing effort for the FO in incongruous utterances leads to the conclusion that it is the procedural mark itself that generates the conflict in the utterance. This conflict between procedural and conceptual information regarding the common ground is,

however, a local conflict that affects the main focusing areas, but not the global level of the utterances with explicit single alternative.
Concluding, these findings corroborate the theoretical claim of two different inferential routes when it comes to integrate congruous and incongruous information to the context. However, they only partly confirm the hypothesis that the accommodation of incongruous information implies major global processing effort. Results reveal, that for utterances with explicit single alternative, the accommodation of incongruous information only entails local, but not global effort.

Although, from a syntactic and semantic perspective, both utterances present the same SVO-structure and the same informative scheme, differences in the focusing areas between the conditions are observable already during the construction of the first assumption. The conceptual alteration provokes local processing effort for the unexpected focus in contrast to the expected focus (182.23 ms vs. 200.96 ms, 10.28%, large effect. Table 51). Moreover, neither the alternatives (169.30 ms vs. 169.48 ms, 0.11%, trivial effect, Table 51) nor the FOs (217.36 ms vs. 213.12 ms, -1.95%, trivial effect, Table 51) present any relevant differences between each other.

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Alternative	169.30 ms	169.48 ms	0.11 ms	0.11% trivial effect
Focus operator	217.36 ms	213.12 ms	-4.24 ms	-1.95% trivial effect
Focus	182.23 ms	200.96 ms	18.73 ms	10.28% large effect

Table 51: First-pass reading time – focusing areas – IV D with explicit single alternative

The informational disorder triggered by the interplay of the procedural mark and the conceptual elements is detected by the reader when the instruction of the FO is related to the lexical information of the focus during the construction of the first assumption. In both conditions, the FO displays the same function forwardly to control immediately the processing of the focus element, therefore, similar processing values are sustainable for *incluso* and the alternative. Likewise, the reader becomes fully aware of the informative contradiction at the focus area, supporting the claim that the integration of unexpected information in a first assumption is tied to early local processing effort for the focus.

The analogous cognitive effort for the alternatives is legitimate, because, in utterances with explicit single alternative, the lexical information of the alternative does not contradict

the context information until the instruction of *incluso* obliges the reader to contrast the unexpected focus to the background information (observable in the second-pass reading time). The findings of the first-pass reading time verify the theoretical and empirical described claim that incongruencies, generated by the alteration of conceptual information and/or by procedural elements are detected early during processing (cfr. § 5.2.).

The complexity of accommodating an assumption with incongruous information becomes evident during the second-pass reading time, in which the initially constructed assumption is reconsidered for confirmation, modification or cancelation. Results of the reanalysis refute a theoretical claim: The integration of unexpected information activates an accommodation-process that implies major global and local reanalysis effort (Table 49).

The most relevant finding concerns the FO: *Incluso* of the incongruous utterance (83.30 ms) requires nearly twice as much processing effort than its counterpart of the congruous utterance (46.01 ms, 81.05%, very large effect, Table 52). The rigidity of the procedural element conditions the conceptual information by activating two different processing-strategies in order to readjust the information of the lexical elements towards the instruction of the FO. The higher processing effort for the FO of the incongruous utterance during the recovery of the assumption is trespassed to the total processing level of the focusing areas (Table 50) indicating that if incongruous information has to be accommodated to the context, the FO, not only is the element that generates the conflict, it also becomes the principle axis for information retrieval.

The effort needed for the accommodation is also visible in the focus area where the unexpected focus (69.94 ms) demands 58.38% more processing effort than the expected focus (44.16 ms, very large effect, Table 52). Likewise, the contrast between alternative and focus in order to create a pragmatic scale that is anti-oriented to the contextual information implies also more processing effort for the alternative of the incongruous utterance (55.99 ms vs. 60.07 ms, 7.29%, medium effect, Table 52).

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Alternative	55.99 ms	60.07 ms	4.08 ms	7.29% medium effect
Focus operator	46.01 ms	83.30 ms	37.29 ms	81.05% very large effect
Focus	44.16 ms	69.94 ms	25.78 ms	58.38% very large effect

Table 52: Second-pass reading time – focusing areas – IV D with explicit single alternative

To conclude, in utterances where the assumption is adaptable to the mental representations, a "check and reevaluate"-strategy is conducted, with slight "additional regulatory effort" in order to construct the scalar implicature while confirming the previously built assumption. Otherwise, in utterances with incongruous information an accommodation-strategy based on modification of the assumption is activated. The performed strategy implies local and global "additional accommodation effort" in order to adapt the information to the context during reanalysis. The rigidity or, in other words, the capacity of the FO to impose its conditions to the context and the whole utterance, provokes an insertion of the adequate assumptions to satisfy the processing instructions at any costs.

Summarizing, the local and global higher processing effort for incongruous utterances during the recovery of the assumption is only trespassed at local level to the total processing time (Table 50), but do not affect the entire utterance processing (Table 47), supporting the conclusion that the additional processing effort for the accommodation-strategy can be levelled out through the entire processing. In light of these results, two theoretical claims can be formulated for utterances with single alternative:

a) Two different processing-strategies are performed in order to fulfil the instruction triggered by *incluso*.
b) Incongruous information is detected early, but the higher processing effort associated with the accommodation-process displays their total impact at later measures (reanalysis).

7.3.2. Utterances with explicit complex alternative

b2a3 – Ana y Marta saben inglés, francés e incluso chino.
d1a3 – Ana y Marta saben chino, francés e incluso inglés.

It is expected that the analysis of utterances with explicit complex alternative prevails similar processing strategies as utterances with explicit single alternative. Thus, two different processing patterns between the conditions are expected: One informatively unmarked pattern (b2 – congruous condition), in which the conceptual enrichment of the alternative, co-oriented to the instruction of *incluso*, facilitates processing during the recovery of a scalar implicature (*Chinese* is more difficult than *English* and *French*); and another, informatively marked pattern (d1 – condition), in which the accommodation-process will evoke major processing

effort in order to establish the semantic relation between the constituents (*English* is more difficult than *Chinese* and *French*). In the incongruous condition, it is expected that due to the extension of conceptual information of the alternative, the additional effort for the accommodation-process in comparison to utterances with single explicit alternative will increase (cfr. § 6.1.4.).

Global Comparison

By analyzing the cumulative values of the total reading time of utterances with explicit complex alternative different cognitive patterns are found in contrast to the results obtained for utterances with single alternative. The accommodation of incongruous information becomes more effort demanding if the conceptual information of the alternative is presented as lexical chain, observable in increased global values for the utterance in which the information is incongruous to the context: in the total mean (225.07 ms vs. 238.73 ms, 6.07% medium effect, Table 53) and in the lexical mean (230.33 ms vs. 248.46 ms, 7.87%, medium effect, Table 53). These results reveal that a) two different processing-strategies are executed, and b) by extending the conceptual information the accommodation of incongruous information becomes more complex reporting major processing effort for the whole utterance.

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Total mean	225.07 ms	238.73 ms	13.66 ms	6.07% medium effect
Lexical mean	230.33 ms	248.46 ms	18.13 ms	7.87% medium effect

Table 53: Total reading time – global comparison – IV D with explicit complex alternative

The analysis of the utterance values during the construction of the first assumption present a slightly different pattern in comparison to the total reading time. The lexical alteration in the incongruous utterance already provokes an increased pattern for the whole utterance in the total mean (180.16 ms vs. 187.59, 4.12%, small effect, Table 54). However, the values of the lexical mean do not differ from each other (184.09 ms vs. 189.75 ms, 3.07%, trivial effect, Table 54). Since the difference between the total and lexical mean reports exactly the impact of the procedural information in the utterance the increased values for the incongruous utterance can be attributed directly to the FO (Table 54). Consequently, the results anticipate that in utterances with complex alternative the incongruency may be detected in an earlier

AOI than in utterances with single alternative provoking local higher processing effort that is trespassed to the processing of the whole utterance.[195]

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Total mean	180.16 ms	187.59 ms	7.43 ms	4.12 % small effect
Lexical mean	184.09 ms	189.75 ms	5.66 ms	3.07% trivial effect

Table 54: First-pass reading time – global comparison – IV D with explicit complex alternative

Different re-reading strategies during the second-pass reading time between the conditions confirm the patterns of the total reading time. The data observed for the total mean present a large increase for the incongruous utterance (50.93 ms), i.e. 13.71% more cognitive effort is required to accommodate conflictive information to the context in comparison to the congruous utterance (44.79 ms, Table 55). The discrepancy between the conditions becomes even sharper in the analysis of the lexical mean, in which a very large effect is detected (45.94 ms vs. 58.34 ms, 26.99%, Table 55).

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Total mean	44.79 ms	50.93 ms	6.14 ms	13.71% large effect
Lexical mean	45.94 ms	58.34 ms	12.40 ms	26.99% very large effect

Table 55: Second-pass reading time – global comparison – IV D with explicit complex alternative

Analyzing the results for the total and lexical mean jointly leads to the conclusion that two different processing-strategies are performed in order to fulfil the instruction of the FO and subsequently to construct a contrastive relation within a pragmatic scale.

In utterances, in which the information is co-oriented to the common ground of the interlocutors, the interplay between conceptual information (lexical chain) and the procedural information of the FO activates an immediate "processing-benefit effect" leading to minor reanalysis and global effort. On the opposite, if the presented information is incongruous to the context, processing becomes more effort demanding. The "processing-benefit effect" observed in congruous utterances is disrupted. The extension of the conceptual information at

[195] The results obtained for utterances with explicit single alternative do not register differences neither for the total mean, nor for the lexical mean indicating that the incongruency is not detected until the instruction of the FO is processed in relation to the focus.

the alternative contains in itself a sufficient stimulus to detect the informational incongruency in the utterance, and further, the relation between the conceptual information and the FO *incluso* makes the contradiction even more explicit during first-pass reading time.

The findings of the reanalysis are consistent with the analysis of the utterances with single alternative: During reanalysis two different processing-strategies are conducted according to the degree of informativity of the utterances. Furthermore, in incongruous utterances with complex alternative, the interplay between conceptual and procedural meaning does not minimize the processing effort, but increases it at all processing levels. The extension of the conceptual information entails higher accommodation effort that emerges during the construction of the first assumption, and this becomes fully apparent during the recovery. Finally, this higher processing effort is trespassed to the total processing level (in the total reading time).

Comparison of focusing areas

The analysis of the focusing areas in the total reading time corroborate the findings obtained for the whole utterance comparison. The global major processing effort for the utterance with incongruous information emerges from different processing-strategies that are conducted at local level between the conditions. The observed data of the total reading time reports more processing effort for the alternative and the FO of the incongruous utterance. The complex alternative of the incongruous utterance (252.41 ms) demands 11.51% more processing effort than the alternative of the congruous utterance (226.35 ms, large effect, Table 56)[196], suggesting that if more conceptual information is added to the alternative and consequently more information has to be integrated to the context, the more relevant becomes the alternative during processing. The accommodation-effort for the incongruous utterances is also displayed at the FO area, where the FO (259.97 ms) requires 8.76% more processing effort than the FO of the congruous utterance (239.04 ms, medium effect, Table 56). On the contrary, the foci do not differ from each other (244.33 ms vs. 252.90 ms, 3.51%, trivial effect, Table 56) indicating that possible higher processing effort for the unexpected focus is levelled out through the entire processing.

[196] The obtained results in the comparison of utterances with single alternative demonstrate a different picture. The single alternatives do not differ from each other in the total reading time (Table 50), leading to the conclusion that if the alternative constitutes a minimal explicit set, the conceptual information of the alternative steps to the background and the recovery of the assumption is mainly derived by the areas of the FO and the focus.

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Alternative	226.35 ms	252.41 ms	26.06 ms	11.51% large effect
Focus operator	239.04 ms	259.97 ms	20.93 ms	8.76% medium effect
Focus	244.33 ms	252.90 ms	8.57 ms	3.51% trivial effect

Table 56: Total reading time – focusing areas – IV D with explicit complex alternative

In both conditions the FO evokes a contrastive relation between the constituents by imposing its instruction to the utterance and to the context. But, while in the congruous utterance, the information is co-oriented to the context, and a guided processing is ensured minimizing the processing effort of all constituents ("check and balance"-strategy), in the incongruous utterance conceptual and procedural information are confronted to each other. In these types of utterance structures a processing disruption is effectuated producing higher local (and global) processing effort for the accommodation-process.

Furthermore, the analysis of the focusing areas corroborate the findings of utterances with single alternative: A procedural incongruency in an utterance is tied to local major processing effort. However, the findings present a relevant difference between utterances with single and complex alternative: The local processing effort required for the accommodation process can be transferred to the global level in utterances with complex alternative or, as in the cases of utterances with single alternative, can be levelled out through entire processing.

The analysis of the focusing areas during the construction of the first assumption report similar patterns for the complex alternative and the FO as in the total reading time. The alternative of the incongruous utterance (200.79 ms) present a medium increase (8.71%) in comparison to the alternative of the congruous utterance (184.71 ms, Table 57). This finding verifies the theoretical claim that incongruencies are detected in the first element that inhibits the incongruous information. In utterances with complex alternative the lexical chain (*Chinese*, *French*) can provide a sufficient stimulus for detecting the incongruency in relation to the common ground.[197] The early detection of the incongruency at the alternative provokes higher processing effort for the FO of the incongruous utterance (189.85 ms vs. 211.40 ms, 11.35%, large effect, Table 57) in contrast to the FO of the congruous utterance. By relating

[197] Note that in utterances with single alternative the first element that entails the contradiction during the construction of the first assumption is the focus element, since the single alternative does not contradict the contextual information. Until the readers relates the instruction of the FO with the focus information, the assumption can be adaptable to the common ground.

the conceptual information of the alternative with the procedural information of *incluso* the incongruency is confirmed. As a consequence, the reader abandons quickly the unexpected focus in order to reanalyze the whole utterance and to accommodate the information during the recovery of the assumption. The abandonment of the unexpected focus causes that the expected focus becomes slightly more effort demanding than the unexpected focus (199.61 ms vs. 188.76 ms, -5.44%, medium effect, Table 57).

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Alternative	184.71 ms	200.79 ms	16.08 ms	8.71% medium effect
Focus operator	189.85 ms	211.40 ms	21.55 ms	11.35% large effect
Focus	199.61 ms	188.76 ms	-10.85 ms	-5.44% medium effect

Table 57: First-pass reading time – focusing areas – IV D with explicit complex alternative

The analysis of the focusing areas during the recovery of the communicated assumption shows slightly different local processing patterns for utterances with complex alternative in contrast to utterances with single alternative. If the conceptual information of the alternative is extended the cognitive effort for the instruction of the FO of the incongruous utterance is minimized and equaled to the values of the FO of the congruous utterances (49.23 ms vs. 48.51 ms, -1.46%, trivial effect, Table 58).

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Alternative	41.15 ms	51.10 ms	8.95 ms	24.18% very large effect
Focus operator	49.23 ms	48.51 ms	-0.72 ms	-1.46% trivial effect
Focus	44.10 ms	63.55 ms	19.45 ms	44.10% very large effect

Table 58: Second-pass reading time – focusing areas – IV D with explicit complex alternative

The reversed patterns between utterances with single and complex alternative regarding the FO are associated with the moment in which the incongruency is detected in the respective utterances during the construction of the first assumption.[198] In utterances with complex alternative, the early detection of the incongruency at the area of the alternative during the

[198] Note, that in utterances with single alternative the FOs do not differ during first-pass reading time (trivial effect, Table 51). The reader does not detect the incongruency until the focus element is processed, thus, he has to reconfirm the instruction of the FO with major processing effort during the second-pass reading time (81.05%, very large effect, Table 52).

first-pass reading time (Table 57) directly activates a more attentive processing of the instruction of the FO entailing major processing effort. During the construction of the first assumption, the additional effort for the FO minimizes the reanalysis effort of the FO during the recovery of the assumption.

In order to contrast the unexpected focus with the lexical chain of the alternative, and subsequently, to accommodate the constructed assumption to the common ground, the conducted accommodation-process implies the redefinition and reevaluation of the conceptual elements towards the procedural instruction. Process that is conducted with notable increases for the alternative and the focus: the alternative (51.10 ms) reports a very large effect (24.18%) in contrast to the alternative of the congruous utterance, (41.15 ms, Table 58), as well as the unexpected focus (63.55 ms vs. 44.10 ms, 44.10%, Table 58).

In the utterances with single alternative, the reader is forced by the conventional instruction to readjust (if necessary) the information given by the conceptual elements. Further, the conceptual information of a complex alternative can act as a sufficient stimulus in order to detect the incongruency and thus, it activates an accommodation-process early. The obtained results reinforce two previous findings:

a) The accommodation of incongruous information to the common ground entails a more effort demanding processing path, at least during the recovery of the assumption at local and global level. This finding leads to refute the argument of two different processing-strategies.
b) Incongruencies triggered by a procedural mark and by a conceptual alteration are detected in the element that inhibits the incongruency (complex alternative) during the construction of the first assumption.

7.3.3. Utterances with implicit alternative

b2a1 – Ana y Marta saben incluso chino.
d1a1 – Ana y Marta saben incluso inglés.

Utterances that are semantically underdetermined require more cognitive effort in order to recover the ostensive communicated assumption, in contrast to utterances with explicit alternatives (cfr. § 7.2.5.). However, in these types of utterances the insertion of *incluso* also facilitates the construction of a contrastive relation between the focus element and a potential

subset given in the discourse (b2-condition). Contrarily, for the d1-condition, it is expected that the alteration of the conceptual information of the semantic relation will evoke a different inferential route based on a more effort demanding accommodation-process that has to be performed in order to modify or cancel the assumption.

Additionally, since utterances with implicit alternative entail less conceptual information and are less restricted to interpretation possibilities in relation to the common ground, different processing-strategies are most likely to be performed in contrast to utterances with explicit alternatives.

Global Comparison

The results of the total reading time report similar global processing effort for both utterance types under consideration in the total mean (229.16 ms vs. 231.42 ms, 0.99%, trivial effect, Table 59); while the analysis of the lexical mean plots a medium decrease for the incongruous utterance (230.74 ms vs. 218.85 ms, -5.15%, medium effect, Table 59).

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Total mean	229.16 ms	231.42 ms	2.26 ms	0.99% trivial effect
Lexical mean	230.74 ms	218.85 ms	-11.89 ms	-5.15% medium effect

Table 59: Total reading time – global comparison – IV D with implicit alternative

The differences between total and lexical mean suggest that two different processing-strategies triggered by the instruction of *incluso* are conducted at local level. The instruction of the FO conditions the processing effort of the focus element in order to construct a contrastive relation between a marked focus and the mental representations activated by the discursive context. In particular, the results of the lexical mean indicate that the construction of a semantically underdetermined assumption should entail local major processing effort for the congruous utterance. However, these possible local effort does not lead to different global processing pattern at utterance level.[199]

[199] The results of the total mean in the comparison of utterances with implicit alternative confirm the findings of utterances with explicit single alternative. Although, different local processing patterns are conducted, the effort necessary for the accommodation-process does not rise to the global processing level of the utterance. A different processing picture is presented in the comparison of utterances with complex alternative, in which the local higher processing effort for the accommodation of incongruous information does transcend to the global level of the utterance. Analyzing these results jointly it can be argued that more additional accommodation effort is required according to the informative load of the utterance.

During the construction of the first assumption slightly increased patterns are detected for congruous utterances at the total mean (172.24 ms vs. 163.99 ms, -4.79%, small effect, Table 60), and at the lexical mean (173.40 ms vs. 159.63 ms, -7.94%, medium effect, Table 60). In line with the findings of the IV B (cfr. § 7.1.5.), it can be assumed that the FO (that encodes the same instruction in both conditions) directly incites over the focus element and activates a "regulatory-effect" by minimizing the processing of the whole utterance. Although the processing effort for the congruous utterance in this comparison may seem contradictory, it is more likely that the same "abandonment-process" at the unexpected focus element is performed as in utterances with complex alternative. Thus, congruous utterances demand slightly more processing effort than utterances with incongruous information during the construction of the first assumption.

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Total mean	172.24 ms	163.99 ms	-8.25 ms	-4.79% small effect
Lexical mean	173.40 ms	159.63 ms	-13.77 ms	-7.94% medium effect

Table 60: First-pass reading time – global comparison – IV D with implicit alternative

The possible "abandonment-effect" during the construction of the first assumption is endorsed by the results of the second-pass reading time, in which a reversed pattern is presented according to the first-pass reading time. The utterance that entails incongruous information (67.24 ms) demands 18.42% more processing effort than the utterance with congruous information (56.78 ms, large effect, Table 61). The result for the total mean sustains the conclusion formulated for utterances with explicit alternative: The accommodation-process performed with the aim of integrating incongruous information to the context implies major reanalysis effort, and thus two different processing-strategies are observed according to the degree of informativity in the utterances.

Considering that the values of the lexical mean do not differ from each other (57.05 ms vs. 58.85 ms, 3.16%, trivial effect, Table 61), and that a large effect is presented in the total mean, it can be concluded that the FO must be the main actor for the recovery of the assumption in utterances without explicit background information. The reader performs the accommodation-process triggered by the FO mainly at the area of the instruction. The processing effort needed for the modification of the assumption and subsequently for the integration of the incongruous information to the common ground is tied to local higher

processing effort that is transferred to the utterance level during reanalysis, but are levelled out through the entire processing of the utterance.

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Total mean	56.78 ms	67.24 ms	10.46 ms	18.42% large effect
Lexical mean	57.05 ms	58.85 ms	1.80 ms	3.16% trivial effect

Table 61: Second-pass reading time – global comparison – IV D with implicit alternative

Comparison of focusing areas

The divergences at global level of the utterance reveal that two different processing-strategies are performed during reanalysis. Although, the required effort for the accommodation-process for incongruous utterances is not trespassed to the global utterance level in the total reading time, the analysis of the focusing areas provides evidence of different local-strategies.

The analysis of the FOs validates the findings of the comparison of the utterances with explicit alternative (cfr. §§ 7.3.1. and 7.3.2.). *Incluso* demands higher processing effort, when the presented information of the utterance is contradictory to the context (240.34 ms vs. 268.77 ms, 11.83%, large effect, Table 62). The FO generates the conflict by imposing its restrictions to the utterance and context. However, with the intention to accommodate information independently of the degree of informativity of the utterance, the FO acts as a guide and is the main area from where the incongruency is resolved. Contrarily, at the area of the focus a reversed pattern is found. The unexpected focus (200.46 ms) require 4.92% less processing effort than the expected focus (210.84 ms, small effect, Table 62). The finding at the focus area support the claim of an "abandonment-effect" when the information of the utterance is incongruous to the context.[200]

[200] The result found at the focus area is divergent to the findings of the comparison of utterances with explicit alternative, in which the unexpected focus either demands more processing effort (cfr. § 7.3.1.) or presents similar processing values than the expected focus (cfr. § 7.3.2.). Considering the results jointly, it appears that the "abandonment-effect" at the focus area is conducted in explicit complex and in implicit alternative structures, and further, that the abandonment is more rigidly executed in utterances with implicit alternative, since the reader has to rely on the given context to a establish a proper assumption.

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Focus operator	240.34 ms	268.77 ms	28.43 ms	11.83% large effect
Focus	210.84 ms	200.46 ms	19.45 ms	-4.92% small effect

Table 62: Total reading time – focusing areas – IV D with implicit alternative

During the construction of the first assumption, both FOs are processed similarly (169.95 ms vs. 165.88 ms, -2.39%, trivial effect, Table 63); but activate different processing-strategies for the focus element. While in the congruous utterance the FO activates a "regulatory-effect" and starts the focusing operation; in incongruous utterances the FO generates an "abandonment-effect" at the focus element (as in utterances with complex alternative, producing a shallow processing effort for the unexpected focus. These two different processing paths result in local higher processing effort for the expected focus (171.69 ms vs. 149.88 ms, -12.70%, large effect, Table 63) that is also trespassed to the global utterance level.

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Focus operator	169.95 ms	165.88 ms	-4.07 ms	-2.39% trivial effect
Focus	171.69 ms	149.88 ms	-21.81 ms	-12.70% large effect

Table 63: First-pass reading time – focusing areas – IV D with implicit alternative

The results of the reanalysis corroborate the observed "abandonment-effect" at the focus area during the first-pass reading time by reporting a very large increase for the unexpected focus in contrast to the expected focus (38.52 ms vs. 49.96 ms, 29.70%, Table 64). Likewise, the FO of the incongruous utterance demands 46.07% more processing effort than the FO of the congruous utterance (70.41 ms vs. 102.85 ms, very large effect, Table 64).

