UNIVERSIDAD COMPLUTENSE DE MADRID

FACULTAD DE FILOLOGÍA

TESIS DOCTORAL

Reference and anaphora in Spanish and Italian : A view from adult monolinguals and bilingual children

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Referencia y anáfora en español e italiano en adultos monolingües y niños bilingües

MEMORIA PARA OPTAR AL GRADO DE DOCTORA

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A mio padre, Manuel Leonetti

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List of abbreviations

AI = Artificial Intelligence
AoO = Age of Onset
DP = Determiner Phrase
DOM = Differential Object Marking
EEP = Extended Projection Principle
ENNI = Edmonton Narrative Norms Instrument
HHP = Hierarchical Height Principle
IC = Implicit Causality
IH = Interface Hypothesis
LDT = Lexical Decision Task
LME = LME
LS = Layered Structure
MAIN = Multilingual Assessment Instrument for Narratives
NOC = null, overt, clitic
NP = Noun Phrase
NS = Null Subject
NSL = Null Subject Language
ODOT = Overspecification Detection Online Task
OS = Overt Subject
PAH = Position of Antecedent Hypothesis
RE = Referential Expression
SLI = Specific Language Impairment
ToM = Theory of Mind
VP = Verb Phrase

Resumen

El presente trabajo investiga la interpretación y la producción de las expresiones anafóricas en español e italiano, como vía para explorar también las similitudes y diferencias entre estas dos lenguas a partir de sus manifestaciones en entornos tanto monolingües como bilingües.

La bibliografía previa presenta a este respecto un panorama heterogéneo, con una extraordinaria diversidad en los resultados: algunos estudios subrayan que hay sobre todo semejanzas entre ambas lenguas, mientras que otros señalan la existencia de diferencias significativas. Estas discrepancias pueden ser en parte aparentes, ya que las condiciones experimentales de cada uno de los trabajos anteriores son distintas, y esto impide comparar sus resultados. Por lo tanto, desde el punto de vista metodológico, el objetivo de este trabajo es recopilar datos utilizando una metodología uniforme, siguiendo las pautas de otros estudios previos, para poder así hacer posible una comparación sistemática.

Dos son las principales preguntas de investigación que guían este estudio: (1) si existen diferencias entre el italiano y el español en la gestión de los mecanismos anafóricos, y (2) en caso afirmativo, qué efectos tienen estas diferencias en la gestión de la anáfora en niños bilingües. Estas preguntas se subdividen a su vez en preguntas de investigación más específicas, que exploran en detalle los diferentes factores que influyen en los procesos de asignación de referencia.

El supuesto de partida de esta investigación es que la resolución de la anáfora depende tanto de condiciones sintácticas como de otros factores relacionados con el discurso, aunque no en la misma medida en todas las lenguas de sujeto tácito. Para probar esta hipótesis en tres lenguas de este tipo (italiano, griego y español), siguiendo las pautas de Torregrossa et al. (2018), se llevó a cabo una tarea de interpretación *offline* (experimento 1) en la que se pidió a los participantes que indicaran, en una escala Likert de cinco puntos, en qué medida interpretaban un pronombre tácito frente a uno explícito como referido a un antecedente sujeto u objeto. Los resultados de nuestro estudio muestran que en italiano existe una fuerte tendencia a interpretar los pronombres tácitos en posición de sujeto en una oración subordinada como referidos al sujeto de la oración principal, mientras que los pronombres explícitos tienden a referirse a

objetos. En griego, se observan las mismas tendencias, aunque en menor grado. En español, sin embargo, ni los pronombres tácitos ni los explícitos se asocian a una preferencia clara por el sujeto o el objeto.

La segunda idea explorada aquí, siguiendo a Kehler y Rohde (2013), es si las relaciones de coherencia (por ejemplo, explicación, elaboración, resultado), la estructura informativa y otras relaciones conceptuales (como la causalidad implícita) influyen en la selección del antecedente. Para ello, se han analizado sistemáticamente estos factores (por primera vez para el español) por medio de una tarea de continuación del discurso (experimento 2) en la que se comparan las preferencias de interpretación de pronombre explícitos y tácitos con verbos con sesgo de sujeto y verbos con sesgo de objeto en cuatro condiciones diferentes; en uno de los modelos, las diferentes condiciones iban precedidas además de una frase que establecía expresamente un referente como tema del discurso.

Los resultados confirmaron la hipótesis de que el español es muy sensible a las restricciones relacionadas con el discurso y la coherencia. A pesar de no haber mostrado preferencias por una u otra expresión referencial en la tarea de interpretación, en esta tarea los participantes mostraron una alta sensibilidad al sesgo verbal y a las relaciones de coherencia para elegir una expresión referencial y establecer un antecedente adecuado.

Estos resultados constituyen la base de una propuesta de análisis de los mecanismos que determinan la asignación de referente en distintas lenguas, la propuesta de la Estructura en Capas (*Layered Structure Proposal*). Se trata de un enfoque multifactorial que incluye los rasgos sintácticos, semánticos y discursivos que resultan relevantes para el establecimiento de la referencia y la resolución anafórica, y los ordena en una escala jerárquica que puede aplicarse tanto a las lenguas de sujeto tácito como a otras. Es una propuesta que permite recoger las tendencias de cada lengua: algunas lenguas son sensibles únicamente a la sintaxis o a los aspectos morfosintácticos, mientras que otras necesitan tener en cuenta también otros factores de tipo semántico o pragmático. Por sus características inherentes, parece que el italiano se sitúa en la parte inicial de la escala, de modo que la resolución de las relaciones anafóricas depende en gran medida de la sintaxis. El griego parte de las condiciones sintácticas, pero tiende a apoyarse en otros atributos adicionales, como el caso morfológico, lo que le permite mostrar un comportamiento intermedio entre el del italiano y el del

español. El español, por su parte, depende aún menos de la sintaxis y recurre en mayor medida a rasgos semánticos y a relaciones discursivas para la gestión de los mecanismos anafóricos. Parece natural, pues, que, a pesar de compartir algunos rasgos muy destacados, estas lenguas se sitúan en diversos puntos de un *continuum* que va desde los aspectos sintácticos a los de tipo discursivo.

Por lo que respecta a los niños bilingües, la bibliografía también muestra un panorama muy heterogéneo: según algunos estudios, el aprendizaje de dos lenguas conlleva costes de procesamiento adicionales o el manejo de un léxico menos rico, entre otros; sin embargo, otras investigaciones presentan un bilingüismo equilibrado.

La hipótesis que se explora en este trabajo es que los niños son capaces de tomar decisiones en la producción e interpretación de las expresiones anafóricas tomando en cuenta los factores sintácticos, semánticos y discursivos pertinentes, y que este comportamiento es coherente con lo observado en los grupos de adultos monolingües por separado. Para ello, se crearon tres pruebas para niños bilingües italiano-español. La primera era un *cloze-test*, cuyo objetivo era cuantificar la competencia individual de cada niño en ambas lenguas. Los resultados revelaron un grupo equilibrado de bilingües, con niveles de dominancia globalmente similares tanto en español como en italiano. La segunda prueba era una tarea narrativa (experimento 3) que pretendía observar la interpretación y producción de la referencia en un contexto de narración; esta tarea reveló que, al igual que los adultos, los niños ya tienen fuertes preferencias por el empleo de ciertas expresiones referenciales en contextos específicos, y que estas preferencias coinciden con las de los adultos monolingües. La última prueba era una tarea de continuación de frases (experimento 4), cuyo objetivo era investigar cómo la causalidad implícita y las relaciones discursivas influían en las decisiones de los niños respecto a la asignación de referencia. Los resultados revelaron una interacción significativa de estos factores en ambas lenguas, y fueron coherentes con los resultados de los monolingües. Estos experimentos se alinean con algunos estudios anteriores y demuestran, por tanto, que los niños bilingües mantienen separadas, con algunas diferencias sutiles, sus dos lenguas en la gestión de los mecanismos anafóricos.

En conjunto, esta tesis aporta nuevos conocimientos sobre la gestión de la referencia en monolingües y bilingües y ofrece un marco global para analizar los factores que determinan la interpretación de las expresiones anafóricas y permitir su comparación interlingüística.

Abstract

This research investigates the conditions governing the interpretation and production of anaphoric expressions in Spanish and Italian. It also explores the similarities and differences between these two languages that are spotlighted in bilingual speakers.

To date, the literature on this area presents a heterogeneous landscape. Some studies highlight the similarities between the two languages while others indicate different patterns of anaphora resolution. However, comparability issues arise due to varying experimental conditions. Hence, this study endeavours to establish a consistent basis of comparison through methodological alignment.

Two main research questions guide this investigation: (1) whether there are differences between Italian and Spanish in anaphora management, and (2) if so, how it works in Spanish-Italian bilingual children. These questions are further divided into specific inquiries exploring the various factors determining reference assignment.

The idea explored here is that anaphora resolution depends on syntactic and discourse-related factors, though to varying degrees across null subject languages. To test this hypothesis for Italian, Greek, and Spanish, an offline interpretation task (experiment 1) was conducted in which participants were asked to indicate the extent to which they interpreted a null versus overt subject pronoun as referring to a subject or an object antecedent, based on a five-point Likert scale (following the methodology in Torregrossa et al. 2018). The results of this study show that, in Italian, null subject pronouns have a strong bias towards choosing the subject as the antecedent, whereas overt pronouns tend to refer to objects. In Greek, the same tendencies apply, albeit to a lesser degree. In Spanish, however, neither null nor overt pronouns are associated with a clear preference for the subject or object.

Building on Kehler and Rohde (2013), the study further examines the influence that discourse-related factors such as coherence relations (e.g., explanation, elaboration, result), information structure, and other conceptual relations (such as implicit causality) have on the selection of the antecedent. These factors were tested in Spanish using a sentence-continuation task (experiment 2) in which four different conditions had both subject-biased and

object-biased verbs; in one of the models, the conditions were preceded by a sentence which established a referent as a discourse topic. The results confirmed the hypothesis that Spanish is highly sensitive to discourse- and coherence-related constraints. Despite displaying no preferences in the interpretation task, here we observed that the judgements and decisions of the participants were made on the basis of verb bias and coherence relations in order to choose a referential expression and establish an appropriate antecedent.

These findings are the basis of a proposal for the analysis of reference in different languages, the Layered Structure Proposal, a multifactorial approach that includes syntactic, semantic and discourse-related features as relevant to reference and anaphora resolution, which can be applied to both *pro*-drop and non-*pro*-drop languages. It is based on the observation of the sensitivities of each language: some languages may be more sensitive to syntax or morphosyntactic aspects only, while others may be more sensitive to a range of semantic or pragmatic factors. Because of its inherent characteristics, Italian seems to rely heavily on syntax, whereas Greek is only partially dependent on syntax and tends to rely on other attributes, such as morphological case, which allows it to behave differently from Italian and Spanish. Spanish, on the other hand, is even less dependent on syntax and relies on semantic and discourse features for the management of anaphoric mechanisms. It seems natural, therefore, to understand that, despite sharing some very salient features, the anaphora resolution mechanisms of these languages behave in a way better captured as a *continuum*.

As for the interpretation of anaphoric reference by bilingual children, here as well the literature shows a very heterogeneous picture: according to some studies, acquiring two languages entails, for example, additional processing costs or a somehow restricted lexicon; others, however, point to a balanced bilingualism. The hypothesis explored in the present study is that these speakers would be able to make syntactic, pragmatic, and discourse-related decisions regarding anaphora management and that this behaviour would be consistent with what is seen in adult monolingual speakers. In order to do so, we tested Italian-Spanish bilingual children through three tasks. A cloze-test was intended to quantify the individual proficiency of each child in both languages. The results revealed a

balanced group with overall similar proficiency levels in both Spanish and Italian. A narrative task (experiment 3) sought to observe children's interpretation and production of reference in a retelling context. It revealed that children already have strong preferences for certain referential expressions in specific contexts and that these preferences are in line with the preferences found in adult monolinguals. In other words, a general preference to associate null pronouns with subject antecedents, and full referential expressions to object antecedents, seemed to arise. The goal of the sentence-continuation task (experiment 4) was to observe how implicit causality and discourse relations impacted (if at all) on children' decisions regarding reference assignment. The results revealed a significant interaction of these factors in both languages, and were consistent with the results for monolinguals, since a stricter separation between referential expressions and their antecedents was found in Italian, and an overruling of null pronouns was found in Spanish. Thus, these results are in line with some previous studies and thus demonstrate that bilingual children can separate the subtle differences between their two languages in the anaphora management.

Overall, this thesis contributes new insights into reference management in monolinguals and bilinguals, and provides a comprehensive framework for investigating anaphora interpretation across languages.

1. INTRODUCTION

1.1. Reference and anaphora resolution

When speaking, we constantly refer to entities, events, and situations, both in the real world and in other possible worlds. For instance, we can talk about people in our immediate environment, fictional characters from a novel, or imaginary beings such as unicorns. To do this, languages can use a variety of nominal expressions, including proper names, definite descriptions, quantified expressions, and pronouns.

Referring expressions exploit three different ways of establishing connections with the representations of entities. Proper names work on the basis of a conventional link between a linguistic label and a world entity. Definite and quantified expressions, by contrast, rely on the composition of descriptive content with an operator. Finally, pronouns express only linguistic features and lack descriptive content, so their interpretation depends on identifying a matching referent in discourse.

Interestingly, these devices can be used not only to refer to entities but also to make connections with other linguistic expressions found in the preceding or following discourse. In the case of proper names and referring expressions with lexical content, co-reference (either total or partial) is achieved mainly on the basis of world knowledge. Pronoun interpretation, by contrast, always requires identifying a referent based on formal linguistic features, located either in the extra-linguistic situation (deictic uses) or in the surrounding discourse (anaphoric uses).

Anaphora resolution is therefore the process whereby a pronominal expression (a linguistic expression lacking descriptive content) is interpreted by identifying an appropriate discourse antecedent (i.e., another linguistic expression from which it takes its referential properties) and establishing the corresponding chain linking the two co-referential expressions, as in (1).

(1) *John* always helps Mary. He is very kind.

In this example, the pronoun *he* in the second sentence is linked to the referential properties of the entity referred to by the subject of the first sentence, *John*. This connection relies on the features of the pronoun *he*, which are understood to match those attributed to the entity named *John*. Because of this, we do not need to repeat the proper name *John* every time we refer to him.

Characterising the conditions that govern the identification of the antecedent of an anaphoric pronoun has been the topic of long-standing debates, from searching for the universals of anaphora use and interpretation to pinpointing the specific conditions of each language or family of languages. Following Chomsky (1981), it is now well established that syntactic structures can partially determine the possibility of co-reference, but other non-syntactic factors seem to be involved as well, depending on the language in question.

While languages like English require that pronouns have an overt (phonetic) realisation, other languages allow null pronouns (i.e., pronominal categories with syntactic representation). Among these, there are languages that allow pronouns in subject position to lack an overt phonetic realisation: these are what we know as null-subject languages (hereinafter, NSLs). Among European languages, Spanish, Italian, and Greek are well-known examples. A sentence in Spanish with a null subject can be seen in (2):

(2) Juan *siempre ayuda a María. Ø es muy amable.*
'John always helps Mary. (He) is very kind.'

Even though it is not phonetically realised, the null pronoun in the second sentence can nevertheless enter into other syntactic relations (e.g., control, reflexive pronoun binding, anaphoric relations), which suggests that it is syntactically represented in the structure.

NSLs have, therefore, a double possibility, since they can use either explicit (overt) or null (covert) pronouns for the same syntactic position, as shown in (3):

(3) *Juan ayuda a Roberto. Ø*/Él *es muy amable.*
'John helps Robert. He is very kind.'

The choice between the two options (overt and null) has been explained as being the result of a division of labour between the two existing possibilities, with null pronouns referring to the previously mentioned subject and overt pronouns referring to a different entity (either that represented by the object or another one that is not the same as the subject of the preceding sentence). Following this division of labour, in (3) the null pronoun (Ø) would refer to the previous subject, *Juan*, while the overt pronoun (*él*) would refer to the previous object, *Roberto*, and imply a change in the topic.

It has been usually assumed that all NSLs behave alike regarding the realisation and interpretation of pronominal anaphora, and that the division exemplified in (3) applies to all these languages. Recent literature has shown, however, that NSLs can display quite an assorted outcome with respect to the use and interpretation of null and overt pronouns. The results of self-paced reading experiments reported in Filiaci (2011) and Filiaci et al. (2013) revealed that Italian and Spanish show similar patterns for the resolution of null pronouns in subject positions, whereas they differ in the resolution of overt pronouns in that Spanish overt pronouns show a greater tendency to refer to a subject antecedent than Italian overt pronouns do. Along the same lines, results from a production study described in Torregrossa et al. (2015) indicated that Greek and Italian differ from each other in the anaphoric possibilities of null pronouns, with Greek showing a preference for null pronouns to take objects as antecedents to a greater extent than Italian.

All these results suggest that, despite sharing some syntactic particularities, NSLs behave quite differently regarding anaphora resolution. However, the results described in Filiaci (2011), Filiaci et al. (2013), Torregrossa et al. (2015) and other studies (see chapter 2) cannot be directly compared because the contexts and contents of the experiments reported there are different. This leaves open a number of questions requiring further exploration, in particular, the respective roles played by different factors (whether syntactic, semantic, or discourse-related) contribute to anaphora resolution in these languages.

These differences have implications for other issues, prominent among which language acquisition in bilinguals. As with anaphora resolution in general, the literature regarding bilinguals and reference management explores different hypotheses tested by means of many different experiments and yielding different results. Some studies, like Sorace (2011) and Belletti et al. (2007) on English-Italian

near-native speakers, found differences between these bilingual speakers and their monolingual peers regarding the production and interpretation of overt pronouns, as these were overused in Italian by near-native speakers. There are many hypotheses as to why this happens, such as cross-linguistic effects or processing constraints, as we will see in chapter 4. However, other authors, such as Di Domenico and Baroncini (2019) for Greek-Italian and Giannakou (2023) for Spanish-Italian, have found native-like patterns in bilingual speakers of these languages.

A new study was therefore deemed necessary to gather and examine a set of comparable data focusing on the similarities and differences between Spanish and Italian. Using comparable data would make it possible to connect these insights to the wider picture of other NSLs such as Greek. Likewise, the findings regarding reference management in Spanish and Italian would need to be analysed in a bilingual context, in order to further understand how these two (apparently similar) systems work and how the different constraints that are applied in each language interact.

1.2. Aims and research questions

The purpose of this research is, therefore, twofold. On the one hand, it aims to analyse and explain how anaphora resolution works in Spanish and Italian monolingual adults, by offering a comparable set of data that permits systematic comparison. On the other hand, it investigates reference production and interpretation in Spanish-Italian bilingual children and explores similarities and differences in anaphora resolution between monolingual speakers and bilingual children from a syntactic and discourse-related point of view. The research questions related to the first aim can be stated as follows:

RQ1:

a. Are there differences between Italian and Spanish monolingual adult speakers in the resolution of pronominal anaphora involving null and overt pronouns?
b. If so, how can these differences be accounted for in a principled way?

The hypothesis that will be explored here is that anaphora resolution depends on syntactic and discourse-related factors, but not to the same extent in every NSL. From

a syntactic point of view, the starting hypothesis is the Hierarchical Height Principle (HHP), an account put forward in Torregrossa et al. (2020). Following Rizzi's (2018) proposal, which defines prominence of sentence constituents in terms of c-command, the HHP states that the higher a subject is in the clausal structure, the more prominent it is for anaphora resolution: languages can vary as to how high subjects are in the structure, a measure that also encompasses case-marking and differences in word order. Following this approach, the structural differences between Italian, Greek and Spanish with respect to the subject position can account for the observed contrast between Spanish and Italian in their preferences for anaphora resolution, as well as for their differences in word order.

From a discourse-related point of view, it has been proved that coherence relations can play a prominent role in favouring certain anaphorical resolution patterns and strategies (Kehler and Rohde 2013). For this reason, in languages such as Spanish, where no antecedent-bias (as associated with null or overt subject pronouns) is observed, discourse factors could carry more weight. Therefore, the second hypothesis was (following Kehler and Rohde 2013) that coherence relations (e.g., explanation, elaboration, result), information structure and other conceptual relations (such as implicit causality) would strongly influence the selection of the antecedent. To give theoretical support for this hypothesis, it was necessary to develop a new proposal of analysis, which will be set out in full in chapter 3. In a nutshell, this proposal layers the constraints that influence anaphora resolution. The bottom layer is the most local and language-internal grammatical structure: in this layer, syntactic constraints (such as structural height and c-command) and morphosyntactic features (such as case marking) can be found that determine the interpretation of anaphoric expressions. This level seems to suffice to account for languages in which anaphora resolution is a syntactically governed process. Other languages, by contrast, resort to additional layers to identify antecedents. Then Information Structure conditions, such as topichood, enter into play. Moving out, we find semantic constraints, such as those imposed by implicit causality verbs. Next, we have discourse-related constraints, such as coherence relations. Finally, the most global and language-external condition is the one imposed by extra-linguistic factors, such as common world knowledge. As we will see, the idea in this proposal is that each language needs a greater or smaller number of constraints from the LS in order to felicitously manage anaphora and reference. By following this

approach, we can accept and integrate different factors depending on the language, test them and integrate new layers (i.e., prosody) if needed.

Given our hypothesis that any observed differences between Spanish and Italian regarding anaphora resolution are due to both structural and discursive factors, meaning that native speakers of the two languages have internalised different patterns and strategies to deal with reference management and co-reference relations, it therefore seemed relevant to explore how these different systems might work and interact in the minds of bilinguals. This raises the second set of research questions of this dissertation:

RQ2:

a. How do Spanish-Italian bilingual children manage anaphora resolution?
b. How does their performance compare with that of monolingual speakers?
c. How do the two systems of interpretation interact with each other?

Here the hypothesis was that bilingual children would be able to make syntactic, pragmatic, and discourse-related decisions regarding the anaphora management, and that this behaviour would be consistent with what was seen in the adult monolingual groups separately. It seems that, contrary to other findings in the literature (as in Sorace and Filiaci 2006 or Belletti et al. 2007 for near-native speakers), Spanish-Italian bilingual children are able to separate each language's pattern and behave accordingly to what is expected respectively, at least in this matter. In fact, dominance has never proved to be a significant factor in statistical analyses, indicating that it plays no role in reference assignment in Italian-Spanish bilingual children. This also seems to be consistent to some extent with the results found in some of the literature, such as Andreou et al. (2023) for Greek-Italian bilinguals or Giannakou (2023) for Greek-Spanish bilinguals.

1.3. Structure of this dissertation

The thesis is organised as follows. Chapter 2 gives an account of the various theories that have been put forward to explain anaphora resolutions through syntactic approaches (such as Carminati 2002, Rizzi 2018, Torregrossa et al. 2020, and others), discourse-related approaches (such as Kehler and Rodhe 2013) and pragmatics-based approaches (such as Leonetti 2022). Chapter 3 describes the experiments for interpretation (interpretation task) and production (sentence-completion task) with monolingual speakers, and offers a new proposal for anaphora resolution, the *Layered Structure*, which considers the various factors, from more local and internal constrains, such as syntactic structure, to language-external ones such as world knowledge, that are bear on the explanation of anaphora interpretation. Chapter 4 presents the theoretical and experimental background for bilingualism situations concerning anaphora and pronoun interpretation and production through different analyses (Sorace 2011, Andreou et al. 2023, Bel et al. 2016, Giannakou 2023, among others). Chapter 5 presents the experiments carried out on bilingual students at the Scuola Italiana di Madrid *Enrico Fermi* (a cloze-test, a narrative task and a sentence-completion task) and some thoughts on anaphora resolution and bilingualism. Finally, chapter 6 concludes this dissertation by presenting a general discussion and the conclusions of the research.

The present study forms part of a broad-scope project being carried out at the University of Köln, entitled *Prominence in Language*[1], particularly to subproject C-03 *Reference management in bilingual narratives*[2]: the project has already analysed other language pairs such as Italian-German, Italian-English, Greek-English and Greek-Italian.

[1] Available at https://sfb1252.uni.koeln.de/start.html?&L=1
[2] Available at https://sfb1252.uni.koeln.de/c03.html?&L=1

PART I

Reference and anaphora in Spanish and Italian adult monolinguals

Chapters 2 and 3

2. REFERENCE, ANAPHORA AND PRONOUN INTERPRETATION. THEORETICAL BACKGROUND

This chapter presents the theoretical background for a comparison of Italian and Spanish in terms of the interpretation of null and overt pronouns and other questions related to reference and anaphora. Firstly, some basic concepts are introduced in section 2.1. The main semantic theories of reference and pronoun interpretation that have shaped the research in this field in the last fifty years are revised in section 2.2, with special emphasis on Accessibility Theory, which is particularly relevant for this study. Section 2.3 deals with syntactically oriented accounts, particularly those developed since the turn of the century, with the main focus falling on Torregrossa et al.'s (2020) Hierarchical Height Principle. Approaches based on discourse and coherence relationships are then introduced in section 2.4, with special attention paid to Kehler and Rhode (2013). Finally, a more pragmatic approach by Leonetti (2022) will be reviewed. A summary of the chapter is provided in section 2.6.

2.1. The nature of reference

The things we perceive and experience are represented by our human cognition in terms of entities or referents: like Andrej Kibrik (2011), when I look out of my window I can see a number of entities, such as clouds, trees, birds, and people, as well as the events and states they are participating in. Some of these entities–such as the people–are more typically treated as referents by our anthropocentric human cognition, while some others–like the weather–may not be mentally represented as referents, due to their transient nature.

Although it is difficult to establish the boundaries for this 'referent' category, we can, through language, mention referents by means of nominal expressions, nouns and pronouns, demonstratives, etc. Referents do not have to be necessarily perceived entities of the external world; they can be brought to mind from external perception,

long-term memory, or imagination (Kibrik 2011), as we do when we speak about a *unicorn*. A referent is therefore an image in an individual's mind, whether it has physical existence or not. A distinction must be made, then, between *entities*, which are the things we actually perceive, which have an independent existence, and *referents*, which are mental representations. There can be referents without a corresponding entity, and there can also be referents that refer to entities as a whole class. These latter are called 'generic', like kinds; they can represent a whole group, such as when we say, for example, "Cats are *mammals"*. Unsurprisingly, the vast and complex world of reference has aroused the interest of a variety of disciplines, including philosophy, psychology, artificial intelligence, and, of course, linguistics.

The relationship between certain sorts of representational tokens and objects has long stood at the centre of philosophical inquiries into the nature of reference, since it is a relationship between bits of language and bits of reality. According to descriptivist theories, like Frege (1892) or Russell (1911), nouns are thought to refer by virtue of being associated with a specific descriptive content that is used to identify a particular object or individual as the referent. Other theories, such as Kripke's (1972) causal model, are based on the idea that names refer by virtue of being associated with chains of use leading back to an initiating use of the referent; in Kaplan's intentionalist model (1990), they refer by virtue of being used, intentionally, to refer to particular objects; in other words, names refer in virtue of their being uttered as part of a complex intentional act. Finally, some philosophers like Quine argued that reference is inherently indeterminate or "inscrutable" (Quine 1960), and are therefore called *sceptics of reference.*

From a psychological point of view, reference is closely connected to not only the way certain mechanisms of our cognition and perception work–since it requires a good coordination of both linguistic and non-linguistic information and events–but also how the brain has evolved, which is a subject that interests both cognitive scientists and linguists (Berwick et al. 2013). The evolution of the brain is linked to its functional architecture, which is also connected to the nature of learning. Because of the huge role language plays in human life, it is one of the most important aspects to observe in order to define how we learn and memorise (Gallistel 2006) and how the mind links representation to things and connects them with the world (Pylyshyn 2007). The functional architecture of the brain is, on first analysis, that of an information-processing device, like a computer: that is also why language has been

fundamental in our understanding or learning mechanisms related to artificial intelligence (AI), since Turing's (1959) imitation game.

From a linguistic point of view, reference is a main component of discourse and carries a significant informational load: in fact, if we remove all referential expressions from a text, we will find it to be almost empty of meaning. Regarding the frequency of referential expressions in language use, nouns and pronouns (in conversation, fiction, news, and academic prose) make up somewhere between 30% and 40% of all words, according to Biber (1995), meaning that about one word in three is a referential expression. Therefore, referring is clearly one of the most fundamental skills of language users.

2.1.1. Nouns with and without articles

As we have just noted, nouns comprise a substantial part of the referential expressions that give meaning to our sentences. Some of their particularities also give rise to different kinds of meaning. For example, nouns can be found with or without the presence of an overt determiner. When preceded by a determiner, nouns become referential, because these elements are what turn nouns from predicates into referring expressions. Proper names and nouns with determiners have an established direct relationship to the entities they refer to.

As we will now see, the presence or absence of overt determiners, as well as other elements, are decisive factors that shape the meaning of nouns. Determiners may be articles, pronouns (demonstratives and possessives), quantifiers, or other lexical elements. In turn, articles may be definite or indefinite. In English, *the* is the definite article and does not express number–number is expressed in English in the noun only– while in other languages there are overt morphological exponents for the expression of gender and number, as we see in the comparison of English with Italian and Spanish in (1).

(1) a. *the* dog / *the* dogs
b. *il* cane / *i* cani
c. *el* perro / *los* perros

For indefinite articles, there is a further distinction to be made: indefinites may be specific or non-specific, depending on whether the noun phrase headed by them refers to a particular known object or entity or not, or whether that object or entity is known only to the speaker or to both speaker and hearer (Renzi 1988). Plural indefinites are expressed by means of a quantifier (*some*) in English, while in other languages, like French or Italian, a partitive is used (*dei*); in languages like Portuguese or Spanish there is an indefinite article with singular and plural forms, as we see in (2).

(2) a. *a* dog / *some* dogs
b. *un* cane / *dei* cani
c. *un* perro / *unos* perros

A Bare Noun (BN), on the other hand, is a noun that appears without a determiner, and can be either singular or plural. BNs are used more freely in languages, like English, whilst they are subject to more restrictive conditions in others. English and Spanish contrast in this regard, as we see in (3).

(3) a. _Dogs are _man's best friends.
b. A dog is _man's best friend.
c. *___ perro es ___ mejor amigo de ___ hombre.
d. El perro es el mejor amigo del hombre.

In the English examples (3a, 3b) the bare nouns *dogs* and *man* do not need a determiner in order to refer to kinds. In fact, the sentence would reject the presence of the determiners (**The dog is the man's best friend*). By contrast, in the Spanish examples (3c, 3d), the two determiners are absolutely necessary, otherwise the sentence would be ungrammatical. It is worth noting that in order to refer to kinds in Spanish and Italian, the determiner used must be the definite determiner, which allows for both individual and kind readings.

As for bare plurals, the situation is rather different when considered cross-linguistically: they are allowed in object position in many languages in which bare singulars are excluded. Note the similarity between English and Italian in this regard in (4).

(4) a. Leo eats _*potato/potatoes/the potato/the potatoes.
b. *Leo mangia _ *patata/patate/la patata/le patate.*

In the English sentence in (4a) the presence of a determiner would yield a different interpretation, namely a definite and specific one, and the same would be true in the Italian sentence in (4b).

Nominals may be read as kind, generic, or existential (Dayal 2011). All of three readings are available for English bare plurals, as can be seen in (5), but would require the presence of an article in languages like Spanish or Italian (*I cani abbaiano; unos perros están ladrando*).

(5) a. *Dinosaurs* are extinct. (kind reading)
b. *Dogs* bark. (generic reading)
c. *Dogs* are barking. (existential reading)

(Dayal 2011:1089)

A kind reading always interprets the noun as the maximal/largest/unique sum of individuals that belong to a species (Carlson 1977, Borik and Espinal 2012). This is so because the noun is selected by a kind-level predicate. A generic reading is based on quantification over individuals. While the predicate of (5b) could also be applied to a particular individual (*Fido barks*), it is not possible to do so with the predicate of (5a) (**Fido is extinct*). An existential reading always interprets what is said about the noun phrase (NP, a phrase that usually has a noun or pronoun as its head) as a temporal state, not a permanent property of the noun. (5c) means that 'here and now there are some (non-specific) dogs that are barking', which does not mean that those dogs–or any dog–is always barking.

In addition, unlike plural determiner phrases (DPs, a type of phrase headed by a determiner), bare plurals cannot be used deictically and anaphorically, which seems to suggest a correlation between the presence of overt determiners and the meaning of NPs. However, BPs and plural DPs do not have a complementary distribution and in some contexts they can replace each other without any significant shift in meaning, as we see in (6).

(6) There was a ghost on campus. *(The) students* were aware of the danger.

(Condoravdi 1992 *apud* Dayal 2011:1089)

There is also a distinction between the existential/generic readings of bare plurals and indefinite NPs, as shown in (7).

(7) a. Miles {didn't see/is looking for} *policemen/a policeman/some policemen.*

b. *#A building/#Some buildings/Buildings* will collapse in Berlin and in Frankfurt.

(Carlson 1977:8-9;20)

The BP in (7a) can only take narrow scope, but the indefinites, both singular and plural, can take wide or narrow scope: Miles could be looking either for a/some specific and well-known by him policeman/policemen or he could be looking for just any policeman/policemen. According to Carlson (1977), in (7b) the indefinite NPs cannot have the plausible reading in which different buildings collapse in the two cities mentioned, while *buildings* has a generic and non-specific reading that allows for this differentiated scope reading, though the distinction is a very subtle one.

The generic readings of bare plurals and singular indefinites can also be distinguished: generic indefinites are restricted to statements in which definitional, rather than accidental properties are at issue, but what counts as definitional is open to contextual manipulation, as in example (8) from Lawler (1973), also discussed in Krifka et al. (1995) and Dayal (2011).

(8) a. *Madrigals* are polyphonic/popular.

b. *A madrigal* is polyphonic/#popular.

(Lawler 1973 *apud* Krifka et al. 1995:13)

2.1.2. Referential expressions

The linguistic elements used to perform the act of reference (that is, again, the indications needed to activate the mental concept that a speaker intends to convey and

make recoverable for the addressee), or referential devices, can carry more or less information depending on the referent's cognitive status, as can be observed by comparing (9a) and (9b).

(9) a. The toy is Garret's. Give it to him.

b. I am asking of you, John, to give the red car toy to your second-cousin Garret.

If the activation of the referent is closer or fresher in the speaker's working memory, then reduced devices can be used (like in 9a); on the other hand, if the activation of the referent is "far away" in the working memory, a full device will be needed (like in 9b), as we will see later across different theories and proposals.

What can be found in (9a) is a case of anaphora: we are referring backwards in the dialogue by means of a reduced expression that picks its referent in another expression in the previous discourse. Etymologically, anaphora derives from Ancient Greek ἀναφορά (anaphorá, "a carrying back"), from ἀνά (aná, "up") + φέρω (phérō, "I carry"). In this narrow sense, anaphora stands in contrast to cataphora, which sees the act of referring forward in a dialog or text, or pointing to the right in languages that are written from left to right: Ancient Greek καταφορά (kataphorá, "a downward motion"), from κατά (katá, "downwards") + φέρω (phérō, "I carry").

The type of anaphora where the name of a person or other kinds of referential expressions are referred to by a pronoun is called pronominal anaphora, and will occupy a large part of the present investigation; in a sentence like (10a), the antecedent is "John" and its anaphoric expression is "he". There are, however, other types of anaphora, such as verb phrase (VP) anaphora, as in (10b), where the antecedent is "played the piano" and the anaphoric expression is a null VP (see Partee and Bach 1984), as well as propositional anaphora (10c) or adjectival anaphora (10d), among many others.

(10) a. *Mark* left. <u>He</u> said *he* needed to finish some things.

b. Mary *played the piano*. Julia <u>did</u> too.

c. *The Japanese ex-prime minister has been murdered.* I heard <u>that</u> on the radio.

d. A *nice lady* helped me with the groceries. <u>Such</u> people are rare.

The pronominal anaphora example just mentioned presents no interpretative problem. However, there are some factors that can make anaphora resolution a difficult task: it is not always easy to understand which element is the antecedent, how *accessible* it is, and how to explain why this is so. In what follows we will briefly review some of the most significant linguistic theories on referential expressions and antecedent accessibility.

2.2. Referential expression choice and antecedent accessibility

The choice of a referential expression is an action performed by the speaker; the interpretation of a referential expression is an action performed by the addressee. Both activities are like two sides of the same coin: they approach the same phenomenon from opposite points of view, thus contributing with different perspectives from which we can analyse the general phenomenon of reference.

Different theories have been developed taking as their starting point either the production or the interpretation of referential expressions. Regarding the choice of referential expressions, the two most influential approaches are those first put forward in Prince (1981) and Gundel et al. (1993). On the interpretive side, the theories developed by Givón (1983) and Ariel (1990, 1994) have focused on the factors and strategies that govern the hearer's identification of the intended referent. These models represent the mainstay from which most approaches have been developed. They are briefly reviewed in what follows.

2.2.1. The production of referential expressions

2.2.1.1. Assumed Familiarity (Prince 1981)

Prince focuses in her work on a well-established distinction between *given* and *new* information. This distinction had been previously applied in Kuno (1978), Halliday (1969), Halliday and Hasan (1976), Chafe (1976) and Clark and Haviland (1977) to the

explanation of sentence-level and information structure phenomena (i.e., dislocations, clefting, topicalizations).

The idea of givenness can be understood in at least three different though related ways. First, *givenness* is a phenomenon by which a speaker assumes that contextual information about a topic of discourse is already known to the listener, and thus considers it unnecessary to supply further contextual information. Givenness involves contextual information in a discourse that is given, or assumed to be known, by the addressee at the moment of utterance. Therefore, a given expression must be known from prior discourse. From this, we can understand that the speaker assumes the hearer to be able to recover or predict a particular piece of shared information. This concept therefore makes a distinction between what is assumed to be known to the listener and what is assumed to be unknown, represented in Kuno (1978) as "old-new" information and in Halliday (1969) and Halliday and Hasan (1976) as "given-new". Kuno defines old-new information in terms of recoverability: an element represents old, predictable information when it is recoverable from the context; otherwise, it represents new, unpredictable information. For Halliday, on the other hand, given-new is also defined in terms of intonation: given information will present no prosodic stress, while new information–at least in English–probably be prosodically emphasised by means of a marked intonational pattern.

By *givenness* we can also understand the saliency of an entity in the consciousness, considered from a cognitive point of view: in other words, the speaker forms a hypothesis about the degree of saliency of an entity for the hearer at the time of utterance. This is the approach to given-new information chosen by Chafe (1976). For him, given information represents the knowledge the speaker assumes to be in the hearer's consciousness, while new information represents what the speaker assumes he/she is introducing to the addressee's consciousness for the first time. In this view, salience is a cognitive, mnemonic attribute (rather than a linguistic one) of a structure or parts of the mental discourse model. Lastly, givenness can be understood in the sense of "shared knowledge", that is, the information the speaker assumes that the hearer knows or can infer. This perspective is represented as given-new by Clark and Haviland (1977).

In order to define the given-new divide in a different, more precise way, Prince proposes the cover term *assumed familiarity* to refer not to a binary distinction, but rather to a more articulated continuum or tree of related notions, as illustrated in figure

1. In this way, familiarity can be conceived as a scale where the status of a given entity can go from less familiar to more familiar in various degrees, and can change over time in the discourse representation.

In this scale, she assumes that a certain entity can be new, inferable or evoked. When the entity is introduced in the discourse for the first time, it is new. When the hearer is able to create a mental representation of a referent from an existing representation of another entity, the referent is inferable. When the referent is contained in the interlocutors' discourse, it is evoked. According to Prince, a speaker will always use the form of referring expression corresponding to the highest appropriate point in the scale.

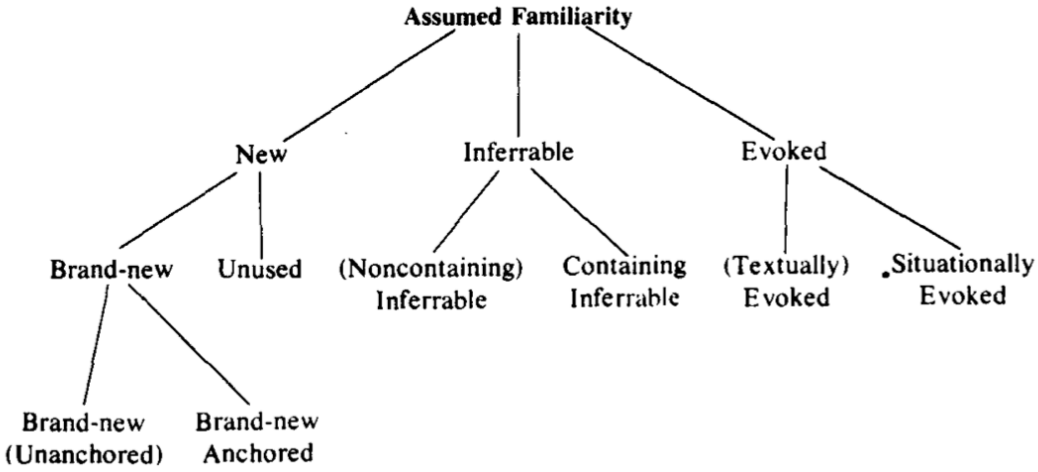


Figure 1. The Assumed Familiarity tree (Prince 1981:237).

A *new* entity can be separated into brand-new and unused: if the hearer has to create a new entity, it is called, according to the author, *brand-new*; if the hearer is assumed to have such an entity in his/her own model and has to copy it into the discourse-model, it is called *unused*. The fact that a brand-new element is anchored or unanchored depends on whether it is linked to some other entity of the discourse.

(11) a. I bought *a beautiful dress*. (Brand-new Unanchored)
b. *A rich guy I know* bought a Cadillac. (Brand-new Anchored)
c. *Rotten Rizzo* can't have a third term. (Unused)

In (11a), *a beautiful dress* is a new item that appears for the first time in discourse, so the concept is shared through an indefinite article (as we previously saw in Section 2.1.1); because it is an entirely new concept for both speaker and addressee, and therefore not linked with another entity in discourse, it is called Unanchored. In (11b), *a rich guy I know* is a concept brand-new in the discourse but linked to the speaker (because he/she knows the person he/she is talking about), and because of this it is called Anchored: the discourse entity the hearer creates for this particular guy will be immediately linked to his/her discourse entity for the speaker (Prince 1981: 236). (11c) represents an unused concept: the hearer is assumed to know who *Rotten Rizzo* is, but the concept is new in the current discourse.

The most complex type of discourse entity in the Assumed Familiarity tree is the *inferrable*. A discourse entity is inferrable if the speaker assumes the hearer can infer it from the discourse entities already evoked or from other inferrable. A particular subclass of inferrables are the *containing inferrables*, where what is inferenced off is properly contained within the inferrable NP itself, such as in *one of these eggs*, where a set (of eggs) is familiar and therefore one of its members can be inferred.

(12) a. I went to the post office and *the stupid clerk* couldn't find a stamp. (Inferrable)

b. Have you heard *the incredible claim that the devil speaks English backwards*? (Containing Inferrable)

Example (12) contains two different types of inferrables. (12a) offers a concept that is presented as known (through the use of a definite article, *the stupid clerk*) although it is possible that the hearer might not know the person working at the post office. The DP represents a concept of a type of person, and the speakers assumes that the hearer can understand this meaning without necessarily knowing the post-office worker. In (12b), on the other hand, the whole sentence *the incredible claim that the devil speaks English backwards* is an entity that the hearer can infer from discourse, as it can also be understood without necessarily knowing or having heard such claim before.

If an entity is already in the discourse, Prince calls it *evoked*: it can be *textually evoked*, if the hearer has–following the speaker's instructions–evoked it previously, or

the hearer can evoke it by him- or herself, for situational reasons (*situationally evoked*).

(13) a. Susie went to visit her grandmother and *the sweet lady* was making Peking Duck. (Evoked)
b. *Lucky me* just stepped in something. (Situationally Evoked)

(Prince 1981:237)

(13a) represents an evoked entity, as *the sweet lady* refers to the entity mentioned *her grandmother*. The entity *lucky me* in sentence (3b) can be inferred by the situation, since the speaker is talking about mention and that entity is understandable and known by the hearer.

2.2.1.2. Givenness Hierarchy (Gundel et al. 1993)

Though closely based on Prince's Assumed Familiarity and other previously mentioned approaches, Gundel et al.'s Givenness Hierarchy takes the form of an implicative hierarchy where each expression has a set of characteristics that is mandatorily present in the statuses lower in the hierarchy. In this respect, it is different from Prince's categories, which are mutually exclusive. Gundel et al. also base the choice of a referential expression on the estimated cognitive status of the referent in the hearer's mind, that is, the mental representation and degree of activation of the referent. The statuses that make up the Givenness Hierarchy are as follows:

In focus > activated > familiar > uniquely identifiable > referential > type identifiable

(Gundel et al. 2003:128)

These statuses are encoded in different linguistic expressions, each providing the speaker with a particular kind of information about where and how the mental representation is to be accessed, thus guiding the addressee by restricting the range of possible interpretations. Gundel and colleagues identify six cognitive statuses that can determine the form of a referential expression situated along the Givenness Hierarchy. The six statuses are shown in table 1 below. The forms in the right-hand column (*it,*

that N, etc.) are only appropriate when their cognitive status is met (here the model is applied to English).

Cognitive status		**Linguistic expressions (English)**
IN FOCUS	Associate representation in focus of attention	*It*
ACTIVATED	Associate representation in working memory	*this/that/this N*
FAMILIAR	Associate representation in memory	*that N*
UNIQUELY IDENTIFIABLE	Associate unique representation with NP	*the N*
REFERENTIAL	Associate unique representation with sentence processing	Indefinite *this* N
TYPE IDENTIFIABLE	Associate type representation with kind identification	*a* N

Table 1. Cognitive statuses and linguistic expressions (Gundel et al. 2003).

Sentences in English exemplifying each cognitive status are provided in table 2.

Type identifiable	a. *I couldn't sleep last night. A dog (next door) kept me awake.*
Referential	b. *I couldn't sleep last night. This dog (next door) kept me awake.*
Uniquely identifiable	c. *I couldn't sleep last night. The dog (next door) kept me awake.*
Familiar	d. *I couldn't sleep last night. That dog (next door) kept me awake.*
Activated	e. *I couldn't sleep last night. That kept me awake.*
In focus	f. *My neighbour's bull mastiff bit a girl on a bike. That's the same dog that bit Mary last summer.*

Table 2. Examples in English of cognitive statuses.

With “type identifiable”, the least restrictive status, the addressee is able to access the representation of the type of object described by the expression. Thus, *a dog* in (a) is appropriate only if the addressee can be assumed to know the meaning of the word ‘dog’ and understand what it describes.

With “referential”, the speaker intends to refer to a particular object. The addressee needs to access an appropriate type-representation and retrieve an existing representation of the speaker’s intended referent. Thus, ‘this dog’ in (b) is appropriate only if the speaker intends to say something about a particular dog.

With “uniquely identifiable”, the addressee can identify the speaker’s intended referent on the basis of the nominal alone. Identifiability can be based on an already existing representation in the addressee’s memory, as would be the case in (c) without the material in parentheses, but the phrase ‘the dog next door’ would be perfectly felicitous even without the previous knowledge of the existence of the neighbour’s dog.

With “familiar”, the addressee is able to uniquely identify the intended referent because he/she already has a representation of it in memory (either long-term or short-term). Unlike (c), (d) is only appropriate if the addressee already knows that the speaker’s neighbour has a dog.

With “activated”, the referent is represented in current short-term memory. Therefore, the pronoun that in (e) can thus be used appropriately to refer to the barking of a dog only if a dog has actually been barking during the speech event or if barking had been introduced in the immediate linguistic context; with “in focus”, the referent is not only in short-term memory but also at the current centre of attention: entities in focus generally include at least the topic of the preceding utterance, as in (f) (Gundel et al. 1993: 276-280).

As noted above, both Prince’s and Gundel’s approaches focus on the choice of referential expressions as an action performed by the speaker, who has to make an estimation about the representational status of the information in her interlocutor’s mind: whether it is actually shared or not, how this information is shared, and how it is to be presented in the discourse to facilitate the activation of the intended referent.

In the next section, the main approaches focused on the interpretive side (i.e., on the actions performed by the hearer) are briefly summarised.

2.2.2. The interpretation of referential expressions

2.2.2.1. Topic Continuity (Givón 1983)

According to Givón, a fundamental link exists between the choice of a given referential expression and the degree of topicality of the referred entity. After analysing a large number of languages, including English, Spanish, Biblical Hebrew, Japanese and Ute, the author noticed that, as discourse proceeds, the referents change their status and become more or less topical. These changes result in the use of different referential expressions according to their degree of topicality. The degree of topicality of the entities referred to depends on three different factors, which are

- Referential distance: the distance between two expressions referring to the same entity,
- Persistence: maintenance of the entity in the discourse, and
- Potential interference: the number of potential antecedents the expression might be referring to.

The different outcome of these three factors allows for a very varied continuum–or degrees–of topicality, which goes hand in hand with the choice of one or another referential expression. The idea developed is that the clearer the entity referred to, the less the quantity of information about it needed. By contrast, an entity whose degree of topicality is low will need more coded information to be referred to. This idea is the base on which Ariel developed some years later her Accessibility Theory, which will be discussed in what follows.

2.2.2.2. Accessibility Theory (Ariel 1990, 1994)

Ariel's theory is based on the relationship between the cognitive status we assign to the mental representation of an entity, on the one hand, and the choice of a referring expression for its representation, on the other. Her theory sees referring expressions as accessibility markers arranged along a continuum, from low accessibility markers to high accessibility markers. According to this scale, a highly accessible referent needs high accessibility markers, such as pronouns; referents with low accessibility, on the other hand, will need low accessibility markers, such as proper names, as we can see in figure 2.

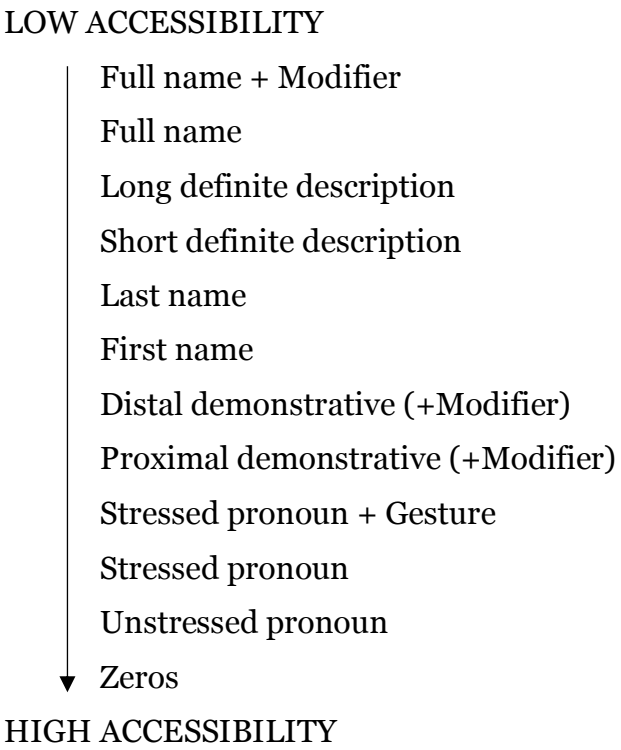


Figure 2. Accessibility Scale (Ariel 1990:449).

The factors influencing the level of accessibility of a referent are saliency, competition, distance and unit. Saliency refers to the prominence of the referent in the discourse, for instance, whether the referent is a discursive topic or not; more salient antecedents will require less specific referring expressions–or highly accessibility markers–and vice versa. Competition is understood in the sense of how many candidates for the role of antecedent could be competing inside the discourse: with only one potential antecedent, high accessibility markers can be used, whereas in a context with many candidates, lower accessibility markers will be needed. Distance refers to the distance between the potential referent and the referring expression: recent mentions are more accessible–and require highly accessible markers–and vice versa. Unit refers to the effect that the structure of the discourse has on the choice of a particular reference form or another: lower accessibility markers are used when the antecedent entities are mentioned in a different segment of the discourse that is not the actual one, while higher accessibility markers can be used when the entities are from the same segment of the discourse. Table 3 below, taken from Arnold (1998), gives some examples (mostly in English) for all the markers in the Accessibility Scale.

Marker	**Example**
Full name + modifier	Joan Smith, the president
Full name	Joan Smith
Long definite description	The tall and authoritative president
Short definite description	The president
Last name	Smith
First name	Joan
Distal demonstrative + modifier	The hat we bought last year
Proximal demonstrative + modifier	This hat we bought last year
Distal demonstrative + NP	That hat
Proximate demonstrative + NP	This hat
Distal demonstrative	That
Proximate demonstrative	This
Stressed pronoun + gesture	SHE (plus gesture)
Stressed pronoun	SHE
Unstressed pronoun	she
Cliticized pronoun	(no examples in English) Le, la, lo (in Spanish)
Extremely High Accessibility Markers	*pro*, PRO, *wh*-traces, reflexives, Agreement

Table 3. Marking Scale of Accessibility (Arnold 1998:19).

There are three other factors that influence the degree of accessibility, namely, those that control the relationship between accessibility and referential expressions: informativity, rigidity, and degree of attenuation. Informativity refers to the fact that the more informative an expression, the better it becomes at retrieving a less salient antecedent. Rigidity refers to how constrained a given expression is to indicate a referent: pronouns can retrieve a wider range of antecedents compared to names, which are more "rigid" and can denote a smaller range of antecedents. Finally, attenuation refers to how much phonological material a referring form carries: although a null pronoun and an overt one can refer to the same entity, they are ranked differently.

We have now seen the main theories of referential expression choice and antecedent accessibility, which are views from a semantic and discursive point of view. In what follows, we will review the syntactic theories that have attempted to explain anaphora interpretation and production.

2.3. Syntactic accounts

There are many accounts that have tried to understand the complexities of anaphora resolution from a syntactic point of view, based on analyses that cover both inter- and intra-sentential situations. Whereas the more semantic and discourse-oriented approaches reviewed in the previous section focus on the interpretive properties of the various referring expressions, syntactic approaches look for an explanation in configurational terms. More specifically, the syntactic proposals that are presented here have in common the idea that the way in which anaphoric dependences are computed and resolved crucially depends on the syntactic properties of the antecedent. Discursive theories share the characteristic of being applied to every language at a more general level; the syntactic accounts that we are about to review, on the other hand, are more focused on specific problems–particularly, null subjects–in one or another language, and are therefore a different kind of approach.