AOI	congruous utterance (b2a2)	incongruous utterance (d1a2)	Difference ms	Difference %
Focus operator	70.41 ms	102.85 ms	32.44 ms	46.07% very large effect
Focus	38.52 ms	49.96 ms	11.44 ms	29.70% very large effect

Table 64: Second-pass reading time – focusing areas – IV D with implicit alternative

Results reveal that the integration of new unexpected information to the common ground activates a more effort demanding accommodation-process during the recovery of the

communicated assumption. Considering the results jointly with the findings at global level (Table 59-61), three main conclusions can be formulated:

a) Depending, if the information in an utterance is congruous or incongruous to the context, different processing-strategies are activated. Whereas in congruous utterances a confirmation is effectuated in order to verify the constructed assumption during the first-pass reading time, in incongruous utterances an immediate accommodation-process based on modification of the first assumption is performed, that entails major local and global reanalysis effort. However, the higher processing effort necessary for the accommodation-process during reanalysis are levelled out through the entire processing of the utterance.

b) Accommodation-processes are effectuated during later processing stages. This effect is associated to the moment in which the incongruency is detected. After detecting the incongruency at the focus area during first-pass reading time, the reader abandons the focus, in order to recover the assumption by conducting an immediate accommodation-process triggered by the FO during second-pass reading time.

c) Accommodation-processes are mainly triggered by the instruction of the FO. The FO constitutes the axis for information retrieval during reanalysis in both conditions. Moreover, if the information is incongruous to the contextual information, the instruction of the FO becomes more pertinent.[201]

7.3.4. Comprehension

The results of the comprehension test of the IV B demonstrate that the insertion of a FO conditions the deduction of inferences. Conventionally marked utterances triggered by *incluso* present a sufficient stimulus to derive a contrastive implicature (cfr. § 7.1.4.). Therefore, due to its rigidity, it is expected that the FO will oblige to construct a contrastive implicature, i.e.

[201] This is further refuted by the fact, that the FO of the utterance with implicit alternative and incongruous information requires the most processing effort during reanalysis in comparison to all other utterances under consideration in this variable:

processing values FO second-pass reading time	explicit single alternative	explicit complex alternative	implicit alternative
congruous utterance	46.01 ms	49.23 ms	70.41 ms
incongruous utterance	83.30 ms	48.51 ms	102.85 ms

The results indicate that if utterances are semantically more underdetermined the procedural impact of the FO in the utterance becomes more indispensable in order to derive the correct the assumption.

the conceptual meaning has to be interpreted towards the procedural meaning, independently whether the conceptual meaning in relation to the procedural meaning is co-oriented (b2-condition) or anti-oriented (d1-condition) to the common ground. Results of the IV D comprehension test reveal that, if the questions asks specifically towards the instruction of the FO in the utterance, in all conditions (regardless the extension of the alternative) the answers are heterogeneously distributed favoring the answer *yes* (Table 65), indicating that the instruction of *incluso* obliges the reader to construct a contrastive implicature, even if the conceptual information in relation to the procedural instruction becomes anti-oriented to the common ground (d1-condition).

b2a2	**d1a2**
Ana y Marta saben inglés e incluso chino. ('Anne and Martha know English and even Chinese.')	Ana y Marta saben chino e incluso inglés. ('Anne and Martha know Chinese and even English.')
Según la frase, es menos probable saber chino que inglés. ('According to the sentence, it is less probably to know Chinese than English')	*Según la frase, es menos probable saber inglés que chino.* ('According to the sentence, it is less probably to know English than Chinese')

explicit single alternative	yes	no	unable to say
congruous utterance	**90%**	7%	3%
incongruous utterance	**85%**	12%	3%
χ^2 test	**1.45 < 5.99; p > .05**		

b2a3	**d1a3**
Ana y Marta saben inglés, francés e incluso chino. ('Anne and Martha know English, French and even Chinese.')	Ana y Marta saben chino, francés e incluso inglés. ('Anne and Martha know Chinese, French and even English.')
Según la frase, es menos probable saber chino que las otras lenguas mencionadas. ('According to the sentence, it is less probably to know Chinese than the other mentioned languages')	*Según la frase, es menos probable saber inglés que las otras lenguas mencionadas.* ('According to the sentence, it is less probably to know English than the other mentioned languages')

explicit complex alternative	yes	no	unable to say
congruous utterance	**88%**	7%	5%
incongruous utterance	**79%**	14%	7%
χ^2 test	**3.15 < 5.99; p > .05**		

b2a1	**d1a1**
Ana y Marta saben incluso chino. ('Anne and Martha know even Chinese.')	Ana y Marta saben incluso inglés. ('Anne and Martha know even English.')
Según la frase, es menos probable saber chino que otras lenguas. ('According to the sentence, it is less probably to know Chinese than other languages')	*Según la frase, es menos probable saber inglés que otras lenguas.* ('According to the sentence, it is less probably to know English than other languages')

implicit alternative	yes	no	unable to say
congruous utterance	**87%**	9%	4%
incongruous utterance	**79%**	10%	11%
χ^2 test	**3.70 < 5.99; p > .05**		

Table 65: Comprehension test results – IV D/IV A

The results of the comprehension test of the IV D seems to justify the properties of units with procedural value: *rigidity* and *asymmetry*. The procedural meaning of the FO imposes its condition to the utterance and the context, and not vice versa (Leonetti and Escandell Vidal 2004:1729). *Incluso* activates the insertion of the appropriate assumption in order to satisfy the interpretation process (Escandell Vidal and Leonetti 2011:81), if the reader is obliged by the comprehension task to fulfil the instruction of the FO.

7.3.5. Final Discussion

In both conditions the grammatical and semantical structures not only codify the relation between the constituents necessary to build the propositional content, they also encode (by the FO) the way in which the different elements have to relate to each other within the discursive model. The reader has to construct in relation to a topic a scalar pragmatic scale. The difference between the conditions in this independent variable lies in the relation between the conceptual und procedural information regarding the common ground: By default, for a Spanish speaker, it is more likely that someone who speaks foreign languages will speak English (b2-condition) rather than Chinese (d1-condition).

The analysis of the IV D has shown that the integration of the mental representations obtained from the conceptual meaning and the instruction of the FO always leads to a scalar implicature even if the presented information in the utterance contradicts the assumptions stored in the common ground (cfr. § 6.1.4., confirmation of the hypotheses IV D-1 and IV D-2). However, the interpretation of a scalar implicature does not mean that both conditions are processed with the same cognitive pattern. The results of all conditions (all alternative extensions) demonstrate that the accommodation-process of an utterance in which the conceptual meaning and the instruction of the FO generate a conflict regarding the common ground demand more cognitive effort. This cognitive overload become most notably apparent during the recovery of the communicated assumption that is not accepted immediately by the reader. These results lead to another focusing conclusion regarding the degree of informativity in an utterance: *In an informative structure with marked focus the co-orientation of the conceptual meaning towards the procedural meaning assures a guided processing. Any difficulty of accommodating a conceptual representation towards the instruction of the focus operator initiates a conflict-resolution strategy.*

The FO demands to perform different inferential routes based on different processing-strategies in order to confirm or to modify the assumption. However, the reported effort for the accommodation-process during the recovery of the communicated assumption in all con-

ditions with incongruous information does not necessarily transcend to the total processing level of utterances, leading to the conclusion that accommodation-processes are mostly effectuated at local level and are levelled out through the entire processing course (cfr. § 6.1.4., confirmation of the hypothesis IV D-1).[202]

Moreover, at the macro level of the utterance, the findings verify the properties of units with procedural meaning. The rigidity of *incluso* obliges to process the conceptual elements according to the procedural mark in order to construct an appropriate assumption at any cost. The FO becomes the axis for information retrieval in both conditions demanding always more processing effort in the incongruous utterances. Thereby, the FO affects directly the cognitive effort of the elements under its scope activating different local processing patterns (cfr. § 6.1.4., confirmation of the hypothesis IV D-2).

Relying on the different conditions of the cross-variable IV A, the findings of the first-pass reading time allow to formulate another claim related to focusing operations: Incongruencies are detected in the first element that inhibits the conflictive information. During the construction of the first assumption, results reveal, that in utterances with implicit or explicit single alternative the reader detects the incongruency by relating the instruction of the FO to the focus element. Whereas, in utterances with complex alternative the lexical chain of the alternative presents in itself a contradictory enchainment and thus, the incongruency is detected already at the alternative element. In accordance with the moment of the incongruency-detection the reader conducts two different strategies during the construction of the explicature: Either an integration-process is started immediately by dwelling longer at the focus area, as in the cases of utterances with single alternative, or an "abandonment-effect" is conducted. If the conceptual information of the alternative is implicitly given in the discourse or present as a high saturated lexical chain, the reader opts for a quick abandonment at the focus area in order to modify the first assumption while conducting an immediate accommodation-process during reanalysis. Independently of the extension of the alternative, the accommodation of incongruous information is always tied to more processing effort during reanalysis (cfr. § 6.1.1., confirmation of the hypotheses of the IV A-1b).

Notwithstanding, the cognitive overload for incongruous utterances during processing is not reflected during comprehension. Results show that if the reader is asked to execute the

[202] Only in the utterances with explicit complex alternative the accommodation-process entails more global effort (6.07%, medium effect) that emerges already during the construction of the first assumption, and is also trespassed to the second-pass reading time and the total processing level. These results are justified since adding more conceptual information means that more conflictive potential is given between the conceptual and procedural information regarding the context, and thus the integration of a proper assumption becomes more effort demanding.

instruction of the FO, he fulfills the task in the same manner as in congruous utterances. These results corroborate the rigidity and asymmetry property of procedural devices (cfr. § 6.1.1., rejection of the hypotheses of the IV A-2b).

8. GENERAL CONCLUSIONS

The aim of this experimental study was to examine whether different focusing structures (marked by the Spanish FO *incluso*) evoke different cognitive patterns during processing, and whether they trigger different comprehension strategies. More specifically, the study aimed to analyze: a) if there are existing correlations between the morphosyntactic, semantic and pragmatic properties of the FO *incluso* and the informative structure of the utterance, b) how the FO affects the implicated elements of the focusing operation, and c) to what extend the presence of *incluso* determines the recovery of inferences.

Therefore, different linguistic variables were considered that enable to analysis to what extent processing patterns and comprehension strategies differ, if a FO is present or absent in an utterance (IV B), if the position of the FO is prepositional or postpositional in relation to the focus element (IV C), or if the conceptual meaning and the procedural meaning are co- or anti-oriented to the common ground of the reader (IV D). Additionally, these three linguistic variables are analyzed in three different informative structures regarding the alternative information: implicit alternative, explicit single alternative and explicit complex alternative (cross-variable IV A) (cfr. § 6.1.1.). In order to test the hypotheses formulated for each independent variable (cfr. § 6.1.), a number of focusing structures based on different syntactical, semantic and pragmatic features were designed and analyzed by implementing two different experimental methods: eye tracking study and comprehension test.

Alongside with descriptive and theoretical arguments, the obtained experimental results and key findings of each independent variable result in five central conclusions (cfr. § 7.):

Focus marking

1. An utterance with marked focus does not present more global processing effort than an utterance with unmarked focus.

2. The focus operator generates a regulation and acceleration effect that compensates the additional processing effort that are produced by the lexical contrast of the affected units (alternative and focus). The processing effort of the focus operator constitutes the maximum limit for the processing of the implicated elements at the focusing operation.

Positional variability

3. A preposition of the focus operator in relation to the focus is the optimal position. Any positional alteration produces more cognitive effort.

Informativity

4. In an informative structure with marked focus the co-orientation of the conceptual meaning towards the procedural meaning assures a guided processing. Any difficulty of accommodating a conceptual representation towards the instruction of the focus operator initiates a conflict-resolution strategy.

Comprehension

5. A contrastive relation is not processed "by default". The insertion of a focus operator in an unmarked focus structure becomes indispensable if a contrastive relation is intended

In line with these five conclusions, it can be argued that different syntactical, semantical and informative alterations generate different processing structures. Considering the processing average of marked focus structures as basis for all the examined variables, general results reflect that a common marked focusing structure never demands more processing effort than the same utterance without procedural device (cfr. § 7.1.). Further, the position of the FO regarding the focus element is strictly correlated with the processing of focusing structures. This specific variable alteration presents the most effortful condition of the presented study. In this regard, it is argued that the more common and frequent the FO-position is, the lower the processing effort (cfr. § 7.2.). At last, the degree of informativity produces an impact in the processing of these types of structures. The co-orientation of conceptual and procedural information regarding the common ground accelerates processing. Any conflict between the two meanings result in a conflict-resolution strategy in which an accommodation attempt is conducted (cfr. § 7.3.). In terms of comprehension, it can be concluded that the rigidity of the procedural mark leads to an interpretation of a conventional scalar implicature, and that a FO becomes indispensable for the construction of contrastive relations.

8.1. Focus marking

The empirical and experimental evidence gathered in the study has proven that utterances with unmarked and marked focus (triggered by a FO) that present different semantic and syntactic properties regarding their information structure require similar global processing effort (always trivial effects; cfr. § 7.1.). Thus, the confirmation of the first hypothesis regarding the variable IV B–*Focus marking* (cfr. § 6.1.2.) allows the formulation of a first conclusion[203]:

> *An utterance with marked focus does not present more global processing processing effort than an utterance with unmarked focus.*

From a theoretical point of view this conclusion is a key finding of the study: The specific information structure evoked by a FO as *incluso* is much more complex than the informative structure of an utterance with unmarked focus. The FO obliges the reader to mark an element of the discourse as more informative than the other elements which could be explicitly present in the utterance or implicitly given in the discourse (cfr. Rooth 1995, Portolés 2007, 2010, *DPDE s.v. incluso*). However, even though this implies more semantical information in the utterance, cognitive effort does not increase proportionally, leading to the conclusion that the insertion of a procedural element as *incluso* facilitates processing.

The discussion of the results reveals that *incluso* (as also other FOs, as *hasta*, cfr. Torres Santos 2020) activates a regulatory-effect while controlling the processing of the focusing areas under its scope (alternative and focus, cfr. § 7.1.). The effect provokes that the possible additional effort exhibited for the contrastive relation is either compensated through entire utterance processing, i.e. utterances with unmarked and marked focus present analogous processing times (cfr. §§ 7.1.1. and 7.1.2.), or can even activate an additional acceleration-effect for the processing of utterances with marked focus, i.e., utterances with marked focus require less processing effort than utterances with unmarked focus (cfr. § 7.1.3.).[204] Thus, results provide evidence for the second formulated focusing conclusion:

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[203] This conclusion is corroborated by other similar studies conducted with the FO *incluso* (cfr. Loureda *et al.* 2013, Loureda *et al.* 2014, Loureda *et al.* 2015, Loureda *et al.* in press), as well as by the study conducted with the FO *hasta* (cfr. Torres Santos 2020). Moreover, this effect is also found in studies conducted with other procedural units, as argumentative connectives, as *por tanto* (cfr. Narváez García 2019, Recio Fernández 2020) and also counter-argumentative connectives as *sin embargo* (cfr. Nadal in press). In none of these studies, any evidence was found that a marked utterance (triggered by a procedural element) with a greater semantic load requires more total processing effort than the same utterance without the respective procedural element.

[204] Torres Santos (2020) describes similar effects for marked utterances conditioned by the FO *hasta*.

The focus operator generates a regulation and acceleration effect that compensates the additional processing effort that are produced by the lexical contrast of the affected units (alternative and focus). The processing effort of the focus operator constitutes the maximum limit for the processing of the implicated elements at the focusing operation.

In this manner, in utterances with marked focus, the FO becomes the axis of information retrieval by evoking a contrastive information structure. Moreover, through the entire course of the utterance processing, *incluso* never demands less processing effort than the other implicated areas in the focusing operation, i.e. the processing effort of the FO constitutes the processing limit for the other focusing elements.[205] Whereas, in utterances with unmarked focus, in which the contrastive relation can only be recovered conversationally, the processing effort is delayed to the focus element. This specific effect is justified through the different semantic properties of unmarked and marked foci (cfr. Rooth 1985, É. Kiss 1998, Kenesei 2006, Escandell Vidal and Leonetti 2009, Portolés 2010).

The fact that a structure with marked focus does not generate quantitatively different global processing effort in relation to a structure with an unmarked focus, does not mean that the utterances are processed according to the same pattern. At the macro level of the utterance, fundamental differences are found between both informative structures. A first relevant finding is associated to the construction of the first assumption (during first-pass reading time). The insertion of a FO always produces a disruption in the course of processing, insofar that it activates immediately the focusing operation and generates an acceleration-effect upon the focus element (by reducing always the processing of the marked focus in contrast to an unmarked focus (medium and large effects, Figure 12):

[205] This regulation and acceleration effect of the FO was also found for the operator *hasta* (cfr. Torres Santos 2020). As observed with *incluso*, *hasta* never presents less processing effort than the other constituents of the utterance, supporting the conclusion of a processing limit anchored in the FO for the processing of the focusing operation.

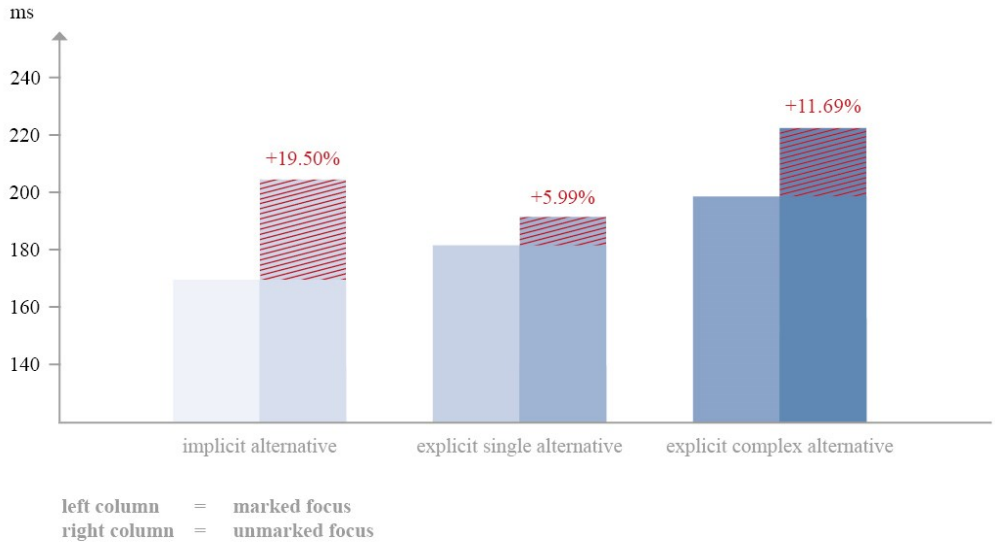

Figure 12: Focus processing – first-pass reading time

This effect is also observable with other FOs, as *hasta,* in which due to its culminative meaning, the effect is even more pertinent (large or very large effects, cfr. Torres Santos 2020). To sum up, if there is a procedural mark that activates a marked focus in an utterance, the focusing operation is activated at the FO, whereas in utterances with unmarked focus, the activation of an additive relation, i.e. the management operation of the common ground is delayed to the focus area. Further, the higher processing effort for the unmarked focus can generate more cognitive effort for the whole utterance processing.[206] This effect indicates that the insertion of a FO produces an immediate processing-effect that leads to the conclusion that during the construction of the first assumption an utterance with marked focus does not demand more processing effort than an utterance with unmarked focus.[207]

However, the effectuation of a conventionally triggered contrastive relation can only by accomplished by integrating all conceptual elements towards the procedural mark and by the integration of the assumption in the common ground. Processes that are mainly visible at later measures. Thus, a second finding at the macro level is concerned with the reanalysis strategies

[206] Higher processing effort is observable in utterances with implicit or explicit complex alternative (medium (-6.69%) or small (-4.38%) effects), whereas in utterances with explicit single alternative the construction of the explicature in an utterance with marked focus does not present differences in contrast to utterances with unmarked focus.

[207] These findings are in line with the findings in the studies conducted by Byram-Washburn (2013:§ 2.4.), Gotzner (2016:§ 3.2.). They found out that FOs not only facilitate focus detection, but also influence the activation of alternative sets. The results indicate that readers, not only detect words faster when the focused element is marked by a FO, but also that alternatives are recalled better in utterances with focus, indicating that the FO activates a contrastive scale between focus and alternative.Further the findings of the IV B support the claim formulated by Filik *et al.* (2009), and Gerwien and Rudka (2019) that focusing operations are detected early during processing, but likewise, display their impact at later measures.

conducted in both structures. *Incluso* provokes primarily local higher processing effort for the areas upon it incites (alternative and focus), and insofar, activates a more effort demanding reanalysis-strategy in contrast to utterances with unmarked focus. The reader effectuates a "check and reevaluate"-strategy upon the lexical elements in order to satisfy the instruction of the FO. This is theoretically supported, since the FO, because of its procedural meaning, conventionally affects the lexical relation of alternative and focus and therefore, more time is implemented on confirmation, enrichment or modification of the previous built assumption. However, the adaptation of the conceptual meaning towards the procedural meaning during reanalysis does not produce global extra effort through the entire utterance processing. On that account, the effort needed to establish the contrastive relation during the recovery of the assumption are defined as "additional regulatory effort", since they allow to control the quality of an initial explicature and to activate a contrastive inferential route without additional global effort. On the opposite, by absence of a procedural mark, no above-average cognitive effort is required. The reader activates a "check and balances"-strategy between alternative and focus in order to confirm if the first assumption still holds and subsequently to integrate the correct assumption to the common ground.

Summarizing, the insertion of a FO activates a different processing pattern by generating a redistribution of the semantic relation in the utterance. Therefore, two processing patterns were defended: One unmarked (conceptual) pattern, in which the information is mainly recovered by the lexical information, in particular by the focus element, and one marked (procedural) pattern, in which the contrastive relation triggered by the FO is recovered by the adaptation of the conceptual information to the procedural information.

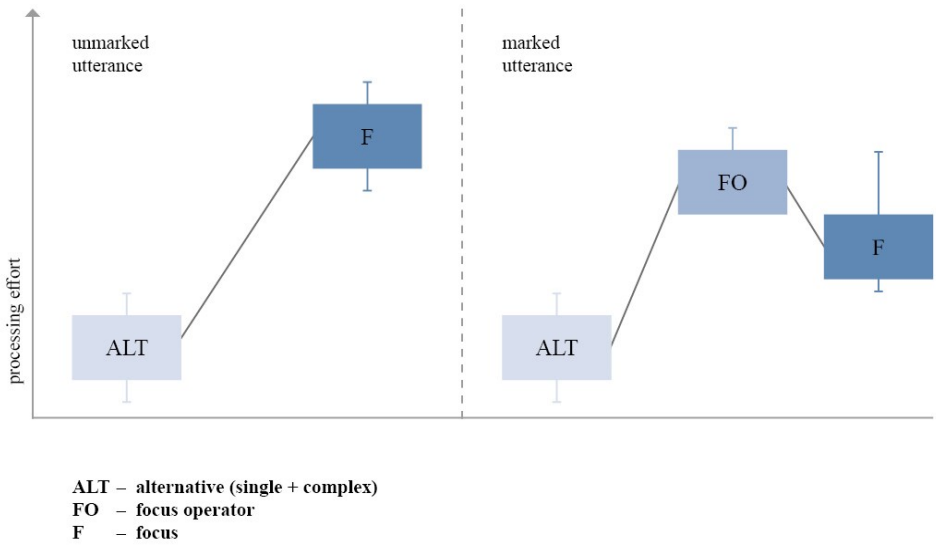

Figure 13: Processing patterns of utterances with unmarked and marked focus

8.2. Positional variability

The findings of the IV C – *Position of the FO in relation to the focus* confirm that, although in both conditions the instruction triggered by the FO evokes the same contrastive implicature, different FO-positions regarding the focus element generate two different processing patterns.[208] Results report that the utterance in which the FO is postponed to the focus always requires more processing effort in contrast to utterances in which the FO precedes its nucleus (ranging from 5% to 11% more cognitive effort depending on the alternative extension; cfr. § 7.2.).[209] Thus, a cognitive optimal position of the FO can be defended leading to the formulation of a third focusing conclusion:

> *A preposition of the focus operator in relation to the focus is the optimal position. Any positional alteration produces more cognitive effort.*

The findings are consistent with the theoretical and descriptive arguments regarding the two possible positions. The preposition of the FO constitutes the most common and most frequent position in Spanish. Likewise, this informative word order structure represents the unmarked informative structure of a focusing operation, since the position allows to display the instruction of the FO in its optimal manner, while determining directly the focus element. Concisely, the theoretical claim that an optimal informative distribution in an utterance enables a processing-benefit (cfr. Sperber and Wilson 1995 [1986], Roberts 2012) can be corroborated. Considering, that the formal construction of an explicature is determined by the informative intention of the interlocutor, in order to present the information in its most relevant form with the minimal cognitive effort, the interlocutor will always opt for the most optimal word order in an utterance according to their communicative needs (cfr. König 1993:978, Gutiérrez Ordóñez 2000 [1997]:17, Fuentes 1999:9).