This section focuses on the two proposals that are directly relevant to the analysis presented in this dissertation: Carminati (2002) and Rizzi (2018). Both are based, to some extent, on the work of Calabrese (1986), who noted that in Italian, in cases like (14), the null pronoun would take the antecedent in subject position, while the overt pronoun would prefer an antecedent which is not the subject.

(14) a. *Quando Carlo$_i$ ha picchiato Antonio$_j$, pro$_{i/*j}$ era ubriaco*
b. *Quando Carlo$_i$ ha picchiato Antonio$_j$, lui$_{j/*i}$ era ubriaco.*
'When Carlo hit Antonio *pro*/he was drunk.'

Because of this, he proposed a test that can be used to determine the *aboutness* property of subjects: he observed that the null pronominal subject *pro* in Italian picks

out the subject of the immediately preceding clause in certain structural contexts, which led him to establish the following two principles:

> a. Use a stressed pronoun only when the occurrence of its referent is not expected
> b. A subject pronoun is expected to have the referent of another subject (in the immediate context)
>
> (Calabrese 1986:27)

Calabrese (1986)'s principles are the basis of the approaches we are about to review. The first proposal, presented in Carminati (2002), is known as the Position of Antecedent Hypothesis (PAH). Though it is based on Italian, its predictions seem to align with the proposals made for other null subject languages, such as Alonso-Ovalle et al. (2002) for Spanish and Papadopoulou et al. (2015) for Greek. On the basis of Carminati's PAH, Filiaci et al. (2013) carried out the first experimental research comparing Italian and Spanish with respect to the constraints operating on some aspects of anaphora resolution.

Rizzi's (2018) account aims at establishing the conditions for anaphora resolution on the basis of the properties of the subject's position in the syntactic configuration. This proposal is relevant to this dissertation because it lays the basis for Torregrossa et al.'s (2020) HHP, suggested for Greek and Italian, which will be fundamental for our analysis of Spanish and the contrast between Spanish and Italian.

2.3.1. The Position of Antecedent Hypothesis (Carminati 2002)

Carminati's (2002) PAH has been highly influential and has given rise to various developments. Carminati's main research questions are how the pronominal system of a language influences the processing of anaphora, and what is the processing strategy for the interpretation of subject pronouns in Italian. The first observation she makes is that if a language has two pronominal forms in its system (in the present case, null and overt), like Italian, these two forms must be treated as two sides of the same coin, and not as independent pronominal choices. To accept this is to understand that they are

likely to have different, specialised functions, that would be used and perceived in different ways by the speaker.

The PAH is a processing hypothesis for both null and overt pronouns in intra-sentential contexts in Italian. The proposal is based on some specific assumptions about Italian subject pronouns, particularly the Extended Projection Principle (EPP), by which all clauses must have a subject. The Spec IP position is where subjects receive nominative case; this position does not need to be filled by an overt element in pro-drop languages, but the position cannot stay bare, and the presence of a non-overt element (which is called *small pro*) is mandatory. Regarding the position of overt subjects in this kind of languages, two positions are to be distinguished, one which is the same as the null one and carries the same syntactic information, and one that is topicalised or left-dislocated. The latter is not neutral and carries a different information structure that will not be dealt with in the present work. Keeping these assumptions in mind, the PAH is as follows:

> The null pronoun prefers an antecedent which is in the Spec IP position, while the overt pronoun prefers an antecedent which is not in the Spec IP position.
>
> (Carminati 2002:33)

Carminati's hypothesis is based on the fact that the different uses of the pronouns are established on the preferences that the pronouns have for antecedents located along a prominence scale: the null pronoun prefers the most prominent antecedent in the context, and the overt pronoun selects a less prominent one. Focusing on the anaphora in the intra-sentential domain in Italian, the antecedent preferences of the pronouns could be predicted on the basis of the syntactic notion of prominence. Antecedents in the highest specifier projection (the Spec IP, i.e., the subject position) are considered to be more prominent than antecedents on lower syntactic projections. Thus, assuming that null pronouns prefer a more accessible and prominent antecedent than overt ones (as argued in Ariel 1990), the prediction is that null pronouns will search for an antecedent in the subject position, while overt pronouns will search for their antecedents in a lower, non-subject position. The predictions of this hypothesis are illustrated by the sentences in (15).

(15) a. *Quando Mario ha telefonato a Giovanni, Ø aveva appena finito di mangiare.*
'When Mario telephoned Giovanni, (he) had just finished eating.'
b. *Quando Mario ha telefonato a Giovanni, lui aveva appena finito di mangiare.*
'When Mario telephoned Giovanni, he had just finished eating.'

According to the PAH, the null pronoun in sentence (15a) prefers the subject antecedent, while the overt pronoun in (15b) prefers the indirect object (Carminati 2002:33), as shown by the subindexes in (16).

(16) a. *Quando Mario$_i$ ha telefonato a Giovanni$_j$, Ø $_i$ aveva appena finito di mangiare.*
'When Mario$_i$ telephoned Giovanni$_j$, (he)$_i$ had just finished eating.'
b. *Quando Mario ha telefonato a Giovanni, lui aveva appena finito di mangiare.*
'When Mario telephoned Giovanni, he had just finished eating.'

This observation matches Calabrese's idea that in these contexts Ø and the overt pronoun are in complementary distribution, where Ø prefers an "expected" referent and the pronoun a referent which is "unexpected".

Some previous approaches, such as Luján's (1985, 1986), had already viewed the null and the overt pronoun as variants of the same item contrasting only in terms of stress. The Italian and Spanish null pronoun would, then, be the unstressed realisation of the pronoun in English, while the Italian and Spanish overt pronoun would be compared to the stressed realisation of the English pronoun. Carminati does not discard this view but argues that it is not precise enough, and searches for an explanation that locates the antecedents for these different pronouns in different syntactic positions.

Carminati also considers various aspects of some psycholinguistic theories, such as the Parallel Function Strategy (Sheldon 1974), which established that a pronoun with two or more grammatically and pragmatically possible antecedents will be preferably interpreted as coreferential with the referent that has the same grammatical role. Along a similar line, the previously mentioned distance and topicality theory by

Givón (1983) also predicts that processing factors will have a bearing on the preference for certain interpretations: thus, the shorter the linear distance, the smaller the number of intervening referents, and the more continuous a topic, the more likely for it to be encoded by a reduced or null anaphoric expression.
Although Carminati's proposal agrees with Accessibility and Centering Theories, it does not really consider non-structural factors, such as the semantics of the antecedent or discursive elements.

Although the PAH can be applied to both production and interpretation of pronouns in intra-sentential anaphora in Italian, the experiments carried out in the present research address only the interpretative aspect of processing. In what follows we will review the literature that has applied the PAH to other NSLs, namely, Spanish and Greek.

2.3.2. Testing PAH on Spanish: Alonso-Ovalle et al. (2002)

The study by Alonso-Ovalle et al. was intended, on the one hand, to show that Carminati's PAH correctly predicts the behaviour of pronouns in intra and intersentential anaphora cases in Spanish as well as Italian and, on the other, to report evidence that the topic-focus articulation of the sentence containing a pronoun affects the general anaphoric preferences predicted by the PAH (Carminati 2002:153). In order to do so, the authors had 80 native Spanish-speakers answer three written questionnaires: the first one showed that in intersentential anaphora *pro* prefers an antecedent in [Spec, IP] to a greater extent than an overt pronoun. The second questionnaire showed that the division of labour between null and overt pronouns inherent to the PAH is not simply due to ambiguity resolution preferences: it should be more natural in Spanish to use null pronouns to refer to subject antecedents even when there is no ambiguity. Finally, the third one showed that the PAH predicts the behaviour of Spanish pronouns when interpreted as bound variables as well.

(17) a. *Juan pegó a Pedro. Ø Está enfadado.*
b. *Juan pegó a Pedro. Él está enfadado.*
'Juan hit Pedro. He is angry.'

(Alonso-Ovalle et al. 2002:154)

Following the PAH, the authors expected speakers to choose the constituent in the subject position (*Juan*) as the antecedent of the null pronoun in (17a), and the object constituent (*Pedro*) to be chosen as the antecedent of the overt pronoun in (17b). Their hypothesis was proved right: 73% of the participants' responses chose the subject of the first sentence as antecedent for *pro*, while when there was an overt pronoun this percentage dropped to 50% (Alonso-Ovalle et al. 2002:154). Overall, the results of this study demonstrated that the predictions of Carminati's PAH are valid for Iberian Spanish too, and that therefore a null pronoun prefers more syntactically prominent antecedents than the overt pronoun (Alonso-Ovalle et al. 2002:165).

2.3.3. The case of Greek: Papadopoulou et al. (2015)

As a null-subject language, Greek has both weak null pronouns and strong overt ones. Although there can be cases of ambiguity in their interpretation, each form presents specific preferences with respect to its antecedent. The null pronoun in (18) is preferably anchored to the most salient/prominent referent, that is, the sentential subject topic, and hence leads to a non-shifted interpretation for the subject. By contrast, the overt pronoun *aftí* in (19), when pronounced as unstressed, marks a topic shift and is preferably associated to less salient entities of the discourse.

(18) *O papús milúse dinatá ston egonó tu ótan pro djávaze éna vivlion.*
'The old-man was speaking loudly to his grandson when he was reading a book.'

(19) *I jajá xerétise tin kopéla ótan aftí pernúse to drómo.*
'The old-lady greeted the girl when SHE was crossing the street.'

(Papadopoulou et al. 2015:99)

According to the authors, it is therefore clear in Greek that the null pronoun in (18) is coreferential with the subject (*the old man*), while the pronoun *aftí* in (19) refers to the object constituent (*the girl*).

Following Carminati's (2002) PAH, Papadopoulou and colleagues sought to determine whether the interpretation is affected by the salience of the antecedent, and

therefore tested the interpretation of null and overt pronouns in backward anaphora in Greek in two online experiments with monolingual adults and children. They investigated pronoun ambiguity resolution of null and overt subject pronouns in sentences with two compatible referents which appeared in the subject and object position of the previous clause. Both referents were always animate, with agentivity associated with the subject (notice, however, that the object is also agentive). The discourse feature of presence versus absence of a shifted topic interpretation in the use of null and overt pronouns was also examined.

In their first experiment, they verified that adults preferred to link null pronouns with prominent referents and topic antecedents, which yielded the same results as those obtained by Carminati (2002) for Italian and Alonso-Ovalle et al. (2002) for Spanish. In their second experiment, they verified that adults interpreted overt pronouns as indicating topic shifts, again in agreement with Carminati's results, although they found some discrepancies with the Spanish data by Alonso-Ovalle and colleagues, who found that the overt pronoun bias for non-topic antecedent was not significant (Alonso-Ovalle et al. 2015:114-115).

Building on Carminati's (2002) work and also on Dimitriadis (1996), Papadopoulou and colleagues claim that overt pronouns carry the discourse feature [topic shift] in their lexical entries, so as soon as this feature is instantiated, anaphora resolution is immediately guided to the preferred antecedent. Null pronouns, on the other hand, are not specified for discourse features and, thus, do not directly point toward the preferred antecedent.[3]

While the two previous studies (i.e. Alonso-Ovalle et al. 2002 and Papadopoulou et al. 2015) prove that both Spanish and Greek obey Carminati's PAH pattern, their respective results are not strictly speaking comparable because the materials used in the experiments were not the same and the resulting percentages actually differ. In fact, more recent studies, on these null-subject languages (like Filiaci 2011 and Filiaci et al. 2013) have yielded a clearly different outcome, indicating that there is actually variation regarding the interpretation and production of null and overt pronouns, as we will see later on in this chapter. We will now review will be made with respect to Filiaci et al.'s (2013) work on Spanish and Italian which was, at the time, the first to compare two similar NSLs using exactly the same methodology.

[3] The lexicalization discourse features proposal is a complicated and very controversial one that will not be dealt with in the present work.

2.3.4. Filiaci et al.'s (2013) account of Italian and Spanish

As Filiaci and colleagues state at the beginning of this paper, no experimental research with the aim of directly comparing anaphora interpretation in two similar NSLs had been carried out before Filiaci (2011). Their aim was to test the validity of the PAH in Spanish and Italian through two self-paced reading experiments, in order to see whether the results would be the same, taking into account certain differences between the two languages, particularly the fact that overt pronouns in Italian and Spanish are not equivalent (Italian has two sets of third person overt pronouns, *lui/lei*, that Carminati analyses, and *egli/ella*, which are overt weak pronouns). According to the authors, this difference could have an impact on the properties of the overt pronouns, in terms of their differing sensitivity to the accessibility of their antecedents.

The experiments were created on the basis of Carminati's, and consisted of a self-paced reading task in which a sentence was followed by a comprehension question with two possible answers. The first experiment used the same materials as Carminati's, a subordinate clause introducing two potential antecedents, one in the subject and the other in the object position, followed by a main clause containing an ambiguous null or overt anaphoric subject, as in (20).

(20) a. *Dopo che Giovanni ha criticato Bruno così ingiustamente, Ø/lui si è scusato ripetutamente.*
b. *Después de que Bernardo criticó a Carlos tan injustamente, Ø/él le pidió disculpas.*
'After John criticised Bruno so unfairly, he apologised.'

The second experiment presented the same conditions (null or overt anaphoric subjects with subject or object antecedents) but with materials adapted to be presented phrase-by-phrase.

The results from the experiments (for both Spanish and Italian) showed that the pattern was the same in both languages for the resolution of null pronouns, but the resolution of overt pronouns seemed to diverge, which means that the two structures obey different processing constraints in Italian and Spanish. In intra-sentential anaphora contexts, null pronouns were easily associated with the subject as their antecedent in both languages. By contrast, Italian overt pronouns were associated with

a change in subject reference, but Spanish overt pronouns did not seem to be associated with such constraints. This means that Spanish and Italian overt pronouns are not sensitive to syntactically encoded expressions of prominence to the same extent, and that Spanish overt pronouns are relatively insensitive to syntactic prominence compared to Italian pronouns and to null subjects in both languages (Filiaci et al 2013:16). The questions left open by the authors are, firstly, whether the existing cross-linguistic differences between these two languages are related to other morpho-syntactic features, and secondly, if these differences extend to other anaphoric expressions and to other pro-drop languages.

2.3.5. Rizzi's proposal (2018)

Rizzi addresses the issue of pronominal interpretation and anaphora resolution in Italian by looking at similarities and differences between subject and topic positions and their syntactic realisations, based on the idea that certain syntactic positions work as "halting sites" for syntactic movement. In order to do so, he looks at Calabrese's (1986) principles (repeated here for convenience) about the bias of null pronouns towards antecedents in subject position, which show that speakers tend to use the unstressed, default form (that is, null pronouns in Italian) when referring to a subject antecedent:

a. Use a stressed pronoun only when the occurrence of its referent is not expected
b. A subject pronoun is expected to have the referent of another subject (in the immediate context)

(Calabrese 1986:27)

The first principle says that the null form is to be used for expected referents, while the stressed form for unexpected referents; the second principle is specific to subjects, or more precisely, to aboutness subjects (what Calabrese calls "thema"): according to Calabrese, it predicts that distinct predicates in the same local domain tend to be predicated about the same referent (a particular case of "topic continuity", Givón 1983).

Reconsidering this proposal, Rizzi notes that null pronouns in Italian would be better described as sensitive to the "aboutness" of the antecedent rather than its "subjecthood", particularly if looking at sentences like (21).

(21) *Poiché Mario Carla lo ha severamente criticato, Ø era imbarazzato.*
'Because Mario Carla severely criticised him, (he) was embarrassed.'
(Rizzi 2018:524)

In this sentence, the null pronoun refers to the clitic-left dislocated object constituent *Mario*, because in Italian, clitic-left dislocations share with subjects the property of marking the corresponding constituents as aboutness topics. Interestingly, the same happens in intersentential contexts, as shown in (22).

(22) *Mario, Carla lo ha severamente criticato. Ø Era imbarazzato.*
'Mario, Carla severely criticised him. (He) was embarrassed.'

Rizzi also notes, however, that the interpretation of null pronouns can be ambiguous, since they can select either the subject or the object as their antecedent, particularly in cases where there is a matching of number and gender of an adjective with both antecedent candidates, as in (23).

(23) *Francesca ha fatto notare a Maria che Ø era molto stanca.*
'Francesca made Maria realise that (she) was very tired.'

In sentence (23), the null pronoun in the complement clause is able to refer to both Francesca and Maria, even though Francesca is the subject/topic of the main clause. To account for this possibility, Rizzi formulates the following structural condition for the resolution of anaphora:

A subject pronoun is expected to have the referent of a c-commanding DP.
(Rizzi 2018:516)

Rizzi therefore determines the interpretation of null pronouns on the basis of a property of the syntactic configuration, namely, c-command. To him, c-command can be relevant to explaining the case in (24).

(24) *Francesca ha fatto notare alla sorella di Maria che Ø era molto stanca.*
'Francesca made Maria's sister realise that (she) was very tired.'

In the sentence in (24), *pro* can naturally refer to either Francesca or Maria's sister, but not to Maria[4]; in order to express that interpretation, an overt pronoun would have to be used, as in (25), and even then, some ambiguity remains.

(25) *Francesca ha fatto notare alla sorella di Maria che lei era molto stanca.*
'Francesca made Maria's sister realise that she was very tired.'

According to Rizzi's explanation, we can see the two principles acting in this sentence: both DPs *Francesca* and *la sorella di Maria* can be expected to be antecedents of the subject pronoun which, according to the first principle, can be *pro*, while *Maria* does not c-command the pronoun, so cannot be expected to be the antecedent if the pronoun is not overt.

In accordance with the previous affirmations, Rizzi also observes that *pro* naturally chooses a preverbal subject over a postverbal one, as we see in (26).

(26) a. *Quando Gianni$_i$ ha telefonato, Ø $_i$ era ubriaco.*
'When Gianni telephoned, (he) was drunk.'
b. **Quando ha telefonato Gianni, Ø era ubriaco.*
'When telephoned Gianni, (he) was drunk.'

In the first sentence, coreference is fine because Gianni is the subject of the predication, while in the second *Gianni* is not in the aboutness subject position, so it is not expected to be the antecedent of *pro*.

The reference to aboutness stresses the similarities between subjects and topics but, as noted by Rizzi, preverbal subjects and topics are actually distinct positions in

[4] Note that although it is not possible in Italian, in Spanish this *pro* could refer to Francesca, to Maria's sister or even to Maria. This will be discussed later on.

NSLs. Interestingly, in non-NSLs, whether a subject is in a preverbal subject or in a topic position is immediately shown by the presence of a resumptive subject clitic in the latter case, as illustrated by the French sentence in (27).

(27) *Jean a rencontré Marie/ Jean, il a rencontré Marie.*
'Jean met Marie' / 'Jean, he met Marie.'

In NSLs like Italian, by contrast, the evidence that distinguishes preverbal subjects from subject topics is less "obvious" because the resumptive pronoun corresponding to a subject topic is null, which renders it ambiguous and only distinguishable in terms of syntactic structure, as well as by the intonational pattern (28).

(28) *Gianni ha incontrato Maria.*
'Gianni met Maria.'
a. [$_{IP}$ Gianni ha incontrato Maria]
b. [$_{TopP}$ Gianni Top [$_{IP}$ *pro* ha incontrato Maria]

Although topics share with subjects the aboutness property, Rizzi points out that they are more demanding because they work better if some kind of connection to the previous discourse can be established. By testing the "what happened" contexts, it is clear that the two cases are different, and that preverbal subjects are possible and topics are not, which also leads to the understanding that subjects and topics have different interpretive patterns (Rizzi 2018:528). Rizzi's proposal is one of the starting points for Torregrossa et al. (2020), which we will discuss now.

2.3.6. Torregrossa et al.'s Hierarchical Height Principle (2020)

Considering these previous studies and following the experiments in Torregrossa et al. (2015), the study in Torregrossa et al. (2020) investigates how speakers of Greek and Italian differ in their respective use and interpretation of null and overt subject pronouns. To account for the observed facts, Torregrossa et al. (2020) introduce the Hierarchical Height Principle, which defines prominence of sentence constituents in terms of hierarchical height.

As mentioned above, the bias of null subjects in favour of antecedents in subject position had been observed by Calabrese (1986), who stated that when referring to a subject antecedent by means of a subject pronoun, speakers tend to use the unstressed, default form, which corresponds in Italian to null pronouns. Considering these data, Rizzi (2018) showed that Italian null pronouns are sensitive to the 'aboutness' of the antecedent rather than its 'subjecthood'–this principle being extended to both intrasentential and extrasentential contexts. As noted above, to account for coreference between a null subject pronoun and a previous antecedent, Rizzi's structural condition for anaphora resolution is repeated here in (29).

(29) A subject pronoun is expected to have the referent of a c-commanding DP.

This intuition that c-command is a relevant factor in anaphora resolution underlies what Torregrossa calls the Hierarchical Height Principle (hereinafter HHP), which reads as follows:

> a. A null subject is expected to have the referent of a prominent DP.
> b. A DP is more prominent than another DP if the former is hierarchically higher than the latter.
> c. Prominence of a DP depends on other factors beyond syntax (e.g., verb-type, coherence relations, discourse topicality, prosody, etc.).
>
> (Torregrossa et al. 2020:9)

Hierarchical height, as formulated here, can be considered a proxy to c-command in terms of Rizzi's proposal, although it works as a continuum and cannot be established as a discreet category. According to Torregrossa and colleagues, anaphora resolution is sensitive to the difference between constituents in terms of hierarchical height, meaning that the greater the difference between constituents in terms of amount of c-commanded syntactic material, the higher the probability for the hierarchically higher constituent to be picked by a null subject pronoun as its antecedent. Of course, this continuum is relevant if one is looking at the interface of syntax with other cognitive domains, like memory retrieval processes. This means that, for instance, the continuum of ways in which constituents differ from each other in terms of hierarchical height is reflected also in a continuum in the activation status of these constituents in

memory and, therefore, in the intuitions on the resolution of null pronouns in discourse.

The second clause of the HHP accounts for the subject/topic bias in the interpretation of null pronouns, because subjects/topics occupy a relatively high position in the structure. The greater the difference between constituents in terms of hierarchical height, the more evident this bias. Because of this, the bias is stronger in sentences like (30)–where one DP is in subject position and the other in object position- than in sentences like (31)–where, depending on the preferred syntactic analysis, both DPs sit in CP or one sits in CP and the other at the edge of TP.

(30) *Marta scriveva frequentemente a Piera, quando Ø era negli Stati Uniti.*
'Marta frequently wrote to Piera, when (she) was in the United States.'

(31) *Poiché Mario Carlo lo ha severamente criticato, era imbarazzato.*
'Because Mario Carlo severely criticized him, (he) was embarrassed.'

What makes this HHP innovative is the fact that it explains and covers proposals like Rizzi's (2018) or Carminati's (2002) PAH ("Nulls would prefer to retrieve their antecedent in a subject position, whereas Overts would prefer an antecedent in a lower syntactic position") but it also accounts for this hierarchical difference that bears gradualness, and this could allow for it to fit into every NSL scheme.

In Torregrossa et al. (2020) we see this principle applied to Italian and Greek, two NSLs that show some differences, mainly in the syntactic domain. The first distinction, observed by Roussou and Tsimpli (2006) is a difference in word order: specifically, VSO-order is available in Greek with a broad focus interpretation (without the referents being mentioned in a previous context), while in Italian such an order can only be acceptable if the subject constituent is given a narrow/contrastive focus interpretation (Belletti 2004). This is illustrated in (32).

(32) a. *Plirose o giatros ton architektona.*
b. ? *Pagò il dottore l'architetto.*[5]

[5] Sentence (32b) could be acceptable in Italian with a narrow/contrastive focus interpretation, as in the following dialogue:
-Chi pagò l'architetto, il polizziotto?
-Ma no, pagò il DOTTORE l'architetto.
A: "Did the policeman pay the architect?"
B: "Of course not. The DOCTOR paid the architect."

'The doctor paid the architect.'

As to why is this order possible in Greek (32a) but not in Italian (32b), Roussou and Tsimpli argue that in Greek subject and object constituents can occupy the same domain in the clause because they both lexicalise different grammatical features, bearing case morphology (as the nominative and accusative in (21a)). In Italian, by contrast, both subject and object constituents lexicalise the same features -due to the absence of case distinctions- and therefore need to occupy different syntactic domains: the object is usually merged above VP, while the subject occupies a higher position. In other words, according to Torregrossa et al. (2020), the difference between Greek and Italian regarding the availability of VSO is interpreted as an effect of the morphological complexity of the case marking in the nominal paradigm, which determines different word order patterns.

The analysis from Roussou and Tsimpli (2006) makes an interesting prediction regarding the interpretative patterns of null pronoun subjects in these languages. In Greek the syntactic position of subject and object constituents is not a signal for null pronoun interpretation, as it is in Italian: the difference between subject and object constituents in terms of the amount of c-commanded material is more pronounced in Italian than in Greek, because in Italian subjects and objects must be merged in different domains (Torregrossa et al. 2020:8). This would also mean than in Italian the syntactic position of the antecedent is a more reliable cue in the interpretation of null subject pronouns, while in Greek anaphora resolution relies more on nominal morphology.

As we have seen, the results of Filiaci et al. (2013) for Italian and Spanish and those of Torregrossa et al. (2020) for Italian and Greek are clear proof that NSLs do actually behave differently regarding the interpretation of null and overt pronouns, and that these differences may lay–at least partially–in the syntactic domain. It is important to consider that in order to properly compare this phenomenon across the three languages, the same testing should be made on all three. Following Torregrossa et al.'s account, one of the aims of this dissertation is to create and reproduce the same

Note that such an interpretation is possible only if *dottore* is prosodically stressed.

interpretation task for Spanish, so that the results and percentages allow a close comparison of the three languages.

2.4. Coherence-driven accounts

What we have seen so far regarding the interpretation of anaphora in Italian, Spanish, and also Greek is based on syntactic approaches that do not consider other factors, such as discursive features like topichood, coherence relationships, or implicit causality.

In what follows we briefly review these concepts and the relevant literature on this topic, focusing particularly on Kehler and Rodhe (2013) work for English, Ueno and Kehler (2016) for Japanese, and Mayol (2018) for Catalan. These approaches are relevant because they consider NSLs and their interaction with discursive features, and this interaction turns out to be crucial to a full understanding of anaphora interpretation.

2.4.1. Coherence relations and Implicit Causality

In order to understand what is meant by coherence relations, consider the classic example in (33) by Winograd (1972).

(33) a. The city council denied the demonstrators the permit because they feared violence.
b. The city council denied the demonstrators the permit because they advocated violence.

As we already know, in these sentences the pronoun *they* can refer to either of the potential antecedents–the city council or the demonstrators. Any native speaker of English would intuitively understand that in (33a) *they* most likely refers to the city council, whereas in (33b) it refers to the demonstrators. This inference is based not on syntax or discourse structure, but on world knowledge. This is because our

comprehension of a discourse involves not merely the decoding of sentences, but also the relationship we establish between the content of the sentence and our hypotheses about the information that the speaker intended to convey by means of the utterance. Having briefly introduced this concept here, we will leave a discussion of the types of coherence relations for Section 2.4.3.

Implicit Causality (IC) is one of the most interesting phenomena concerning the interaction between coherence relations and pronoun interpretation. The first attempt at illustrating IC was perhaps that of Garvey and Caramazza (1974), who observed that some verbs import an implicit attribution of the cause of the action or attitude indicated by the verb. This is illustrated in (34).