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[208] From a theoretical perspective, only two positions can be assigned to the FO *incluso*, in which the scope does not vary: one preposition, in which *incluso* as modifier precedes its nucleus, and another directly postposition of the FO in relation to the focus, in which the relation is inverted. Any other position implies that the interpretation possibilities vary since the information load that is directly affected by the FO differs (cfr. König 1991, Andorno 2000, Portolés 2010, and § 4.2.). The most common and neutral position of the FO is the preposition (FO precedes the focus element), and thus it is theoretically expectable that the preposition of the FO requires less processing effort.

[209] An acceleration-effect for the optimal FO-position refutes the arguments of studies conducted with causal (cfr. Narváez García 2019) or counter-argumentative (cfr. Nadal in press) connectives, in which the most common and frequent connective (initial) position is always the position with less processing effort.

At the macro level of the utterance it is manifested that two identical informative relations that globally are processed differently according to different word order distributions, present also different local processing patterns. A first relevant finding is related to the relation between the constituents of the focusing operation. Results of the total reading time report that a distributional alteration provokes a dislocation of the processing to the right side of the utterance. This dislocation-effect can either a) activate a concentration of the processing at the procedural unit in utterances with implicit alternative (cfr. § 7.2.3., Figure 15)[210],

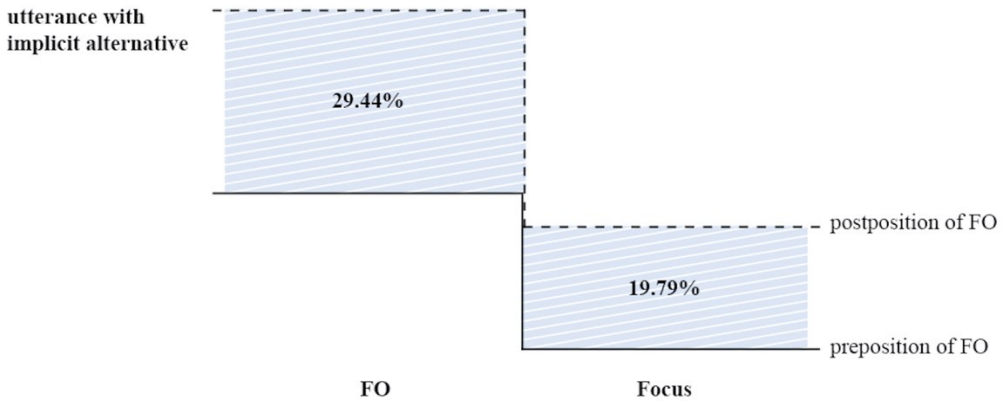

Figure 14: Processing pattern - implicit alternative

or b) provoke that the focus element and the FO constitute a functional unit in order to recover the information in utterances with explicit (single or complex) alternative (Figure 16).[211]

[210] In order to clearly illustrate the differences between the AOIs, both conditions are presented in the same order (as the condition with prepositional FO).
[211] The differences between the FO and the focus are trivial (<4%), whereas the differences between the alternative and the FO or the focus present very large effects (ranging from 35% to 45%) in the total reading time.

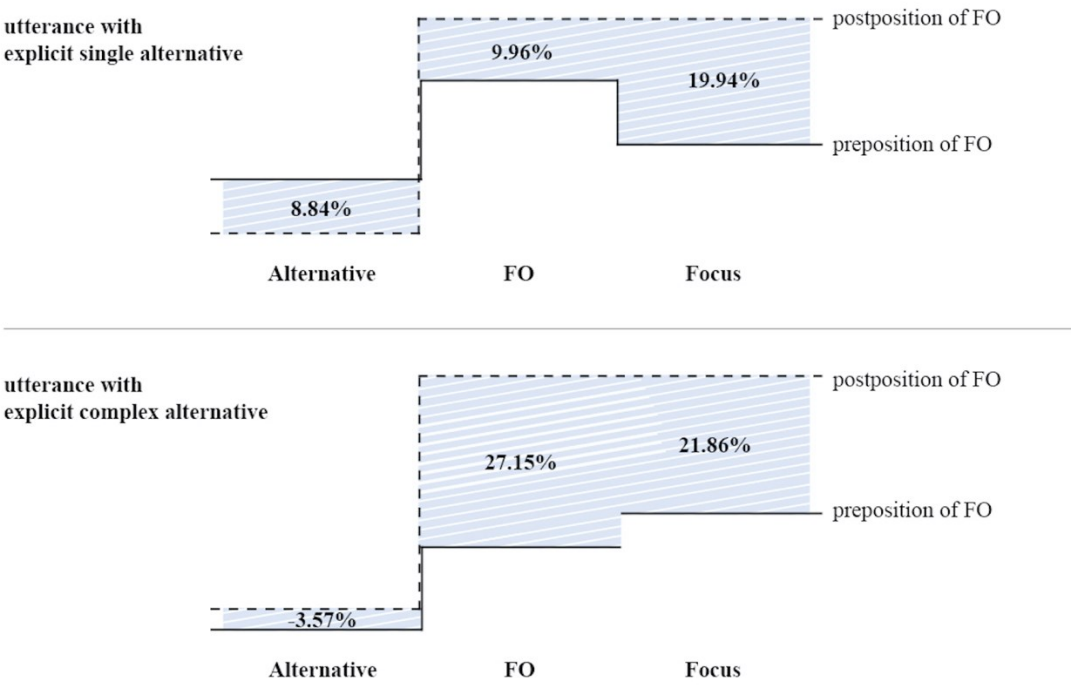

Figure 15: Processing pattern - explicit alternative (single and complex)

The different processing patterns between the conditions observed during the whole processing originate mainly from the reanalysis, in which utterances with postpositional FO regarding the focus demand excessive more processing effort for the areas directly affected by the distributional alteration (focus and FO) that is further trespassed to the global utterance level. In all utterances with postpositional FO (independently of the extension of the alternative), the areas of focus and FO demand relevant processing effort in contrast to the elements of the utterance with optimal FO-position (in all cases very large effects, >20%, in some areas the processing effort nearly doubles the processing effort of the other areas, >90%, Figure 17).

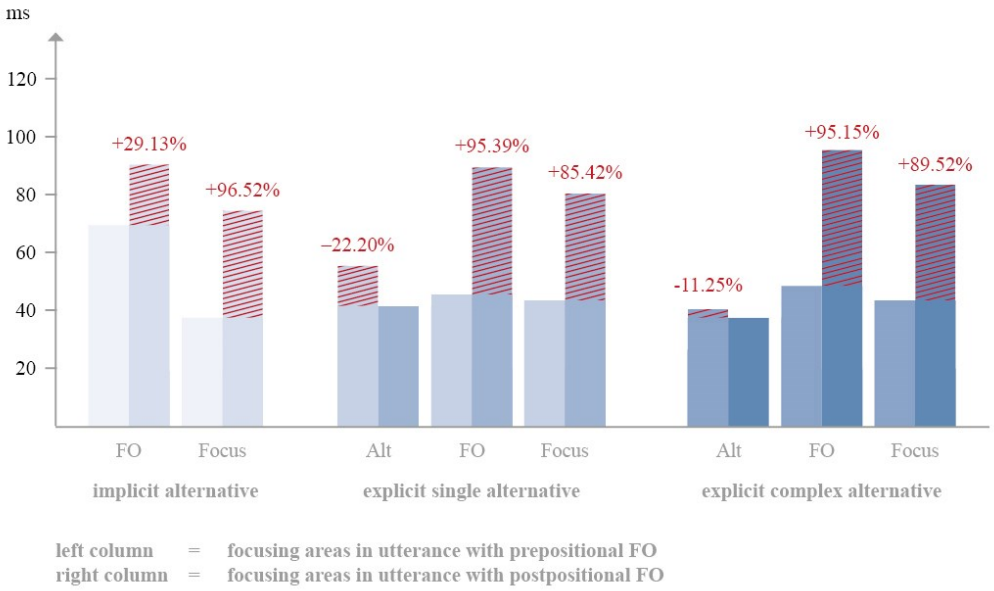

Figure 16: Processing of focusing areas – total reading time

This dislocation-effect to the right side of the utterance becomes even more pertinent, since a processing gap is generated between the explicit alternative (single or complex) and the areas of the focus and FO. The alternatives of the utterances with postpositional FO never demand more processing effort than the alternative in the utterance in which the FO precedes the focus element (large and very large effects, ranging around 10% and 20%, Figure 17). Thus, these findings reveal that in order to recover a contrastive relation in an utterance that implies a distributional alteration the reader relies mainly on the focusing areas that are directly affected by the position-shift of the FO and that the background information becomes marginalized for the recovery of the contrastive relation. The local reanalysis effort for the elements of the utterance with postpositional FO produces an impact in the global processing of the utterance which always results in major reanalysis effort for the whole utterance with postpositional FO.

Results have proven that in utterances with optimal FO-position, the FO can generate a regulation and acceleration effect that compensates the additional effort for the insertion of the procedural information. However, this effect only holds if the FO precedes its focus (cfr. § 7.1.). If the position of the FO is altered, and the FO is postponed to the focus, the processing pattern changes, provoking major additional reanalysis effort in order to adapt the contrastive implicature to the context. Summarizing, the results report that:

a) A position-shift of the FO leads to a distributional alteration in the informative structure provoking a dislocation-effect of the processing to the right side of the utterance. The dislocation-effect generates significant local higher processing effort for the areas that are directly affected by the positional alteration of the FO (focus and FO) and backgrounds the role of the alternative.

b) The local effort required in order to process the contrastive relation in the utterances with postpositional FO is also trespassed to the global utterances level through the entire processing course of the utterance leading to the conclusion that an utterance with postpositional FO always demands more processing effort than an utterance with preposition of the FO. Therefore, from a cognitive perspective, the findings allow to defend that there is an optimal FO-position (preposition) which ensures a guided processing with a minimal cognitive effort.

8.3. Informativity

The integration of an assumption in the common ground or the abandonment of the assumption is determined by the generated cognitive effects during processing (cfr. Sperber and Wilson 1995 [1986]). If the information in an utterance accomplishes the expectations of relevance activating positive cognitive effects, the reader confirms or modifies the existing assumptions, or, if necessary, creates a new assumption *ad hoc* during the communicative process (cfr. Carston 2002, Beaver and Zeevat 2007, Escandell Vidal *et al.* 2011, Wilson and Sperber 2012). Otherwise, if the information in an utterance does not satisfy the expectations of relevance and no positive cognitive effects are activated, the assumption can be abandoned (cfr. Wilson and Sperber 2004:613). Thus, for each presented utterance in communication the interlocutor has to carry out a highly efficient selection process in order to recover the suitable information (cfr. Wilson and Sperber 2012: 271). The presented study aimed to assess how this efficient selection process is effectuated when in an utterance the information given by the conceptual and procedural elements are congruous or incongruous to the contextual information anchored in the common ground. Two main results can be isolated:

a) *Utterances with congruous und incongruous information present two different processing patterns.* If conceptual and procedural information in an utterance is co-oriented to the assumptions stored in the common ground more positive cognitive effects are generated, the information in the utterance becomes more relevant and less processing effort is demanded (cfr. § 7.1.). On the other hand, if the integration of the conceptual meaning towards the procedural meaning is anti-oriented in relation to the common ground less positive cognitive effects are expected and a different processing pattern is generated (cfr. Wilson and Sperber 2002:252, Noveck and Sperber 2004:5-6, Blakemore 2002:79, cfr. § 7.3.).
b) *Conflict detection always initiates a conflict-resolution strategy.* In cases in which a conflict is detected between the conceptual and procedural information in relation to the common ground the reader can initiate different strategies in order to process the information. Which strategy is used depends on whether the reader considers the conflict to be reparable or not (cfr. Beaver/Zevat 2007: 5).

Within the attempt of a *conflict-resolution-strategy* (b) the results corroborate two main subordinated findings concerning focus structures. The first finding concerns the moment of conflict-detection (in line with the results of Filik et al. 2009). The data prove that informative incongruencies are detected early during processing. During first-pass reading time the reader detects a conflict between conceptual and procedural information at the first element that inhibits the incongruency.[212] In relation to the extension of the alternative, the reader detects the incongruency either by relating the instruction of the FO *incluso* to the focus (in the cases of implicit alternative and explicit single alternative) or by connecting the elements of the complex alternative, that already inhibits a contradictory enchainment.

The second finding concerns the different *conflict-resolution-strategies* after conflict detection that a reader can adopt. Two main processing strategies can be isolated (Figure 18):

a) *Accommodation-strategy* (Route A or B). The reader considers the information repairable and attempts to accommodate the conflictive information by implementing more processing effort at the affected area (focus). This higher processing effort can be implemented during the construction of the first assumption and be transferred to the reanalysis and therefore to the total processing of the affected area (Route A, *immediate accommodation strategy*) or can only occur at the reanalysis, but producing also more processing effort at the total processing (Route B, *immediate reactivation strategy*). In both cases the reader either then modifies existing assumptions or creates an assumption *ad hoc* in order to satisfy the instruction triggered by the FO (cfr. Carston 2002 Beaver y Zeevat 2007, Escandell Vidal *et al.* 2011, Escandell Vidal and Leonetti 2011:91). This created assumption can *a posteriori* be accepted and fully integrated in the common ground or can also be cancelled if the cognitive effects do not yield a positive outcome (cfr. Carston 2002, Wilson and Sperber 2004:613, Recio Fernández 2020, Narváez García, 2019).
b) *Abandonment-strategy* (Route C). The reader considers the presented information not repairable and abandons quickly the affected focusing area and does not initiate an accommodation process. This strategy results in less processing effort for the focus area across all parameters (*processing breakdown*). The constructed as-

[212] This finding confirms the theoretical and empirical described claim that incongruencies, generated either by the alteration of conceptual elements (cfr. Pickering *et al.* 2000) or by a procedural element (cfr. Köhne and Demberg 2013, Drenhaus *et al.* 2014, Nadal in press, Recio Fernández 2020, Narváez García 2019) are detected early during processing.

sumption could not be repaired and integrated in the common ground (see also Torres Santos 2020, Recio Fernández, 2020).

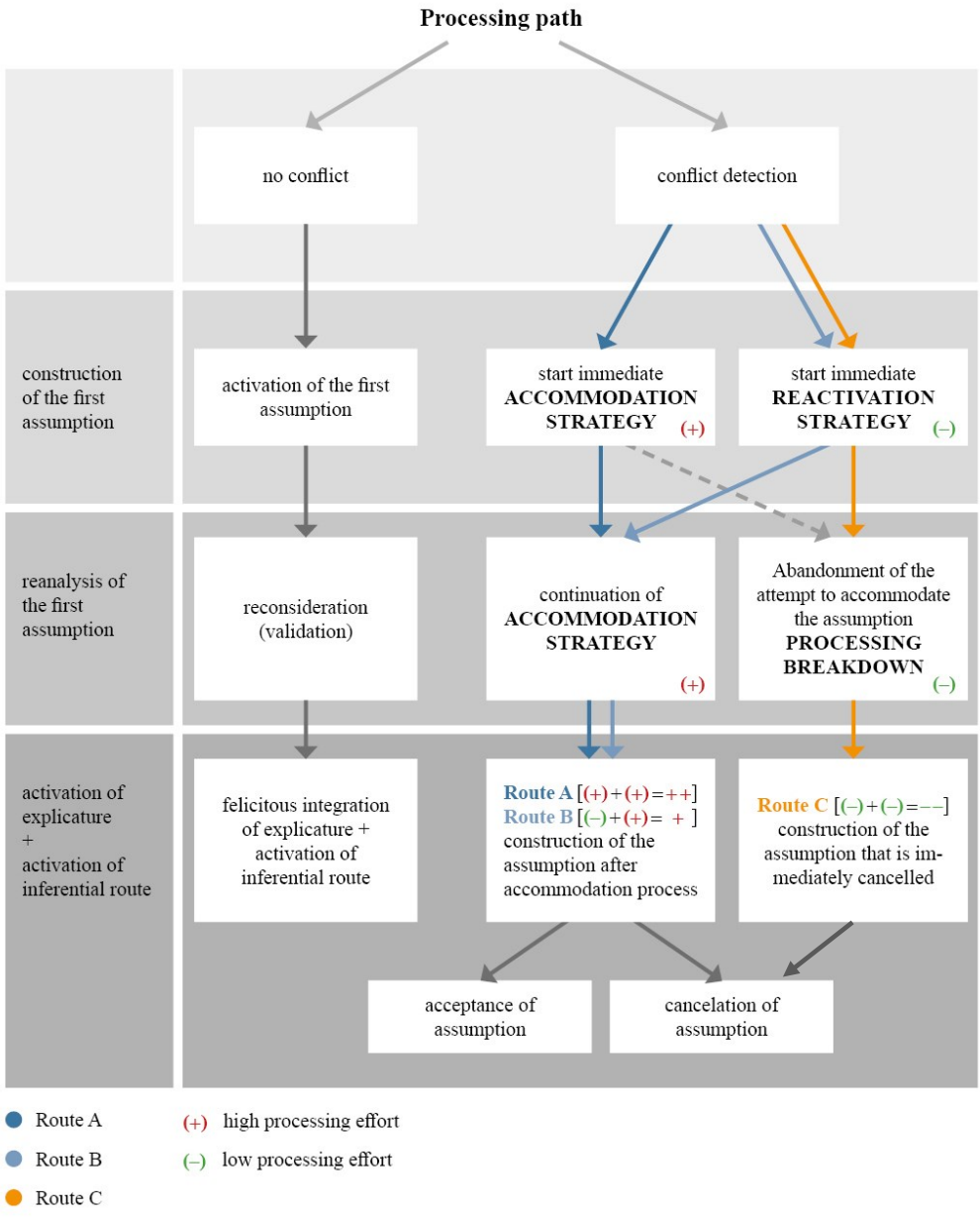

Figure 17: Processing paths after conflict detection

In cases of *incluso* an *accommodation-strategy* is always implemented that lead to the construction of an assumption that entails always higher cognitive effort for the affected area (focus, at least for the reanalysis). *Incluso* always evokes an accommodation-strategy and obliges the reader to make an attempt to accommodate the conceptual information towards the proce-

dural instruction (route A or B).[213] The semantic nature of the relative FO *incluso* allows the reader to consider the accommodation of the assumption to a possible context (cfr. Schwenter 2002:9-10). A strategy that cannot occur with other FOs, as *hasta*. *Hasta* due to its absolute semantic nature activates an *abandonment-strategy* since no positive cognitive effects are produced. Consequently, the assumptions are immediately cancelled (cfr. Torres Santos 2020).

Thus, the findings of the study corroborate the theoretical described hypothesis only for focus structures marked by *incluso*, but allow the formulation of a general focusing conclusion (cfr. § 6.1.4., confirmation of the hypotheses of the IV D):

> *In an informative structure with marked focus the co-orientation of the conceptual meaning towards the procedural meaning assures a guided processing. Any difficulty of accommodating a conceptual representation towards the instruction of the focus operator initiates a conflict-resolution strategy.*

The decision which strategy to adopt after detecting the conflict between conceptual and procedural information in focusing structures depends on two factors. One factor concerns the semantic constraintment of FOs: Different operators of the same paradigm can inhibit different degrees of semantic constraintment, as *incluso* and *hasta*. *Incluso*, as relative FO entails less semantic constraints: its instruction is less restrictive and allows a broader interpretative range (*accommodation-strategy*), whereas *hasta* due to its high degree of semantic constraintment is more restrictive in its interpretative range. The constraints of *hasta* imposes to the utterances an early abandonment of the pursuit of relevance, which results in lower processing effort for the focus area (*abandonment-strategy*, cfr. Torres Santos 2020).

A second factors relates to the degree of informativity of the background information, i.e. the relation between focus and background information triggered by the FO *incluso*. If the conceptual information of the alternative itself inhibits a lexical conflict (as in the cases with

[213] The higher processing effort of the reanalysis of the procedural element and the elements under its scope is also visible in other experimental studies with different connectives, see Nadal and Recio Fernández (2019), Loureda *et al.* (2016), Loureda *et al.* (in press), Nadal (2019), Narváez García (2019) and Recio Fernández (2020), and also with other FOs, as *hasta*, Torres Santos (2020) and for English FOs, as *only* and *even* see Filik *et al.* (2009).

explicit complex alternative) the accommodation becomes even more effort demanding transferring the local accommodation effort to global processing effort[214].

In summary, if the conceptual and procedural information is co-oriented processing can be accelerated. Otherwise, a conflict-resolution strategy is implemented which depending on different factors can adopt different processing routes ranging from the attempt to accommodate the assumption to its cancellation. If the reader tries to accommodate the conceptual information towards the instruction of the procedural device an accommodation-process is initiated which always implies major local and global effort during the reanalysis. The results confirm the theoretical approach that accommodation requires more processing effort in order to achieve a (positive) cognitive effect (cfr. Escandell Vidal and Leonetti 2011:98, Nadal in press, Recio Fernández 2020, Narváez García 2019).

[214] Furthermore, studies with different degrees of linguistic competence of the reader that examine the processing of causal and counter-argumentative relations in Spanish have proven that a low degree of linguistic and discursive competence can also lead to an *abandonment-strategy* (cfr. Recio Fernández 2020).

8.4. Comprehension

During the construction of an assumption, the conceptual meaning of the lexical elements in an utterance activates mental representations that are stored in the common ground of the interlocutors, and the procedural meaning of the FO introduces how these mental representations have to be processed in order to activate cognitive effects. Thereby, the procedural device restricts the accessible context and guides with its morphosyntactic, semantic and pragmatic properties the inferences during communication evoking that the inferential route becomes more restrictive and unambiguous (cfr. Blakemore 1987, 2002, Portolés 2001 [1998]).

Incluso activates a different inferential route that leads to a conventional scalar implicature. The procedural meaning of the FO conventionally imposes its instruction on the conceptual elements of the utterance (property of rigidity) and obliges the reader to interpret the mental representations that are built upon the conceptual elements towards the instruction (property of asymmetry). The heterogenous answer proportions with a yes-answer rate at least above 85% for the utterance with marked focus indicate that the stimuli are highly sufficient to recover a contrastive implicature triggered by the FO (Figure 19). Whereas, in utterances with unmarked focus a more homogenous answer distribution was found leading to the conclusion that the presented stimulus is not sufficient to interpret a contrastive relation (cfr. § 7.3.4.).