(34) a. Mary admires John.
b. Mary amazes John.

If we compare these two sentences, the intuition arises that in (34a) there is something about John that causes admiration in Mary, whereas in (34b) it is something special about Mary that produces amazement in John. The cause of the state is automatically attributed to the referent that one considers responsible for the situation. Because of this, if we were to ask "Why?" in response to these sentences, we would expect to receive some information about John in (34a) and some information about Mary in (34b). Therefore, verbs like *admire* (34a) are called object-biased verbs, while verbs like *amaze* in (34b) are called subject-biased verbs.

Both coherence relations and implicit causality are extremely important phenomena for the theories of pronoun interpretation and production we are about to examine, and will be further explained in what follows. Kehler and Rodhe (2013) explain how rhetorical relations, as well as topichood, affect anaphora interpretation; Ueno and Kehler (2016) observe that anaphora interpretation can be sensitive to transfer-of-possession and IC-verbs in Japanese; and Mayol (2018) analyses how rhetorical relations influence anaphora interpretation in Catalan.

2.4.2. Discourse and anaphora: Kehler and Rodhe (2013)

The twofold goal of Kehler and Rodhe (2013) is, first, to demonstrate that pronoun interpretation is affected by the hearer's expectations about what coherence relationships may follow and about which entities will be mentioned afterwards (which are also conditioned by those coherence relationships as well); and second, to reveal the crucial role played by the topichood of potential referents. To explain pronoun interpretation, Kehler and Rodhe compare two theories of discourse coherence that make opposite and "seemingly irreconcilable" claims.

The first one, the Centering Theory by Grosz et al. (1995), mainly claims that the fact that certain entities are more central than others in an utterance imposes constraints on the use of different types of referring expressions. The coherence of a piece of discourse is therefore affected by the compatibility of the utterance's centering properties and the choice of a referring expression.

Despite being influenced by a variety of factors, centering is mainly focused on the grammatical role and hierarchy of antecedents (Subject > Object > Other). Because of this, in (35a) is easy to associate the pronoun *him* to the subject (*Mitt*). Similarly, given that *Rick* is the subject of the first clause in (35b), the pronoun *him* refers to *Rick*.

(35) a. Mitt narrowly defeated Rick, and the press promptly followed him to the next primary state. [him = Mitt]
b. Rick was narrowly defeated by Mitt, and the press promptly followed him to the next primary state. [him = Rick]

As Kehler and Rodhe point out, Centering Theory is constructed in terms of morphological and grammatical properties of the discourse, whereas semantics, world knowledge and inference do not come into play. Note that these are precisely the factors previously mentioned in connection with coherence-driven accounts.

The second model is Hobbs' (1979) coherence-driven theory based on the idea that discourse coherence is achieved by making the necessary inferences in order to meet the constraints imposed by coherence relations. Take the sentence in (36).

(36) Mitt flew to San Diego this weekend. He has family there.

It is only natural to infer that the second sentence expresses the reason for the eventuality described by the first one, though this relationship is not overtly expressed in the passage. This means that hearers need to make the inferences required to establish the Explanation relation between the two (that is, the second sentence describes a cause or reason for the eventuality described in the first sentence). The list of relations assumed by this approach are (see Jasiskaya and Karagjosova 2020 for a recent overview):

- **Explanation**: Infer that the second sentence describes a cause or reason for the eventuality described in the first sentence.
  Mitt flew to San Diego this weekend. He had to meet a colleague.
- **Elaboration**: Infer that both sentences provide descriptions of the same eventuality.
  Mitt flew to San Diego this weekend. He took a private jet into Lindbergh field.
- **Occasion**: Infer a change of state from the second sentence, taking its initial state to be the final state of the eventuality described in the first sentence.
  Mitt flew to San Diego this weekend. He took a taxi from the airport to his house.
- **Result**: Infer that the first sentence describes a cause or reason for the eventuality described in the second sentence.
  Mitt flew to San Diego this weekend. He was therefore able to visit several high-profile campaign donors.
- **Violated Expectation**: Infer that the second sentence describes an unexpected result of the eventuality described in the first sentence.
  Mitt flew to San Diego this weekend. He wasn't able to visit any high-profile campaign donors, however.
- **Parallel**: Infer that the first and second sentences express similar eventualities, as if each provides a partial answer to a common question.
  Mitt flew to San Diego this weekend. Rick stayed in Kansas to campaign.

(from Kehler and Rodhe 2013:6-7)

Considering these approaches and theories, and bearing in mind the situation created by the example by Winograd (1972) mentioned above, Kehler and Rodhe (2013) considered a set of data coming from passage completion experiments conducted by

Stevenson, Crawley and Kleinman (1994) that used transfer-of-possession verbs. An example of passage completion task like those used in the experiment is given in (37).

(37) a. John seized the comic from Bill. He _____
b. John passed the comic to Bill. He _____

In both cases, a transfer of possession is described but the fillers of the Source and Goal thematic roles differ: in (37a) the Goal is the subject, while in (37b) it appears as the object of the prepositional phrase. In the results of Stevenson et al.'s (1994) experiments, for contexts like (26a) a bias could be seen whereby participants favoured an interpretation of the pronoun as referring to the subject/Goal (i.e., *John*). In contexts like (37b), however, the distribution was almost even, with 51% of participants interpreting *He* as referring to the subject/Source and 49% interpreting it as referring to the non-subject/Goal. In light of these results, Stevenson and colleagues understood that two biases came into play for pronoun interpretation, one a grammatical role preference that ranked subjects over non-subjects, and the other a thematic role bias that ranked Goal role occupants over Source role occupants.

For their own experiment, Kehler and Rodhe paired verbs in the perfective form with verbs in the imperfective form. The prediction was that with the imperfective the focus would fall on the ongoing unfolding of the event, which would create a higher percentage of Source interpretations. The result confirmed their expectations, showing that imperfective context sentences yielded significantly more Source interpretations than perfective sentences. They also tested whether the coherence relation that relates the continuation to the context sentence had any impact on the distribution of pronoun assignment. Their results showed that coherence relations had a strong effect. The rhetorical relation Occasion exhibited a strong bias in favour of the Goal, while those of Elaboration and Explanation displayed a strong Source bias (Kehler and Rodhe 2013:11).

These psycholinguistic experiments yielded results that reconcile the two classic theories of pronoun interpretation previously mentioned. As we explained, pronoun interpretation comes, for Hobbs (1990), as a by-product of using world knowledge during the inferential establishment of coherence relations, without regard to grammatical form or information structure; according to Centering Theory, on the other hand, pronoun interpretation is determined by information structural

relationships within and between utterances and the grammatical roles played by potential referents. Kehler and Rodhe's analysis reconciles these approaches by a Bayesian probabilistic model in which the interpretation bias is determined by

a) Expectations that comprehenders have about what Hobbsian coherence relations will ensue, which in turn condition top-down expectations about referent next mention (regardless of the referring expression used), and
b) Centering-style constraints on pronoun production, which provide bottom-up evidence about the topichood status of referents that are specific to the speaker's decision to use a pronoun.

(Kehler and Rodhe 2013:27)

Kehler and Rodhe's proposal will be further explored in chapter 3 in connection to our coherence-related experiment for Spanish. The following two analyses related respectively to Japanese and Catalan are largely based on the premises set forth in Kehler and Rodhe (2013), and explore the interaction between coherence relations, IC-verbs, and topichood with anaphora interpretation.

2.4.3. Anaphora interpretation in Japanese (Ueno and Kehler 2016)

The experiments in Kehler and Rodhe (2013) target the interpretation of anaphoric English pronouns in subject positions. Ueno and Kehler (2016) have the same aim, but they focus on a NSL, in this case Japanese. They investigate the interpretation of null and overt pronouns in Japanese through passage completion tasks with transfer-of-possession and implicit causality contexts. A particularity of Japanese, in contrast to European NSLs like Italian and Spanish, is that there is no verbal agreement marking to aid the identification of null pronouns. Nevertheless, Japanese overt pronouns (particularly third person pronouns), occur much less frequently in normal discourse than null ones (Ueno and Kehler 2016:1166). Therefore, the main question addressed in this paper is how pronouns are interpreted in typologically differing languages.

(38) a. *Taro-wa/ga Jiro-ni hon-o watashita/watashi-te-iru tokoro-datta. Taro-*
TOP/NOM Jiro-DAT book-ACC handed/hand-INF-ASP scene-was
shugo-shoryaku/kare-wa/jiyu.
subject-omission(Null)/he-TOP(Overt)/free(Free)
'Taro handed/was handing a book to Jiro.'

(Ueno and Kehler 2016:1179)

The experiment results showed Japanese overt pronouns behaving similar to English ones, in the sense that they were sensitive to pragmatic factors, while Japanese null pronouns showed more resistance to these factors. Still, both null and overt pronouns were mostly subject-biased, which casts some doubts on the existence of a real division of labor between the two forms. Topic-marking yielded some effect on reference, but only in certain contexts.

Coherence relations, on the other hand, did play an important role, showing that the relationship between coherence and reference is bidirectional. These elements prove that there is a clear interaction between grammatical and pragmatic factors, and that discourse coherence indeed plays a fundamental role in the interpretation of pronouns across languages.

2.4.4. Anaphora interpretation in Catalan (Mayol 2018)

Mayol (2018) took Kehler and Rohde's (2013) model of pronoun behaviour and implicit causality and carried out two discourse-completion studies in order to examine whether the model could account for the behaviour of null and overt pronouns in Catalan. Her findings support Kehler and Rohde's model but also uncover several asymmetries, such as the fact that in Catalan the interpretation of null pronouns is affected by pragmatic and semantic factors that do not seem to affect production, which is affected mainly by grammatical factors, and that overt pronouns show a strong interpretation bias in favour of the object, even when they are not produced with this goal.

Mayol's first experiment (one of whose items is reproduced in (39)) uses a transfer of possession verb that triggers continuations about the Goal argument. The results show that pronoun biases for interpretation are actually different across

different rhetorical relations: nulls were mostly interpreted as referring to subjects in cases of Elaborations, but were mostly interpreted as objects in cases of Occasions. In contrast, production was not affected by these pragmatic factors, and pronominalisation was similar in Elaboration and Occasion, although with opposite interpretation biases. Regarding overt pronouns, Mayol also noticed that their production and interpretation presented a strong asymmetry, in the sense that an overt pronoun seemed to be automatically interpreted as referring to the object, even when the probability of using an overt pronoun for object reference was very low, which means a division of labour between null and overt pronouns was present in interpretation, but not in production.

(39) a. Condition 1: Null prompt
El Pere li va passar un llibre al Robert. Ø …
'Peter passed a book to Robert. Ø …'
b. Condition 2: Overt prompt
El Pere li va passar un llibre al Robert. Ell …
'Peter passed a book to Robert. He …'
c. Condition 3: Free prompt
El Pere li va passar un llibre al Robert. …
'Peter passed a book to Robert. …'

The second experiment–exemplified in (40)–used implicit causality verbs, which, as previously mentioned, can attribute the cause of the denoted event either to the subject or to the object. This difference is useful in order to study the weight of semantic and pragmatic factors. Regarding interpretation, the results showed that while null subject biases increased in Explanations with verbs that attributed the cause to the subject (but not with verbs which attributed the cause to the object), overt pronouns had a strong object bias in Explanations with verbs that attributed the cause to the object (but not with verbs which attributed the cause to the subject). Regarding production, on the other hand, pragmatic factors seemed to exert no such influence.

(40) a. Condition 1: ICV1 + Null
La Nuria va sorprendre la Maria. Ø …
'Nuria surprised Maria. Ø …'

b. Condition 2: ICV1 + Overt
La Nuria va sorprendre la Maria. Ella …
'Nuria surprised Maria. She …'
c. Condition 3: ICV1 + Free
La Nuria va sorprendre la Maria. …
'Nuria surprised Maria. …'
d. Condition 4: ICV2 + Null
La Nuria va felicitar la Maria. Ø …
'Nuria congratulated Maria. Ø …'
e. Condition 5: ICV2 + Overt
La Nuria va felicitar la Maria. Ella …
'Nuria congratulated Maria. She …'
f. Condition 6: ICV2 + Free
La Nuria va felicitar la Maria. …
'Nuria congratulated Maria. …'

To summarise, it seems that multiple cues are used to assign reference, particularly grammatical biases, while the production-shaping cues remain less clear and show that utterances are not always planned with the hearer in mind. This could be because the processing load is stronger in production, and it is easy to pass the pragmatically informative burden from speaker to hearer.

These studies, based on the interaction between the interpretation of null and overt pronouns and pragmatic as well as grammatical factors, provide clear evidence for the influence of discursive elements on referential production and interpretation. The results obtained by Ueno and Kehler (2016) and Mayol (2018) are particularly relevant, because they are based on languages that do not show a direct and evident division of labour between null and overt pronouns from an exclusively grammatical point of view. Testing topichood, transfer-of-possession and implicit causality demonstrates that such features are relevant to unravel the processes that lie behind a speakers' decisions.

Because of this, and considering that the uncertainty regarding pronoun interpretation in Spanish, it seems necessary to test the extent to which factors as the ones playing a role in languages like Japanese, Catalan, or Dutch (Koorneef and Berkum 2006) may also have an impact on Spanish. No previous studies have been

carried out in this area. The purpose of experiment 2 in chapter 3 will therefore be to see the effects of topichood and implicit causality on Spanish pronoun interpretation.

2.5. Towards a pragmatic approach (Leonetti 2022)

In a recent work on the interpretation of referential null subjects in Spanish and Italian, Leonetti (2022) explores the interactions among syntactic structure, information structure and discourse-pragmatic interferences. Leonetti's proposal is that null subjects can refer not only to topic antecedents, but also to antecedents that raise the coherence of the discourse. This basic point will be fundamental for my own approach, as it unifies grammatical conditions with general pragmatic inferences and coherence principles.

Leonetti (2022) starts from the assumption that anaphora interpretation necessarily involves the interaction of the grammatical system and pragmatic principles, since determining reference is a context-dependent task (in line with Arnold 2010, Kehler 2002, and others). It is therefore important to understand the extent to which grammar contributes by constraining possible interpretations: in other words, grammar does contribute to interpretation, but it is not the only element that determines it. This view goes against some proposals, such as Frascarelli's (2007, 2018), which regard the preference of null subjects for topic antecedents as a property of grammar by suggesting a specific kind of topic in the left periphery, the 'Aboutness-Shift Topic' (Frascarelli and Hinterhölzl 2007). Leonetti offers some counterexamples for this kind of syntactic proposals and shows that the observed preference of null subjects for topical antecedents is just that, a preference, or a strong tendency, but not a rule of syntax, because a true syntactic condition would not allow for violations in such a natural way and be accepted by hearers and speakers (Leonetti 2022:12). In what follows, we will review these counterexamples.

The first one is provided by antecedents occurring as *by*-phrases. Although *by*-phrases are not good candidates for antecedents, some contexts, such as the one in (41) in Italian, can offer perfectly adequate antecedents for null subjects:

(41) *A: Il guasto è stato riparato da Gianni.*
B: È proprio bravo, eh?

'A: The damage was repaired by John.'
'B: (He) is really good, isn't he?'

In this example, even though the subject of the first sentence is not *Gianni*, we understand that it is he who referred to in the second sentence. This is because, despite the by-phrase not being topical, there is a coherence relation of Explanation that links the two sentences, as the second is an explanation of the situation described in the first one. This means that even though topics are the most prominent expressions and hence are highly accessible and usually make salient antecedents for null subjects, coherence relations can override prominence and favour an interpretation that contradicts the predictions based exclusively on the salience of topic antecedents. Because of this, if the topical/non-topical nature of a phrase, as a factor determining the retrieval of an antecedent for an anaphoric expression, can be overridden by the need to establish coherence relations, then the preference for topics cannot be a principle of core grammar (Leonetti 2022:13).

Another counterexample, following Leonetti (2022), is the case of objects selected as antecedents in competition with subjects. This had been already noted in the literature since Calabrese (1986). As we saw above, Rizzi (2018) explains this double possibility through c-command. In a sentence like (42), both *Francesca* and *Maria* c-command the null subject in the subordinate clause, so it can be linked to either:

(42) *Francesca ha fatto notare a Maria che Ø era molto stanca.*
'Francesca made Maria realise that (she) was very tired.'

The fact that both *Francesca* and *Maria* can be the subject of the subordinate means that the null subject can be tied to any prominent antecedent, but not necessarily to a topic. By contrast, if the possible antecedents are inside a subordinate adverbial clause and do not c-command the null subject, the anaphoric form is forced to link with the topical subject, blocking the alternative link with the object, like in sentence (43) and as we saw in section 2.3.5.

(43) *Quando Mario ha picchiato Antonio, Ø era ubriaco.*
'When Mario punched Antonio, (he) was drunk.'

Again, here we can see that the preference for topical antecedents is not a grammatical constraint. If we also add a coherence relation like Explanation to the picture, as in (44), we see that null subjects can choose objects, instead of preverbal subjects, as antecedents.

(44) *Carlos solo escucha a Arturo. Es su mejor amigo.*
'Carlos listens to Arturo only. (He) is his best friend.'

Once again, the coherence relation of Explanation forces an interpretation of the null subject as not referring to the previous sentence's topic, indicating that coherence overrides prominence.

Another counterexample refuting the role of syntactic constraints in anaphora interpretation is the case of post-verbal subjects as antecedents. Consider the examples in (45).

(45) a. *Dopo che è arrivato, Gianni ha parlato.*
b. *Dopo che è arrivato, ha parlato Gianni.*
'After (he) arrived, John spoke'.

The contrast between these two examples shows that the preverbal subject in (45a) can be the antecedent for the null subject in the subordinate clause, while the post-verbal subject in (45b) cannot. However, in (46) we see a post-verbal subject being the null subject antecedent:

(46) *Quando ha parlato Leo, ha convinto tutti.*
'When Leo spoke, he convinced everyone'.

Examples (45b) and (46) differ in the position of antecedent and null subject in the main clause and the subordinate clause, which may have effects on c-command, and in the relative order of the two subjects (Leonetti 2022:14): in fact, backward anaphora is possible only if the antecedent is in sentence-topic position, following Reinhart (1986:138). Null subjects are therefore perfectly compatible with focal antecedents, at least when such antecedents are clearly salient and there are no competing topical

candidates. This again leads to the conclusion that the preference of null subjects for topical antecedents cannot be taken as a principle of core grammar.

What Leonetti (2022) sought to prove through these counterexamples is that grammar should explain how null subjects are licenced in a language, but not how their referents/antecedents are chosen and identified, because this does not pertain to the domain of grammar exclusively: the problem of anaphora interpretation lies, at least partially, outside the realm of grammar, which contributes to restricting the search for an antecedent by placing a condition on it, and nothing more.

2.6. Summary

In this chapter, we have reviewed the main theoretical proposals that try to unravel the pattern for anaphora resolution from different points of view: from a semantic/pragmatic point of view, from a syntactic point of view and from a discursive point of view.

The semantic theories (Prince 1981, Gundel et al. 1993; Givón 1983, Ariel 1990, 1994) claim that the choice and interpretation of referential expressions are closely related to how prominent the antecedent is in the discourse model of either the speaker or the hearer. The syntactic approaches based on Carminati (2002), on one hand, and on Rizzi (2018), on the other, place their emphasis on structural parameters and principles. In section 2.3. we saw some comparative analyses of comparable NSLs that have yielded different results that show that not all languages with null subjects behave similarly: Filiaci et al. (2013) showed a division of labour regarding Spanish and Italian null and overt pronouns, and Torregrossa et al. (2020) did the same for Italian and Greek.

Moving on to the discursive approaches, we saw that Kehler and Rodhe (2013) show that antecedent prominence might not be enough to explain the whole spectrum of results and that certain discursive factors such as coherence and implicit causality play an important role in the interpretation of anaphora. For his part, Leonetti (2022) also argues that syntactic features alone cannot account for the differences in anaphora interpretation, and that other domains of languages, such as pragmatics, are clearly involved.

The thought that arises from this picture is that the role played by the factors under study here seems to have a different weight depending on the context and also on the language. This takes us back to the first of the two general research questions of this dissertation, which we posed in chapter 1 (RQ1):

a. Are there differences between Italian and Spanish in the resolution of pronominal anaphora involving null and overt pronouns?
b. If so, how can these differences be accounted for in a principled way?

In order to account for these differences, and bearing in mind the theories we reviewed in this chapter, two experiments regarding Spanish, Italian and Greek anaphora interpretation (experiment 1) and the effect of discursive factors on Spanish anaphora interpretation and production (experiment 2) will be presented in chapter 3. Our second research question (RQ2), regarding Spanish-Italian bilingualism, will be held back for now until chapters 4 and 5.

3. SPANISH PRONOUN INTERPRETATION IN A CROSS-LINGUISTIC PERSPECTIVE: TWO EXPERIMENTAL STUDIES

In chapter 2 we reviewed various syntactic and pragmatic accounts of the conditions governing the interpretation of null and overt pronouns in different languages, particularly Spanish, Italian, Greek, and Catalan, and also English and Japanese. We saw that the results of studies testing these accounts are not conclusive.

Regarding the syntactic accounts, some studies yield similar outcomes across languages, which suggests that the norms involved in reference assignment of pronouns are basically the same (Carminati 2002 for Italian; Alonso-Ovalle et al. 2002 for Spanish; Papadopoulou 2015 for Greek); other studies, by contrast, show different patterns of behaviour even when comparing typologically similar languages (in the present case, null subject languages) like Spanish, Italian and Greek (Filiaci et al. 2013 for Spanish and Italian; Torregrossa et al. 2020 for Greek and Italian). The origin of these apparent inconsistencies in the observations found in the literature lies in the fact that the results of the first group of studies are not comparable, since the experiments follow slightly different methodologies for each language and therefore the percentages reported cannot be adequately matched to each other. A true comparative study based on syntactic factors is, hence, lacking at the moment.

For this reason, the first goal of this dissertation is to replicate the interpretation task experiment carried out in Torregrossa et al. (2020) (see section 2.3.6) but applied to Spanish (experiment 1). The original experiment was completed by Italian and Greek monolinguals, so adding Spanish monolinguals will add a new set of results fully suitable for comparison. As we noted in chapter 2, the starting hypothesis for that study was the HHP (Torregrossa et al. 2020), according to which the selection of the antecedent for an anaphor is determined by the syntactic height of the subject constituent projection, following three principles: 1) a null subject is expected to have the referent of a prominent DP; 2) a DP is more prominent than another DP if the former c-commands more material than the latter; 3) prominence of a DP depends on other factors beyond syntax (e.g., discourse, prosody, verb type) (Torregrossa et al. 2020:7).

In experiment 1, the predictions of the HHP will be tested for Spanish. The results will be important, since Spanish, presents two syntactic particularities that set it apart from both Greek and Italian: first, the possibility of having a VSX order in a wider array of constructions; and, second, the existence of Differential Object Marking (DOM). We will review these two features before describing the procedure and results of experiment 1.

Regarding the coherence-driven accounts, Kehler and Rodhe (2013) have demonstrated that discourse-related factors, such as topichood and implicit causality, do have a clear impact on pronominal and anaphoric interpretation and production, so they clearly need to be considered, particularly in NSLs. The results in Ueno and Kehler (2016) for Japanese and in Mayol (2018) for Catalan are a good indicator that a similar study is much needed for Spanish. As far as I know, such a study does not exist, so the second part of this chapter is devoted to experiment 2, which tests the role of coherence-relations and implicit causality in Spanish.

The chapter is organised as follows. In section 3.1 we will introduce the Spanish syntactic particularities that are relevant in order to understand the impact of syntax in Spanish anaphora resolution: VSX order and Spanish DOM. Section 3.2 presents experiment 1, which examines anaphora interpretation: participants, procedure, analysis of the data and results; section 3.3 presents experiment 2, which looks at anaphora production and discourse, in a similar way. Section 3.4. presents a new proposal for anaphora interpretation, the *Layered Structure*; finally, in section 3.5. I will offer the main conclusions to be drawn from this chapter.

3.1. Spanish syntactic particularities: VSX and DOM

Although Spanish shares many syntactic features with the other Romance languages, there are two specific features that are not found in most Romance languages: the possibility to feature VSO as unmarked word-order (VSX order, see Zubizarreta 1998, Ordóñez and Treviño 1999, Gutiérrez Bravo 2007, Belletti 2001) and the special marking given to a subclass of direct objects (DOM, see Brugè 2000, Leonetti 1999, Leonetti 2004, Torrego 1998). We will review them in what follows.

Various studies (Belletti 2004; Leonetti 2014; Roussou and Tsimpli 2006) have observed that Spanish allows for VSO-order in broad focus sentences (i.e., uttered in

out-of-the-blue contexts) and in this respect differs from Italian and other Romance languages such as Catalan and French. This is illustrated by the contrast between the Italian sentence (1a) and the Spanish sentence (1b) – both taken from Leonetti (2014: 37).

(1) a. # *Ha comprato Maria il giornale.*
b. *Ha comprado María el periódico.*
Have.PRS.3SG buy.PP María the newspaper
'Maria bought the newspaper.'

Note that the VSO-order is possible in Italian, but in that case the subject constituent needs to be interpreted as a narrow/contrastive focus. It should be mentioned that sentences like (1b) are more likely to be accepted by Spanish speakers if they are preceded by a constituent in the left-periphery, such as an adverb, as shown in (2) (also taken from Leonetti 2014:48; see also Zubizarreta 1998; Roussou and Tsimpli 2006). We will not consider these two particular cases in this contribution.

(2) *Ayer ganó Juan la lotería.*
Yesterday win.PST.3SG Juan the lottery
'Yesterday Juan won the lottery.'

In this respect, Spanish seems to align with Greek, which also allows for the VSO-order in broad focus context, as can be seen in (3).

(3) *Plirose o giatros ton architektona.*
pay.PST.3SG the.NOM doctor.NOM the.ACC architect.ACC
'The doctor paid the architect'

According to Roussou and Tsimpli (2006), subject and object constituents can occupy the same clausal domain in Greek, since they lexicalize different features – i.e., they are both case-marked (e.g. the nominative-marked *o giatros* 'the doctor' vs. the accusative-marked *ton architektona* 'the architect' in (3)). By contrast, in Italian, nominal phrases lexicalize the same set of features, since they are not overtly case-marked, and, as a result, they must appear in different clausal domains: while the

object is usually merged in the VP-domain, the subject must occupy a higher projection (i.e., Spec,IP).

Based on these assumptions, Torregrossa *et al.* (2020) argue that differences in the hierarchical height of subject and object constituents in Greek and Italian have further consequences on the interpretation of null subject pronouns in both languages. As a result, the difference between subjects and objects in terms of hierarchical height in Greek does not need to be marked as it does in Italian.

At first sight, the availability of VSO in Spanish seems to contradict Roussou and Tsimpli's (2006) proposal. Just like in Italian, Spanish nominal phrases are not marked for case (see, e.g., (1) and (2)). In other words, subject and object constituents do not lexicalize different features and, hence, should not be able to appear in the same sentential domain. However, contrary to Italian, object constituents in Spanish can exhibit morphological marking under certain conditions. The relevant contrast is given in (4) and (5) – taken from Fábregas (2013).

(4) *Encontré un problema*.
'I found a problem.'
(5) *Encontré* a *un superviviente*.
'I found a survivor.'