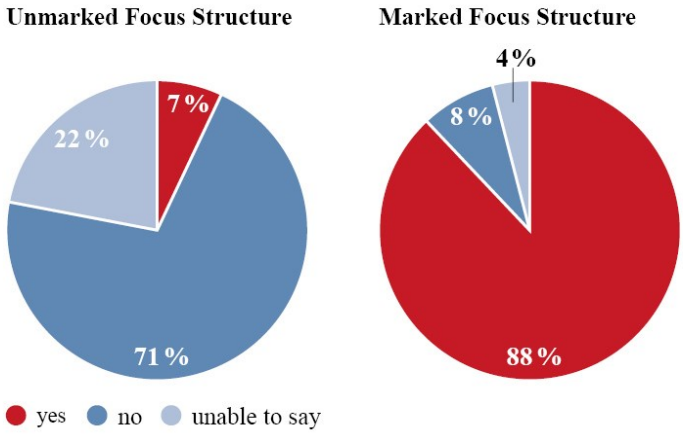

Figure 18: Results Comprehension test IV B

Thus, unmarked and marked focus structures do not provide equally optimal stimuli to lead to a contrastive implicature (cfr. § 6.1.2., confirmation of the hypotheses of the IV B). According to these results the following conclusion can be formulated:

> *A contrastive relation is not processed "by default". The insertion of a focus operator in an unmarked focus structure becomes indispensable if a contrastive relation is intended.*

Thus, FOs become indispensable, if a contrastive relation is intended. In utterances with unmarked focus a contrastive relation is not processed "by default" if no procedural device evokes it.[215] On the contrary, through the use of *incluso*, any utterance with marked focus is a structure directed by the interpretation of the operator and conventionally generates a contrast.[216]

The alteration of the FO-position in relation to the focus element that produces a high impact in processing does not generate a different inferential route in comprehension (cfr. § 7.2.5.). The FO (pre- or postposition of the FO in relation to the focus) conventionally guides the inferential process in order to interpret a scalar implicature in both conditions (again, majority of yes-answers, confirmation of the hypotheses of the IV C, Figure 20):

[215] Even the extension of the conceptual information of the background information in unmarked utterances with complex alternative do not constitute an independent sufficient stimulus to evoke a contrastive relation supporting the claim that unmarked focus structures do not automatically generate a contrastive. Insofar this effect holds for pragmatic open scales, it could be expected that in pragmatic closed scales different comprehension patterns are found and it is likely to assume that the conceptual information could provide a sufficient stimulus to evoke a contrastive relation in cases of pragmatic closed scales.

[216] These results are further reinforced by the findings of the comprehension study of the FO *hasta* realized by Torres Santos (2020).

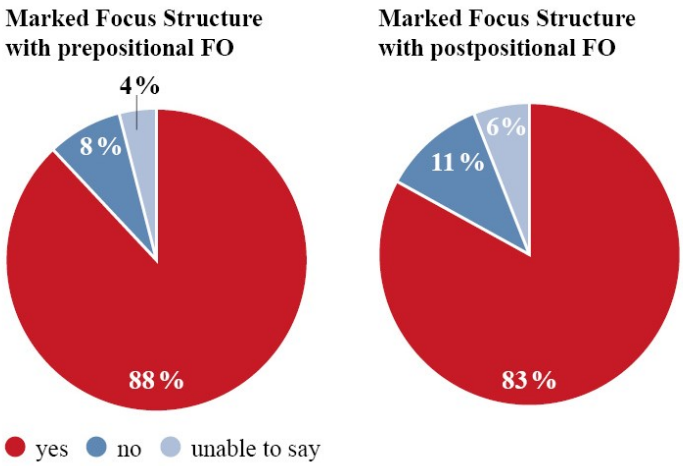

Figure 19: Results Comprehension test IV C

This is theoretically sustainable, because the FO introduces the same instruction in both conditions and allow the reader to establish a specific inferential route that leads to a scalar implicature. In brief, a distributional alteration in an utterance affects, but does not determine comprehension-strategies.

Findings of the eye tracking study demonstrate that in marked focus structures different degrees of informativity lead to an accommodation-process that is tied to major reanalysis effort (cfr. § 7.3.5.). However, not any accommodation-process does necessarily lead to the integration of adaptable material in the common ground. The new created assumption could not be acceptable *a posteriori*. According to the results of the comprehension test, the reader seems to accommodate the conceptual representations to the instruction of the FO validating the properties of the procedural units (Figure 21). Even though the information presented in the utterances contradicts the assumptions stored in the common ground, the reader fulfils the task by answering according to the instruction of the operator.[217] The procedural meaning of the FO imposes its conditions to the utterance and the context and activates the insertion of the appropriate assumption in order to satisfy the interpretation (cfr. Leonetti and Escandell Vidal 2004:1729, Escandell Vidal and Leonetti 2011:81, and § 6.1.1. rejection of the hypotheses of the IV A-2b).

[217] Note that the task asks specifically about interaction between the conceptual and procedural meaning in the particular utterance and note also that each question of the comprehension test is initiated with "According to the sentence,…"

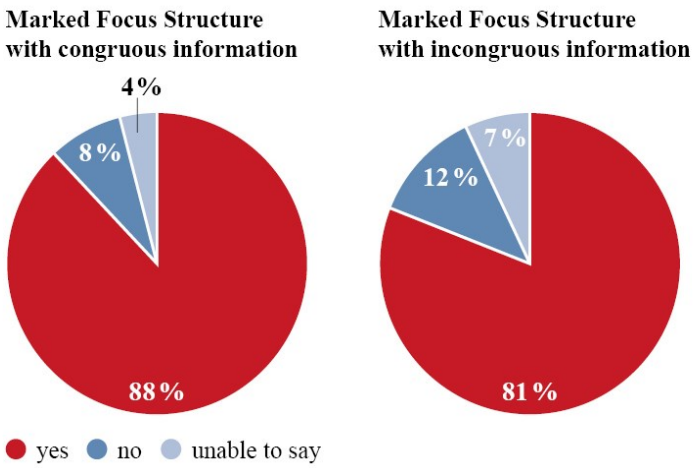

Figure 20: Results Comprehension test IV D

However, results of an additional comprehension test reveal that the rigidity-property only holds if the task is based on the instruction of the FO. If the task of the comprehension test asks precisely about the instruction of the FO the participants fulfil the instruction and establish a contrastive relation of the utterance. However, by eliminating the initial formulation of the task "According to the sentence,…", in e.g. "According to the sentence, English is more difficult than Chinese" the participants do not follow the instruction of the FO, but rather answer according to their world knowledge presenting heterogenous answer-proportions between the conditions (Figure 22)[218].

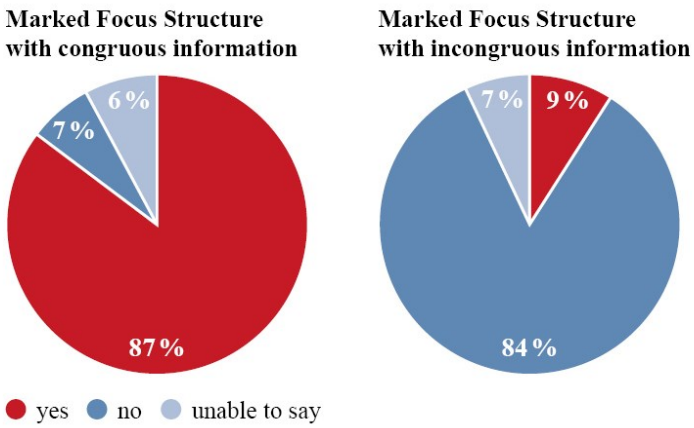

Figure 21: Results additional Comprehension test IV D

[218] *Results* χ^2 test:
comparison: b2a1 – d1a1: 365.81 > 5.99; p < .05
comparison: b2a2 – d1a2 423.80 > 5.99; p < .05
comparison: b2a3 – d1a3 446.02 > 5.99; p < .05
cfr. also Appendix G.

The findings suggest that the mental representations built upon the conceptual elements of the utterance can surpass the expectations of relevance insofar that not enough positive cognitive effects are created and the reader cancels the integration of the assumption into the common ground. The different results of the additional comprehension test support the claim that the participants after making an attempt of accommodation during processing at the end cancel the created assumptions.[219] The malleable conceptual elements and the rigid instruction of the FO can keep their properties until a certain point. This point is determined by the principle of relevance and thus, by the activation of positive cognitive effects and whether the expectations of relevance can be satisfied according to the world knowledge of any individual.

[219] Same outcome as in focusing structures triggered by the FO *hasta*. Whereas, the relative FO *incluso* allows an attempt of accommodation in order to integrate the information in a possible adaptable context, but at the end cancels the assumptions. Focusing structures with *hasta* do not conduct an accommodation-process and cancel the assumption immediately.

8.5. Prospects of further research

The aim of the experimental study of the presented PhD thesis was to provide an insight view on how focusing structures triggered by the FO *incluso* influence the processing and comprehension of pragmatic open scales. Thereby, the conducted experimental studies (eye tracking and comprehension test) constitute a complementary method to theoretical and descriptive approaches, which build the fundament of this thesis. The findings of the study aim to corroborate or adjust theoretical principles that guide the communication and finally, enrich the description with a cognitive experimental approach of different focusing phenomena.

This study on focusing structures constitutes a possible starting point for further research. The treated independent variables basically concern three main aspects of focusing operations: Focus marking, position-shift of the FO in relation to the focus and the degree of informativity in an utterance. It could be potentially useful to extend the independent variables in different directions.

Regarding focus marking and the position variability of FOs it is a future research option to investigate the influence of different FO-positions that allow different scope interpretations (cfr. Jacobs 1983:8-10, König 1991:10-12). It can be assumed that the wider the scope of the FO, the more effort demanding the interpretation of the contrastive relation of a focusing structure is.

On the informative level, different aspects can be further considered that concern the set of alternatives. A further auspicious aspect is the limitation of different sets of alternatives (open vs. close set of alternatives, cfr. § 3.3.) in utterances with explicit complex alternative. In this regard, it can be expected that closed sets of alternatives (due to conceptual constraints) are processed faster in congruous conditions.

Whereas in incongruous conditions the assumption arises that difficulties in regard to the realization of an accommodation-process emerge. Here, it is more likely that the reader opts for an abandonment-strategy due to conceptual constraints of the set of alternatives (route C, Figure 18). Additionally, this possible independent variable could give rise to relevant findings regarding the interpretation of the relation between the alternative set and focus information. It is particularly interesting to investigate if readers process a complex alternative in relation to the focus as a binary division or if they consider the intern order of the alternative information (cfr. Portolés 2007). Results of the presented study in this thesis have indicated that the binary division holds for pragmatic open scales, but it can be assumed that

pragmatic scales with closed sets of alternative inhibit a rigid intern order that determines the processing effort.

Different aspects of the focusing phenomenon in discourse are open for further investigation, as e.g. different types of scales triggered by FOs (cfr. § 3.3.). Since the presented study only considers pragmatic scales, it would be particularly promising to examine whether different types of scales lead to different processing and comprehension patterns. Specifically, the examination of semantic scales triggered by *incluso* or any other FO could be worthwhile. Semantic scales are expected to be processed with less processing effort, since they exist by default (cfr. Horn 1972, 1979, Levinson 2000 [1983]), Portolés 2007:136-137). The scalar value in the scales is inferred by the semantic content of the elements and thus, is faster accessible. Whereas the elements of a pragmatic scale have to be ordered according to the same topic and according to their informative value that is anchored in the world knowledge of the interlocutors. This informative enrichment is tied to more cognitive effort and should present different in contrast to semantic scales.

A further research aspect could concern other procedural elements that evoke a focusing operation, for Spanish and for other languages. The comparison with the study realized with the FO *hasta* (cfr. Torres Santos, 2020) allows to establish general focusing conclusions, even though both FOs present different semantic features. This leads to the conclusion that focusing operations may be universal linguistic phenomena with similar processing and comprehension patterns independently of the type of the FO or language. Therefore, it can be promising to examine other inclusive FOs, as for Spanish e.g. *también* or, as counterpart, exclusive FOs, as *solo* or *ni siquiera,* and their equivalents in other languages. Thus, a wholesome cognitive perspective of the FO paradigm and the discourse particle paradigm would allow to formulate solid discursive principles.

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Appendix A. Schematic token set

Independent Variables				
		IV A - Extension of the alternative		
		a1 – implicit alternative	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
IV B – Focus marking	b1 – absence of FO	b1 a1	b1 a2	b1 a3
	b2 – presence of FO	b2 a1	b2 a2	b2 a3
	b3 – with adjective	b3 a1	b3 a2	b3 a3
IV C – Position of the FO in relation to the focus	c1 – postposition of the FO	c1 a1	c1 a2	c1 a3
IV D – Degree of informativity	d1 – incongruous information	d1 a1	d1 a2	d1 a3

Appendix B. Counter-balancing design

	EXP 1	EXP 2	EXP 3	EXP 4	EXP 5	EXP 6	EXP 7	EXP 8	EXP 9	EXP 10	EXP 11	EXP 12	EXP 13	EXP 14	EXP 15
token set 1	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
token set 2	B	C	D	E	F	G	H	I	J	K	L	M	N	O	A
token set 3	C	D	E	F	G	H	I	J	K	L	M	N	O	A	B
token set 4	D	E	F	G	H	I	J	K	L	M	N	O	A	B	C
token set 5	E	F	G	H	I	J	K	L	M	N	O	A	B	C	D
token set 6	F	G	H	I	J	K	L	M	N	O	A	B	C	D	E
token set 7	G	H	I	J	K	L	M	N	O	A	B	C	D	E	F
token set 8	H	I	J	K	L	M	N	O	A	B	C	D	E	F	G
token set 9	I	J	K	L	M	N	O	A	B	C	D	E	F	G	H
token set 10	J	K	L	M	N	O	A	B	C	D	E	F	G	H	I
token set 11	K	L	M	N	O	A	B	C	D	E	F	G	H	I	J
token set 12	L	M	N	O	A	B	C	D	E	F	G	H	I	J	K
token set 13	M	N	O	A	B	C	D	E	F	G	H	I	J	K	L
token set 14	N	O	A	B	C	D	E	F	G	H	I	J	K	L	M
token set 15	O	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Participants	**20**	**20**	**20**	**20**	**20**	**20**	**20**	**20**	**20**	**20**	**20**	**20**	**20**	**20**	**20**
Total amount participants			**300**												

Appendix C. Concrete token sets

Token set 1

Independent Variables				
		IV A - Extension of the alternative		
		a1 – implicit alternative	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
IV – B Focus marking	b1 – absence of FO	**A** - Manolo y Antonio importan tomates. Es un buen negocio.	**B** - Manolo y Antonio importan pimientos y tomates. Es un buen negocio.	**C** - Manolo y Antonio importan pimientos, cebollas y tomates. Es un buen negocio.
	b2 – presence of FO	**D** - Manolo y Antonio importan incluso tomates. Es un buen negocio.	**E** - Manolo y Antonio importan pimientos e incluso tomates. Es un buen negocio.	**F** - Manolo y Antonio importan pimientos, cebollas e incluso tomates. Es un buen negocio.
	b3 – with adjective	**G** - Manolo y Antonio importan tomates italianos. Es un buen negocio.	**H** - Manolo y Antonio importan pimientos y tomates italianos. Es un buen negocio.	**I** - Manolo y Antonio importan pimientos, cebollas y tomates italianos. Es un buen negocio.
IV C – Position of the FO in relation to the focus	c1 – postposition of the FO	**J** - Manolo y Antonio importan tomates incluso. Es un buen negocio.	**K** - Manolo y Antonio importan pimientos y tomates incluso. Es un buen negocio.	**L** - Manolo y Antonio importan pimientos, cebollas y tomates incluso. Es un buen negocio.
IV D – Degree of informativity	d1 – incongruous information	**M** - Manolo y Antonio importan incluso pimientos Es un buen negocio.	**N** - Manolo y Antonio importan tomates e incluso pimientos. Es un buen negocio.	**O** - Manolo y Antonio importan tomates, cebollas e incluso pimientos. Es un buen negocio.

Context	Manolo y Antonio son dos importadores mayoristas de Madrid. Importan diversas hortalizas como pimientos y cebollas que después venden en Andalucía.
filler item 1	Por su negocio tienen que viajar mucho. Durante los viajes conocen a muchos agricultores.
filler item 2	A las mujeres de Manolo y Antonio les gusta cocinar. Siempre les traen frutas y verduras frescas.

Token set 2

Independent Variables				
		IV A - Extension of the alternative		
		a1 – implicit alternative	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
IV – B Focus marking	b1 – absence of FO	**A** - Letizia y Paola conocen Málaga. Les gusta viajar.	**B** - Letizia y Paola conocen Sevilla y Málaga. Les gusta viajar.	**C** - Letizia y Paola conocen Sevilla, Granada y Málaga. Les gusta viajar.
	b2 – presence of FO	**D** - Letizia y Paola conocen incluso Málaga. Les gusta viajar.	**E** - Letizia y Paola conocen Sevilla e incluso Málaga. Les gusta viajar.	**F** - Letizia y Paola conocen Sevilla, Granada e incluso Málaga. Les gusta viajar.
	b3 – with adjective	**G** - Letizia y Paola conocen Málaga capital. Les gusta viajar.	**H** - Letizia y Paola conocen Sevilla Málaga capital. Les gusta viajar.	**I** - Letizia y Paola conocen Sevilla, Granada Málaga capital. Les gusta viajar.
IV C – Position of the FO in relation to the focus	c1 – postposition of the FO	**J** - Letizia y Paola conocen Málaga incluso. Les gusta viajar.	**K** - Letizia y Paola conocen Sevilla y Málaga incluso. Les gusta viajar.	**L** - Letizia y Paola conocen Sevilla, Granada y Málaga incluso. Les gusta viajar.
IV D – Degree of informativity	d1 – incongruous information	**M** - Letizia y Paola conocen incluso Sevilla. Les gusta viajar.	**N** - Letizia y Paola conocen Málaga e incluso Sevilla. Les gusta viajar.	**O** - Letizia y Paola conocen Málaga, Granada e incluso Sevilla. Les gusta viajar.

Context	Letizia y Paola son dos estudiantes italianas de la Universidad de Florencia. Estudian Arte e Historia árabe en España. Este semestre realizan un viaje de estudios por Andalucía y en muy poco tiempo han recorrido ya varias provincias, como Sevilla y Granada.
filler item 1	Durante su viaje, Letizia y Paola conocen a mucha gente. Sobre todo los chicos andaluces se interesan mucho por las dos estudiantes.
filler item 2	Letizia y Paola echan de menos a sus familias en Italia y les escriben postales a menudo.

Token set 3

Independent Variables				
		IV A - Extension of the alternative		
		a1 – implicit alternative	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
IV – B Focus marking	b1 – absence of FO	**A** - Susana y María conocen Ecuador. Les gusta viajar mucho.	**B** - Susana y María conocen Colombia y Ecuador. Les gusta viajar mucho.	**C** - Susana y María conocen Colombia, Bolivia y Ecuador. Les gusta viajar mucho.
	b2 – presence of FO	**D** - Susana y María conocen incluso Ecuador. Les gusta viajar mucho.	**E** - Susana y María conocen Colombia e incluso Ecuador. Les gusta viajar mucho.	**F** - Susana y María conocen Colombia, Bolivia e incluso Ecuador. Les gusta viajar mucho.
	b3 – with adjective	**G** - Susana y María conocen Ecuador entero. Les gusta viajar mucho.	**H** - Susana y María conocen Colombia y Ecuador entero. Les gusta viajar mucho.	**I** - Susana y María conocen Colombia, Bolivia y Ecuador entero. Les gusta viajar mucho.
IV C – Position of the FO in relation to the focus	c1 – postposition of the FO	**J** - Susana y María conocen Ecuador incluso. Les gusta viajar mucho.	**K** - Susana y María conocen Colombia y Ecuador incluso. Les gusta viajar mucho.	**L** - Susana y María conocen Colombia, Bolivia y Ecuador incluso. Les gusta viajar mucho.
IV D – Degree of informativity	d1 – incongruous information	**M** - Susana y María conocen incluso Colombia. Les gusta viajar mucho.	**N** - Susana y María conocen Ecuador e incluso Colombia. Les gusta viajar mucho.	**O** -Susana y María conocen Ecuador, Bolivia e incluso Colombia. Les gusta viajar mucho.

Context	Susana y María trabajan en una ONG. Han pasado varios años en diferentes países de América Latina, como Bolivia y Colombia, para realizar diversos trabajos de ayuda social.
filler item 1	Susana y María trabajan mucho, sobre todo con niños huerfanos. Les enseñan a leer y escribir.
filler item 2	Las dos pasan mucho tiempo en el extranjero, pero no les importa demasiado Les gusta mucho su trabajo.

Token set 4

Independent Variables				
		IV A - Extension of the alternative		
		a1 – implicit alternative	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
IV – B Focus marking	b1 – absence of FO	**A** - Elena e Esteban meriendan plátanos. Les gusta mucho la fruta.	**B** - Elena e Esteban meriendan manzanas y plátanos. Les gusta mucho la fruta.	**C** - Elena e Esteban meriendan manzanas, naranjas y plátanos. Les gusta mucho la fruta.
	b2 – presence of FO	**D** - Elena e Esteban meriendan incluso plátanos. Les gusta mucho la fruta.	**E** - Elena e Esteban meriendan manzanas e incluso plátanos. Les gusta mucho la fruta.	**F** - Elena e Esteban meriendan manzanas, naranjas e incluso plátanos. Les gusta mucho la fruta.
	b3 – with adjective	**G** - Elena e Esteban meriendan plátanos canarios. Les gusta mucho la fruta.	**H** - Elena e Esteban meriendan manzanas y plátanos canarios. Les gusta mucho la fruta.	**I** - Elena e Esteban meriendan manzanas, naranjas y plátanos canarios. Les gusta mucho la fruta.
IV C – Position of the FO in relation to the focus	c1 – postposition of the FO	**J** - Elena e Esteban meriendan plátanos incluso. Les gusta mucho la fruta.	**K** - Elena e Esteban meriendan manzanas y plátanos incluso. Les gusta mucho la fruta.	**L** - Elena e Esteban meriendan manzanas, naranjas y plátanos incluso. Les gusta mucho la fruta.
IV D – Degree of informativity	d1 – incongruous information	**M** - Elena e Esteban meriendan incluso manzanas. Les gusta mucho la fruta.	**N** - Elena e Esteban meriendan plátanos e incluso manzanas. Les gusta mucho la fruta.	**O** -Elena e Esteban meriendan plátanos, naranjas e incluso manzanas. Les gusta mucho la fruta.

Context	Elena e Esteban son veganos, por lo tanto comen bastante fruta. Apenas cenan porque siempre meriendan mucho, especialmente fruta, como manzanas y naranjas.
filler item 1	Elena y Esteban solo compran fruta de temporada. La compran en el mercado todas las semanas.
filler item 2	Los dos se sienten muy responsables por el medio ambiente. Por eso se han decidido ser veganos.

Token set 5

Independent Variables				
		IV A - Extension of the alternative		
		a1 – implicit alternative	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
IV – B Focus marking	b1 – absence of FO	**A** - Paula y Daniel beben leche. Toman mucho líquido.	**B** - Paula y Daniel beben agua y leche. Toman mucho líquido.	**C** - Paula y Daniel beben agua, zumo y leche.Toman mucho líquido.
	b2 – presence of FO	**D** - Paula y Daniel beben incluso leche. Toman mucho líquido.	**E** - Paula y Daniel beben agua e incluso leche. Toman mucho líquido.	**F** - Paula y Daniel beben agua, zumo e incluso leche. Toman mucho líquido.
	b3 – with adjective	**G** - Paula y Daniel beben leche entera. Toman mucho líquido.	**H** - Paula y Daniel beben agua y leche entera. Toman mucho líquido.	**I** - Paula y Daniel beben agua, zumo y leche entera. Toman mucho líquido.
IV C – Position of the FO in relation to the focus	c1 – postposition of the FO	**J** - Paula y Daniel beben leche incluso. Toman mucho líquido.	**K** - Paula y Daniel beben agua y leche incluso. Toman mucho líquido.	**L** - Paula y Daniel beben agua, zumo y leche incluso. Toman mucho líquido.
IV D – Degree of informativity	d1 – incongruous information	**M** - Paula y Daniel beben incluso agua. Toman mucho líquido.	**N** - Paula y Daniel beben leche e incluso agua. Toman mucho líquido.	**O** - Paula y Daniel beben leche, zumo e incluso agua. Toman mucho líquido.

Context	Paula y Daniel se levantan todos los días muy temprano para ir a correr. Antes de hacer deporte no desayunan, solo se toman un vaso de algo líquido, como agua o zumo.
filler item 1	Paula y Daniel hacen mucho deporte para estar en forma. Quieren correr la maratón de Nueva York.
filler item 2	Además de beber mucho líquido, siguen una dieta rígida. Se alimentan muy bien.