The contrast between (4) and (5) illustrates the phenomenon of Differential Object Marking (DOM; Leonetti 2004) in Spanish. Some objects are marked with the preposition *a* (the same used for indirect objects), while others are not: as a result, the class of direct objects is split into two different realisations based on the features of the referent, mainly animacy. Animate entities are expected to receive the additional *a*-marking (e.g., *un superviviente* 'a survivor' in (5)), while inanimate entities (e.g., *un problema* 'a problem' in (4)) cannot be *a*-marked.

Animacy is not, however, the only requirement for DOM. Consider the contrast between (6) and (7).

(6) *Busca* a *un médico*.
(7) *Busca un médico*.
'(S)he is looking for a doctor.'

Among animate direct objects, *a*-marked entities are usually associated with a specific interpretation. Speakers tend to use sentences like (6) to express the idea that they are looking for a specific doctor, who is active in discourse and identifiable in the mind of the speaker and/or hearer (however, see Leonetti 2004 for some exceptions to this generalization). In (7), by contrast, the speaker is not referring to any specific doctor (Leonetti 2004).[6]

The interpretation of DOM is one of the mostly debated issues in the grammar of Spanish: our discussion here will mainly focus on its relation with the availability of VSO in Spanish. In this respect, two main points should be discussed. First, the contrast between (4) and (5), on the one hand, and (6) and (7), on the other, shows that DOM is not obligatory for structural reasons (i.e., it does not necessarily mark the object constituent). In this sense, it differs from accusative case-marking in Greek, which always occurs in association with nominal phrases: pronouns, determiners and full nouns are obligatorily case-marked. Therefore, Roussou and Tsimpli's (2006) idea that subject and object constituents can appear in the same sentential domain only if they lexicalize a different set of features does not seem to be generalizable to all contexts in Spanish: inanimate objects (independently of whether they are specific or not) lexicalize the same set of features as subject constituents. However, if one assumes that the absence of DOM corresponds to the spell-out of a zero morpheme (in complementary distribution with DOM), Roussou and Tsimpli's (2006) generalization still holds (see Belletti 2004 for a similar proposal).

From a syntactic perspective, Kalin (2018) has argued that the nominal structure consists of different functional heads, each encoding a different semantic function. For example, minimal NPs (consisting of a number head Num° selecting for a NP) may be selected by a Specificity head (Specific°), which may in turn be selected by an Animacy head (Animate°), selected by a Person head (Person°).[7] Crucially, the author claims that the set of functional projections realized in the nominal structure

[6] In any case, *a*-marking is allowed with non-specific indefinites referring to animate object constituents, as shown by Leonetti (2004: 82):

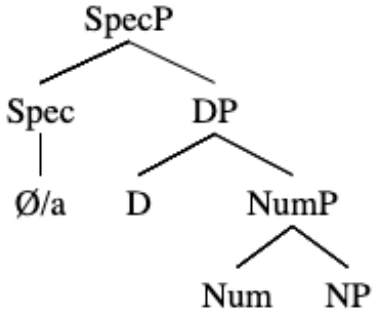
(i) Está buscando a alguien. / No está buscando *a* nadie.
AUX.IND.PRES.3SG. look-for.GERUND DOM somebody NEG. AUX.IND.PRES.3SG. look-for.GERUND DOM nobody
'(S)he is looking for someone.' / '(S)he is not looking for anyone.'

[7] The author does not assume any particular ordering of these projections. However, she reports examples of an implicational ordering among the projections, e.g., ParticipantP > PersonP > HumanP > AnimateP (Kalin 2018: 137).

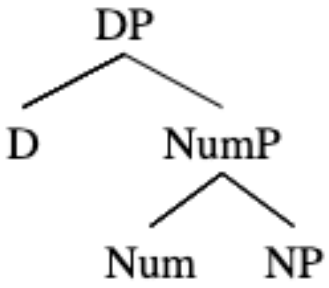
varies across and within languages (Kalin 2018: 137). Based on these assumptions, the idea is that the nominal structure of object constituents in Spanish corresponds to the structure in (8) below, where the DP is selected by a head encoding specificity (Spec°). As argued above, the proposal is that *Ø* and *a* are two possible spell-outs of this projection.

López (2012) also argues in favour of two possible lexicalizations of a head dominating an object DP, one covert (*Ø*) and one overt (*a*) encoding Case (K°).[8] The spell-out K° as *Ø* and *a* depends on insertion rules that are sensitive to, among other things, the properties of the DP or the NP contained in it (e.g., whether it denotes an animate or an inanimate entity) and aspectual properties of the verb (e.g., whether it is telic or not; see also Fábregas 2013 for a general overview of these rules).

By contrast, the nominal structure in Greek and Italian is represented in (9). Since these two languages do not show any grammatical marking of specificity, it is likely that they do not realize Spec°. However, as claimed above, Greek and Italian differ from each other in the overt versus covert lexicalization of case features, which motivates the availability of VSO-order in Greek, but not in Italian.



(8)



(9)

The structure in (9) may apply to Spanish DPs that occur in subject position, too, given that specificity is never marked on subjects in Spanish. As a result, there is no theoretical reason to assume an alternation between covert and overt for Spanish DPs in subject position (see Kalin 2018 for a similar idea). To sum up, in this approach the object constituents in Spanish behave differently from object constituents in Italian

[8] However, López (2012) claims that the head dominating the object DP encodes case (K°). More specifically, the author distinguishes between "smaller" indefinite DPs, which are merged as complements of V° and incorporate into it (being of type <e, t>) and indefinite DPs selected by K°, whose function is to shift the indefinite type from <e, t> to <e>. The latter must be merged outside the domain of V° in a dedicated projection within the vP.

and Greek, since they involve a projection encoding specificity, which can be spelt out as either *Ø* or *a*. Object-marking (as encoded in Spec°) creates the conditions for the availability of VSO in Spanish (as in the case of Greek), independently of whether this lexicalization is covert (*Ø*) or overt (*a*).

It should be mentioned once again that according to Roussou and Tsimpli (2006), subject and object constituents can appear in the same domain in Greek, because they are associated with different lexicalization patterns for case. However, the Spanish data considered here suggest that this generalization should be extended to include semantic-pragmatic features, such as specificity. In other words, the Spanish data suggest that subject and object constituents can appear in the same clausal domain whenever there is (at least) one feature whose lexicalization differs between subjects and objects, independently of its nature (e.g., syntactic as case or semantic-pragmatic as specificity).

Within the Romance family, Romanian provides further empirical evidence in favour of this idea: as in the case of Spanish, Romanian allows for VSO, and if the hypothesis presented is on the right track, this property should be related to the availability of DOM in the grammar, as happens to be the case (see Leonetti 2014 on VSO and Irimia 2018 on DOM in Romanian).

Another syntactic property which is typical of DOM in Spanish is its association with movement. López (2012) shows that object constituents realizing the structure in (9) are merged in a higher position than the complement of V°. This conclusion is based on the contrast between (10) and (11).

(10) *Los enemigos no entregaron a su$_i$ hijo a ningún prisionero$_i$.*
'The enemies did not deliver their son to any prisoner.'

(11) *Los enemigos$_j$ no entregaron a su$_{j/k}$ hijo ningún prisionero.*
'The enemies did not deliver any prisoner to his son'.

In (10), the *a*-marked direct object *a ningún prisionero* 'DOM any prisoner' can c-command the indirect object *a su hijo* 'to his son' and bind the pronoun *su* 'his'. As a consequence, the interpretation of *su hijo* 'his son' co-varies as a function of the quantifier *ningún prisionero* 'no prisoner'. In (11), this interpretation is not available, which indicates that the direct object cannot take scope over the indirect object. The possessive *su* is bound by either the subject constituent *los enemigos* 'the enemies' or

by a sentence-external discourse-given constituent, since the singular and plural forms of the third person possessive adjectives in Spanish are homophonous. Crucially, the interpretation associated with (10) cannot be derived in the corresponding Italian and Greek sentences, as reported in (12) and (13), respectively. In both cases, the possessive can only be interpreted as referring to a sentence-external discourse-given constituent (as indicated by the referential indices).

(12) *I nemici non riconsegnarono a suo figlio$_j$ nessun prigioniero$_i$.*
(13) *I exthri dhen epestrepsan ston ghio tu$_j$ kanenan filakismeno$_i$.*

Considering this review of the literature, it seems that in Spanish subject and object constituents can appear in the same clausal domain as an effect of DOM. Therefore, the prediction is that Spanish will exhibit a behaviour different from Italian (in which subject and object should appear in two different clausal domains) and similar to Greek (which also allows for VSO). Following Torregrossa et al. (2020), it can be assumed that in Spanish, the hierarchical height of subject and object constituents will not be as relevant a cue for the resolution of null pronouns as is the case in Italian. Therefore, the prediction is that Spanish will be more flexible and allow null pronouns in subject position to refer to object antecedents to a greater extent than in Italian (thus patterning with Greek). In addition, if object constituents in Spanish occupy a higher position than object constituents in Greek and Italian, the prediction is that Spanish objects will be more prominent (in terms of hierarchical height) than objects in Italian and Greek. This should be reflected in an even greater tendency of Spanish null subject pronouns to refer to object constituents as compared to Greek. The experiment introduced in the next section aims at testing these two hypotheses.

3.2. Experiment 1: Spanish pronoun interpretation task

Overview

The purpose of this first experiment is to understand the extent to which null and overt pronouns in subject position are interpreted in Spanish in a different way than in Greek and Italian.

The research questions for this experiment are as follows:

- RQ1.1: What are the differences and similarities between reference assignment in Spanish, Greek and Italian?
- RQ1.2: Does the type of anaphoric expression play a role in reference assignment in Spanish?

Based on our discussion in the previous section, the interpretation of null subject pronouns in Spanish is expected to be more flexible in terms of their reference possibilities than in Italian. This should be reflected in Spanish speakers' greater acceptance of null pronouns in subject position (NSs, for short) referring to object antecedents as compared to Italian speakers. As in the case of Greek, word order should be a weaker cue to the interpretation of NSs in Spanish compared to Italian, due to the availability of VSO. Furthermore, we would expect to observe a difference between Greek and Spanish as well: due to the existence of DOM in Spanish, Spanish objects should be more prominent from a syntactic point of view, which should be reflected in an even greater acceptance of NSs referring to object antecedents by Spanish speakers as opposed to Greek speakers. Overall, a gradient in the extent to which NSs are able to refer to an object antecedent is expected, from Italian (which, lacking both VSO and DOM, exhibits the strongest subject-bias) to Spanish (which features both VSO and DOM), with Greek (which has VSO but not DOM) in the middle.

For the present study, a Spanish version of the pronoun interpretation task used in Torregrossa et al. (2020) was created. The presentation of the results will be based on a comparison between the data presented in Torregrossa et al. (2020) and the Spanish data collected for this study. In order to compare the interpretation of null and overt pronouns across the three languages, a linear mixed effects model will be used, which

improves on the ANOVA-analysis used in Torregrossa et al. (2020) by modelling random effects.

The results related to the interpretation of overt subject pronouns (OSs) will be the mirror image of the ones concerning NSs, provided that the interpretation of overt pronouns is sensitive to the syntactic prominence of subject and object antecedents, as observed with NSs. As a result, Italian OSs should exhibit the strongest object bias. By contrast, the tendency for an OS to refer to an object antecedent should be less marked in Spanish, where the difference between subject and object antecedents in terms of syntactic prominence should be less marked than it is in Italian or Greek. Notably, this result would be in line with what was observed in Filiaci (2011) and Filiaci et al. (2013).

3.2.1. Participants

Seventy-five adult native Spanish-speakers took part in the study (mean age: 26;8, range: 18-78). Before participating in the study, each participant was asked to complete a short questionnaire about their background (age, level of education, region of origin), knowledge of other languages/dialects and level of proficiency in them. A majority (78.1%) of participants were native speakers of the Central variety of European Spanish (Madrid, Castilla-La Mancha, Castilla y León), while 12.2% were speakers of the Levante variety (Cataluña, Comunidad Valenciana, Islas Baleares); the remaining 9.7% spoke Spanish varieties from other areas of the Iberian Peninsula. Potential participants who declared themselves to be bilingual or to have a C-1 level of proficiency in a second language (as defined by the European Framework for Language Competence) were excluded from the analysis. The 75 participants' competence in a particular national language/dialect was not accounted for: only 13% claimed to have some sort of competence.

The study by Torregrossa et al. (2020) included 62 adult native Italian speakers (mean age: 30,7; age range: 22-54) from both Northern Italy (Lombardy and Emilia Romagna, 51%) and Central Italy (Marche, Tuscany, Umbria, 49%), with 50% of them being speakers of both Standard Italian and a local dialect, as well as 62 adult native speakers of Greek (mean age: 21;6, range: 18-48), mainly born and raised in Northern Greece (e.g., areas around Thessaloniki), but also in Central (19.35%) and Southern Greece (17.75%), with 11.3% of them also being speakers of a local dialect.

3.2.2. Materials and procedure

An interpretation task was administered, in which participants had to indicate the extent to which they interpreted a null or an overt subject pronoun in a subordinate clause as referring to a subject or object antecedent in the main clause, using a five-point Likert-scale. Two factors were manipulated, *Type of Pronoun* (null pronoun versus overt pronoun), and *Pronoun Interpretation* (reference to the subject versus reference to the object), resulting in four different conditions.

Each sentence consisted of an SVO-main clause introducing two same-gender referents, one in subject and one in object position, followed by a subordinate clause containing either a NS or an OS in subject position, whose reference was potentially ambiguous between the subject and the object constituent in the main clause (see (14)). The stimuli were adapted in Spanish from the stimuli in Greek and Italian used in Torregrossa et al. (2020) – see (15) for Italian and (16) for Greek. Crucially, the sentences were kept as ambiguous as possible, in order to prevent the action described in the subordinate clause from being prototypically associated with one of the two referents. This was done to neutralise or at least minimise the effects of world knowledge on reference assignment.

(14) *El doctor pagó al arquitecto mientras* Ø/él *cerraba la cartera*.
(15) *Il dottore pagò l'architetto mentre* Ø/él *chiudeva la cartella*.
(16) *O giatros plirose ton architektona, eno* Ø/aftos *ekleine to fakelo*.
'The doctor paid the architect, while *Ø/he* was closing the folder.'

To manipulate *Pronoun Interpretation* (reference to the subject vs. object), each sentence was followed by a question asking how likely it was that the action expressed by the verb in the subordinate clause was being performed by the subject or the object of the main clause. The subject in the question would vary between the subject and object of the main clause of the sentence, as seen in (17a) for Spanish, (17b) for Italian and (17c) for Greek.

(17) a. *¿Cómo de probable es que fuera {el doctor/el arquitecto} el que cerraba la cartera?*

b. *Quanto probabile pensi che fosse {il dottore/l'architetto} a chiudere la cartella?*
c. *Poso pithano einai oti {o giatros/o architektonas} ekleine to fakelo?*
'How likely do you think it is that it was {the doctor/the architect} that closed the folder?'

Participants had to answer this question using a five-point Likert scale, where 1 indicated that it was not likely at all (that the entity suggested was the one that performed the action expressed in the subordinate clause), while 5 indicated that it was very likely.

The experimental material included 30 items appearing in four different versions that differed with respect to *Type of Pronoun* (null vs. overt) and target question (i.e., *Pronoun Interpretation*, referring to either the subject or the object antecedent). Following a Latin Square Design, four lists were created, each containing 30 critical sentences and 15 fillers.

Fillers were created by manipulating the type of referring expression (a full DP instead of a NS or OS in the subordinate clause), the gender of the pronoun in the subordinate clause together with the gender of one of the two antecedents (e.g., a female character used as an object, followed by a gender-matched overt pronoun), the type of subordinate clause (e.g., a temporal clause indicating precedence in time instead of simultaneity) and the linear order between the main and the subordinate clause (Torregrossa et al. 2020 for a similar methodology).

(18) *Antes de que el jefe de estación parase a la ladrona, ella tiró la cartera que había robado. ¿Cómo de probable es que fuera el jefe de estación el que tirase la cartera?*
'Before the station master stopped the (female) thief, she got rid of the wallet that she had stolen. How likely do you think it is that it was the female thief who got rid of the wallet?'

Some sentences that are used in a study by Escandell-Vidal (2023) were also used as fillers:

(19) *Ana dice: "Silvia está muy joven y muy guapa."*
¿Cómo de probable es que Ana haya visto a Silvia?
'Ana says: "Silvia looks very young and pretty."
How likely is it that Ana has seen Silvia?'

Each participant was assigned only one experimental list. 25 participants completed List 1, 25 List 2, 24 List 3 and 24 List 4. Before carrying out the experiment, participants were asked to read the following instructions in Spanish (the same as the Italian and Greek experiments from Torregrossa *et al.* 2020): "The following questionnaire consists in reading and interpreting some sentences. Specifically, you will read a sentence that mentions two characters, A and B (for example, "A greets B [...]") and a sentence that acts as a continuation and describes an action performed by only one of the two characters (for example, "[...] while A/B runs"). After reading the two sentences, you will be asked how likely you think it is that character A or B performed the action described in the continuation. Remember that 1 indicates a low likelihood and 5 indicates a high likelihood."

3.2.3. Results

3.2.3.1. Null subject pronouns in Italian, Greek and Spanish

Results from this experiment were analysed in conjunction with the results from Torregrossa et al. (2020). Figure 1 reports the means and standard errors (+/- 1.5) for 1–5 Likert-scale associated with NSs referring to a subject antecedent as opposed to an object antecedent across the three languages, Italian, Greek, and Spanish. Italian speakers accept the interpretation of NSs as referring to a subject antecedent to the greatest extent, followed by Greek speakers and Spanish speakers, respectively (mean for Italian: 3.87, SD: 1.16; mean for Greek: 3.55; SD: 1.36; mean for Spanish: 3.30, SD: 1.53). By contrast, Italian accepts the interpretation of a NS as referring to an object antecedent to the lowest extent, followed by Greek-speakers and Spanish-speakers, respectively (mean for Italian: 2.37, SD: 1.23; mean for Greek: 2.64; SD: 1.39; mean for Spanish: 3.23, SD: 1.46).

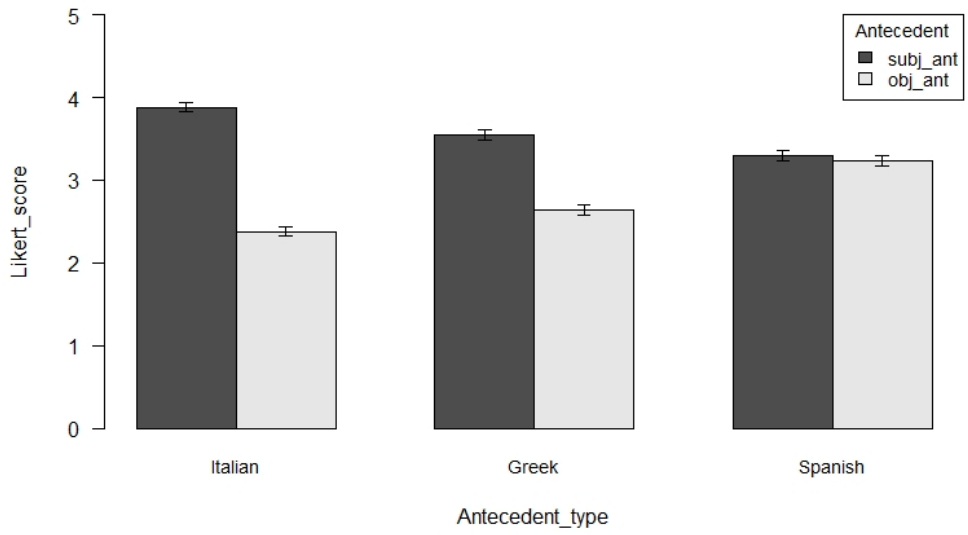


Figure 1. Means (bar plots) and standard errors (+/- 1.5) for Likert-scale associated with null subjects as referring to a subject or object antecedent in Italian, Greek, and Spanish.

R (R Core Team, 2012) and lme4 (Bates, Maechler and Bolker 2012) were used to perform a linear mixed effects (LME) analysis, considering all Likert scores associated with NSs as dependent variable. As fixed effects, *Pronoun Interpretation* (reference to the subject vs. reference to the object) and *Language* (Greek, Italian and Spanish) were used, as well as their interaction. Random slopes were specified for the effects of *Pronoun Interpretation* by participant (*id*). The Likert-scores associated with reference to the subject in Italian were chosen as the reference level, because Italian is the language that most clearly uses NSs to refer to subject antecedents (see section 1.1). The LME analysis revealed a significant lower-order effect of *Pronoun Interpretation*, indicating that in Italian, participants tend to assign lower scores to NSs referring back to object antecedents as opposed to subject antecedents, as reflected by the negative estimate (table 1). A significant lower-order effect of *Language* was also found, for both Greek and Spanish, showing that participants tend to assign lower scores to NSs referring to subject antecedents in both languages, as revealed by the fact that in both cases, the estimate is negative. Finally, a significant interaction between *Pronoun Interpretation* and *Language* was also found in both languages. This suggests that the difference between Likert-scores related to NSs referring back to a subject antecedent and NSs referring back to an object antecedent is less marked in both Greek and

Spanish as opposed to Italian. This interpretation is based on the observation of a positive estimate.

Emmeans in R (Lenth 2020) was used to compute pairwise comparisons. The analysis showed that whereas for Greek the Likert scores associated with NSs referring to a subject antecedent differ from the ones associated with an object antecedent (β = .91, t = 5.36, p < .001), this is not the case for Spanish (β = .08, t = .50, p = .99). Furthermore, the Likert scores associated with NSs referring to an object antecedent for Spanish differ significantly from the ones for Italian (β = -.83, t = -6.40, p < .001) and Greek (β = -.58, t = -4.42, p < .001). By contrast, the *emmeans* analysis revealed no difference between Greek and Italian in the Likert scores associated with NSs referring to an object antecedent (β = -.26, t = -1.90, p = .41).

Fixed effects	*Estimate*	*SE*	*t*	*p*
Intercept	3.88	0.10	39.15	<.001***
Pronoun Interpretation (object)	-1.50	0.17	-8.80	<.001***
Language (Greek)	-0.33	0.14	-2.33	.02
Language (Spanish)	-0.59	0.13	-4.36	<.001***
Pronoun Interpretation (object) × Language (Greek)	0.58	0.24	2.43	.02
Pronoun Interpretation (object) × Language (Spanish)	1.42	0.23	6.14	<.001***

Table 1. Parameters of the LME analysis concerning the Likert-scale associated with null subjects referring to a subject or object antecedent in Italian, Greek, and Spanish.

3.2.3.2. Overt subject pronouns in Italian, Greek, and Spanish

Figure 2 reports the means and standard errors (+/- 1.5) for Likert scores associated with OSs referring to a subject antecedent as opposed to an object antecedent across the three languages. Italian-speakers accept the interpretation of OSs as referring to a subject antecedent to the lowest extent, followed by Greek-speakers and Spanish-

speakers, respectively (mean for Italian: 1.97; SD: 1.18; mean for Greek: 2.23; SD: 1.26; mean for Spanish: 3.02, SD: 1.55). By contrast, Italian accepts the interpretation of an overt pronoun as referring to an object antecedent to the greatest extent, followed by Greek speakers and Spanish speakers, respectively (Mean in Italian: 4.09, SD: 1.15; Mean in Greek: 3.68; SD: 1.32; Mean in Spanish: 3.41, SD: 1.51).

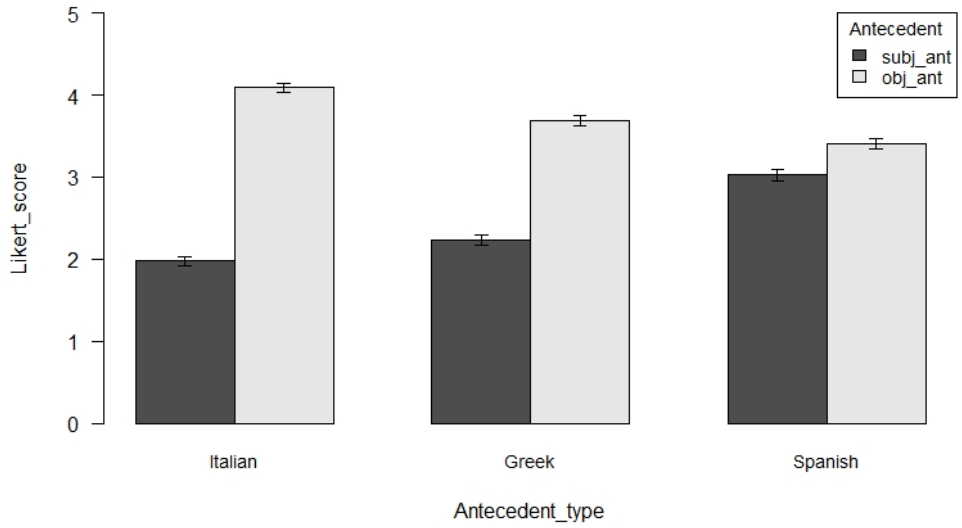


Figure 2. Means (bar plots) and standard errors (+/- 1.5) for Likert-scale associated with overt subject pronouns as referring to a subject or object antecedent in Italian, Greek, and Spanish.

An additional LME analysis was performed, considering the Likert scores associated with OSs as the dependent variable. As fixed effects, *Pronoun Interpretation* (reference to the subject vs. reference to the object) and *Language* (Greek, Italian and Spanish) were used, as well as their interaction. Random slopes were specified for the effects of *Pronoun Interpretation* by participant (ID). In line with what was done in the previous analysis (section 3.2.3.1), the Likert scores associated with reference to the subject for Italian were chosen as the reference level. The LME analysis revealed a significant lower-order effect of *Pronoun Interpretation*, indicating that for Italian, participants tend to assign higher scores to overt subject pronouns referring to an object antecedent as opposed to a subject antecedent, as reflected by the positive estimate (table 2). A significant lower-order effect of *Language* was found, only in association with Spanish, showing that participants tend to assign higher scores to overt subject pronouns referring to subject antecedents, as revealed by the fact that the

estimate is positive. Finally, a significant interaction between *Pronoun Interpretation* and *Language* was also found, which holds for both Greek and Spanish. This suggests that the difference between Likert scores related to overt subject pronouns referring to a subject antecedent, and overt subject pronouns referring to an object antecedent is less marked in both Greek and Spanish as opposed to Italian. This interpretation is based on the observation that the estimate is negative.

As in the case of NSs, *emmeans* in R was used to compute pairwise comparisons. The analysis shows that whereas for Greek the Likert scores associated with NSs referring to a subject antecedent differ from the ones associated with an object antecedent (β = -1.45, t = -7.65, p < .001), this is not the case for Spanish (β = -.37, t = -2.13, p = .28). Furthermore, the Likert scores associated with overt subject pronouns referring to a subject antecedent in Spanish differ significantly from the ones in Italian (β = -1.04, t = -7.53, p < .001) and Greek (β = -.79, t = -5.70, p < .001). By contrast, the *emmeans* analysis revealed no difference between Greek and Italian in the Likert scores associated with overt subject pronouns referring to a subject antecedent (β = -.25, t = -1.76, p = .50).

Fixed effects	*Estimate*	*SE*	*t*	*p*
Intercept	1.98	0.10	19.54	<.001***
Pronoun interpretation (object)	2.12	0.19	11.18	<.001***
Language (Greek)	0.25	0.14	1.76	.08
Language (Spanish)	1.04	0.14	7.53	<.001***
Pronoun Interpretation (object) × Language (Greek)	-0.67	0.27	-2.49	.01*
Pronoun Interpretation (object) × Language (Spanish)	-1.75	0.26	-6.77	<.001***

Table 2. Parameters of the LME analysis concerning the Likert-scale associated with overt subject pronouns referring back to a subject or object antecedent in Italian, Greek, and Spanish.

3.2.4. Discussion

Several studies on the use of referring expressions in discourse assume that the morphosyntactic form of a referring expression encodes the prominence of its antecedent (see Ariel 1990 as a main reference). Based on this theory, referring expressions have a different orientation (e.g., reference to the subject vs. reference to the object) depending on their morphosyntactic forms. For example, referring expressions which are not realized phonologically (like null pronouns) may refer to antecedents in subject position, while phonologically realized referring expressions (like overt pronouns) preferably refer to antecedents in object position. Crucially, this should apply to all languages alike, at least for all those that exhibit the distinction between null and overt subject pronouns: each form should be assigned a different discourse functions (i.e., reference to a subject or an object antecedent, respectively). However, the results of this experiment reveal that the extent to which NSs and OSs refer to a subject or an object antecedent varies across Italian, Greek and Spanish.

RQ1.2: Does the type of anaphoric expression play a role in reference assignment?

Regarding RQ1.2, statistical analysis revealed that Spanish does not significantly differentiate between a null and overt pronoun when assigning an antecedent, particularly not to the extent seen in Greek or, of course, Italian. This result is consistent with the hypothesis presented in the overview of section 3.2, and needs to be analysed by comparing the results with our other NSLs.

RQ1.1: What are the differences and similarities between reference assignment in Spanish, Greek, and Italian?

Regarding RQ1.1, Italian shows the clearest division of labour between null and overt subject pronouns. Among all participants, Italian-speakers are most likely to accept a NS as referring to a subject antecedent and an OS pronoun as referring to an object antecedent. Incidentally, it should be noted that the mean associated with the Likert scores concerning reference of an overt subject pronoun to an object antecedent is the highest one (see Section 3.2.3.2). Crucially, the behaviour exhibited by Italian speakers was expected under the assumption that word order is an important cue to the interpretation of referring expressions. For example, subject constituents are

hierarchically high in sentence structure and, as a result, they are most likely to be picked by a null pronoun in later discourse (see section 3.2).

Greek also features a clear division of labour between null and overt subject pronouns. Greek-speakers are more likely to accept a NS as referring to a subject antecedent than as referring to an object antecedent, and an OS as referring to an object antecedent rather than as referring to a subject antecedent. However, the significant interactions between *Pronoun Interpretation* and *Language* shown in both table 1 and 2 (for null and overt pronouns, respectively) reveal that in Greek, the difference between the two discourse functions (i.e., reference to the subject vs. to the object) is less marked than the one shown in Italian. The same result emerged from the study by Torregrossa et al. (2020), although in the present study the data have been modelled differently by considering the random effects structure (see section 3.2.3). In line with our expectations, the observation of a smaller difference between the two interpretations (reference to the subject versus reference to the object) in Greek may be related to the fact that word order in that language is, as a cue to the interpretation of null and overt pronouns, not as important as it is in Italian, which has been traced back to the availability of VSO in broad focus contexts in Greek (vs. Italian).

The data concerning Spanish constitute the original empirical contribution of this dissertation, for which the experimental task carried out in Torregrossa et al. (2020) for Italian and Greek was adapted. My findings show that Spanish is the language that most deviates from a clear division of labour between NSs and OSs. Crucially, Spanish-speakers seem to accept null pronouns referring to a subject antecedent and an object antecedent to the same extent. The same holds true for overt subject pronouns. Furthermore, the Likert scores associated with the interpretation of null and overt pronouns in both conditions (reference to the subject vs. to the object) differ significantly from the respective conditions in Italian and Greek. This result complies with the idea that in Spanish, word order is not as reliable a cue for the interpretation of null or overt pronouns as it is in Italian, due to the availability of VSO (as discussed above for Greek). Furthermore, Spanish DOM-marked object constituents are syntactically more prominent than non-marked ones, because they move to a higher position in sentence structure than the canonical object position (see section 3.1). Since in Spanish the difference between subject and object constituents in terms of hierarchical height is not as marked as it is in the other two languages, both null and overt subject pronouns are used to refer to them.

As previously mentioned, the proposal centred on Torregrossa et al.'s (2020) HHP follows a syntactic approach, but also advocates for a multi-factorial perspective: by considering other elements, such as semantic and discourse-related factors, as well as information structure or pragmatics, we may be able to cover all the necessary ground in order to understand how anaphora resolution works in each language. In the upcoming section, I will argue in favour of such a multi-factorial perspective as well, adding for the first time a discourse-based view to Spanish anaphora interpretation and production.

3.3. Discourse and coherence relations in Spanish

In chapter 2 we reviewed syntactic accounts as well as more pragmatics-driven ones. Discursive features such as topichood, coherence relations or implicit causality have proved to be crucial for the interpretation of null and overt pronouns in the previously mentioned studies, namely Kehler and Rodhe (2013) for English, Ueno and Kehler (2016) for Japanese, and Mayol (2018) for Catalan.

My analysis of the results of the first experiment in the series comprising this study shows that syntax might actually not be such a strong and defining cue in Spanish for pronoun interpretation as it is in other similar languages like Greek or Italian. Because of this, one question that arises is: what are the other factors that determine pronoun interpretation in Spanish? We have seen that Spanish does not show a clear preference between null and overt subject pronouns when it comes to referring to an antecedent in subject or object position. However, in this first experiment, the discourse relation between clauses was kept constant, since only *when*-clauses were used (for more on the use of *mientras* 'while' and other time adverbs in Spanish see Martín-Villena 2023). Therefore, it is worth investigating whether the interpretation of null versus overt subject pronouns changes as a result of other factors, particularly a conceptual, verb-induced bias, on the one hand, and the differences in discourse relations on the other.

Following the pragmatics-driven accounts that we have previously reviewed, the aim of experiment 2 is therefore to understand how discourse properties shape the interpretation and production of null and overt subjects in Spanish.

The main research question that will be tested is whether speakers' sensitivity to the type of referring expression in antecedent choice (reference to subject vs. object) is modulated by factors such as implicit causality, discourse relations and topichood. But before we proceed, a brief summary of the main ideas in previous discourse-oriented approaches is in order.

3.3.1. Previous discourse-oriented approaches

Many approaches to the interpretation of null and overt pronouns have been made in discourse-oriented terms. One of them, as already discussed, is Kehler and Rodhe (2013), which tried to reconcile two apparently opposed theories, a coherence-driven proposal (Hobbs 1979) and a centering-driven approach (Grosz et al. 1995). The authors' goal was twofold: first, to demonstrate that pronoun interpretation is affected by the expectations that comprehenders have about both what coherence relationships will ensure, and which entities will be mentioned in what follows (which are conditioned by those coherence relationships as well); and second, to reveal the crucial role played by the topichood status of potential referents.

Ueno and Kehler (2016) tested transfer-of-possession and IC-verbs (like *admire* and *amaze*, as we saw in 2.4.1) passage completion tasks in Japanese. Their results showed that, although both null and overt pronouns were mostly subject biased, null pronouns were indeed sensitive to contextual biases like those related to IC-verbs, and that topic-marking did have some effect on reference in certain contexts.

Mayol (2018) ran some discourse-completion experiments to explore the interpretation and production of both null and overt pronouns in Catalan, following Kehler and Rodhe's account. Her results showed that the production of null pronouns was affected mainly by grammatical factors, since they were more likely to refer to subjects, but that their interpretation was influenced by rhetorical relations. Overt pronouns, on the other hand, presented a strong interpretation bias towards the object, but were not the preferred form to refer to the object.

These results, especially Ueno and Kehler's (2016) and Mayol (2018), are particularly relevant to our study for various reasons. Mayol's account for Catalan is relevant both because Catalan and Spanish are closely related languages and because the interpretation in Mayol's experiments proved to be influenced by coherence

relations. This could explain why our own interpretation results for Spanish differ from those we find for Italian and Greek. The findings for Japanese (Ueno and Kehler 2016), on the other hand, are relevant to us because significantly both null and overt pronouns were mostly subject-biased, a pattern like that which emerges from our results for Spanish. This suggests that Spanish is also sensitive to contextual biases.

In light of the results of these other studies, it seems reasonable to test how these discourse and contextual factors, such as coherence relations, implicit causality, and topichood interact in Spanish to shape the interpretation of anaphoric pronouns, given that the results could give us a better understanding of what happens underneath the grammatical surface of reference.

3.4. Experiment 2: Interpretation and production task

Overview

The main hypothesis of this second experiment is that discourse factors are relevant to define the underlying decisions made by both hearers and speakers when they choose either a null or an overt pronoun.

The research questions for this experiment are as follows:

- RQ 1.2: Does the type of anaphoric expression play a role in reference assignment?
- RQ 1.3: Does verb bias play a role in reference assignment?
- RQ 1.4: Do discourse relations play a role in reference assignment?
- RQ 1.5: Does topichood play a role in reference assignment?

RQ1.2 reiterates the research question posed for the first experiment described in this chapter, the offline interpretation task. In the results of experiment 1, it was observed that Spanish does not really differentiate between null and overt subject pronouns when it comes to reference to an antecedent in subject or object position. This experiment, however, departs from the previous one in two significant respects; first, it presents a different set of sentences with a wider set of possibly interfering elements, as will be seen when the materials are presented in sections 3.4.2. and 3.4.3.; and

second, this experiment also includes the production element, which perhaps offers more space for personal interpretation. The prediction here is that given the discourse-based and semantic features that have been added to the task, the preference for null and overt pronouns in the subordinate clause to take either the subject or the object of the main clause as antecedent could be slightly similar to what is "canonically" expected, that is, that null pronouns pick the subject as their antecedent, while overt pronouns select the object. The reasons for this prediction, however, are solidly intertwined with the hypotheses that address the other three research questions (RQ1.3, RQ1.4, RQ1.5).

RQ1.3 introduces one of the novel aspects of this experiment, which is the use of implicit causality verbs. The simple assumption for this RQ is that subject-biased verbs will preferably be followed by sentence continuations about the subject antecedent and object-biased verbs will prefer sentence continuations about the object antecedent. It is being assumed (RQ1.2) that an interaction between the interpretation of null subjects as referring to a subject or an object constituent and the type of bias associated with the verb is to be found. Let us consider, for example, Italian, in which null and overt subject pronouns have a relatively rigid interpretation (see Section 3.2). If in this language, a subject-biased verb sentence is followed by a sentence starting with an overt pronoun, the overt pronoun should refer to the object antecedent, as syntactic reasons would "win" over semantic ones. For Spanish, however, the verb bias is expected to play a more significant role in the continuation sentences and yield, for example, an interpretation of the overt subject as referring to the subject antecedent. The weight of verb bias depends also, and is again intertwined, with the discursive feature of RQ1.4.

In RQ1.4, the coherence relation dimension is added to the hypothesis. Here the plot thickens, as the relations of explanation, elaboration and result are added and can interact with the linguistic properties identified in RQ1.2 and RQ1.3. The prediction for this factor is that with the rhetorical relation "explanation", reference to the subject or to the object will depend on the verb-bias: with subject-biased verbs, we will observe more reference to the subject antecedent, and with object-biased verbs to the object antecedent. Thus, for instance, with a verb like *impress*, an explanation as to why the subject impressed the object is expected, and with a verb like *praise*, an explanation as to what the object did do to be praised by the subject. Elaborations are expected to appear more related to the subject of the first sentence, because they will offer further

information about the event taking place in the sentence. As for results, they are expected to appear more related to the object of the first sentence, as they are the result of the event taking place in the sentence.

In the last research question, RQ1.5, the concept of topichood is introduced. This element yields less predictable results, as the hypothesis is that the previously mentioned elements could play a major role in the decision of antecedent selection and type of referential expression. The influence of topichood is to be expected when the topic introduced is the same as the referent biased by the implicit causality verb.

3.4.1. Participants

Moving forward to the participants, a total of 54 monolingual Spanish-speaking adults took part in the study (mean age: 30,8; range: 18-72). Before participating in the study, each participant was asked to complete a short questionnaire to obtain information about their background, knowledge of other languages or dialects, and level of proficiency in those languages. In this case 69,8% of participants were speakers of the Central variety of European Spanish (Madrid, Castilla-La Mancha, Castilla y León), while 20,7% were speakers of the Levante variety (Cataluña, Comunidad Valenciana, Islas Baleares); the remaining 9,4% were Spanish-speakers from other areas.

3.4.2. Materials and procedure

The goal of this experiment was to explore the respective roles of three different discourse factors: IC-verbs, both subject-biased and object-biased, topichood (or the lack thereof) and coherence relations.

The experiment consisted of an offline sentence continuation task where 48 sentences (32 prompt sentences and 16 fillers) had to be completed. Four versions of the task were created: in each version, a different order of the elements for continuation was applied. The prompt sentences consisted of a SVO clause introducing two same-gender referents, half of the sentences having proper names, the other half having full lexical DPs, one in subject and the other in object position. Following the prompt sentence, the participant saw a space where they were to write a second

sentence that would logically proceed from the first. Here there were four possibilities. In three cases, the blank was preceded by a prompt consisting of one or two words by which the participant had to begin the sentence. These prompts involved either a null subject, an overt pronoun, or a clitic. In the fourth case, the participant merely saw a blank line, which they could complete in any way they wished. The four possibilities are illustrated in (20), where (20a) is the blank condition, (20b) the null subject condition, (20c) the over pronoun condition, and (20)d the clitic condition. For these four different conditions, four lists of items were created using a Latin-square design.

(20) a. *Juan ha impresionado a Carlos.* _____
b. *Juan ha impresionado a Carlos. Ha* _____
c. *Juan ha impresionado a Carlos. Él ha* _____
d. *Juan ha impresionado a Carlos. Le ha* _____
'John impressed Charles. …'

In order to see how the (absence of) antecedent bias (as associated with null or overt subject pronouns) interacts with discourse relations, every prompt sentence used an implicit causality verb which, as has been mentioned, is usually associated with the hearer's expectations of an explanation. Implicit causality verbs are either subject- or object-biased, as was previously explained (see chapter 2). Half of the sentences had subject-biased verbs, like *impresionar* ('to impress'), while the other half had object-biased verbs, like *alabar* ('to praise').

In order to account for possible sensitivity to topichood (RQ4), a second model of the experiment was created, with an added complex discourse dimension. Like in Model 1, sentences consisted of a SVO clause introducing two same-gender referents–again, half of the sentences with proper names and half with full lexical DPs–one in subject and the other in object position. Participants were given the same 48 sentences (32 target and 16 fillers) to complete, but in this case these sentences were preceded by a sentence which established a referent as discourse topic, as shown in (21).

(21) *Juan es adolescente y le encanta ir a fiestas. Muchos adolescentes van a fiestas en discotecas.*

'Juan is a teenager and he likes going to parties. Many teenagers go to parties at clubs.'

The established discourse topic would change (i.e., either the subject or the object of the main sentence could be the topic). Out of the eight versions created, four had only the blank and overt conditions (22a, 22b), while the other four had only the null and clitic conditions (23a, 23b).

(22) a. *Silvia es médico y suele tener guardias. Muchos médicos tienen guardias a menudo. Julia ha preocupado a Silvia.* _____
'Silvia is a doctor and is often on call. Many doctors are often on call. Julia has worried Silvia.'
b. *Juan es adolescente y le encanta ir a fiestas. Muchos adolescentes van a fiestas en discotecas. Juan ha impresionado a Carlos. Él*_____
'Juan is a teenager and loves to go to parties. Many teenagers go to parties at clubs. Juan has made an impression on Carlos. He _____'

(23) a. *Julia es médico y suele tener guardias. Muchos médicos tienen guardias a menudo. Julia ha preocupado a Silvia. Ha*_____
b. *Carlos es adolescente y le encanta ir a fiestas. Muchos adolescentes van a fiestas en discotecas. Juan ha impresionado a Carlos. Le*_____

In what follows, the analysis of the results of the experiment will be explained, followed by the statistical results.

3.4.3. Analysis

In order to analyse the answers provided by the participants, the elements listed in the research questions were considered: firstly, the *Verb type*, that is, whether it was subject- or object-biased, and–only for Model 2–whether the discourse topic introduced was the subject or object of the prompt sentence (*Topic*); and secondly, the subject of the continuation sentence *Type* (null, overt, full) and its *Antecedent*. Finally, the previously mentioned source-biased and goal-biased *Coherence Relations* based

on Ueno and Kehler (2016), which are as follows, exemplified for English in (24), were analysed.

ELABORATION: continuations that provide additional details about the eventuality (event or state) provided or described in the context (24a)
EXPLANATION: continuations that describe the cause of the eventuality described in the context sentence (24b)
OCCASION: continuations that describe an eventuality that initiates from the end state of the eventuality described in the context sentence (24c)
RESULT: continuations that provide the effect or result of the eventuality described in the context sentence (24d)

(24) John handed the book to Bob.
a. He did so slowly and carefully.
b. He no longer had any use for it.
c. He began reading it.
d. He thanked him for the gift.

(Ueno and Kehler 2016)

ID	STIMULI	RESPONSE	VERB	COHERENCE	TYPE	ANTEC.	TOPIC
9	*El adolescente ha respetado al anciano. Ha…* 'The teenager respected the elderly man. *Pro* …'	*Ha cedido su asiento en el autobús.* 'He gave him his seat on the bus.'	OBJ	ELABORATION	NULL	SUBJ	NO
20	*Manuel ha pedido perdón a Arturo.*	*Él ha olvidado llevarle las partituras.*	SUBJ	EXPLANATION	OVERT	SUBJ	SUBJ

	'Manuel has apologised to Arturo.'	'He forgot to bring him the sheet music.'					

Table 3. Example of coding for experiments 1 and 2.

Result and *occasion* discourse relations were merged in a single group labelled *result*, because the difference between the two conditions was negligible and the number of conditions in the analysis was already quite high. Examples of sentence continuations provided by the participants can be seen in (25).

(25) a. *Julia ha preocupado a Silvia. Ha estado triste todos estos días.*
'Julia has worried Silvia. (She) has been sad for days.'
b. *El atleta ha ganado al principiante. Él ha corrido más rápido.*
'The athlete beat the beginner. He ran faster.'
c. *Inés ha fascinado a Marta. ___No esperaba aquella sorpresa.*
'Inés has delighted Marta. (She) didn't expect that surprise.'
d. *Álvaro ha denunciado a Alex. Le ha reclamado sus diez mil euros.*
'Álvaro has reported Alex. (He) demanded of him his ten thousand euros.'
e. *El entrenador ha culpado al jugador. ___No había seguido bien sus indicaciones durante el partido.*
'The coach blamed the player. (He) didn't follow his instructions well during the game.'

In (25a), after a subject-biased verb and the 'null' condition, the antecedent chosen was the subject, just as in (25b), where there is a subject-biased verb and the 'overt' condition; the coherence relation established in both sentences is 'explanation'. In (25c), on the other hand, a null pronoun referring to the object antecedent is chosen after a subject-biased verb and the 'blank' condition; the coherence relation in this sentence is also 'explanation'. (25d) moves to an object-biased verb with the 'clitic' condition, where the chosen antecedent is the subject and a coherence relation of 'elaboration'. Finally, in (25e), a null pronoun referring to the object antecedent is chosen after an object-biased verb and the 'blank' condition, also with a coherence relation of 'explanation'.

As noted above, the aim of this experiment was to test speakers' sensitivity to lexical verb bias, coherence relations. and topichood. In what follows, the statistical results for these research questions are presented.

3.4.4. Results

The statistical analysis of the results was carried out separating the three forced conditions (null, overt, or clitic, henceforth -NOC-) on the one hand from the 'blank' condition on the other. For this analysis, in the clitic condition the referent considered is that of the subject of the verb in the continuation sentence. This separation will give us a better understanding of choices in reference interpretation and production for NOC and of free production for the 'blank' condition.

3.4.4.1. Results in forced conditions (NOC)

RQ1.2: Does the type of anaphoric expression play a role in reference assignment?

Figure 3 represents the overall occurrences of null and overt pronouns and full referential expressions (that appear in post-verbal position) referring to either the subject or the object antecedent across the three forced conditions (NOC). It will be seen that 74% of null pronouns referred to subject antecedents, while 51% of overt pronouns referred to object antecedents. With regard to full referential expressions (that appear in post-verbal position), 72% were used to refer to the object antecedent.

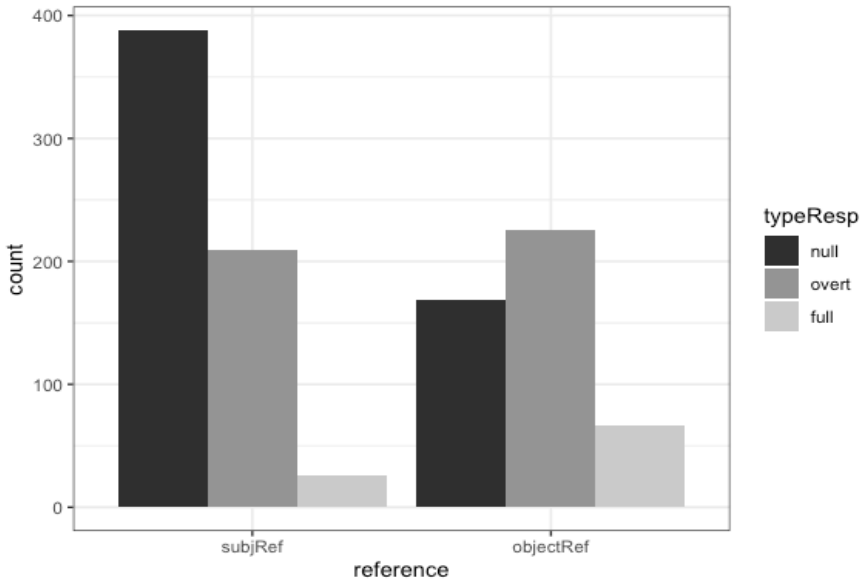


Figure 3. Overall occurrences of null and overt pronouns and full REs referring to either a subject or object antecedent.

For the statistical analysis, a LME model was conducted using R. The model, created for the response variable *Reference* (reference to the subject antecedent vs. reference to the object antecedent), included a random intercept for each participant (*id*) and was fitted as a function of the dependent variable *Type* (indicating the type of referential expression), a categorical variable with three levels (null, overt, and full).

The results in table 4 indicate that there is a significant effect of the referential expression on reference across the three forced conditions. Compared to null pronouns referring to subject antecedents ($\beta = -0.91$, $t = -7.43$, $p < 0.001$), overt pronouns are the preferred option for referring to an object antecedent ($\beta = 0.98$, $t = 6.57$, $p < 0.001$), and the same applies to full referential expressions ($\beta = 2.05$, $t = 7.23$, $p < 0.001$).

Fixed effects	*Estimate*	*SE*	*t*	*p*
(Intercept)	-0.91	0.12	-7.43	<0.001***
TypeRE (overt)	0.98	0.15	6.57	<0.001***
TypeRE (full)	2.05	0.28	7.23	<0.001***

Table 4. Parameters of the LME analysis concerning the REs associated with null and overt subject pronouns referring back to a subject or object antecedent.

RQ1.3: Does verb play a role in reference assignment?

Figure 4 represents the overall occurrences of null and overt pronouns and full referential expressions referring to either the subject or the object antecedent across the three forced conditions (null, overt, clitic) depending on the verb bias (subject or object bias). With subject biased verbs, 88% of null pronouns referred to a subject antecedent, and 66% of overt pronouns referred to the subject antecedent. Full referential expressions are more balanced: 46% referred to the subject, while 53% referred to the object. Object biased verbs present a more varied situation. 51% of null pronouns were used to refer to the subject and 48% to refer to the object. Reference to the object antecedent is clearly preferred with overt pronouns (67%) and full referential expressions (87%).

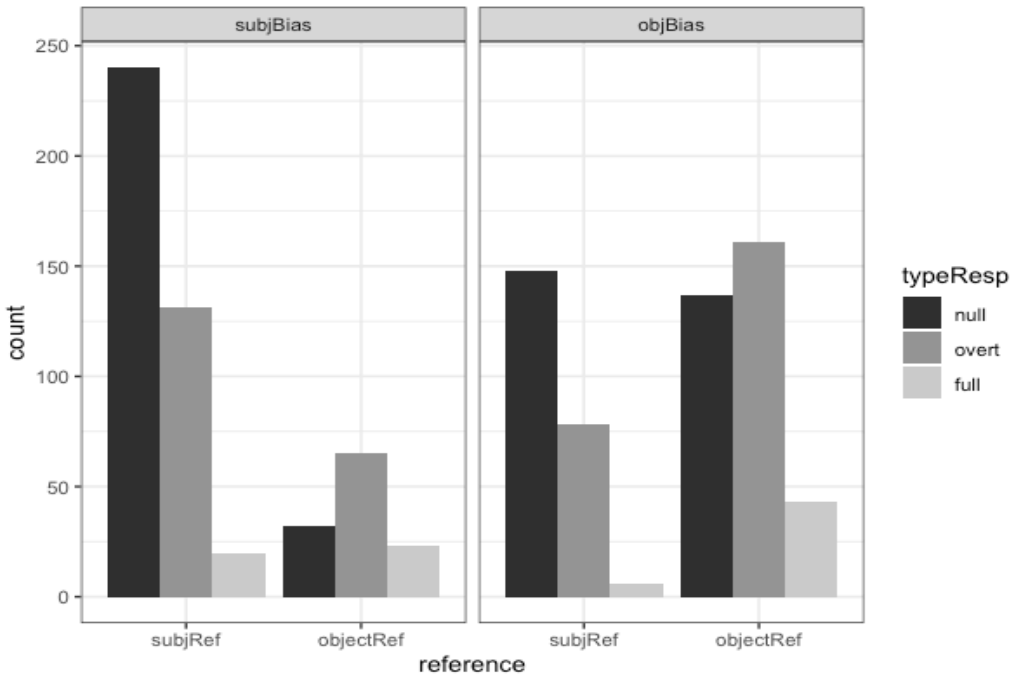


Figure 4. Overall occurrences of null and overt pronouns and full REs referring to either a subject or object antecedent with subject and object biased verbs.

For the statistical analysis, a LME model was conducted using R. The model, created for the response variable *Reference* (reference to the subject antecedent vs. reference to the object antecedent), included a random intercept for each participant (*id*) and was fitted as a function of the dependent variable *Type* (indicating the type of

referential expression), a categorical variable with three levels (null, overt, and full), in interaction with *verb type* (subject bias vs. object bias).

The results in table 5 indicate that there is a significant effect of both the referential expression and the verb bias on reference across the three forced conditions. With subject-bias verbs, null pronouns refer more to subject antecedents ($\beta = -2.18$, $t = -10.07$, $p < 0.001$), while overt pronouns are the preferred option when referring to an object antecedent ($\beta = 1.39$, $t = 5.41$, $p < 0.001$), and the same applies to full referential expressions ($\beta = 2.49$, $t = 6.28$, $p < 0.001$). With object-bias verbs, the difference between null pronouns referring to the subject or the object antecedent decreases significantly ($\beta = 2.04$, $t = 8.82$, $p < 0.001$), while overt pronouns and full REs maintain the same pattern as with subject bias verbs, as shown by the non-significant interactions between type of referring expression and verb-bias.