Token set 6

Independent Variables				
		IV A - Extension of the alternative		
		a1 – implicit alternative	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
IV – B Focus marking	b1 – absence of FO	**A** - Clara y Laura venden cocos. Tienen un buen negocio.	**B** - Clara y Laura venden piñas y cocos. Tienen un buen negocio.	**C** - Clara y Laura venden piñas, mangos y cocos. Tienen un buen negocio.
	b2 – presence of FO	**D** - Clara y Laura venden incluso cocos. Tienen un buen negocio.	**E** - Clara y Laura venden piñas e incluso cocos. Tienen un buen negocio.	**F** - Clara y Laura venden piñas, mangos e incluso cocos. Tienen un buen negocio.
	b3 – with adjective	**G** - Clara y Laura venden cocos grandes.Tienen un buen negocio.	**H** - Clara y Laura venden piñas y cocos grandes.Tienen un buen negocio.	**I** - Clara y Laura venden piñas, mangos y cocos grandes.Tienen un buen negocio.
IV C – Position of the FO in relation to the focus	c1 – postposition of the FO	**J** - Clara y Laura venden cocos incluso. Tienen un buen negocio.	**K** - Clara y Laura venden piñas y cocos incluso. Tienen un buen negocio.	**L** - Clara y Laura venden piñas, mangos y cocos incluso. Tienen un buen negocio.
IV D – Degree of informativity	d1 – incongruous information	**M** - Clara y Laura venden incluso piñas. Tienen un buen negocio.	**N** - Clara y Laura venden cocos e incluso piñas. Tienen un buen negocio.	**O** -Clara y Laura venden cocos, mangos e incluso piñas. Tienen un buen negocio.

Context	Clara y Laura tienen a medias una frutería en el barrio de Lavapiés, en Madrid. Venden mucha fruta tropical, como mangos y piñas, porque entre sus vecinos hay muchos de origen ecuatoriano y peruano.
filler item 1	Clara y Laura se conocen desde niñas. Siempre han querido tener una frutería juntas.
filler item 2	Las dos tienen muy buenas relaciones con la gente del barrio. Una vez al año organizan juntos la fiesta de la fruta.

Token set 7

Independent Variables				
		IV A - Extension of the alternative		
		a1 – implicit alternative	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
IV – B Focus marking	b1 – absence of FO	**A** - Ricardo y Fernando escriben poemas. Su pasión es la literatura.	**B** - Ricardo y Fernando escriben ensayos y poemas. Su pasión es la literatura.	**C** - Ricardo y Fernando escriben ensayos, novelas y poemas. Su pasión es la literatura.
	b2 – presence of FO	**D** - Ricardo y Fernando escriben incluso poemas. Su pasión es la literatura.	**E** - Ricardo y Fernando escriben ensayos e incluso poemas. Su pasión es la literatura.	**F** - Ricardo y Fernando escriben ensayos, novelas e incluso poemas. Su pasión es la literatura.
	b3 – with adjective	**G** - Ricardo y Fernando escriben poemas sencillos. Su pasión es la literatura.	**H** - Ricardo y Fernando escriben ensayos y poemas sencillos. Su pasión es la literatura.	**I** - Ricardo y Fernando escriben ensayos, novelas y poemas sencillos. Su pasión es la literatura.
IV C – Position of the FO in relation to the focus	c1 – postposition of the FO	**J** - Ricardo y Fernando escriben poemas incluso. Su pasión es la literatura.	**K** - Ricardo y Fernando escriben ensayos y poemas incluso. Su pasión es la literatura.	**L** - Ricardo y Fernando escriben ensayos, novelas y poemas incluso. Su pasión es la literatura.
IV D – Degree of informativity	d1 – incongruous information	**M** - Ricardo y Fernando escriben incluso ensayos. Su pasión es la literatura.	**N** - Ricardo y Fernando escriben poemas e incluso ensayos. Su pasión es la literatura.	**O** - Ricardo y Fernando escriben poemas, novelas e incluso ensayos. Su pasión es la literatura.

Context	Ricardo y Fernando son dos periodistas famosos del principal periódico de Lima. Además de escribir para el periódico en su tiempo libre se dedican a su verdadera pasión, la literatura. Ya han escrito juntos varios relatos y un par de novelas, por ejemplo.
filler item 1	Son dos periodistas muy famosos de Perú. A menudo también salen en la televisión.
filler item 2	Ricardo y Fernando se conocen muy bien. Siempre han trabajado juntos.

Token set 8

Independent Variables				
		IV A - Extension of the alternative		
		a1 – implicit alternative	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
IV – B Focus marking	b1 – absence of FO	**A** - José y David venden peces. Adoran a los animales.	**B** - José y David venden perros y peces. Adoran a los animales.	**C** - José y David venden perros, gatos y peces. Adoran a los animales.
	b2 – presence of FO	**D** - José y David venden incluso peces. Adoran a los animales.	**E** - José y David venden perros e incluso peces. Adoran a los animales.	**F** - José y David venden perros, gatos e incluso peces. Adoran a los animales.
	b3 – with adjective	**G** - José y David venden peces grandes. Adoran a los animales.	**H** - José y David venden perros y peces grandes. Adoran a los animales.	**I** - José y David venden perros, gatos y peces grandes. Adoran a los animales.
IV C – Position of the FO in relation to the focus	c1 – postposition of the FO	**J** - José y David venden peces incluso. Adoran a los animales.	**K** - José y David venden perros y peces incluso. Adoran a los animales.	**L** - José y David venden perros, gatos y peces incluso. Adoran a los animales.
IV D – Degree of informativity	d1 – incongruous information	**M** - José y David venden incluso perros. Adoran a los animales.	**N** - José y David venden peces e incluso perros. Adoran a los animales.	**O** - José y David venden peces, gatos e incluso perros. Adoran a los animales.

Context	José y David tienen una tienda en la que venden muchos accesorios para mascotas. También venden distintos animales, como perros o gatos.
filler item 1	Las novias de José y David pasan también mucho tiempo en la tienda. Juntos se ocupan de los animales.
filler item 2	Es un buen negocio. La gente del barrio ahora tiene más animales.

Token set 9

Independent Variables				
		IV A - Extension of the alternative		
		a1 – implicit alternative	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
IV – B Focus marking	b1 – absence of FO	**A** - Francisco y Manuel cocinan arroz. Quieren aprender a cocinar mejor.	**B** - Francisco y Manuel cocinan pasta y arroz. Quieren aprender a cocinar mejor.	**C** - Francisco y Manuel cocinan pasta, pizza y arroz. Quieren aprender a cocinar mejor.
	b2 – presence of FO	**D** - Francisco y Manuel cocinan incluso arroz. Quieren aprender a cocinar mejor.	**E** - Francisco y Manuel cocinan pasta e incluso arroz. Quieren aprender a cocinar mejor.	**F** - Francisco y Manuel cocinan pasta, pizza e incluso arroz. Quieren aprender a cocinar mejor.
	b3 – with adjective	**G** - Francisco y Manuel cocinan arroz blanco. Quieren aprender a cocinar mejor.	**H** - Francisco y Manuel cocinan pasta y arroz blanco. Quieren aprender a cocinar mejor.	**I** - Francisco y Manuel cocinan pasta, pizza y arroz blanco. Quieren aprender a cocinar mejor.
IV C – Position of the FO in relation to the focus	c1 – postposition of the FO	**J** - Francisco y Manuel cocinan arroz incluso. Quieren aprender a cocinar mejor.	**K** - Francisco y Manuel cocinan pasta y arroz incluso. Quieren aprender a cocinar mejor.	**L** - Francisco y Manuel cocinan pasta, pizza y arroz incluso. Quieren aprender a cocinar mejor.
IV D – Degree of informativity	d1 – incongruous information	**M** - Francisco y Manuel cocinan incluso pasta. Quieren aprender a cocinar mejor.	**N** - Francisco y Manuel cocinan arroz e incluso pasta. Quieren aprender a cocinar mejor.	**O** - Francisco y Manuel cocinan arroz, pizza e incluso pasta. Quieren aprender a cocinar mejor.

Context	Francisco y Manuel acaban de empezar la carrera de Física en la Universidad de Salamanca. Es la primera vez que viven lejos de casa. No tienen mucha experiencia en la cocina, pero en su nuevo piso intentan aprender poco a poco. Ya cocinan algunos platos fáciles, como los pasta y la pizza.
filler item 1	Francisco y Manuel no tienen novia. Tienen mucho tiempo para estudiar.
filler item 2	Algunas veces las madres de Francisco y Manuel les llevan algo de comer. Así por lo menos comen algo sano.

Token set 10

Independent Variables				
		IV A - Extension of the alternative		
		a1 – implicit alternative	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
IV – B Focus marking	b1 – absence of FO	**A** - Alberto y Cristina plantan álamos. Pasan mucho tiempo en la naturaleza.	**B** - Alberto y Cristina plantan castaños y álamos. Pasan mucho tiempo en la naturaleza.	**C** - Alberto y Cristina plantan castaños, robles y álamos. Pasan mucho tiempo en la naturaleza.
	b2 – presence of FO	**D** - Alberto y Cristina plantan incluso álamos. Pasan mucho tiempo en la naturaleza.	**E** - Alberto y Cristina plantan castaños e incluso álamos. Pasan mucho tiempo en la naturaleza.	**F** - Alberto y Cristina plantan castaños, robles e incluso álamos. Pasan mucho tiempo en la naturaleza.
	b3 – with adjective	**G** - Alberto y Cristina plantan álamos blancos. Pasan mucho tiempo en la naturaleza.	**H** - Alberto y Cristina plantan castaños y álamos blancos. Pasan mucho tiempo en la naturaleza.	**I** - Alberto y Cristina plantan castaños, robles y álamos blancos. Pasan mucho tiempo en la naturaleza.
IV C – Position of the FO in relation to the focus	c1 – postposition of the FO	**J** - Alberto y Cristina plantan álamos incluso. Pasan mucho tiempo en la naturaleza.	**K** - Alberto y Cristina plantan castaños y álamos incluso. Pasan mucho tiempo en la naturaleza.	**L** - Alberto y Cristina plantan castaños, robles y álamos incluso. Pasan mucho tiempo en la naturaleza.
IV D – Degree of informativity	d1 – incongruous information	**M** - Alberto y Cristina plantan incluso castaños. Pasan mucho tiempo en la naturaleza.	**N** - Alberto y Cristina plantan álamos e incluso castaños. Pasan mucho tiempo en la naturaleza.	**O** - Alberto y Cristina plantan álamos, robles e incluso castaños. Pasan mucho tiempo en la naturaleza.

Context	Alberto y Cristina son dos activistas de Greenpeace que tienen un proyecto forestal. En su tiempo libre plantan muchos árboles, como por ejemplo castaños y robles.
filler item 1	Sus padres están muy orgullosos. Muchas veces les ayudan a plantar los árboles.
filler item 2	Alberto y Cristina estudian biológia y medio ambiente. Son activistas de Greenpeace desde hace años.

Token set 11

Independent Variables				
		IV A - Extension of the alternative		
		a1 – implicit alternative	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
IV – B Focus marking	b1 – absence of FO	**A** - Mercedes y Lucía enseñan euskera. Les gusta mucho dar clases.	**B** - Mercedes y Lucía enseñan catalán y euskera. Les gusta mucho dar clases.	**C** - Mercedes y Lucía enseñan catalán, gallego y euskera. Les gusta mucho dar clases.
	b2 – presence of FO	**D** - Mercedes y Lucía enseñan incluso euskera. Les gusta mucho dar clases.	**E** - Mercedes y Lucía enseñan catalán e incluso euskera. Les gusta mucho dar clases.	**F** - Mercedes y Lucía enseñan catalán, gallego e incluso euskera. Les gusta mucho dar clases.
	b3 – with adjective	**G** - Mercedes y Lucía enseñan euskera básico. Les gusta mucho dar clases.	**H** - Mercedes y Lucía enseñan catalán y euskera básico. Les gusta mucho dar clases.	**I** - Mercedes y Lucía enseñan catalán, gallego y euskera básico. Les gusta mucho dar clases.
IV C – Position of the FO in relation to the focus	c1 – postposition of the FO	**J** - Mercedes y Lucía enseñan euskera incluso. Les gusta mucho dar clases.	**K** - Mercedes y Lucía enseñan catalán y euskera incluso. Les gusta mucho dar clases.	**L** - Mercedes y Lucía enseñan catalán, gallego y euskera incluso. Les gusta mucho dar clases.
IV D – Degree of informativity	d1 – incongruous information	**M** - Mercedes y Lucía enseñan incluso catalán. Les gusta mucho dar clases.	**N** - Mercedes y Lucía enseñan euskera e incluso catalán. Les gusta mucho dar clases.	**O** - Mercedes y Lucía enseñan euskera, gallego e incluso catalán. Les gusta mucho dar clases.

Context	Mercedes y Lucía son dos profesores del Instituto Cervantes de Berlín. Vivieron varios años en Barcelona, pero ambos nacieron en Coruña, donde pasaron su infancia. Estudiaron Filología en Berlín y se quedaron en esta cuidad para dar clases de lenguas de España, como gallego o catalán.
filler item 1	Mercedes y Lucía viven juntos en Berlín. Les encanta la ciudad y tienen muchos amigos.
filler item 2	Dos veces al año vuelven a España para pasar unos días con sus familias. En Berlín solo hablan con sus amigos y sus familias por el Skype.

Token set 12

Independent Variables				
		IV A - Extension of the alternative		
		a1 – implicit alternative	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
IV – B Focus marking	b1 – absence of FO	**A** - Ana y Marta saben chino. Les gusta hablar en sus lenguas extranjeras.	**B** - Ana y Marta saben inglés y chino. Les gusta hablar en sus lenguas extranjeras.	**C** - Ana y Marta saben inglés, francés y chino. Les gusta hablar en sus lenguas extranjeras.
	b2 – presence of FO	**D** - Ana y Marta saben incluso chino. Les gusta hablar en sus lenguas extranjeras.	**E** - Ana y Marta saben inglés e incluso chino. Les gusta hablar en sus lenguas extranjeras.	**F** - Ana y Marta saben inglés, francés e incluso chino. Les gusta hablar en sus lenguas extranjeras.
	b3 – with adjective	**G** - Ana y Marta saben chino mandarín. Les gusta hablar en sus lenguas extranjeras.	**H** - Ana y Marta saben inglés y chino mandarín. Les gusta hablar en sus lenguas extranjeras.	**I** - Ana y Marta saben inglés, francés y chino mandarín. Les gusta hablar en sus lenguas extranjeras.
IV C – Position of the FO in relation to the focus	c1 – postposition of the FO	**J** - Ana y Marta saben chino incluso. Les gusta hablar en sus lenguas extranjeras.	**K** - Ana y Marta saben inglés y chino incluso. Les gusta hablar en sus lenguas extranjeras.	**L** - Ana y Marta saben inglés, francés y chino incluso. Les gusta hablar en sus lenguas extranjeras.
IV D – Degree of informativity	d1 – incongruous information	**M** - Ana y Marta saben incluso inglés. Les gusta hablar en sus lenguas extranjeras.	**N** - Ana y Marta saben chino e incluso inglés. Les gusta hablar en sus lenguas extranjeras.	**O** - Ana y Marta saben chino, francés e incluso inglés. Les gusta hablar en sus lenguas extranjeras.

Context	Ana y Marta son profesoras de lenguas extranjeras en Madrid, donde llevan muchos años dando clase. Han viajado mucho juntas y hablan distintas lenguas, como el inglés y el francés.
filler item 1	Ana y Marta tienen amigos por todos los países del mundo. Pasan también mucho tiempo en facebook hablando con todos.
filler item 2	En unos de sus viajes Ana y Marta conocieron a sus futuros maridos. Ahora todos trabajan en Madrid.

Token set 13

Independent Variables				
		IV A - Extension of the alternative		
		a1 – implicit alternative	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
IV – B Focus marking	b1 – absence of FO	**A** - Rocío y Natalia compran joyas. Se van de compras todas las semanas.	**B** - Rocío y Natalia compran zapatos y joyas. Se van de compras todas las semanas.	**C** - Rocío y Natalia compran zapatos, bolsos y joyas. Se van de compras todas las semanas.
	b2 – presence of FO	**D** - Rocío y Natalia compran incluso joyas. Se van de compras todas las semanas.	**E** - Rocío y Natalia compran zapatos e incluso joyas. Se van de compras todas las semanas.	**F** - Rocío y Natalia compran zapatos, bolsos e incluso joyas. Se van de compras todas las semanas.
	b3 – with adjective	**G** - Rocío y Natalia compran joyas caras. Se van de compras todas las semanas.	**H** - Rocío y Natalia compran zapatos y joyas caras. Se van de compras todas las semanas.	**I** - Rocío y Natalia compran zapatos, bolsos y joyas caras. Se van de compras todas las semanas.
IV C – Position of the FO in relation to the focus	c1 – postposition of the FO	**J** - Rocío y Natalia compran joyas incluso. Se van de compras todas las semanas.	**K** - Rocío y Natalia compran zapatos y joyas incluso. Se van de compras todas las semanas.	**L** - Rocío y Natalia compran zapatos, bolsos y joyas incluso. Se van de compras todas las semanas.
IV D – Degree of informativity	d1 – incongruous information	**M** - Rocío y Natalia compran incluso zapatos. Se van de compras todas las semanas.	**N** - Rocío y Natalia compran joyas e incluso zapatos. Se van de compras todas las semanas.	**O** - Rocío y Natalia compran joyas, bolsos e incluso zapatos. Se van de compras todas las semanas.

Context	Rocío y Natalia viven en el centro de Sevilla. Sus maridos trabajan en la banca. Ellas ya no trabajan, y van mucho de compras. Son dos "shopping victims". Gastan mucho dinero en zapatos o bolsos, porque les encanta estar a la última moda.
filler item 1	Después de dejar los niños en la guardería se toman juntas un café para empezar el dia. Siempre tienen algo que contarse.
filler item 2	En las tiendas ya las conocen, porque solo compran las cosas más caras. Los maridos están disgustados.

Token set 14

Independent Variables				
		IV A - Extension of the alternative		
		a1 – implicit alternative	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
IV – B Focus marking	b1 – absence of FO	**A** - Carlos y Juan roban coches. No han tenido una vida fácil.	**B** - Carlos y Juan roban bicis y coches. No han tenido una vida fácil.	**C** - Carlos y Juan roban bicis, motos y coches. No han tenido una vida fácil.
	b2 – presence of FO	**D** - Carlos y Juan roban incluso coches. No han tenido una vida fácil.	**E** - Carlos y Juan roban bicis e incluso coches. No han tenido una vida fácil.	**F** - Carlos y Juan roban bicis, motos e incluso coches. No han tenido una vida fácil.
	b3 – with adjective	**G** - Carlos y Juan roban coches nuevas. No han tenido una vida fácil.	**H** - Carlos y Juan roban bicis y coches nuevas. No han tenido una vida fácil.	**I** - Carlos y Juan roban bicis, motos y coches nuevas. No han tenido una vida fácil.
IV C – Position of the FO in relation to the focus	c1 – postposition of the FO	**J** - Carlos y Juan roban coches incluso. No han tenido una vida fácil.	**K** - Carlos y Juan roban bicis y coches incluso. No han tenido una vida fácil.	**L** - Carlos y Juan roban bicis, motos y coches incluso. No han tenido una vida fácil.
IV D – Degree of informativity	d1 – incongruous information	**M** - Carlos y Juan roban incluso bicis. No han tenido una vida fácil.	**N** - Carlos y Juan roban coches e incluso bicis. No han tenido una vida fácil.	**O** - Carlos y Juan roban coches, motos e incluso bicis. No han tenido una vida fácil.

Context	Carlos y Juan son dos delicuentes bien conocidos por la policía de Algeciras. Han estado en la cárcel muchas veces por robar todo tipo de vehículos, como coches y motos, que revenden luego en Marruecos.
filler item 1	Las novias de Carlos y Juan no saben nada de las actividades criminales de sus novios. Piensan que trabajan en un taller.
filler item 2	Antes de robar también traficaban con drogas. Ahora ya no.

Token set 15

Independent Variables				
		IV A - Extension of the alternative		
		a1 – implicit alternative	*a2 – explicit single alternative*	*a3 – explicit complex alternative*
IV – B Focus marking	b1 – absence of FO	**A** - Luisa y Sara saben persa. Les encanta la filología clásica.	**B** - Luisa y Sara saben latín y persa. Les encanta la filología clásica.	**C** - Luisa y Sara saben latín, griego y persa. Les encanta la filología clásica.
	b2 – presence of FO	**D** - Luisa y Sara saben incluso persa. Les encanta la filología clásica.	**E** - Luisa y Sara saben latín e incluso persa. Les encanta la filología clásica.	**F** - Luisa y Sara saben latín, griego e incluso persa. Les encanta la filología clásica.
	b3 – with adjective	**G** - Luisa y Sara saben persa antiguo. Les encanta la filología clásica.	**H** - Luisa y Sara saben latín y persa antiguo. Les encanta la filología clásica.	**I** - Luisa y Sara saben latín, griego y persa antiguo. Les encanta la filología clásica.
IV C – Position of the FO in relation to the focus	c1 – postposition of the FO	**J** - Luisa y Sara saben persa incluso. Les encanta la filología clásica.	**K** - Luisa y Sara saben latín y persa incluso. Les encanta la filología clásica.	**L** - Luisa y Sara saben latín, griego y persa incluso. Les encanta la filología clásica.
IV D – Degree of informativity	d1 – incongruous information	**M** - Luisa y Sara saben incluso latín. Les encanta la filología clásica.	**N** - Luisa y Sara saben persa e incluso latín. Les encanta la filología clásica.	**O** - Luisa y Sara saben persa, griego e incluso latín. Les encanta la filología clásica.

Context	Luisa y Sara son dos expertos en la Antigüedad Clásica. Lo saben todo de su arte, de su literatura y de su historia gracias a sus excelentes conocimientos de distintas lenguas, como el latín o el griego.
filler item 1	Luisa y Sara viajan mucho juntos. El último viaje fue a Grecia para ver la Acrópolis.
filler item 2	Pasan mucho tiempo en la biblioteca estudiando textos clásicos. Esta es su pasión.

Appendix D. Statistical Analysis - Generative Additive Mixed Models

Legend AOIs

TM	Total mean of the utterance per word
LM	lexical mean of the utterance per word
ALT	Alternative
F	Focus
FO	Focus operTMor
ADJ	Adjective

IV B – Focus marking

Model 1 – implicit alternTMive – total reading time

AOI condition	EstimTMed value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b1a1	241.53	11.28	6.06	6.35	240.63	11.31
TM_b2a1	-11.47	14.05	6.23	6.35	229.16	11.17
TM_b3a1	-7.09	14.05	6.22	6.35	233.55	11.18
LM_b1a1	14.05	14.11	6.24	6.35	254.69	11.3
LM_b2a1	-9.89	14.05	6.21	6.35	230.74	11.2
LM_b3a1	1.88	14.06	6.43	6.35	242.51	11.18
F_b1a1	6.21	14.12	5.83	6.35	246.84	11.36
F_b2a1	-29.79	14.05	5.8	6.35	210.84	11.26
F_b3a1	16.29	14.05	5.78	6.35	256.92	11.27
FP_b2a1	-0.3	14.17	7	6.35	240.34	11.23
ADJ_b3a1	-24.85	14.14	6.9	6.35	215.79	11.29

Model 1 – implicit alternative – first-pass reading time

AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b1a1	186.04	7.89	6.06	6.35	184.58	7.93
TM_b2a1	-12.34	9.9	6.23	6.35	172.24	7.82
TM_b3a1	-7	9.89	6.22	6.35	177.57	7.83
LM_b1a1	17.93	9.94	6.24	6.35	202.51	7.92
LM_b2a1	-11.17	9.89	6.21	6.35	173.4	7.85
LM_b3a1	-3.28	9.9	6.43	6.35	181.3	7.83
F_b1a1	20.6	9.95	5.83	6.35	205.17	7.97
F_b2a1	-12.89	9.9	5.8	6.35	171.69	7.9
F_b3a1	-8.18	9.9	5.78	6.35	176.39	7.9
FP_b2a1	-14.63	9.98	7	6.35	169.95	7.86
ADJ_b3a1	-1.31	9.96	6.9	6.35	183.27	7.93

Model 1 – implicit alternative – second-pass reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b1a1	55.47	7.54	6.06	6.35	55.47	7.54
TM_b2a1	1.31	9.92	6.23	6.35	56.78	7.45
TM_b3a1	0.38	9.92	6.22	6.35	55.85	7.45
LM_b1a1	-3.66	9.97	6.24	6.35	51.81	7.53
LM_b2a1	1.57	9.92	6.21	6.35	57.05	7.45
LM_b3a1	5.79	9.93	6.43	6.35	61.26	7.45
F_b1a1	-14.49	9.97	5.83	6.35	40.98	7.56
F_b2a1	-16.95	9.92	5.8	6.35	38.52	7.48
F_b3a1	24.49	9.92	5.78	6.35	79.96	7.49
FP_b2a1	14.93	9.99	7	6.35	70.41	7.49
ADJ_b3a1	-22.78	9.97	6.9	6.35	32.69	7.48

Model 4 – explicit single alternative – total reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b1a2	229.44	11.02	6.16	6.35	228.54	11.06
TM_b2a2	7.98	13.61	6.27	6.35	236.52	10.87
TM_b3a2	3.7	13.67	6.25	6.35	232.23	10.96
LM_b1a2	6.01	13.73	6.36	6.35	234.55	11.06
LM_b2a2	14.92	13.61	6.31	6.35	243.46	10.9
LM_b3a2	10.29	13.69	6.45	6.35	238.83	10.96
ALT_b1a2	-16	13.77	6.58	6.35	212.54	11.14
ALT_b2a2	-2.64	13.65	6.53	6.35	225.9	10.99
ALT_b3a2	-44.12	13.71	6.52	6.35	184.42	11.06
F_b1a2	0.59	13.74	5.84	6.35	229.13	11.12
F_b2a2	17.25	13.63	5.81	6.35	245.78	10.96
F_b3a2	28.78	13.69	5.8	6.35	257.32	11.04
FP_b2a2	34.83	13.72	7	6.35	263.37	10.93
ADJ_b3a2	45.48	13.76	6.92	6.35	274.02	11.06

Model 4 – explicit single alternative – first-pass reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b1a2	179.04	7.71	6.16	6.35	177.58	7.75
TM_b2a2	5.12	9.59	6.27	6.35	182.7	7.60
TM_b3a2	0.39	9.63	6.25	6.35	177.98	7.67
LM_b1a2	4.17	9.67	6.36	6.35	181.75	7.76
LM_b2a2	7.56	9.59	6.31	6.35	185.14	7.65
LM_b3a2	6.45	9.64	6.45	6.35	184.03	7.68
ALT_b1a2	-14.24	9.71	6.58	6.35	163.35	7.85
ALT_b2a2	-8.28	9.63	6.53	6.35	169.3	7.75
ALT_b3a2	-23.9	9.67	6.52	6.35	153.69	7.79
F_b1a2	15.21	9.68	5.84	6.35	192.79	7.80
F_b2a2	23.37	9.6	5.81	6.35	182.23	7.69
F_b3a2	16.24	9.64	5.8	6.35	193.83	7.74
FP_b2a2	39.77	9.67	7	6.35	217.36	7.65
ADJ_b3a2	30.52	9.69	6.92	6.35	208.1	7.77

Model 4 – explicit single alternative – second-pass reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b1a2	50.4	7.35	6.16	6.35	50.4	7.35
TM_b2a2	3.24	9.61	6.27	6.35	53.65	7.23
TM_b3a2	3.56	9.66	6.25	6.35	53.96	7.29
LM_b1a2	1.95	9.7	6.36	6.35	52.36	7.35
LM_b2a2	7.55	9.61	6.31	6.35	57.95	7.23
LM_b3a2	4.21	9.66	6.45	6.35	54.61	7.29
ALT_b1a2	-1.86	9.71	6.58	6.35	48.54	7.36
ALT_b2a2	5.58	9.62	6.53	6.35	55.99	7.23
ALT_b3a2	-20.4	9.67	6.52	6.35	30.05	7.29
F_b1a2	-14.8	9.7	5.84	6.35	35.59	7.38
F_b2a2	-6.24	9.62	5.81	6.35	44.16	7.26
F_b3a2	12.35	9.66	5.8	6.35	62.76	7.32
FP_b2a2	-4.39	9.67	7	6.35	46.01	7.27
ADJ_b3a2	15.53	9.7	6.92	6.35	65.93	7.32

Model 7 – explicit complex alternative – total reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b1a2	235.27	10.99	6.16	6.35	234.37	11.02
TM_b2a2	-9.3	13.66	6.26	6.35	225.07	10.97
TM_b3a2	-1.56	13.65	6.25	6.35	232.81	10.96
LM_b1a2	8	13.68	6.32	6.35	242.37	11.03
LM_b2a2	-4.04	13.66	6.28	6.35	230.33	10.99
LM_b3a2	10.67	13.65	6.42	6.35	245.04	10.96
ALT_b1a2	1.5	13.68	6.41	6.35	235.87	11.05
ALT_b2a2	-8.02	13.67	6.38	6.35	226.35	11.01
ALT_b3a2	-1.5	13.66	6.4	6.35	232.87	11
F_b1a2	28.07	13.69	5.82	6.35	262.44	11.09
F_b2a2	9.96	13.68	5.78	6.35	244.33	11.06
F_b3a2	11.19	13.67	5.8	6.35	245.55	11.04
FP_b2a2	4.67	13.76	7	6.35	239.04	11.03
ADJ_b3a2	39.24	13.72	6.89	6.35	273.61	11.05

Model 7 – explicit complex alternative – first-pass reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b1a2	189.87	7.68	6.16	6.35	188.41	7.72
TM_b2a2	-8.25	9.62	6.26	6.35	180.16	7.67
TM_b3a2	-5.19	9.61	6.25	6.35	183.23	7.67
LM_b1a2	8.08	9.63	6.32	6.35	196.49	7.73
LM_b2a2	-4.32	9.62	6.28	6.35	184.09	7.71
LM_b3a2	1.31	9.61	6.42	6.35	189.72	7.68
ALT_b1a2	4.41	9.64	6.41	6.35	192.82	7.76
ALT_b2a2	-3.71	9.63	6.38	6.35	184.71	7.74
ALT_b3a2	-2.93	9.62	6.4	6.35	185.49	7.72
F_b1a2	34.54	9.64	5.82	6.35	222.95	7.78
F_b2a2	11.2	9.64	5.78	6.35	199.61	7.76
F_b3a2	-1.15	9.63	5.8	6.35	187.26	7.75
FP_b2a2	1.44	9.7	7	6.35	189.85	7.72
ADJ_b3a2	24.09	9.67	6.89	6.35	212.51	7.76

Model 7 – explicit complex alternative – second-pass reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b1a2	45.53	7.33	6.16	6.35	45.53	7.33
TM_b2a2	-0.73	9.65	6.26	6.35	44.79	7.3
TM_b3a2	3.9	9.64	6.25	6.35	49.43	7.29
LM_b1a2	-0.04	9.66	6.32	6.35	45.49	7.32
LM_b2a2	0.41	9.65	6.28	6.35	45.94	7.3
LM_b3a2	9.69	9.64	6.42	6.35	55.22	7.29
ALT_b1a2	-3.05	9.66	6.41	6.35	42.48	7.32
ALT_b2a2	-4.38	9.65	6.38	6.35	41.15	7.3
ALT_b3a2	1.36	9.64	6.4	6.35	46.89	7.29
F_b1a2	-6.75	9.67	5.82	6.35	38.78	7.35
F_b2a2	-1.43	9.66	5.78	6.35	44.1	7.33
F_b3a2	12.14	9.65	5.8	6.35	57.67	7.32
FP_b2a2	3.7	9.7	7	6.35	49.23	7.34
ADJ_b3a2	15.67	9.68	6.89	6.35	61.2	7.32

IV C – Position of the focus operator in relation to the focus

Model 2 – implicit alternative – total reading time

AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a1	230.06	11.17	6.23	6.35	229.16	11.17
TM_c1a1	24.55	13.88	6.15	6.35	253.71	11.08
LM_b2a1	1.58	13.95	6.21	6.35	230.74	11.2
LM_c1a1	24.82	14.06	6.29	6.35	253.98	11.33
FP_b2a1	11.17	14.02	7	6.35	240.34	11.23
FP_c1a1	81.94	14.13	7	6.35	311.1	11.35
F_b2a1	-18.32	13.98	5.8	6.35	210.84	11.26
F_c1a1	23.4	14.09	5.86	6.35	252.57	11.38

Model 2 – implicit alternative – first-pass reading time

AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a1	173.7	7.81	6.23	6.35	172.24	7.82
TM_c1a1	17.19	9.77	6.15	6.35	189.43	7.75
LM_b2a1	1.17	9.83	6.21	6.35	173.4	7.85
LM_c1a1	10.78	9.91	6.29	6.35	183.01	7.94
FP_b2a1	-2.29	9.88	7	6.35	169.95	7.86
FP_c1a1	47.87	9.95	7	6.35	220.1	7.95
F_b2a1	-0.55	9.85	5.8	6.35	171.69	7.9
F_c1a1	3.93	9.93	5.86	6.35	176.17	7.98

Model 2 – implicit alternative – second-pass reading time

AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a1	56.78	7.45	6.23	6.35	56.78	7.45
TM_c1a1	7.14	9.8	6.15	6.35	63.92	7.38
LM_b2a1	0.26	9.85	6.21	6.35	57.05	7.45
LM_c1a1	13.77	9.93	6.29	6.35	70.56	7.55
FP_b2a1	13.62	9.89	7	6.35	70.41	7.49
FP_c1a1	34.13	9.97	7	6.35	90.92	7.58
F_b2a1	-18.27	9.86	5.8	6.35	38.52	7.48
F_c1a1	18.91	9.94	5.86	6.35	75.7	7.57

Model 5 – explicit single alternative – total reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a2	237.42	10.86	6.27	6.35	236.52	10.87
TM_c1a2	10.68	13.48	6.27	6.35	247.19	10.87
LM_b2a2	6.94	13.47	6.31	6.35	243.46	10.9
LM_c1a2	9.72	13.49	6.33	6.35	246.23	10.9
ALT_b2a2	-10.62	13.52	6.53	6.35	225.9	10.99
ALT_c1a2	-30.57	13.53	6.55	6.35	205.94	10.97
FP_b2a2	26.85	13.54	7	6.35	263.37	10.93
FP_c1a2	53.07	13.55	7	6.35	289.59	10.93
F_b2a2	9.27	13.51	5.81	6.35	245.78	10.96
F_c1a2	58.28	13.52	5.83	6.35	294.8	10.96

Model 5 – explicit single alternative – first-pass reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a2	184.16	7.6	6.27	6.35	182.7	7.6
TM_c1a2	0.82	9.49	6.27	6.35	183.52	7.61
LM_b2a2	2.44	9.49	6.31	6.35	185.14	7.65
LM_c1a2	3.65	9.5	6.33	6.35	186.35	7.65
ALT_b2a2	-13.4	9.55	6.53	6.35	169.3	7.75
ALT_c1a2	-20.91	9.55	6.55	6.35	161.79	7.73
FP_b2a2	34.66	9.54	7	6.35	217.36	7.65
FP_c1a2	16.93	9.55	7	6.35	199.63	7.65
F_b2a2	18.26	9.52	5.81	6.35	182.23	7.69
F_c1a2	29.52	9.53	5.83	6.35	212.22	7.69

Model 5 – explicit single alternative – second-pass reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a2	53.64	7.23	6.27	6.35	53.65	7.23
TM_c1a2	9.79	9.52	6.27	6.35	63.44	7.23
LM_b2a2	4.31	9.51	6.31	6.35	57.95	7.23
LM_c1a2	5.83	9.52	6.33	6.35	59.48	7.23
ALT_b2a2	2.34	9.52	6.53	6.35	55.99	7.23
ALT_c1a2	-10.09	9.53	6.55	6.35	43.56	7.23
FP_b2a2	-7.63	9.55	7	6.35	46.01	7.27
FP_c1a2	36.25	9.56	7	6.35	89.9	7.27
F_b2a2	-9.48	9.53	5.81	6.35	44.16	7.26
F_c1a2	28.23	9.54	5.83	6.35	81.88	7.26

Model 8 – explicit complex alternative – total reading time

AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a2	225.97	10.96	6.26	6.35	225.07	10.97
TM_c1a2	15.5	13.55	6.27	6.35	240.57	10.87
LM_b2a2	5.26	13.62	6.28	6.35	230.33	10.99
LM_c1a2	11.85	13.56	6.31	6.35	236.92	10.9
ALT_b2a2	1.27	13.63	6.38	6.35	226.35	11.01
ALT_c1a2	-6.81	13.57	6.4	6.35	218.26	10.92
FP_b2a2	13.97	13.7	7	6.35	239.04	11.03
FP_c1a2	78.86	13.63	7	6.35	303.93	10.93
F_b2a2	19.26	13.66	5.78	6.35	244.33	11.06
F_c1a2	72.67	13.59	5.81	6.35	297.75	10.96

Model 8 – explicit complex alternative – first-pass reading time

AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a2	181.62	7.66	6.26	6.35	180.16	7.67
TM_c1a2	5.33	9.55	6.27	6.35	185.49	7.6
LM_b2a2	3.94	9.6	6.28	6.35	184.09	7.71
LM_c1a2	5.78	9.55	6.31	6.35	185.94	7.64
ALT_b2a2	4.55	9.61	6.38	6.35	184.71	7.74
ALT_c1a2	0.92	9.57	6.4	6.35	181.08	7.67
FP_b2a2	9.69	9.65	7	6.35	189.85	7.72
FP_c1a2	27.58	9.6	7	6.35	207.74	7.65
F_b2a2	19.46	9.63	5.78	6.35	199.61	7.76
F_c1a2	33.25	9.58	5.81	6.35	213.41	7.69

Model 8 – explicit complex alternative – second-pass reading time

AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a2	44.79	7.3	6.26	6.35	44.79	7.3
TM_c1a2	10.02	9.57	6.27	6.35	54.81	7.23
LM_b2a2	1.14	9.62	6.28	6.35	45.94	7.3
LM_c1a2	5.73	9.57	6.31	6.35	50.52	7.23
ALT_b2a2	-3.65	9.62	6.38	6.35	41.15	7.3
ALT_c1a2	-8.28	9.57	6.4	6.35	36.52	7.23
FP_b2a2	4.43	9.66	7	6.35	49.23	7.34
FP_c1a2	51.28	9.61	7	6.35	96.07	7.27
F_b2a2	-0.7	9.64	5.78	6.35	44.1	7.33
F_c1a2	38.78	9.59	5.81	6.35	83.58	7.26

IV D – Degree of informativity

Model 3 – implicit alternative – total reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a1	230.06	11.17	6.23	6.35	229.16	11.17
TM_c1a1	2.26	13.97	6.38	6.35	231.42	11.19
LM_b2a1	1.58	13.95	6.21	6.35	230.74	11.2
LM_c1a1	-10.31	14.01	6.58	6.35	218.85	11.25
FP_b2a1	11.17	14.02	7	6.35	240.34	11.23
FP_c1a1	39.61	14.05	7	6.35	268.77	11.25
F_b2a1	-18.32	13.98	5.8	6.35	210.84	11.26
F_c1a1	-28.7	14.03	6.55	6.35	200.46	11.3

Model 3 – implicit alternative – first-pass reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a1	173.7	7.81	6.23	6.35	172.24	7.82
TM_c1a1	-8.24	9.84	6.38	6.35	163.99	7.83
LM_b2a1	1.17	9.83	6.21	6.35	173.4	7.85
LM_c1a1	-12.61	9.87	6.58	6.35	159.63	7.9
FP_b2a1	-2.29	9.88	7	6.35	169.95	7.86
FP_c1a1	-6.36	9.9	7	6.35	165.88	7.88
F_b2a1	-0.55	9.85	5.8	6.35	171.69	7.9
F_c1a1	-22.36	9.9	6.55	6.35	149.88	7.96

Model 3 – implicit alternative – second-pass reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a1	56.78	7.45	6.23	6.35	56.78	7.45
TM_c1a1	10.46	9.87	6.38	6.35	67.24	7.46
LM_b2a1	0.26	9.85	6.21	6.35	57.05	7.45
LM_c1a1	2.06	9.88	6.58	6.35	58.85	7.47
FP_b2a1	13.62	9.89	7	6.35	70.41	7.49
FP_c1a1	46.06	9.91	7	6.35	102.85	7.51
F_b2a1	-18.27	9.86	5.8	6.35	38.52	7.48
F_c1a1	-6.83	9.88	6.55	6.35	49.96	7.47

Model 6 – explicit single alternative – total reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a2	237.42	10.86	6.27	6.35	236.52	10.87
TM_c1a2	6.99	13.56	6.26	6.35	243.5	10.97
LM_b2a2	6.94	13.47	6.31	6.35	243.46	10.9
LM_c1a2	5.36	13.56	6.3	6.35	241.87	11
ALT_b2a2	-10.62	13.52	6.53	6.35	225.9	10.99
ALT_c1a2	3.79	13.6	5.8	6.35	229.55	11.06
FP_b2a2	26.85	13.54	7	6.35	263.37	10.93
FP_c1a2	60.01	13.63	7	6.35	296.52	11.03
F_b2a2	9.27	13.51	5.81	6.35	245.78	10.96
F_c1a2	16.35	13.61	6.53	6.35	270.9	11.08

Model 6 – explicit single alternative – first-pass reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a2	184.16	7.6	6.27	6.35	182.7	7.6
TM_c1a2	1.21	9.55	6.26	6.35	183.91	7.67
LM_b2a2	2.44	9.49	6.31	6.35	185.14	7.65
LM_c1a2	-2.86	9.56	6.3	6.35	179.84	7.71
ALT_b2a2	-13.4	9.55	6.53	6.35	169.3	7.75
ALT_c1a2	-3.22	9.58	5.8	6.35	169.48	7.76
FP_b2a2	34.66	9.54	7	6.35	217.36	7.65
FP_c1a2	30.42	9.6	7	6.35	213.12	7.72
F_b2a2	18.26	9.52	5.81	6.35	182.23	7.69
F_c1a2	-0.47	9.61	6.53	6.35	200.96	7.81

Model 6 – explicit single alternative – second-pass reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a2	53.64	7.23	6.27	6.35	53.65	7.23
TM_c1a2	5.67	9.57	6.26	6.35	59.32	7.3
LM_b2a2	4.31	9.51	6.31	6.35	57.95	7.23
LM_c1a2	7.93	9.57	6.3	6.35	61.57	7.3
ALT_b2a2	2.34	9.52	6.53	6.35	55.99	7.23
ALT_c1a2	6.43	9.59	5.8	6.35	60.07	7.33
FP_b2a2	-7.63	9.55	7	6.35	46.01	7.27
FP_c1a2	29.65	9.62	7	6.35	83.3	7.34
F_b2a2	-9.48	9.53	5.81	6.35	44.16	7.26
F_c1a2	16.29	9.58	6.53	6.35	69.94	7.3

Model 9 – explicit complex alternative – total reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a2	225.97	10.96	6.26	6.35	225.07	10.97
TM_c1a2	13.66	13.56	6.26	6.35	238.73	10.89
LM_b2a2	5.26	13.62	6.28	6.35	230.33	10.99
LM_c1a2	23.39	13.57	6.31	6.35	248.46	10.91
ALT_b2a2	1.27	13.63	6.38	6.35	226.35	11.01
ALT_c1a2	27.34	13.58	6.04	6.35	252.41	10.93
FP_b2a2	13.97	13.7	7	6.35	239.04	11.03
FP_c1a2	34.9	13.64	7	6.35	259.97	10.95
F_b2a2	19.26	13.66	5.78	6.35	244.33	11.06
F_c1a2	27.83	13.61	6.54	6.35	252.9	11

Model 9 – explicit complex alternative – first-pass reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a2	181.62	7.66	6.26	6.35	180.16	7.67
TM_c1a2	7.43	9.55	6.26	6.35	187.59	7.62
LM_b2a2	3.94	9.6	6.28	6.35	184.09	7.71
LM_c1a2	9.59	9.56	6.31	6.35	189.75	7.65
ALT_b2a2	4.55	9.61	6.38	6.35	184.71	7.74
ALT_c1a2	20.63	9.56	6.04	6.35	200.79	7.66
FP_b2a2	9.69	9.65	7	6.35	189.85	7.72
FP_c1a2	31.24	9.61	7	6.35	211.4	7.66
F_b2a2	19.46	9.63	5.78	6.35	199.61	7.76
F_c1a2	8.6	9.61	6.54	6.35	188.76	7.75

Model 9 – explicit complex alternative – second-pass reading time						
AOI condition	Estimated value	Standard Error	nLetters-word_obs	nLetters-word_fix	Predicted value	Pred. Std. Error
TM_b2a2	44.79	7.3	6.26	6.35	44.79	7.3
TM_c1a2	6.14	9.58	6.26	6.35	50.93	7.24
LM_b2a2	1.14	9.62	6.28	6.35	45.94	7.3
LM_c1a2	13.54	9.58	6.31	6.35	58.34	7.24
ALT_b2a2	-3.65	9.62	6.38	6.35	41.15	7.3
ALT_c1a2	6.3	9.58	6.04	6.35	51.1	7.25
FP_b2a2	4.43	9.66	7	6.35	49.23	7.34
FP_c1a2	3.72	9.62	7	6.35	48.51	7.28
F_b2a2	-0.7	9.64	5.78	6.35	44.1	7.33
F_c1a2	18.76	9.59	6.54	6.35	63.55	7.25

Appendix E. Pre-test – Norming study

Norming study 1

Ordene los elementos, según su conocimiento del mundo.
(Rango: 1=menos presente en el conocimiento del mundo - 5=más presente en el conocimiento del mundo)

Inglés	francés	chino	italiano	alemán

pimientos	cebollas	acelga	berenjena	tomates

Sevilla	Granada	Jaén	Córdoba	Málaga

Colombia	Bolivia	Ecuador	Venezula	Perú

menzanas	naranjas	fresas	peras	plátanos

agua	zumo	leche	refresco	té

piña	coco	mango	lima	kiwi

ensayos	novelas	relatos	poemas

perro	gato	pez	conejo	hámster

pasta	pizza	arroz	hamburguesa

castaños	robles	arce	nogal	álamo

catalán	gallego	euskera	español

zapatos	bolso	vestido	joyas

bici	moto	coche	quad

latín	griego	persa	hebreo

salsa	merengue	samba	mambo	tango

lavar	peinar	teñir	cortar

Santiago	Montevideo	Brasilia	Bogotá	Caracas

cabra	cerdo	oveja	llama	caballo

pato	gallina	ganso	codorniz	paloma

cuchillo	tenedor	cuchara

merluza	rape	lenguado	bacalao	lubina

girasol	rosa	margarita	tulipán	dalía

almendra	anarcado	avellana	cacahuete	castaña

ajedrez	cartas	domino	damas	parchís

lima	martillo	sierra	tijeras

granito	pizarra	arenisco	caliza	mármol

cristianismo	judaísmo	hinduísmo	islam	budísmo

bogavante	langostino	ostras	vieiras	mejillón

blues	soul	rock	metal	funk

algodón	seda	lino	encaje	franela

Norming study 2

Ordene los elementos: Ana y Marta son profesoras de lenguas extranjeras en Madrid, donde llevan muchos años dando clase. Han viajado mucho juntas y hablan distintas lenguas como…

Inglés	chino	francés

Ordene los elementos: Manolo y Antonio son dos importadores mayoristas de Madrid. Importan diversas hortalizas que después venden en Andalucía, como…

pimientos	cebollas	tomates

Ordene los elementos: Letizia y Paola son dos estudiantes italianas de la Universidad de Florencia. Estudian Arte e Historia árabe en España. Este semestre realizan un viaje de estudios por Andalucía y en muy poco tiempo han recorrido ya varias provincias, como…

Granada	Sevilla	Málaga

Ordene los elementos: Susana y María trabajan en una ONG. Han pasado varios años en diferentes países de América Latina, como…

Bolivia	Ecuador	Colombia

Ordene los elementos: Elena e Esteban son veganos, por lo tanto comen bastante fruta. Apenas cenan porque siempre meriendan mucho, especialmente fruta, como…

manzanas	plátanos	naranjas

Ordene los elementos: Paula y Daniel se levantan todos los días muy temprano para ir a correr. Antes de hacer deporte no desayunan, solo se toman un vaso de algo líquido, como…

zumo	leche	agua

Ordene los elementos: Clara y Laura tienen a medias una frutería en el barrio de Lavapiés, en Madrid. Venden mucha fruta tropical, como…

piñas	mangos	cocos

Ordene los elementos: Ricardo y Fernando son dos periodistas famosos del principal periódico de Lima. Además de escribir para el periódico en su tiempo libre se dedican a su verdadera pasión, la literatura. Ya han escrito juntos …

ensayos	novelas	poemas

Ordene los elementos: José y David tienen una tienda en la que venden muchos accesorios para mascotas. También venden distintos animales, como…

perros	gatos	peces

Ordene los elementos: Francisco y Manuel acaban de empezar la carrera de Física en la Universidad de Salamanca. No tienen mucha experiencia en la cocina, pero en su nuevo piso intentan aprender poco a poco. Ya cocinan algunos platos fáciles, como…

pizza	pasta	arroz

Ordene los elementos: Alberto y Cristina son dos activistas de Greenpeace que tienen un proyecto forestal. En su tiempo libre plantan muchos árboles, como…

robles	álamos	castaños

Ordene los elementos: Mercedes y Lucía son dos profesores del Instituto Cervantes de Berlín. Vivieron varios años en Barcelona, pero ambos nacieron en Coruña, donde pasaron su infancia. Estudiaron Filología en Berlín y se quedaron en esta cuidad para dar clases de lenguas de España, como…