Fixed effects	*Estimate*	*SE*	*t*	*p*
(Intercept)	-2.18	0.21	-10.07	<0.001***
typeRE (overt)	1.39	0.25	5.41	<0.001***
typeRE (full)	2.49	0.39	6.28	<0.001***
Verb (Object Bias)	2.04	0.23	8.82	<0.001***
typeRE (overt) × Verb (Object Bias)	-0.50	0.31	-1.60	0.10
typeRE (full) × Verb (Object Bias)	0.08	0.59	0.14	0.8

Table 5. Parameters of the LME analysis concerning the REs associated with null and overt subject pronouns referring back to a subject or object antecedent in interaction with the verb bias type.

RQ1.4: Do discourse relations play a role in reference assignment?

Figure 5 represents the overall occurrences of null and overt pronouns and full referential expressions referring to either the subject or the object antecedent across

the three forced conditions (NOC) depending on the discourse relation (explanation, elaboration and result).

For the relation 'explanation', 58% of null pronouns refer to the subject antecedent and 41% refer to the object antecedent; 48% of overt pronouns refer to the subject antecedent and 51% to the object antecedent; and the distinction between the antecedents for full REs is very different: only 23% of full REs refer to subject antecedents and 76% to the object antecedent.

The 'elaboration' discourse relation presents a different situation: there is a clear preference for the subject antecedent, which is referred to with the 94% of null pronoun occurrences (against 5% referring to the object antecedent), and 75% of overt pronoun occurrences (against 25% referring to the object antecedent). 66% of full REs refer to the object antecedent.

Finally, the 'result' relation occurrences are even more varied. While the null pronouns keep showing a clear preference for the subject antecedent (65% against 34% for the object antecedent), there is a massive difference for overt pronouns, with only 7% of them referring to the subject antecedent against 92% referring to the object antecedent. Similarly, only 5% of full REs refer to the subject antecedent, while 94% refer to the object antecedent.

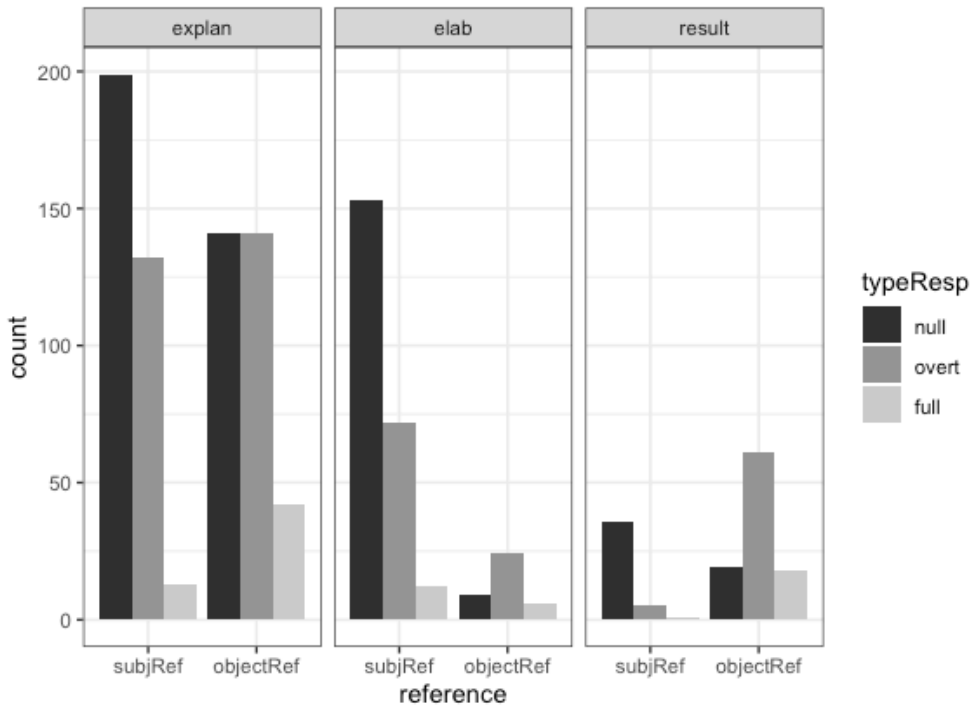


Figure 5. Overall occurrences of null and overt pronouns and full REs referring to either a subject or object antecedent with different coherence relations.

For the statistical analysis, a LME model was conducted using R. The model, created for the response variable *Reference* (reference to the subject antecedent vs. reference to the object antecedent), included a random intercept for each participant (*id*) and was fitted as a function of the dependent variable *Type* (indicating the type of referential expression), a categorical variable with three levels (null, overt, and full), in interaction with *relation* (explanation, elaboration and result).

The results in table 6 indicate that there is a significant effect of both the referential expression and the coherence relation on reference across the three forced conditions. With explanations, null pronouns refer slightly more to subject antecedents than to object antecedents ($\beta = -0.42$, $t = -2.97$, $p < 0.01$); both overt pronouns and full referential expressions are preferred to refer to an object antecedent (($\beta = 0.39$, $t = 2.14$, $p < .01$); $\beta = 1.75$, $t = 4.77$, $p < 0.001$, respectively). With elaborations, there is a significant decrease in the number of null pronouns referring to object antecedents ($\beta = -2.52$, $t = -6.88$, $p < 0.001$), and the same is true of overt pronouns ($\beta = 1.42$, $t = 3.09$, $p < 0.01$). With results, overt pronouns are used significantly more to refer to the object antecedent ($\beta = 1.98$, $t = 1.73$, $p < 0.001$).

Fixed effects	*Estimate*	*SE*	*t*	*p*
(Intercept)	-0.42	0.14	-2.97	<0.01**
typeRE (overt)	0.39	0.18	2.14	<.01*
typeRE (full)	1.75	0.36	4.77	<0.001***
Relation (elaboration)	-2.52	0.36	-6.88	<0.001***
Relation (result)	-0.20	0.32	-0.64	0.51
typeRE (overt) × Relation (elaboration)	1.42	0.46	3.09	<0.01**
typeRE (full) × Relation (elaboration)	0.67	0.71	0.94	0.34

typeRE (overt) × Relation (result)	2.95	0.59	4.94	<0.001***
typeRE (full) × Relation (result)	1.98	1.14	1.73	0.08

Table 6. Parameters of the LME analysis concerning the REs associated with null and overt subject pronouns referring back to a subject or object antecedent in interaction with coherence relations.

RQ1.5: Does topichood play a role in reference assignment?

Figure 6 represents the overall occurrences of null and overt pronouns and full referential expressions referring to either the subject or the object antecedent across the three forced conditions depending on the presence or absence of a topic antecedent.

In the absence of a topic, 73% of null pronouns refer to the subject antecedent, while 59% of overt pronouns refer to the object antecedent. Finally, 73% of the occurrences of full REs refer to the object antecedent. When the subject of the clause is an established topic, 66% of null pronouns refer to the subject antecedent; 44% of overt pronouns referred to the subject antecedent while 55% selected the object antecedent; and full REs referring to the subject antecedent represent only 20%, the remaining 80% corresponding to the object antecedent.

When the object of the clause is an established topic, 65% of null pronouns refer to the subject antecedent; 40% of overt pronouns refer to the subject antecedent and 59% to the object antecedent; and 37% of full REs refer to the subject antecedent and 62% to the object antecedent.

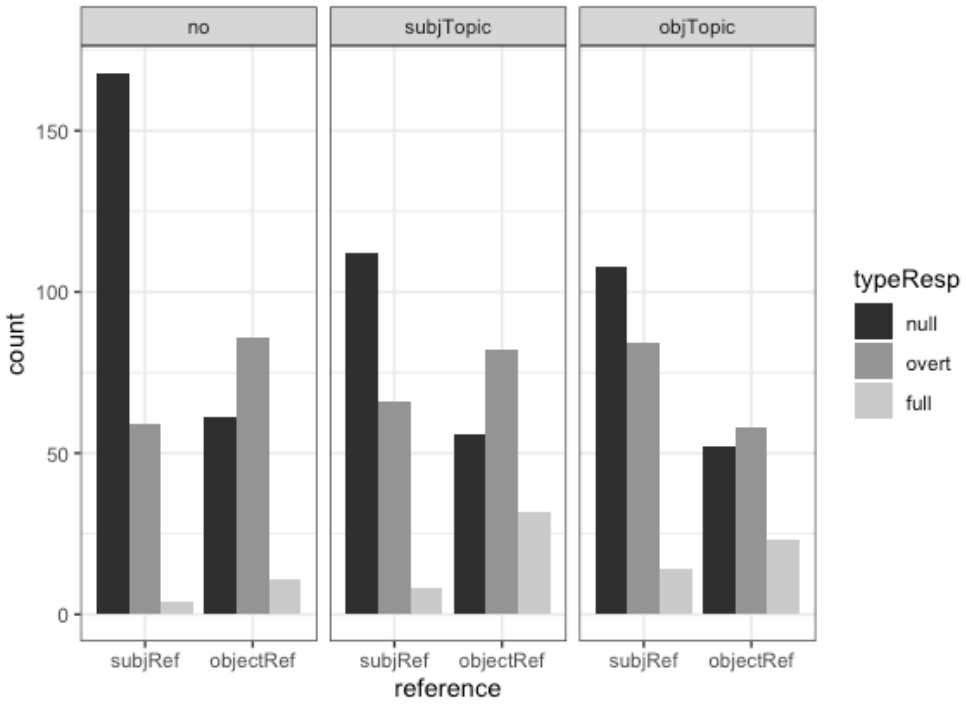


Figure 6. Overall number of occurrences of null and overt pronouns and full REs referring to either a subject or object antecedent with topichood.

For the statistical analysis, a LME model was conducted using R. The model, created for the response variable *Reference* (reference to the subject antecedent vs. reference to the object antecedent), included a random intercept for each participant (*id*) and was fitted as a function of the dependent variable *Type* (indicating the type of referential expression), a categorical variable with three levels (null, overt, and full), in interaction with *topic* (no topic, subject antecedent topic, or object antecedent topic).

The results in table 7 indicate that there is a small effect of topichood on reference across the three forced conditions. With no topic, null pronouns refer more to subject antecedents than to object antecedents ($\beta = -1.12$, $t = -5.48$, $p < 0.001$); overt pronouns are preferred to refer to the object antecedent ($\beta = 1.54$, $t = 6.38$, $p < .001$); and the same applies to full referential expression ($\beta = 2.37$, $t = 3.65$, $p < 0.001$). No significant difference is observed in the other two conditions (subject topic and object topic), except for the decreasing pattern observed in association with overt pronouns used to refer to the object antecedent in object topic contexts ($\beta = -1.23$, $t = -3.44$, $p < 0.001$).

Fixed effects	*Estimate*	*SE*	*t*	*p*
(Intercept)	-1.12	0.20	-5.48	<0.001***
typeRE (overt)	1.54	0.24	6.38	<0.001***
typeRE (full)	2.37	0.64	3.65	<0.001***
Topic (subject)	0.37	0.28	1.32	0.18
Topic (object)	0.33	0.28	1.16	0.24
typeRE (overt) × Topic (subject)	-0.65	0.35	-1.84	0.06
typeRE (full) × Topic (subject)	-0.10	0.79	-0.13	0.89
typeRE (overt) × Topic (object)	-1.23	0.35	-3.44	<0.001***
typeRE (full) × Topic (object)	-0.97	0.76	-1.27	0.20

Table 7. Parameters of the LME analysis concerning the REs associated with null and overt subject pronouns referring back to a subject or object antecedent in interaction with topichood.

Testing interactions between verb bias and discourse relations

Figure 7 represents the reference to either the subject or the object antecedent across the three forced conditions depending on verb type and discourse relation.

With subject bias verbs, 83% of explanations refer to the subject antecedent. 86% of elaborations also refer to the subject antecedent while 73% of results refer to the object antecedent. The situation with object bias verbs is diametrically opposed, as 73% of explanations are found with object antecedents (against 26% with subject antecedents). As for elaborations, 85% refer to the subject antecedent (14% to the object antecedent), and 66% of full REs refer to the object antecedent.

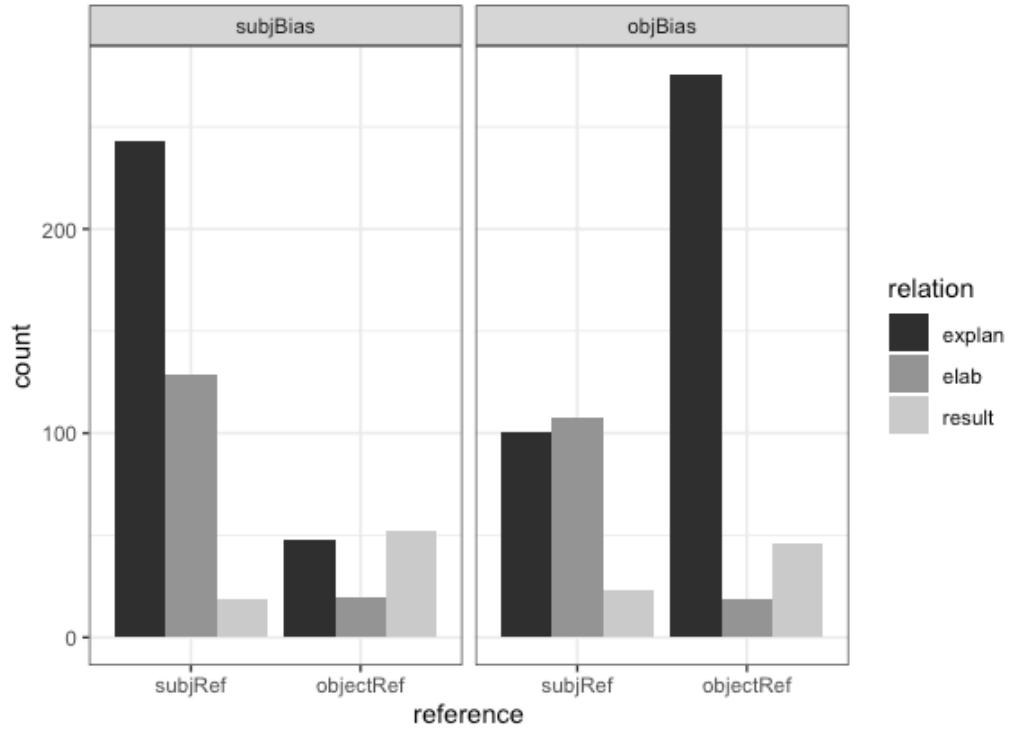


Figure 7. Overall number of occurrences of null and overt pronouns and full REs referring to either a subject or object antecedent with subject and object biased verbs and different coherence relations.

For the statistical analysis, a LME model was conducted using R. The model, created for the response variable *Reference* (reference to the subject antecedent vs. reference to the object antecedent), included a random intercept for each participant (*id*) and was fitted as a function of the dependent variable *verb* (subject or object bias), in interaction with *relation* (explanation, elaboration, result).

Explanations are the preferred relation when referring to a subject antecedent with subject bias verbs ($\beta = -1.85$, $t = -9.26$, $p < 0.001$), and they are also the preferred relation when referring to an object antecedent with object bias verbs ($\beta = 2.82$, $t = 13.28$, $p < 0.001$). Elaborations maintain the same pattern with both subject- and object-bias verbs, but compared to explanations, reference to object with elaborations decreases significantly in object bias contexts ($\beta = -2.56$, $t = -6.17$, $p < 0.001$). Results are preferred when referring to object antecedents ($\beta = 2.95$, $t = 8.62$, $p < 0.001$). However, compared to explanations, reference to object decreases significantly with object-biased verbs, as in the case of elaborations.

Fixed effects	*Estimate*	*SE*	*t*	*p*
(Intercept)	-1.85	0.20	-9.26	<0.001***
Verb (object bias)	2.82	0.21	13.28	<0.001***
Relation (elaboration)	-0.25	0.29	-0.84	0.39
Relation (result)	2.95	0.34	8.62	<0.001***
Verb (object bias) × Relation (elaboration)	-2.56	0.41	-6.17	<0.001***
Verb (object bias) × Relation (result)	-3.13	0.45	-6.95	<0.001***

Table 8. Parameters of the LME analysis concerning the REs associated with null and overt subject pronouns referring back to a subject or object antecedent in interaction with coherence relations and verb bias type.

The overall findings of the NOC condition offer solid evidence of the influence of semantic and discourse factors such as implicit causality and coherence relations on reference and antecedent choice; topichood, however, does not seem to play a fundamental role. In what follows, the results of the blank condition will be analysed.

3.4.5.2. Results in blank condition

The blank condition presents a surprising situation, as can be seen in the raw numbers of referential expressions and their antecedents in table 9 below.

	NULL	OVERT	FULL
SUBJECT	275	0	0
OBJECT	61	0	2

Table 9. Raw numbers of REs and antecedents in blank condition.

As can be seen, there are no occurrences of overt pronouns, and only two occurrences of full REs; null pronouns are used to refer to the subject 81% of the time and 18% of the time to refer to the object. The two occurrences of full nouns both refer to the object with an object bias verb, one in an explanation condition without a topic and another in an explanation condition with a subject topic. As for the breakdown of the null pronoun occurrences, they are set out in table 10.

	Subj bias – No topic			**Object bias – No topic**	
	SubjAnt	ObjAnt		SubjAnt	ObjAnt
Explanation	29	1		8	12
Elaboration	21	1		39	0
Result	5	6		14	1

	Subj bias – Subj topic			**Object bias – Subj topic**	
	SubjAnt	ObjAnt		SubjAnt	ObjAnt
Explanation	16	3		12	12
Elaboration	18	2		23	0
Result	2	1		10	0

	Subj bias – Obj topic			**Object bias – Obj topic**	
	SubjAnt	ObjAnt		SubjAnt	ObjAnt
Explanation	27	1		10	17
Elaboration	18	0		18	1
Result	2	3		3	0

Table 10. Raw numbers of REs and their antecedent with different verb biases, coherence relations and topics.

There is a clear preference for null pronouns to refer to the subject, both with subject and object bias verbs. Regarding discourse relations, elaboration is preferred, followed

by explanation; result occurs only rarely. As for the topic condition, it does not seem to have any effect on the choice of antecedent.

Because (almost) the only referential expressions used are null pronouns, statistical analysis for RQ1.2 and RQ1.3 would seem to be unnecessary. For this reason, let us jump straight to RQ1.4.

RQ1.4: Do discourse relations play a role in reference assignment?

Figure 8 shows the division between reference (to the subject or to the object) and the different kinds of coherence relation. 68% of null pronouns referred to the subject antecedent in explanations, which also elicited the only occurrence of a full RE. The *elaboration* relation displays 95% of the null pronouns referring to the subject antecedent. Finally, the *result* relation elicited 76% of references to a subject antecedent and 23% of references to an object.

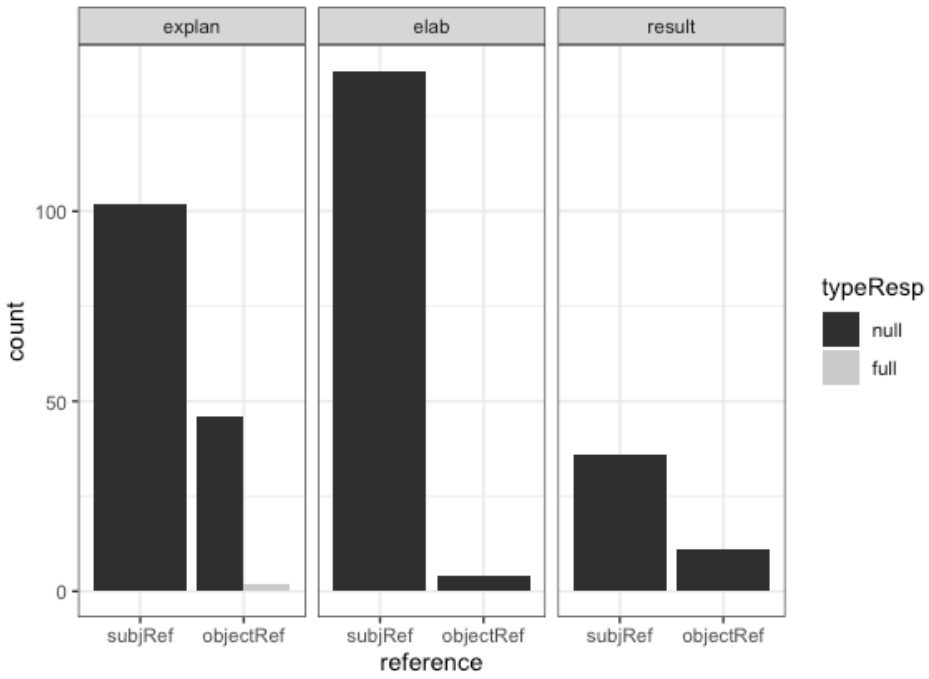


Figure 8. Overall number of occurrences of null and full REs referring to either a subject or object antecedent with coherence relations.

For the statistical analysis, a LME model was conducted using R. The model, created for the response variable *Reference* (reference to the subject antecedent vs. reference to the object antecedent), included a random intercept for each participant (*id*) and

was fitted as a function of the dependent variable *relation* (indicating the type of coherence relation), a categorical variable with three levels (explanation, elaboration and result). The statistically significant result *relation (elaboration)* indicates that the possibilities of referring to the object decrease significantly when the relation is *elaboration* (β = -2.02; *t*= -5.87; *p*= <0.001).

Fixed effects	*Estimate*	*SE*	*t*	*p*
(Intercept)	0.40	0.15	2.68	<0.01**
Relation (elaboration)	-2.02	0.34	-5.87	<0.001***
Relation (result)	0.42	0.38	-1.10	0.26

Table 11. Parameters of the LME analysis concerning the REs referring back to a subject or object antecedent in interaction with coherence relations.

RQ1.5: Does topichood play a role in reference assignment?

Figure 9 shows the division between reference (to the subject or the object) and the presence of a topic antecedent (or its absence). The two full REs occur in the condition with a subject topic and in the condition without a topic. In this condition, 84% of null pronouns refer to the subject. For the subject topic condition, 81% of null pronouns refer to the subject and for the object topic condition, 78% of null pronouns refer to the subject.

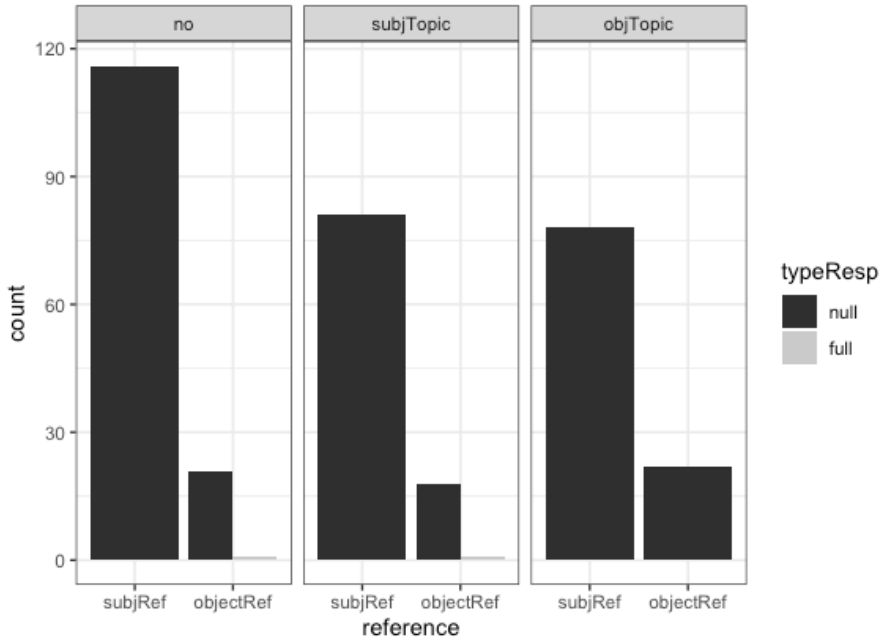


Figure 9. Overall number of occurrences of null and full REs referring to either a subject or object antecedent with topichood.

For the statistical analysis, a LME model was conducted using R. The model, created for the response variable *Reference* (reference to the subject antecedent vs. reference to the object antecedent), included a random intercept for each participant (*id*) and was fitted as a function of the dependent variable *topic* (indicating the type of topichood), a categorical variable with three levels (no topic, subject antecedent topic, or object antecedent topic). No significant effect of the presence of a topic can be observed.

Fixed effects	*Estimate*	*SE*	*t*	*p*
(Intercept)	-0.05	0.20	-0.24	0.8
Topic (subject)	0.41	0.30	1.36	0.1
Topic (object)	-0.07	0.30	-0.24	0.8

Table 12. Parameters of the LME analysis concerning the REs referring back to a subject or object antecedent in interaction with topichood.

3.4.5. Discussion

The second experiment in this dissertation stemmed from the need to further understand which factors underlay speakers' decisions regarding anaphora interpretation. Following various discourse-oriented approaches, mainly Kehler and Rodhe (2013), it was necessary to determine the relative weight of implicit causality, coherence relations and topichood on native Spanish-speakers' interpretation and production of referential expressions. The results of this experiment reveal these factors have indeed a degree of influence, which we will now review in an attempt to answer each research question posed at the beginning of 3.4.

Our first research question, RQ1.2, was whether reference to a subject or an object antecedent was sensitive to the distinction between null and overt pronouns. The results in the forced NOC condition are highly significant and show the participants' huge sensitivity. Despite an increased number of null pronouns in general, there is a tendency to associate null subjects with the subject antecedent (74%), on the one hand, and overt (49%) and full (72%) subjects with the object antecedent, on the other. Example (26a) is an example of a null pronoun referring to a subject antecedent, while (26b) is an example of an overt pronoun referring to an object antecedent.

(26) a. *María ha irritado a Sofía. Ha mentido sobre lo que pasó.*
'María annoyed Sofía. (She) lied about what happened.
b. *Lidia ha felicitado a Carmen. Ella ha ganado el concurso de poesía.*
'Lidia congratulated Carmen. She won the poetry contest'

These results, which could be the expected ones, particularly if we think about the behaviour of other NSLs, need to be linked to the following ones in order to understand the bigger picture.

RQ1.3 was related to the weight of subject or object biased verbs. The statistical results for the NOC condition show that despite having no interaction with referential expressions, in the case of subject-biased verbs there is a significant preference to refer to the subject. Although the results with object-biased verbs are slightly less clear-cut, the increase of reference to the object is statistically significant, particularly with overt pronouns. It is interesting to note that whereas subject-biased verbs present a clear

preference for null subjects, the situation with object-biased verbs reflects the same results as those of experiment 1: at first sight, figure 4 shows similar numbers of null REs referring to subjects and objects; we see bing differences, however, between the numbers of overt and full REs, which are significantly preferred for reference to the object. The differences found for RQ1.3 are the first sign that, although it might appear that Spanish has no preference for subject or object antecedents paired with null or overt referential expression, it actually does, though this preference is to be found in semantic and discursive differences, such as implicit causality verbs.

In (27a), a subject-biased verb like *aburrir* 'to bore' leads to a continuation about the subject antecedent, while in (27b), an object-biased verb like *elogiar* 'to praise' leads to a continuation about the object antecedent.