Gallego	catalán	euskera

Ordene los elementos: Rocío y Natalia viven en el centro de Sevilla. Sus maridos trabajan en la banca. Ellas ya no trabajan, y van mucho de compras. Son dos "shopping victims". Gastan mucho dinero en…

bolsos	zapatos	joyas

Ordene los elementos: Carlos y Juan son dos delicuentes bien conocidos por la policía de Algeciras. Han estado en la cárcel muchas veces por robar todo tipo de vehículos, como…

coches	motos	bicis

Ordene los elementos: Luisa y Sara son dos expertos en la Antigüedad Clásica. Lo saben todo de su arte, de su literatura y de su historia gracias a sus excelentes conocimientos de distintas lenguas, como…

griego	persa	latín

Ordene los elementos: Juana y Maribel son dos apasionadas de las flores, en su jardín tienen…

girasol	rosa	margarita

Ordene los elementos: Francisca y Pedro son dos bailarines profesionales, sobre todo bailan música latina, como…

salsa	merengue	samba

Ordene los elementos: Daniel y Elisa tiene una granja en el que crían distintos tipos de ave, como…

gallina	ganso	codorniz

Ordene los elementos: Anselmo y Salvador se juntan todos los domingo en el bar y juegan al…

ajedrez	domino	parchís

Ordene los elementos: Héctor y Diego son dos cocineros especializados en mariscos, cocinan sobre todo…

bogavante	langostino	ostras

Appendix F. Comprehension test – Results per condition

b1a1			b2a1		
Manolo y Antonio importan tomates. *Según la frase, es menos probable importar tomates que otras hortalizas.*			Manolo y Antonio importan incluso tomates. *Según la frase, es menos probable importar tomates que otras hortalizas.*		
sí	no	no puede saberse	sí	no	no puede saberse
1	**14**	**5**	**13**	**4**	**3**
Letizia y Paola conocen Málaga. *Según la frase, es menos probable conocer Málaga que otras provincias andaluzas.*			Letizia y Paola conocen incluso Málaga. *Según la frase, es menos probable conocer Málaga que otras provincias andaluzas.*		
sí	no	no puede saberse	sí	no	no puede saberse
1	**14**	**5**	**14**	**4**	**2**
Susana y María conocen Ecuador. *Según la frase, es menos probable conocer Ecuador que otros países.*			Susana y María conocen incluso Ecuador. *Según la frase, es menos probable conocer Ecuador que otros países.*		
sí	no	no puede saberse	sí	no	no puede saberse
3	**15**	**2**	**15**	**4**	**1**
Elena y Esteban meriendan plátanos. *Según la frase, es menos probable merendar plátanos que otras frutas.*			Elena y Esteban meriendan incluso plátanos. *Según la frase, es menos probable merendar plátanos que otras frutas.*		
sí	no	no puede saberse	sí	no	no puede saberse
2	**9**	**9**	**16**	**4**	**0**
Paula y Daniel beben leche. *Según la frase, es menos probable beber leche que otras bebidas.*			Paula y Daniel beben incluso leche. *Según la frase, es menos probable beber leche que otras bebidas.*		
sí	no	no puede saberse	sí	no	no puede saberse
6	**9**	**5**	**16**	**2**	**2**
Clara y Laura venden cocos. *Según la frase, es menos probable vender cocos que otras frutas tropicales.*			Clara y Laura venden incluso cocos. *Según la frase, es menos probable vender cocos que otras frutas tropicales.*		
sí	no	no puede saberse	sí	no	no puede saberse
2	**11**	**7**	**18**	**1**	**1**
Ricardo y Fernando escriben poemas. *Según la frase, es menos probable escribir poemas que otros textos literarios.*			Ricardo y Fernando escriben incluso poemas. *Según la frase, es menos probable escribir poemas que otros textos literarios.*		
sí	no	no puede saberse	sí	no	no puede saberse
0	**10**	**10**	**18**	**1**	**1**
José y David venden peces.			José y David venden incluso peces.		

Según la frase, es menos probable vender peces que otros animales.			*Según la frase, es menos probable vender peces que otros animales.*		
sí	no	no puede saberse	sí	no	no puede saberse
1	**9**	**10**	**18**	**2**	**0**
Francisco y Manuel cocinan arroz.			Francisco y Manuel cocinan incluso arroz.		
Según la frase, es menos probable cocinar arroz que otras cosas.			*Según la frase, es menos probable cocinar arroz que otras cosas.*		
sí	no	no puede saberse	sí	no	no puede saberse
0	**18**	**2**	**18**	**2**	**0**
Alberto y Cristina plantan álamos.			Alberto y Cristina plantan incluso álamos.		
Según la frase, es menos probable plantar álamos que otros árboles.			*Según la frase, es menos probable plantar álamos que otros árboles.*		
sí	no	no puede saberse	sí	no	no puede saberse
1	**17**	**2**	**20**	**0**	**0**
Mercedes y Lucía enseñan euskera.			Mercedes y Lucía enseñan incluso euskera.		
Según la frase, es menos probable enseñar euskera que otras lenguas de España.			*Según la frase, es menos probable enseñar euskera que otras lenguas de España.*		
sí	no	no puede saberse	sí	no	no puede saberse
1	**18**	**1**	**19**	**0**	**1**
5%	**90%**	**5%**	**95%**	**0%**	**5%**
Ana y Marta saben chino.			Ana y Marta saben incluso chino.		
Según la frase, es menos probable saber chino que otras lenguas.			*Según la frase, es menos probable saber chino que otras lenguas.*		
sí	no	no puede saberse	sí	no	no puede saberse
4	**9**	**7**	**18**	**1**	**1**
Rocío y Natalia compran joyas.			Rocío y Natalia compran incluso joyas.		
Según la frase, es menos probable comprar joyas que otras cosas.			*Según la frase, es menos probable comprar joyas que otras cosas.*		
sí	no	no puede saberse	sí	no	no puede saberse
2	**11**	**7**	**18**	**2**	**0**
Carlos y Juan roban bicis.			Carlos y Juan roban incluso bicis.		
Según la frase, es menos probable robar bicis que otros vehículos.			*Según la frase, es menos probable robar bicis que otros vehículos.*		
sí	no	no puede saberse	sí	no	no puede saberse
3	**10**	**7**	**19**	**1**	**0**
Luisa y Sara saben persa.			Luisa y Sara saben incluso persa.		
Según la frase, es menos probable saber persa que otras lenguas antiguas.			*Según la frase, es menos probable saber persa que otras lenguas antiguas.*		
sí	no	no puede saberse	sí	no	no puede saberse
6	**7**	**7**	**20**	**0**	**0**
38	**180**	**82**	**260**	**28**	**12**
13%	**60%**	**27%**	**87%**	**9%**	**4%**

b1a2			b2a2		
Manolo y Antonio importan pimientos y tomates.			Manolo y Antonio importan pimientos e incluso tomates.		
Según la frase, es menos probable importar tomates que pimientos.			*Según la frase, es menos probable importar tomates que pimientos.*		
sí	no	no puede saberse	sí	no	no puede saberse
2	**10**	**8**	**18**	**1**	**1**
Letizia y Paola conocen Sevilla y Málaga.			Letizia y Paola conocen Sevilla e incluso Málaga.		
Según la frase, es menos probable conocer Málaga que Sevilla.			*Según la frase, es menos probable conocer Málaga que Sevilla.*		
sí	no	no puede saberse	sí	no	no puede saberse
3	**14**	**3**	**18**	**2**	**0**
Susana y María conocen Colombia y Ecuador.			Susana y María conocen Colombia e incluso Ecuador.		
Según la frase, es menos probable conocer Ecuador que Colombia.			*Según la frase, es menos probable conocer Ecuador que Colombia.*		
sí	no	no puede saberse	sí	no	no puede saberse
1	**16**	**3**	**17**	**2**	**1**
Elena y Esteban meriendan manzanas y plátanos.			Elena y Esteban meriendan manzanas e incluso plátanos.		
Según la frase, es menos probable merendar plátanos que manzanas.			*Según la frase, es menos probable merendar plátanos que manzanas.*		
sí	no	no puede saberse	sí	no	no puede saberse
0	**20**	**0**	**17**	**3**	**0**
Paula y Daniel beben agua y leche.			Paula y Daniel beben agua e incluso leche.		
Según la frase, es menos probable beber leche que agua.			*Según la frase, es menos probable beber leche que agua.*		
sí	no	no puede saberse	sí	no	no puede saberse
2	**15**	**3**	**19**	**0**	**1**
Clara y Laura venden piñas y cocos.			Clara y Laura venden piñas e incluso cocos.		
Según la frase, es menos probable vender cocos que piñas.			*Según la frase, es menos probable vender cocos que piñas.*		
sí	no	no puede saberse	sí	no	no puede saberse
2	**13**	**5**	**18**	**1**	**1**
Ricardo y Fernando escriben ensayos y poemas.			Ricardo y Fernando escriben ensayos e incluso poemas.		
Según la frase, es menos probable escribir poemas que ensayos.			*Según la frase, es menos probable escribir poemas que ensayos.*		
sí	no	no puede saberse	sí	no	no puede saberse
2	**12**	**5**	**19**	**1**	**0**
José y David venden perros y peces.			José y David venden perros e incluso peces.		
Según la frase, es menos probable vender peces que perros.			*Según la frase, es menos probable vender peces que perros.*		

sí	no	no puede saberse	sí	no	no puede saberse
0	**14**	**6**	**18**	**2**	**0**
Francisco y Manuel cocinan pasta y arroz.			Francisco y Manuel cocinan pasta e incluso arroz.		
Según la frase, es menos probable cocinar arroz que pasta.			*Según la frase, es menos probable cocinar arroz que pasta.*		
sí	no	no puede saberse	sí	no	no puede saberse
0	**8**	**12**	**17**	**1**	**2**
Alberto y Cristina plantan castaños y álamos.			Alberto y Cristina plantan castaños e incluso álamos.		
Según la frase, es menos probable plantar álamos que castaños.			*Según la frase, es menos probable plantar álamos que castaños.*		
sí	no	no puede saberse	sí	no	no puede saberse
0	**17**	**3**	**19**	**1**	**0**
Mercedes y Lucía enseñan catalán y euskera.			Mercedes y Lucía enseñan catalán e incluso euskera.		
Según la frase es menos probable enseñar euskera que catalán.			Según la frase es menos probable enseñar euskera que catalán.		
sí	no	no puede saberse	sí	no	no puede saberse
0	**20**	**0**	**20**	**0**	**0**
0%	**100%**	**0%**	**100%**	**0%**	**0%**
Ana y Marta saben inglés y chino.			Ana y Marta saben inglés e incluso chino.		
Según la frase, es menos probable saber chino que inglés.			*Según la frase, es menos probable saber chino que inglés.*		
sí	no	no puede saberse	sí	no	no puede saberse
1	**18**	**1**	**17**	**1**	**2**
Rocío y Natalia compran zapatos y joyas.			Rocío y Natalia compran zapatos e incluso joyas.		
Según la frase, es menos probable comprar joyas que zapatos.			*Según la frase, es menos probable comprar joyas que zapatos.*		
sí	no	no puede saberse	sí	no	no puede saberse
3	**14**	**3**	**18**	**2**	**0**
Carlos y Juan roban coches y bicis.			Carlos y Juan roban coches e incluso bicis.		
Según la frase, es menos probable robar bicis que coches.			*Según la frase, es menos probable robar bicis que coches.*		
sí	no	no puede saberse	sí	no	no puede saberse
2	**12**	**6**	**17**	**3**	**0**
Luisa y Sara saben latín y persa.			Luisa y Sara saben latín e incluso persa.		
Según la frase, es menos probable saber persa que latín.			*Según la frase, es menos probable saber persa que latín.*		
sí	no	no puede saberse	sí	no	no puede saberse
2	**15**	**3**	**18**	**1**	**1**
20	**218**	**61**	**270**	**21**	**9**
7%	**73%**	**20%**	**90%**	**7%**	**3%**

b1a3			b2a3		
Manolo y Antonio importan pimientos, cebollas y tomates.			Manolo y Antonio importan pimientos, cebollas e incluso tomates.		
Según la frase, es menos probable importar tomates que otras hortalizas.			*Según la frase, es menos probable importar tomates que las otras hortalizas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
1	**9**	**10**	**18**	**0**	**2**
Letizia y Paola conocen Sevilla, Granada y Málaga.			Letizia y Paola conocen Sevilla, Granada e incluso Málaga.		
Según la frase, es menos probable conocer Málaga que las otras provincias mencionadas.			*Según la frase, es menos probable conocer Málaga que las otras provincias mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
1	**12**	**7**	**17**	**2**	**1**
Susana y María conocen Colombia, Bolivia y Ecuador.			Susana y María conocen Colombia, Bolivia e incluso Ecuador.		
Según la frase, es menos probable conocer Ecuador que los otros paises mencionados.			*Según la frase, es menos probable conocer Ecuador que los otros paises mencionados.*		
sí	no	no puede saberse	sí	no	no puede saberse
1	**17**	**2**	**17**	**1**	**2**
Elena y Esteban meriendan manzanas, naranjas y plátanos.			Elena y Esteban meriendan manzanas, naranjas e incluso plátanos.		
Según la frase, es menos probable merendar plátanos que las otras frutas mencionadas.			*Según la frase, es menos probable merendar plátanos que las otras frutas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
1	**18**	**1**	**15**	**4**	**1**
Paula y Daniel beben agua, zumo y leche.			Paula y Daniel beben agua, zumo e incluso leche.		
Según la frase, es menos probable beber leche que las otras bebidas mencionadas.			*Según la frase, es menos probable beber leche que las otras bebidas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
0	**18**	**2**	**17**	**1**	**2**
Clara y Laura venden piñas, mangos y cocos.			Clara y Laura venden piñas, mangos e incluso cocos.		
Según la frase, es menos probable vender cocos que las otras frutas tropicales mencionadas.			*Según la frase, es menos probable vender cocos que las otras frutas tropicales mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
0	**17**	**3**	**17**	**3**	**0**
Ricardo y Fernando escriben ensayos, novelas y poemas.			Ricardo y Fernando escriben ensayos, novelas e incluso poemas.		
Según la frase, es menos probable escribir poemas que los otros textos literarios mencionados.			*Según la frase, es menos probable escribir poemas que los otros textos literarios mencionados.*		
sí	no	no puede saberse	sí	no	no puede saberse
1	**16**	**3**	**18**	**1**	**1**
José y David venden perros, gatos y peces.			José y David venden perros, gatos e incluso peces.		
Según la frase, es menos probable vender peces que los otros animales mencionados			*Según la frase, es menos probable vender peces que los otros animales mencionados*		
sí	no	no puede saberse	sí	no	no puede saberse

0	**17**	**3**	**17**	**1**	**2**
Francisco y Manuel cocinan pasta, pizza y arroz.			Francisco y Manuel cocinan pasta, pizza e incluso arroz.		
Según la frase, es menos probable cocinar arroz que los otros platos mencionados.			*Según la frase, es menos probable cocinar arroz que los otros platos mencionados.*		
sí	no	no puede saberse	sí	no	no puede saberse
1	**15**	**4**	**17**	**3**	**0**
Alberto y Cristina plantan castaños, robles y álamos.			Alberto y Cristina plantan castaños, robles e incluso álamos.		
Según la frase, es menos probable plantar álamos que los otros árboles mencionados.			*Según la frase, es menos probable plantar álamos que los otros árboles mencionados.*		
sí	no	no puede saberse	sí	no	no puede saberse
0	**18**	**2**	**18**	**1**	**1**
Mercedes y Lucía enseñan catalán, gallego y euskera.			Mercedes y Lucía enseñan catalán, gallego e incluso euskera.		
Según la frase, es menos probable enseñar euskera que las otras lenguas mencionadas.			*Según la frase, es menos probable enseñar euskera que las otras lenguas mencionadas.*		
sí	no	Sin respuesta	sí	no	no puede saberse
1	**19**	**0**	**18**	**2**	**0**
5%	**75%**	**20%**	**75%**	**20%**	**5%**
Ana y Marta saben inglés, francés y chino.			Ana y Marta saben inglés, francés e incluso chino.		
Según la frase, es menos probable saber chino que las otras lenguas mencionadas.			*Según la frase, es menos probable saber chino que las otras lenguas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
0	**20**	**0**	**20**	**0**	**0**
Rocío y Natalia compran zapatos, bolsos y joyas.			Rocío y Natalia compran zapatos, bolsos e incluso joyas.		
Según la frase, es menos probable comprar joyas que las otras cosas mencionadas.			*Según la frase, es menos probable comprar joyas que las otras cosas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
0	**20**	**0**	**18**	**1**	**1**
Carlos y Juan roban coches, motos y bicis.			Carlos y Juan roban coches, motos e incluso bicis.		
Según la frase, es menos probable robar bicis que los otros vehículos mencionados.			*Según la frase, es menos probable robar bicis que los otros vehículos mencionados.*		
sí	no	no puede saberse	sí	no	no puede saberse
2	**18**	**0**	**18**	**1**	**1**
Luisa y Sara saben latín, griego y persa.			Luisa y Sara saben latín, griego e incluso persa.		
Según la frase, es menos probable saber persa que las otras lenguas mencionadas.			*Según la frase, es menos probable saber persa que las otras lenguas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
1	**16**	**6**	**19**	**1**	**0**
10	**250**	**43**	**264**	**22**	**14**
3%	**83%**	**14%**	**88%**	**7%**	**5%**

c1a1			c1a2		
Manolo y Antonio importan tomates incluso.			Manolo y Antonio importan pimientos y tomates incluso.		
Según la frase, es menos probable importar tomates que otras hortalizas.			*Según la frase, es menos probable importar tomates que las otras hortalizas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
16	**1**	**3**	**17**	**1**	**2**
Letizia y Paola conocen Málaga incluso.			Letizia y Paola conocen Sevilla y Málaga incluso.		
Según la frase, es menos probable conocer Málaga que otras provincias andaluzas.			*Según la frase, es menos probable conocer Málaga que Sevilla.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**2**	**1**	**15**	**5**	**0**
Susana y María conocen Ecuador incluso.			Susana y María conocen Colombia y Ecuador incluso.		
Según la frase, es menos probable conocer Ecuador que otros países.			*Según la frase, es menos probable conocer Ecuador que Colombia.*		
sí	no	no puede saberse	sí	no	no puede saberse
15	**5**	**0**	**17**	**0**	**3**
Elena y Esteban meriendan plátanos incluso.			Elena y Esteban meriendan manzanas y plátanos incluso.		
Según la frase, es menos probable merendar plátanos que otras frutas.			*Según la frase, es menos probable merendar plátanos que manzanas.*		
sí	no	no puede saberse	sí	no	no puede saberse
16	**1**	**3**	**16**	**4**	**0**
Paula y Daniel beben leche incluso.			Paula y Daniel beben agua y leche incluso.		
Según la frase, es menos probable beber leche que otras bebidas.			*Según la frase, es menos probable beber leche que agua.*		
sí	no	no puede saberse	sí	no	no puede saberse
13	**5**	**2**	**17**	**3**	**0**
Clara y Laura venden cocos incluso.			Clara y Laura venden piñas y cocos incluso.		
Según la frase, es menos probable vender cocos que otras frutas tropicales.			*Según la frase, es menos probable vender cocos que piñas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**2**	**1**	**15**	**4**	**1**
Ricardo y Fernando escriben poemas incluso.			Ricardo y Fernando escriben ensayos y poemas incluso.		
Según la frase, es menos probable escribir poemas que otros textos literarios.			*Según la frase, es menos probable escribir poemas que ensayos.*		
sí	no	no puede saberse	sí	no	no puede saberse
14	**4**	**2**	**13**	**5**	**2**
José y David venden peces incluso.			José y David venden perros y peces incluso.		
Según la frase, es menos probable vender peces que otros animales.			*Según la frase, es menos probable vender peces que perros.*		
sí	no	no puede saberse	sí	no	no puede saberse
20	**0**	**0**	**15**	**3**	**2**

Francisco y Manuel cocinan arroz incluso.			Francisco y Manuel cocinan pasta y arroz incluso.		
Según la frase, es menos probable cocinar arroz que otras cosas.			*Según la frase, es menos probable cocinar arroz que pasta.*		
sí	no	no puede saberse	sí	no	no puede saberse
16	**1**	**3**	**16**	**2**	**2**
Alberto y Cristina plantan álamos incluso.			Alberto y Cristina plantan castaños y álamos incluso.		
Según la frase, es menos probable plantar álamos que otros árboles.			*Según la frase, es menos probable plantar álamos que castaños.*		
sí	no	no puede saberse	sí	no	no puede saberse
16	**4**	**0**	**16**	**3**	**1**
Mercedes y Lucía enseñan euskera incluso.			Mercedes y Lucía enseñan catalán y euskera incluso.		
Según la frase, es menos probable enseñar euskera que otras lenguas de España.			Según la frase es menos probable enseñar euskera que catalán.		
sí	no	no puede saberse	sí	no	no puede saberse
16	**3**	**1**	**18**	**2**	**0**
80%	**15%**	**5%**	**90%**	**10%**	**0%**
Ana y Marta saben chino incluso.			Ana y Marta saben inglés y chino incluso.		
Según la frase, es menos probable saber chino que otras lenguas.			*Según la frase, es menos probable saber chino que inglés.*		
sí	no	no puede saberse	sí	no	no puede saberse
19	**1**	**0**	**18**	**1**	**1**
Rocío y Natalia compran joyas incluso.			Rocío y Natalia compran zapatos y joyas incluso.		
Según la frase, es menos probable comprar joyas que otras cosas.			*Según la frase, es menos probable comprar joyas que zapatos.*		
sí	no	no puede saberse	sí	no	no puede saberse
16	**3**	**1**	**16**	**3**	**1**
Carlos y Juan roban bicis incluso.			Carlos y Juan roban coches y bicis incluso.		
Según la frase, es menos probable robar bicis que otros vehículos.			*Según la frase, es menos probable robar bicis que coches.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**0**	**3**	**16**	**2**	**2**
Luisa y Sara saben persa incluso.			Luisa y Sara saben latín y persa incluso.		
Según la frase, es menos probable saber persa que otras lenguas antiguas.			Según la frase, es menos probable saber persa que latín.		
sí	no	no puede saberse	sí	no	no puede saberse
17	**2**	**1**	**18**	**0**	**2**
245	**34**	**21**	**243**	**38**	**19**
82%	**11%**	**7%**	**81%**	**13%**	**6%**

c1a3			d1a1		
Manolo y Antonio importan pimientos, cebollas y tomates incluso.			Manolo y Antonio importan incluso pimientos.		
Según la frase, es menos probable importar tomates que otras hortalizas.			*Según la frase, es menos probable importar pimientos que otras hortalizas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**1**	**2**	**17**	**1**	**2**
Letizia y Paola conocen Sevilla, Granada y Málaga incluso.			Letizia y Paola conocen incluso Sevilla.		
Según la frase, es menos probable conocer Málaga que las otras provincias mencionadas.			*Según la frase, es menos probable conocer Sevilla que otras provincias andaluzas.*		
sí	no	no puede saberse	sí	no	no puede saberse
18	**1**	**1**	**16**	**3**	**1**
Susana y María conocen Colombia, Bolivia y Ecuador incluso.			Susana y María conocen incluso Colombia.		
Según la frase, es menos probable conocer Ecuador que los otros paises mencionados.			*Según la frase, es menos probable conocer Colombia que otros países.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**2**	**1**	**17**	**2**	**1**
Elena y Esteban meriendan manzanas, naranjas y plátanos incluso.			Elena y Esteban meriendan incluso manzanas.		
Según la frase, es menos probable merendar plátanos que las otras frutas mencionadas.			*Según la frase, es menos probable merendar manzanas que otras frutas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**1**	**2**	**17**	**1**	**2**
Paula y Daniel beben agua, zumo y leche incluso.			Paula y Daniel beben incluso agua.		
Según la frase, es menos probable beber leche que las otras bebidas mencionadas.			*Según la frase, es menos probable beber agua que otras bebidas.*		
sí	no	no puede saberse	sí	no	no puede saberse
16	**2**	**2**	**16**	**3**	**1**
Clara y Laura venden piñas, mangos y cocos incluso.			Clara y Laura venden incluso piñas.		
Según la frase, es menos probable vender cocos que las otras frutas tropicales mencionadas.			*Según la frase, es menos probable vender piñas que otras frutas tropicales.*		
sí	no	no puede saberse	sí	no	no puede saberse
16	**3**	**1**	**14**	**4**	**2**
Ricardo y Fernando escriben ensayos, novelas y poemas incluso.			Ricardo y Fernando escriben incluso ensayos.		
Según la frase, es menos probable escribir poemas que los otros textos literarios mencionados.			*Según la frase, es menos probable escribir ensayos que otros textos literarios.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**3**	**0**	**13**	**6**	**1**
José y David venden perros, gatos y peces incluso.			José y David venden incluso perros.		
Según la frase, es menos probable vender peces que los otros animales mencionados			*Según la frase, es menos probable vender perros que otros animales.*		

sí	no	no puede saberse	sí	no	no puede saberse
15	**3**	**2**	**17**	**3**	**0**
Francisco y Manuel cocinan pasta, pizza y arroz incluso.			Francisco y Manuel cocinan incluso pasta.		
Según la frase, es menos probable cocinar arroz que los otros platos mencionados.			*Según la frase, es menos probable cocinar pasta que otras cosas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**2**	**1**	**16**	**2**	**2**
Alberto y Cristina plantan castaños, robles y álamos incluso.			Alberto y Cristina plantan incluso castaños.		
Según la frase, es menos probable plantar álamos que los otros árboles mencionados.			*Según la frase, es menos probable plantar castaños que otros árboles.*		
sí	no	no puede saberse	sí	no	no puede saberse
16	**2**	**2**	**15**	**1**	**4**
Mercedes y Lucía enseñan catalán, gallego y euskera incluso.			Mercedes y Lucía enseñan incluso catalán.		
Según la frase, es menos probable enseñar euskera que las otras lenguas mencionadas.			*Según la frase, es menos probable enseñar catalán que otras lenguas de España.*		
sí	no	no puede saberse	sí	no	no puede saberse
14	**3**	**3**	**15**	**1**	**4**
70%	**25%**	**5%**	**75%**	**10%**	**15%**
Ana y Marta saben inglés, francés y chino incluso.			Ana y Marta saben incluso inglés.		
Según la frase, es menos probable saber chino que las otras lenguas mencionadas.			*Según la frase, es menos probable saber inglés que otras lenguas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**1**	**2**	**16**	**2**	**2**
Rocío y Natalia compran zapatos, bolsos y joyas incluso.			Rocío y Natalia compran incluso zapatos.		
Según la frase, es menos probable comprar joyas que las otras cosas mencionadas.			*Según la frase, es menos probable comprar zapatos que otras cosas.*		
sí	no	no puede saberse	sí	no	no puede saberse
18	**1**	**1**	**15**	**0**	**5**
Carlos y Juan roban coches, motos y bicis incluso.			Carlos y Juan roban incluso coches.		
Según la frase, es menos probable robar bicis que los otros vehículos mencionados.			*Según la frase, es menos probable robar coches que otros vehículos.*		
sí	no	no puede saberse	sí	no	no puede saberse
18	**1**	**1**	**17**	**0**	**3**
Luisa y Sara saben latín, griego y persa incluso.			Luisa y Sara saben incluso latín.		
Según la frase, es menos probable saber persa que las otras lenguas mencionadas.			*Según la frase, es menos probable saber latín que otras lenguas antiguas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**3**	**0**	**17**	**1**	**2**
250	**29**	**21**	**238**	**30**	**32**
83%	**10%**	**7%**	**79%**	**10%**	**11%**

d1a2			d1a3		
Manolo y Antonio importan tomates e incluso pimientos.			Manolo y Antonio importan tomates, cebollas e incluso pimientos.		
Según la frase, es menos probable importar pimientos que tomates.			*Según la frase, es menos probable importar pimientos que las otras hortalizas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
18	**1**	**1**	**17**	**2**	**1**
Letizia y Paola conocen Málaga e incluso Sevilla.			Letizia y Paola conocen Málaga, Granada e incluso Sevilla.		
Según la frase, es menos probable conocer Sevilla que Málaga.			*Según la frase, es menos probable conocer Sevilla que las otras provincias mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
14	**4**	**2**	**17**	**1**	**2**
Susana y María conocen Ecuador e incluso Colombia.			Susana y María conocen Ecuador, Bolivia e incluso Colombia.		
Según la frase, es menos probable conocer Colombia que Ecuador.			*Según la frase, es menos probable conocer Colombia que los otros paises mencionados.*		
sí	no	no puede saberse	sí	no	no puede saberse
14	**6**	**0**	**14**	**5**	**1**
Elena y Esteban meriendan plátanos e incluso manzanas.			Elena y Esteban meriendan plátanos, naranjas e incluso manzanas.		
Según la frase, es menos probable merendar manzanas que plátanos.			*Según la frase, es menos probable merendar manzanas que las otras frutas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**3**	**0**	**12**	**8**	**0**
Paula y Daniel beben leche e incluso agua.			Paula y Daniel beben leche, zumo e incluso agua.		
Según la frase, es menos probable beber agua que leche.			*Según la frase, es menos probable beber agua que las otras bebidas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**2**	**1**	**18**	**1**	**1**
Clara y Laura venden cocos e incluso piñas.			Clara y Laura venden cocos, mangos e incluso piñas.		
Según la frase, es menos probable vender piñas que cocos.			*Según la frase, es menos probable vender piñas que las otras frutas tropicales mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**2**	**1**	**18**	**0**	**2**
Ricardo y Fernando escriben poemas e incluso ensayos.			Ricardo y Fernando escriben poemas, novelas e incluso ensayos.		
Según la frase, es menos probable escribir ensayos que poemas.			*Según la frase, es menos probable escribir ensayos que los otros textos literarios mencionados.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**2**	**1**	**16**	**2**	**2**
José y David venden peces e incluso perros.			José y David venden peces, gatos e incluso perros.		
Según la frase, es menos probable vender perros que peces.			*Según la frase, es menos probable vender perros que los otros animales mencionados*		

sí	no	no puede saberse	sí	no	no puede saberse
18	**2**	**0**	**12**	**4**	**4**
Francisco y Manuel cocinan arroz e incluso pasta.			Francisco y Manuel cocinan arroz, pizza e incluso pasta.		
Según la frase, es menos probable cocinar pasta que arroz.			*Según la frase, es menos probable cocinar pasta que los otros platos mencionados.*		
sí	no	no puede saberse	sí	no	no puede saberse
18	**1**	**1**	**17**	**3**	**0**
Alberto y Cristina plantan álamos e incluso castaños.			Alberto y Cristina plantan álamos, robles e incluso castaños.		
Según la frase, es menos probable plantar castaños que álamos.			*Según la frase, es menos probable plantar castaños que los otros árboles mencionados.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**3**	**0**	**18**	**2**	**0**
Mercedes y Lucía enseñan euskera e incluso catalán.			Mercedes y Lucía enseñan euskera, gallego e incluso catalán.		
Según la frase es menos probable enseñar catalán que euskera.			*Según la frase, es menos probable enseñar catalán que las otras lenguas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**3**	**0**	**16**	**2**	**2**
50%	**35%**	**15%**	**80%**	**10%**	**10%**
Ana y Marta saben chino e incluso inglés.			Ana y Marta saben chino, francés e incluso inglés.		
Según la frase, es menos probable saber inglés que chino.			*Según la frase, es menos probable saber inglés que las otras lenguas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
16	**3**	**1**	**18**	**1**	**1**
Rocío y Natalia compran joyas e incluso zapatos.			Rocío y Natalia compran joyas, bolsos e incluso zapatos.		
Según la frase, es menos probable comprar joyas que zapatos.			*Según la frase, es menos probable comprar zapatos que las otras cosas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
19	**1**	**0**	**14**	**2**	**3**
Carlos y Juan roban bicis e incluso coches.			Carlos y Juan roban bicis, motos e incluso coches.		
Según la frase, es menos probable robar coches que bicis.			*Según la frase, es menos probable robar coches que los otros vehículos mencionados.*		
sí	no	no puede saberse	sí	no	no puede saberse
16	**3**	**1**	**17**	**2**	**1**
Luisa y Sara saben persa e incluso latín.			Luisa y Sara saben persa, griego e incluso latín.		
Según la frase, es menos probable saber latín que persa.			*Según la frase, es menos probable saber latín que las otras lenguas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
19	**0**	**1**	**14**	**6**	**0**
254	**36**	**10**	**238**	**41**	**20**
85%	**12%**	**3%**	**79%**	**14%**	**7%**

Results χ^2 test

comparisons	χ^2 test
b1a1 – b2a1	312.9 > 5.99; p < .05
b1a2 – b2a2	309.5 > 5.99; p < .05
b1a3 – b2a3	307.47 > 5.99; p < .05
b2a1 – c1a1	0.96 < 5.99; p > .05
b2a2 – c1a2	3.27 < 5.99; p > .05
b2a3 – c1a3	1.12 < 5.99; p > .05
b2a1 – d1a1	3.70 < 5.99; p > .05
b2a2 – d1a2	1.45 < 5.99; p > .05
b2a3 – d1a3	3.15 < 5.99; p > .05

Appendix G. Additional Comprehension test – Results per condition

b2a1			d1a1		
Manolo y Antonio importan incluso tomates.			Manolo y Antonio importan incluso pimientos.		
Es menos probable importar tomates que otras hortalizas.			*Es menos probable importar pimientos que otras hortalizas.*		
sí	no	no puede saberse	sí	no	no puede saberse
14	**2**	**4**	**3**	**16**	**1**
Letizia y Paola conocen incluso Málaga.			Letizia y Paola conocen incluso Sevilla.		
Es menos probable conocer Málaga que otras provincias andaluzas.			*Es menos probable conocer Sevilla que otras provincias andaluzas.*		
sí	no	no puede saberse	sí	no	no puede saberse
16	**4**	**0**	**0**	**18**	**2**
Susana y María conocen incluso Ecuador.			Susana y María conocen incluso Colombia.		
Es menos probable conocer Ecuador que otros países.			*Es menos probable conocer Colombia que otros países.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**2**	**1**	**4**	**16**	**0**
Elena y Esteban meriendan incluso plátanos.			Elena y Esteban meriendan incluso manzanas.		
Es menos probable merendar plátanos que otras frutas.			*Es menos probable merendar manzanas que otras frutas.*		
sí	no	no puede saberse	sí	no	no puede saberse
15	**5**	**0**	**3**	**15**	**2**
Paula y Daniel beben incluso leche.			Paula y Daniel beben incluso agua.		
Es menos probable beber leche que otras bebidas.			*Es menos probable beber agua que otras bebidas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**2**	**1**	**2**	**16**	**2**
Clara y Laura venden incluso cocos.			Clara y Laura venden incluso piñas.		
Es menos probable vender cocos que otras frutas tropicales.			*Es menos probable vender piñas que otras frutas tropicalEs.*		
sí	no	no puede saberse	sí	no	no puede saberse
19	**0**	**1**	**1**	**15**	**4**
Ricardo y Fernando escriben incluso poemas.			Ricardo y Fernando escriben incluso ensayos.		
Es menos probable escribir poemas que otros textos literarios.			*Es menos probable escribir ensayos que otros textos literarios.*		
sí	no	no puede saberse	sí	no	no puede saberse
20	**0**	**0**	**1**	**18**	**1**
José y David venden incluso peces.			José y David venden incluso perros.		

Es menos probable vender peces que otros animales.			*Es menos probable vender perros que otros animales.*		
sí	no	no puede saberse	sí	no	no puede saberse
16	**1**	**3**	**1**	**19**	**0**
Francisco y Manuel cocinan incluso arroz.			Francisco y Manuel cocinan incluso pasta.		
Es menos probable cocinar arroz que otras cosas.			*Es menos probable cocinar pasta que otras cosas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**2**	**1**	**3**	**17**	**0**
Alberto y Cristina plantan incluso álamos.			Alberto y Cristina plantan incluso castaños.		
Es menos probable plantar álamos que otros árboles.			*Es menos probable plantar castaños que otros árboles.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**2**	**1**	**0**	**17**	**3**
Mercedes y Lucía enseñan incluso euskera.			Mercedes y Lucía enseñan incluso catalán.		
Es menos probable enseñar euskera que otras lenguas de España.			*Es menos probable enseñar catalán que otras lenguas de España.*		
sí	no	no puede saberse	sí	no	no puede saberse
16	**1**	**3**	**1**	**19**	**0**
Ana y Marta saben incluso chino.			Ana y Marta saben incluso inglés.		
Es menos probable saber chino que otras lenguas.			*Es menos probable saber inglés que otras lenguas.*		
sí	no	no puede saberse	sí	no	no puede saberse
19	**0**	**1**	**1**	**18**	**1**
Rocío y Natalia compran incluso joyas.			Rocío y Natalia compran incluso zapatos.		
Es menos probable comprar joyas que otras cosas.			*Es menos probable comprar zapatos que otras cosas.*		
sí	no	no puede saberse	sí	no	no puede saberse
16	**1**	**3**	**4**	**16**	**0**
Carlos y Juan roban incluso bicis.			Carlos y Juan roban incluso coches.		
Es menos probable robar bicis que otros vehículos.			*Es menos probable robar coches que otros vehículos.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**2**	**1**	**2**	**17**	**1**
Luisa y Sara saben incluso persa.			Luisa y Sara saben incluso latín.		
Es menos probable saber persa que otras lenguas antiguas.			*Es menos probable saber latín que otras lenguas antiguas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**3**	**0**	**1**	**17**	**2**
253	**27**	**20**	**27**	**254**	**19**
84%	**9%**	**7%**	**9%**	**85%**	**6%**

b2a2			d1a2		
Manolo y Antonio importan pimientos e incluso tomates.			Manolo y Antonio importan tomates e incluso pimientos.		
Es menos probable importar tomates que pimientos.			*Es menos probable importar pimientos que tomates.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**2**	**1**	**2**	**18**	**0**
Letizia y Paola conocen Sevilla e incluso Málaga.			Letizia y Paola conocen Málaga e incluso Sevilla.		
Es menos probable conocer Málaga que Sevilla.			*Es menos probable conocer Sevilla que Málaga.*		
sí	no	no puede saberse	sí	no	no puede saberse
19	**1**	**0**	**1**	**19**	**0**
Susana y María conocen Colombia e incluso Ecuador.			Susana y María conocen Ecuador e incluso Colombia.		
Es menos probable conocer Ecuador que Colombia.			*Es menos probable conocer Colombia que Ecuador.*		
sí	no	no puede saberse	sí	no	no puede saberse
16	**3**	**1**	**3**	**17**	**0**
Elena y Esteban meriendan manzanas e incluso plátanos.			Elena y Esteban meriendan plátanos e incluso manzanas.		
Es menos probable merendar plátanos que manzanas.			*Es menos probable merendar manzanas que plátanos.*		
sí	no	no puede saberse	sí	no	no puede saberse
18	**1**	**1**	**0**	**18**	**2**
Paula y Daniel beben agua e incluso leche.			Paula y Daniel beben leche e incluso agua.		
Es menos probable beber leche que agua.			*Es menos probable beber agua que leche.*		
sí	no	no puede saberse	sí	no	no puede saberse
18	**2**	**0**	**2**	**17**	**1**
Clara y Laura venden piñas e incluso cocos.			Clara y Laura venden cocos e incluso piñas.		
Es menos probable vender cocos que piñas.			*Es menos probable vender piñas que cocos.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**2**	**1**	**2**	**17**	**1**
Ricardo y Fernando escriben ensayos e incluso poemas.			Ricardo y Fernando escriben poemas e incluso ensayos.		
Es menos probable escribir poemas que ensayos.			*Es menos probable escribir ensayos que poemas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**1**	**2**	**3**	**16**	**1**
José y David venden perros e incluso peces.			José y David venden peces e incluso perros.		
Es menos probable vender peces que perros.			*Es menos probable vender perros que peces.*		
sí	no	no puede saberse	sí	no	no puede saberse
18	**0**	**2**	**0**	**19**	**1**

Francisco y Manuel cocinan pasta e incluso arroz.			Francisco y Manuel cocinan arroz e incluso pasta.		
Es menos probable cocinar arroz que pasta.			*Es menos probable cocinar pasta que arroz.*		
sí	no	no puede saberse	sí	no	no puede saberse
19	**1**	**0**	**3**	**17**	**0**
Alberto y Cristina plantan castaños e incluso álamos.			Alberto y Cristina plantan álamos e incluso castaños.		
Es menos probable plantar álamos que castaños.			*Es menos probable plantar castaños que álamos.*		
sí	no	no puede saberse	sí	no	no puede saberse
19	**0**	**1**	**0**	**16**	**4**
Mercedes y Lucía enseñan catalán e incluso euskera.			Mercedes y Lucía enseñan euskera e incluso catalán.		
Es menos probable enseñar euskera que catalán.			*Es menos probable enseñar catalán que euskera.*		
sí	no	no puede saberse	sí	no	no puede saberse
18	**2**	**0**	**2**	**17**	**1**
Ana y Marta saben inglés e incluso chino.			Ana y Marta saben chino e incluso inglés.		
Es menos probable saber chino que inglés.			*Es menos probable saber inglés que chino.*		
sí	no	no puede saberse	sí	no	no puede saberse
20	**0**	**0**	**2**	**17**	**1**
Rocío y Natalia compran zapatos e incluso joyas.			Rocío y Natalia compran joyas e incluso zapatos.		
Es menos probable comprar joyas que zapatos.			*Es menos probable comprar joyas que zapatos.*		
sí	no	no puede saberse	sí	no	no puede saberse
18	**2**	**0**	**1**	**19**	**0**
Carlos y Juan roban coches e incluso bicis.			Carlos y Juan roban bicis e incluso coches.		
Es menos probable robar bicis que coches.			*Es menos probable robar coches que bicis.*		
sí	no	no puede saberse	sí	no	no puede saberse
18	**1**	**1**	**2**	**18**	**0**
Luisa y Sara saben latín e incluso persa.			Luisa y Sara saben persa e incluso latín.		
Es menos probable saber persa que latín.			*Es menos probable saber latín que persa.*		
sí	no	no puede saberse	sí	no	no puede saberse
20	**0**	**0**	**0**	**17**	**3**
272	**18**	**10**	**23**	**262**	**15**
91%	**6%**	**3%**	**8%**	**87%**	**5%**

b2a3			d1a3		
Manolo y Antonio importan pimientos, cebollas e incluso tomates.			Manolo y Antonio importan tomates, cebollas e incluso pimientos.		
Es menos probable importar tomates que las otras hortalizas mencionadas.			*Es menos probable importar pimientos que las otras hortalizas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
19	**0**	**1**	**3**	**17**	**0**
Letizia y Paola conocen Sevilla, Granada e incluso Málaga.			Letizia y Paola conocen Málaga, Granada e incluso Sevilla.		
Es menos probable conocer Málaga que las otras provincias mencionadas.			*Es menos probable conocer Sevilla que las otras provincias mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**1**	**2**	**1**	**18**	**1**
Susana y María conocen Colombia, Bolivia e incluso Ecuador.			Susana y María conocen Ecuador, Bolivia e incluso Colombia.		
Es menos probable conocer Ecuador que los otros paises mencionados.			*Es menos probable conocer Colombia que los otros paises mencionados.*		
sí	no	no puede saberse	sí	no	no puede saberse
18	**1**	**1**	**1**	**18**	**1**
Elena y Esteban meriendan manzanas, naranjas e incluso plátanos.			Elena y Esteban meriendan plátanos, naranjas e incluso manzanas.		
Es menos probable merendar plátanos que las otras frutas mencionadas.			*Es menos probable merendar manzanas que las otras frutas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**2**	**1**	**1**	**17**	**2**
Paula y Daniel beben agua, zumo e incluso leche.			Paula y Daniel beben leche, zumo e incluso agua.		
Es menos probable beber leche que las otras bebidas mencionadas.			*Es menos probable beber agua que las otras bebidas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
19	**0**	**1**	**2**	**18**	**0**
Clara y Laura venden piñas, mangos e incluso cocos.			Clara y Laura venden cocos, mangos e incluso piñas.		
Es menos probable vender cocos que las otras frutas tropicales mencionadas.			*Es menos probable vender piñas que las otras frutas tropicalEs mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**1**	**2**	**1**	**19**	**0**
Ricardo y Fernando escriben ensayos, novelas e incluso poemas.			Ricardo y Fernando escriben poemas, novelas e incluso ensayos.		
Es menos probable escribir poemas que los otros textos literarios mencionados.			*Es menos probable escribir ensayos que los otros textos literarios mencionados.*		
sí	no	no puede saberse	sí	no	no puede saberse
18	**0**	**2**	**2**	**18**	**0**
José y David venden perros, gatos e incluso peces.			José y David venden peces, gatos e incluso perros.		
Es menos probable vender peces que los otros animales mencionados			*Es menos probable vender perros que los otros animales mencionados*		
sí	no	no puede saberse	sí	no	no puede saberse
19	**1**	**0**	**2**	**18**	**0**

Francisco y Manuel cocinan pasta, pizza e incluso arroz.			Francisco y Manuel cocinan arroz, pizza e incluso pasta.		
Es menos probable cocinar arroz que los otros platos mencionados.			*Es menos probable cocinar pasta que los otros platos mencionados.*		
sí	no	no puede saberse	sí	no	no puede saberse
16	**1**	**3**	**1**	**16**	**3**
Alberto y Cristina plantan castaños, robles e incluso álamos.			Alberto y Cristina plantan álamos, robles e incluso castaños.		
Es menos probable plantar álamos que los otros árboles mencionados.			*Es menos probable plantar castaños que los otros árboles mencionados.*		
sí	no	no puede saberse	sí	no	no puede saberse
18	**2**	**0**	**1**	**19**	**0**
Mercedes y Lucía enseñan catalán, gallego e incluso euskera.			Mercedes y Lucía enseñan euskera, gallego e incluso catalán.		
Es menos probable enseñar euskera que las otras lenguas mencionadas.			*Es menos probable enseñar catalán que las otras lenguas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
19	**1**	**0**	**0**	**20**	**0**
Ana y Marta saben inglés, francés e incluso chino.			Ana y Marta saben chino, francés e incluso inglés.		
Es menos probable saber chino que las otras lenguas mencionadas.			*Es menos probable saber inglés que las otras lenguas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
17	**2**	**1**	**0**	**19**	**1**
Rocío y Natalia compran zapatos, bolsos e incluso joyas.			Rocío y Natalia compran joyas, bolsos e incluso zapatos.		
Es menos probable comprar joyas que las otras cosas mencionadas.			*Es menos probable comprar zapatos que las otras cosas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
16	**2**	**2**	**0**	**17**	**3**
Carlos y Juan roban coches, motos e incluso bicis.			Carlos y Juan roban bicis, motos e incluso coches.		
Es menos probable robar bicis que los otros vehículos mencionados.			*Es menos probable robar coches que los otros vehículos mencionados.*		
sí	no	no puede saberse	sí	no	no puede saberse
18	**2**	**0**	**3**	**17**	**0**
Luisa y Sara saben latín, griego e incluso persa.			Luisa y Sara saben persa, griego e incluso latín.		
Es menos probable saber persa que las otras lenguas mencionadas.			*Es menos probable saber latín que las otras lenguas mencionadas.*		
sí	no	no puede saberse	sí	no	no puede saberse
20	**0**	**0**	**0**	**20**	**0**
268	**16**	**16**	**18**	**271**	**11**
89%	**5%**	**5%**	**6%**	**90%**	**4%**

Results χ^2 test

comparisons	χ^2 test
b2a1 – d1a1	365.81 > 5.99; p < .05
b2a2 – d1a2	423.80 > 5.99; p < .05
b2a3 – d1a3	446.02 > 5.99; p < .05