(27) a. *Daniel ha aburrido a Mario. No ha dicho nada interesante en toda la presentación.*
'Daniel bored Mario. He didn't say anything interesting during his presentation.'
b. *Silvia ha elogiado a Raquel. Ha sido muy trabajadora.*
'Silvia praised Raquel. (She) had worked a lot.'

The next research question, RQ1.4, was related to discourse relations as a factor in the choice of a referring expression in reference choice, following Kehler and Rodhe (2013). The coherence relations that are pertinent here (explanation, elaboration, result) can be seen in the following examples: in (28a) a reason for the behaviour of the captain is given in the second sentence, and it is therefore a relation of explanation; in (28b), the second sentence is a description of the event given in the first sentence, and it is therefore a relation of elaboration; and finally, in (28c) the second sentence describes the repercussion of the event of the first sentence, and for that reason is a relation of result. Notice that in (28a) a null pronoun is used to refer to the object antecedent (with an object-biased verb); in (28b) a null pronoun is used to refer to the subject antecedent (also with an object-biased verb); and in (28c) an overt pronoun is used to refer to the object antecedent (with a subject-biased verb).

(28) a. *El capitán ha detestado al marinero. Había sido demasiado holgazán.*
'The captain hated the sailor. (He) had been too lazy.'

b. *David ha alabado a Nicolás. Ha dicho que su trabajo era de los mejores.*
'David praised Nicolás. (He) said that his paper was one of the best.'
c. *La violinista ha herido a la violonchelista. Ella ha denunciado los hechos en la comisaría.*
'The violinist wounded the cellist. She reported the incident at the police station.'

The relation with most occurrences is explanation, with a clear preference to refer to the subject antecedent with null pronouns. With object antecedents, the results are equivalent for both null and overt REs, but there is a significant increase in full REs. As mentioned at the beginning of Section 3.4., it was expected that elaboration relations would display a clear preference to refer to the subject antecedent, particularly with null referential expressions, since elaborations offer further information regarding the process underway in the event of the stimuli sentence. However, there is also a statistically significant result regarding the interaction of overt REs and reference to the object in this coherence relation: this is the kind of result that some previous studies on Spanish anaphora resolutions yielded (as we saw in chapter 2: Alonso-Ovalle *et al.* 2002). This could mean that, in order to clarify the subtle differences in Spanish, different discourse settings need to be tested: something that can be easily detected in one language may require further analysis in another, as the data from experiment 2 suggest. Consistent with our starting hypothesis, the result relation presents a clear preference for overt referential expressions and object antecedent reference. This is also an indicator of Spanish speakers' sensitivity to coherence relations, as they follow the assumption that the result of an event will be something about the object of the action of the first sentence. Overall, these results show a clear responsiveness to discourse factors.

Our final research question, RQ1.5, explored the possibility that topichood was a key factor in anaphora resolution and reference. The results for this factor show a preference for null REs with subject referents in every condition (no topic, subject topic, and object topic), and a preference for overt REs with object referents. The statistics offer a single interaction with a significant number for overt pronouns and object topic conditions, which leads to the conclusion that although there is a mild effect of topichood in the force condition with overt pronouns, it seems that it does not have a big impact on the speakers' decisions. This could also mean, in connection with

the results of the previous research questions, that by being "out" of the principal sentence of the task, a possible topic is seen as distant and because of this it has much less prominence, whereas elements like implicit causality, by being at the core of the sentence in focus, are also at the core of every interpretative decision made regarding reference.

This is illustrated in (29): (29a) has no previous established topic, and the chosen continuation is a null subject referring to the subject antecedent; (29b) presents a topic that is later the subject of the prompt sentence, but in the continuation the object antecedent is chosen; and the same situation applies in (29c), where the topic is the object of the prompt sentence, but in the continuation the subject antecedent is chosen.

(29) a. *El vendedor ha estafado al cliente. Le ha vendido murciélago en lugar de ternera.*
'The seller cheated the customer. (He) sold him bat instead of veal.'
b. *El vendedor quería hacer un buen negocio. El precio es un factor muy importante en una compra-venta. El vendedor ha estafado al cliente. El cliente se dispone a denunciar.*
'The seller wanted to get himself a good deal. The price is a very important factor in a sale. The seller cheated the customer. The customer is going to report him.'
c. *El cliente quería hacer un buen negocio. El precio es un factor muy importante en una compra-venta. El vendedor ha estafado al cliente. El vendedor no ha cobrado al cliente un precio justo.*
'The customer wanted to get himself a good deal. The price is a very important factor in a sale. The seller cheated the customer. The seller didn't charge the customer a fair price.'

In the statistical analysis, interactions between verb bias and discourse relations were also tested, yielding very significant results that reveal the speakers' use of different strategies depending on these semantic and discourse conditions in that the statistically significant interactions were found between object biased verbs and the relations of elaboration and result. The results of the statistical analysis of verb bias and topic interaction, on the other hand, were not consistent with the results bearing

on RQ1.5, since they showed no significant influence of topichood on reference, either on its own or in relation to the implicit causality of the verb.

The blank condition presents an interesting situation, because it can again be observed that, when left to their own devices, speakers will always resort to a null pronoun regardless of other factors or imposed conditions, as can be seen in (30).

(30) a. *El adolescente ha respetado al anciano. Ha tenido en cuenta su opinión de sabio.*
'The teenager respected the old man. (He) took into account his wise opinion.'
b. *Inés ha fascinado a Marta. Le ha hecho una gran sorpresa.*
'Inés fascinated Marta. (She) made her a big surprise.'
c. *Manuel ha pedido perdón a Arturo. Ha entrado en razón.*
'Manuel apologised to Arturo. (He) came to his senses.'

Nevertheless, there is one significant result regarding the elaboration condition, which is the reluctance on the part of speakers to refer to an object antecedent in that discourse condition. This result is consistent with the expected results mentioned in RQ1.4, because with elaborations a "description" of how the event in the first sentence is developing is expected, and such a description often describes how the subject of the sentences carries out the action denoted by the verb.

Overall, what these results indicate is that Spanish speakers are indeed sensitive to the factors in question, but still, if they can choose, will always prefer to use a null pronoun to refer to the antecedent they want to talk about (as seen in the blank condition). Interestingly, when carrying out the experiments, many participants were heard saying things like "Oh, it must be the postman that is riding the bike: priests don't ride bikes" or "I play the guitar and never use sheet music, so the person picking up the sheet music must be the violin player". Such observations indicate that participants' bias based on world knowledge is having a stronger effect when they are interpreting or producing these sentences than other pragmatic or discourse factors, overriding syntactic structures.

3.5. A new approach: The Layered Structure proposal

In order to have descriptive and explanatory adequacy, an account of the conditions determining the selection of antecedents for anaphoric expressions must combine the insights from syntactic approaches and coherence-related analysis. My contribution in this research investigation seeks to merge the syntactic and coherence-related studies that we reviewed in chapters 2 and 3, following a layered approach whereby syntactic structure, information structure, discourse and pragmatics all play a role in deciphering the mechanisms underlying anaphora resolution.

The syntactic proposal offered by the HHP (see Rizzi 2018, Torregrossa et al. 2020) highlights a structural difference between the NSLs in our study (Greek, Italian, and Spanish) that can explain, at least partially, their dissimilarities. As we mentioned in chapter 3, in Italian both subject and object constituents lexicalise the same grammatical features and therefore need to occupy different syntactic domains. This is how grammar restricts the search for an antecedent in Italian: by placing a syntactic condition on it. Greek, on the other hand, can have subject and object constituents in the same domain because these constituents are overtly marked for different grammatical cases; here, morphology is the chief feature helping to restrict the search for an antecedent, allowing different word order patterns without this interfering with anaphora interpretation. Finally, we have noted that Spanish has traces of case marking in the animate accusative case (DOM), which also allows for VSO-orders and explains the less restrictive conditions of this language.

Following Leonetti's (2022) considerations, in my proposal these syntactic conditions represent the first layer for reference management in NSLs under scrutiny. As mentioned, these conditions restrict the search for an antecedent by placing a syntactic condition on this process, but they are not the only reason why these languages behave the way they do. They are simply the first of several layers of constraints affecting the successful management of anaphora. Otherwise, sentences like (31) and (32) would yield an interpretation that is not the predicted one.

(31) *Il cliente ha salutato il cuoco mentre tagliava i pomodori.*
'The customer greeted the cook while (he) was chopping tomatoes.'

(32) *El portero ha ayudado al bombero mientras apagaba el fuego.*
'The doorman helped the fireman while (he) was extinguishing the fire.'

In experiment 1 we created very neutral situations because the aim was to observe anaphora interpretation in unbiased contexts. Sentences like (31) and (32), however, are also proof–like Leonetti's (2022) counterexamples–that grammar helps locate the antecedent but is not the only mechanism present: the contexts and our knowledge of the world allow us to interpret perfectly well that in (31) it is the cook who is most likely chopping tomatoes, not the customer, and that in (32) most probably it is the fireman who is extinguishing the fire, not the doorman. However, if we were to analyse these sentences only by looking at their syntax, ignoring the meaning of the words, we would have to accept that the null subjects in the temporal clauses find their antecedents in the subject of the main clause, not in the object. The fact that these sentences are natural, acceptable, and perfectly interpretable by native speakers in the way predicted is another reason to believe that other elements must be intervening as well.

For this reason, following Kehler and Rodhe (2013), I added the semantic and discourse aspects of reference to my analysis of Spanish anaphora management. The specific elements observed in experiment 2 were implicit causality, coherence relations and topichood. The results showed how crucial the first two factors are for reference interpretation and production in Spanish, revealing a clear sensitivity in speakers to discourse cues. Topichood was introduced as a context-sentence between the prompt topic and subject; this makes it different from the two other elements, because it requires context (and not the prompt sentence alone) in order to influence the interpretation and production of anaphoric expressions. In this sense, it could be said that topichood is a feature that can appear "outside" the prompt sentence (where the antecedent is being searched for), while implicit causality and coherence relations are unequivocally included in the prompt sentence, that is, they are part of it. This could be the reason why Spanish-speakers are so sensitive to them. Topichood, on the other hand, does not appear inside the prompt sentence and can therefore be overridden by the information carried by the implicit causality verb or by the coherence relation. By way of example, consider the sequence in (33).

(33) *A Lidia le gusta la repostería y siempre hace tartas. La repostería requiere de técnica y precisión. Lidia ha felicitado a Carmen. Ø/Ella logró el nivel de precisión de una experta.*

‘Lidia loves baking and is always baking cakes. Baking requires technique and precision. Lidia congratulated Carmen. (She) achieved an expert’s level of precision.’

In (33), despite *Lidia* being both the topic and the subject of the first sentence, it is *Carmen*, and not *Lidia*, that is the intended antecedent of the null subject in the last sentence: Carmen is the one who achieved an expert’s level of precision. This is, firstly, because the verb ‘to congratulate’ is an implicit causality verb that bears object-bias properties, creating an expectation that we will hear something about the object antecedent. Secondly, the coherence relation of explanation established between the two sentences also guides the interpretation, choosing the object as the antecedent of the subject of the last sentence. Note that this interpretation is the only one possible, whether the subject pronoun is null or overt (which is evidence, once again, what is dictating which antecedent to choose is not the syntactic structure).

As a consequence, I argue that on top of the first layer created by the syntactic conditioning, we find a second layer, where basic Information Structure can set another condition that contributes to restricting the search for an antecedent, but does not necessarily impose a specific reading.

While implicit causality and coherence relations clearly override topichood, it is not as clear which element is “stronger” in the interaction between these two. However, the results of the experiments in chapter 3 prove that coherence overrides IC, because the coherence relations have subject- or object-oriented preferences, as we saw in the results of experiment 2, that can overrule IC and impose a specific reading. Consider the set of examples in (34).

(34) a. *Lidia ha felicitado a Carmen. Lo ha hecho abrazándola y gritando como una loca.*
‘Lidia congratulated Carmen. (She) did so by hugging her and screaming like crazy.’
b. *Lidia ha felicitado a Carmen. Estaba orgullosa de ella.*
‘Lidia congratulated Carmen. (She) was proud of her.’
c. *Lidia ha felicitado a Carmen. De la emoción, se ha puesto a llorar.*’
‘Lidia congratulated Carmen. She was so full of emotion, (she) started crying.’

All three examples in (34) have an object-biased verb in the first sentence but refer to the subject antecedent in the second sentence. (34a) exemplifies the most common case, when the coherence relation is an elaboration, because the second sentence is a description of how the event in the first sentence is developing, so we can expect to hear how the subject of the first sentence (*Lidia*) is performing. (34b), on the other hand, represents a coherence relation of explanation (the reason Lidia, which is the subject, is congratulating Carmen, which is the object) but the reason is related to the subject. Finally (34c) is more uncommon but not impossible; it represents a consequence of the event in the first sentence (a coherence relation of result) where the result refers to the subject. The fact that all these sentences are natural and acceptable is proof that, although IC and coherence work close together, the latter can override the former. The interpretation of (34c), however, remains quite ambiguous, as both antecedents could refer to the person that started to cry. In this situation, the meaning would be determined by the context, a layer at a higher level.

Note that, in order to find and interpret the antecedent, we are moving from the more local conditions to more global ones. An ambiguous context like the one in (34c) can be disambiguated by means of context and elements that lie outside the linguistic domain: knowing that Lidia is a cry-baby, or that Carmen was really looking forward to finally receiving good wishes from Lidia are information essential to felicitously interpret the sentence but that cannot be retrieved from the syntactic structure or the lexical load of a verb. Nevertheless, this does not make the sentences less acceptable. The constraints and interpretative options we have observed as we try to analyse these examples are the reason why I advocate a layered structure of reference management, in which all different linguistic conditions (can) play a role in interpretation.

Syntax offers a first condition to help retrieve the antecedent, a condition which may or may not be sufficient on its own, depending on the particular language. In the case of Italian, it could be enough, if we consider the preferences that resulted from the interpretation task in chapter 3. In the case of Spanish, it is not, and we need to move further up in the layers looking for more conditions.

Morphological constraints could be located in the second layer of this structure, since we know that morphosyntactic elements such as case marking can play an important role in languages such as Greek or, to some extent, Spanish, if we consider the remains of case marking in the animate accusative case (DOM).

The next layer would be basic information structure in the form of topichood, which presents another possible constraint on interpretation. This is the first layer outside grammar. An in-depth analysis of information structure and anaphora interpretation is beyond the scope of the present investigation, although I would like to further explore this interaction, considering more non-canonical orders, left periphery, information structure-related intonation, etc. However, for the moment I am just considering the effect of topichood on Spanish anaphora interpretation on the basis of the results of experiment 2.

Moving further up in our layered structure we would find the lexical load of verbs and implicit causality, which set a further condition on the retrieval of antecedents with their preference for subject or object antecedents based on semantics. As we know, however, this is merely a preference or suggestion, not a rule or imposition, since we can have an object-biased verb but then refer to the subject antecedent. That said, the reason why we can do it is bound to our next layer.

One of the last layers in this structure is the realm of discourse-related conditions. Here, coherence offers further help in narrowing the search for the antecedent through coherence relations (in experiment 2 I used 'elaboration', 'explanation', and 'result', but there are more; see Kehler and Rodhe 2013). These relations create a discourse-related interpretation that is not encoded in structure or lexical meaning, but rather depends on the relation between the first sentence, where the antecedent is located, and the second sentence, where we find the referential pronoun. In most cases, by the time we reach this layer, the conditions offered by all the previous elements working together should be enough to find the correct antecedent and fittingly interpret the sentence and the anaphora in it. Things may not end here, however. There can still be a layer, the layer of extra-linguistic constraints, where we interpret information not encoded in the sentence that is needed in order to decipher the meaning and choose the right antecedent when all the previous layers have not been enough to restrict the search, like in sentence (34c). Here we would find pragmatic and contextual information, as well as common and world knowledge. In order to felicitously interpret reference, we may find ourselves obliged to search for conditions that are external to linguistic features.

This is, once again, evidence that anaphora interpretation does pertain not to the domain of grammar, but rather entails adopting a kind of lens that is the result of stacking up all these layers. In fact, I picture this structure as the phoropter used by

optometrists to determine a patient's prescription for glasses. As my short-sighted colleagues know, use of the phoropter involves stacking lenses with different dioptre adjustments until the patient can see the test letters or figures in focus. In this sense, the Layered Structure (LS) I propose for anaphora interpretation entails an analogous procedure, except that in this case it is an individual language, not a patient, that requires a different set of filtering lenses in order to bring anaphor interpretation into full focus.

I consider this particular model a good fit for the NSLs in this study based on the results of experiments 1 and 2. I am aware that other languages, with other settings, may have stronger cues, may stop at the first or second layer, or may need a completely different layer that I have not mentioned. However, for purposes of the present investigation, the Layered Structure proposal could be schematically represented as in figure 10.

	LAYER	**CONTENT**
↑	Extra-linguistic constraints	Common knowledge
	Discourse-related constraints	Coherence relations
	Semantic (lexical) constraints	Implicit Causality
	Information structure constraints	Topichood
	Morphological constraints	Case marking
	Syntactic constraints	C-command *pro*-drop/non *pro*-drop

Figure 10. Layered Structure proposal for anaphora interpretation.

Following this structure, we observe that the two lowest layers (the syntactic and morphological constraints) belong to the grammar, while the layer of information structure constraints is related to the syntax-discourse interface. The semantic constraints belong to the conceptual structure, while the discourse-related constraints are associated with the discourse articulation. Finally, the extra-linguistic constraints are connected to world knowledge. Note, in this sense, that we are moving from more local and internal elements (such as syntax) to more global and external ones, in the process stepping outside the purely linguistic domain.

My aim with this approach is to create a structure which does not leave out any element that plays a role in shaping anaphora interpretation, and which merges the existing findings that we reviewed in the literature, from Rizzi's (2018) syntactic proposal to Leonetti's (2022) pragmatic view, including discourse-related approaches such as Kehler and Rodhe's (2013). Only by simultaneously accommodating syntax, morphology, semantics, and pragmatics will we be able to fully understand anaphora and the interpretation of null and overt pronouns, because this will enable us to shift our point of view in a more three-dimensional manner.

Before moving on to the chapter conclusions, I would like to make some predictions regarding LS in the other languages observed in this chapter, on the basis of the results of experiment 1. First, with regard to Italian, we have seen that it is a language with strong syntactic constraints and very specific interpretative preferences. For this reason, my prediction is that it would only need the first, syntactic layer (where we find c-command), to felicitously interpret anaphoric expressions. However, two aspects need to be considered: firstly, in experiment 1 we only analysed sentences with a subordinate clause, which is a structure with a strong syntactic relation; and secondly, we saw in Leonetti (2022) that Italian is in fact sensitive to discourse-related constraints -such as coherence relations- in specific contexts where the antecedent is in a by-phrase, a post-verbal subject, or even an object. This could mean that Italian relies on syntax for anaphora interpretation when the syntactic condition is very strong (as in the subordinate clauses in experiment 1). When it is not, however, it requires more external elements, and starts to "climb" up through the layers, searching for constraints that can aid in the interpretation. For this reason, it is necessary to observe and analyse different syntactic settings and their differences in the light of the LS model. This could also account for the differences found among previous studies with other linguistic contexts for anaphora resolution.

Regarding Greek, my prediction is that it needs at least the grammar-related layers, syntax and morphology, for anaphora interpretation. Non-*pro-drop* languages like English, on the other hand, cannot rely on the first syntactic layer alone; rather, we know, following Kehler and Rodhe (2013), that they lean on more external layers, such as topichood, implicit causality and coherence relations. Moreover, I assume English to be very sensitive to intonation in this regard: prosody is an important layer that I have not included in my proposal because my experiments did not involve

spoken data. However, intonation goes hand in hand with information structure and definitely deserves a spot in the LS.

I look forward to testing the LS proposal in other languages, in the near future, as well as to testing its fit to other specific features of language.

3.5. Chapter conclusions

This chapter represents an attempt to find answers to some of the questions that came to my mind as I read the literature summarised in chapter 2. They are questions regarding reference in general and, more particularly, reference and anaphora resolution in my two native languages, Spanish and Italian.

Because many of the experiments described in the literature had been performed on a single language, I wanted to create my own set of experimental materials in order to be able to carry out a precise comparison of results. The opportunity to replicate the task of Torregrossa et al. (2020) in experiment 1 and compare Spanish to Italian and Greek in an interpretation task was a fundamental starting point in this endeavour, since it would provide me with a solid basis on which to explore these three NSLs and my personal hypotheses.

As we saw in 3.1., an offline interpretation task was run with native speakers regarding their interpretation of null and overt subject pronouns. As previously mentioned, participants had to indicate the extent to which they interpreted a null or an overt subject pronoun as referring to a subject or object antecedent. Each sentence consisted of a SVO-main clause introducing two same-gender referents, one in subject and the other in object position, followed by a subordinate clause containing either a null or an overt pronoun in subject position, whose reference was potentially ambiguous between the subject and the object constituent in the main clause.

The results from this task draw the picture of a situation far from identical across the three languages: Italian appeared to be the most "restrictive" syntactically, as it showed a clear preference to associate null pronouns with the subject antecedent and overt pronouns with the object antecedent, and it rejected the contrary association, that is, null pronouns with the object antecedent and overt pronouns with the subject antecedent. Greek followed these lines but was less restrictive in accepting the "non-canonical" combination. As for Spanish, it defied the previous results found in the

literature, and offered no preference whatsoever for what was thought to be the orthodox predisposition of NSLs.

As these results emerged, so did some syntactic hypotheses regarding why these differences were found, particularly in Spanish, in the light of recent proposals by Rizzi (2018), and some previous considerations put forth by Torregrossa et al. (2020), in comparing Greek to Italian. The possible syntactic explanation to the differences between these three NSLs lies in the HHP and the idea that in Italian both subject and object constituents lexicalise the same features and therefore need to occupy different syntactic domains, whereas Greek can have subject and object constituents in the same domain because these constituents lexicalise different grammatical case, bearing case morphology. The availability of VSO in Greek is interpreted as an effect of the morphological complexity of the case marking in the nominal paradigm, which determines different word order patterns (see Section 2.3.6.). In this context, it seems plausible to suggest a spot on the loose end of this continuum for Spanish since it has, like Greek, VSO-availability and traces of case marking in the animate accusative case (DOM).

Accepting this hypothesis can "tick off" an explanation as to why NSLs like Italian, Greek, and Spanish behave differently. It does not, however, give a solid and complete answer as to what happens inside a language like Spanish, which apparently shows no sensitivity to a referential expression being associated with a specific antecedent. The apparent symmetry that null and overt pronouns referring to either subject or object antecedents displayed in experiment 1 led to the hunch that looking at reference from a different perspective could give extra information regarding the depths of Spanish speakers' preferences.

Because of this, in Section 3.4 I sought to create a new task that would focus on semantic and discourse aspects of reference, following mainly the insights in Kehler and Rodhe (2013) and adapting this kind of experiment to Spanish for the first time. Experiment 2 was designed to test implicit causality, coherence relations and topichood in Spanish reference resolution, because these elements could play a role in both interpretation and production.

The prompt sentences consisted of a SVO clause introducing two same-gender referents -half of the sentences had proper names, the other half had full DPs-, one in subject and one in object position. Following the prompt sentence, the experiment had three possible forced conditions (with a null pronoun, an overt pronoun or a clitic) or

a blank condition. One version of the experiment materials had no previous topic sentence, and the other version had an introductory sentence that presented a discourse topic.

The results show a mild effect of topichood, but a strong effect of both IC and coherence: as we saw in Section 3.4.6., these elements are crucial in reference interpretation and production. Furthermore, the statistical analysis reveals a clear and solid interaction between these two, which suggests that Spanish speakers are actually very sensitive to such discourse cues and make decisions regarding referent expressions and antecedents on the basis of non-syntactic factors.

As for topichood, the lack of interaction with reference shown in experiment 2 could prove to be new evidence against some approaches that argue for a syntactic condition on topics. For example, in Frascarelli (2007, 2018) the preference for topic antecedents is considered a property of the grammar of null subjects; according to this view, the interpretation of a topical or referential *pro* depends on the matching relation between the empty category and the 'Aboutness-Shift Topic', a specific kind of topic in the left periphery (see Frascarelli and Hinterhölz 2007 for more on this subject). A series of arguments against a syntactic analysis based on topic chains can be found in Leonetti (2022), as we saw in section 2.5, one of which is the possibility of finding objects as antecedents in sentences such as *Carlo listens to Arturo only. He is his best friend,* in which a coherence relation of explanation forces an interpretation of the null subject as referring to *Arturo*. This intuition is consistent with the results of our experiment; it seems undeniable that there can be, in some contexts, "a preference, or a strong tendency, but not a rule of syntax, (…) for a syntactic condition would not allow for violations in such a natural way" (Leonetti 2022:12). Moreover, accepting some features, such as topichood, not as a syntactic rule but rather as a pragmatic preference, is the only way to explain other aspects of information structure that can be possible in some closely related languages but not in others (left dislocations, clefts, etc.).

Considering each of the languages mentioned in chapters 2 and 3, it is obvious that each has its own peculiarities, in every linguistic aspect, and in many hues. Despite the human (and linguistic) inclination to search for universals and patterns, we have accepted that categorisations cannot be total in every aspect. Because of this, even when it has been agreed that this or that language belongs to the *pro*-drop group, and therefore share with the other members of that group some defining characteristics,

we still find that not every principle fits every language well, leading to the conclusion that the principle might need to be relativized, because it is not as universal as we would like. What seemed clear to me after observing the behaviour of the three NSLs that are being analysed in the present work is that, although they share some very prominent features, some adjustments needed to be made bearing in mind their specific traits, if they are to be analysed jointly in terms of reference and anaphora resolution.

For this reason, my personal proposal, the Layered Structure, is a multi-factorial approach that includes syntactic, semantic and discourse features as relevant for reference and anaphora resolution, and that offers a satisfactory explanation that will apply in both *pro*-drop and non *pro*-drop languages. It is a proposal that centres on sensitivities: some languages may be more sensitive to syntax or morphosyntactic aspects, whereas others may be more sensitive to other factors, such as semantics or pragmatics. Because of its inherent characteristics, it seems that Italian depends heavily on syntax, while Greek relies only partially on it, not being as "needy" because it can rely on other attributes, such as the morphological complexity of case marking, which allows it to behave in a way that neither Italian nor Spanish can. Spanish, on the other hand, depends even less on syntax and resorts to other semantic and discourse features for reference resolution. It seems only natural, then, to understand that despite sharing some very prominent features, these languages need to be seen as being situated along a continuum, not lying on the same point in the line.

In what follows, chapter 4 will review the basic literature on anaphora resolution and bilingualism, describing the different approaches that will be considered. In chapter 5, an attempt to observe these particularities of Spanish and Italian in bilingual children will be presented, by means of a battery of experiments carried out in a bilingual school, considering all the syntactic, pragmatic and discourse-related features discussed in this chapter.

PART II

Reference and anaphora in Spanish and Italian bilingual children

Chapters 4 and 5

4. ANAPHORA RESOLUTION IN BILINGUAL NARRATIVES. A LITERATURE REVIEW

This chapter presents a literature review for bilingualism and bilingual narratives research. Such a review is necessary in order to establish a theoretical background to contextualise the bilingual experiments presented in chapter 5. After the experiments in chapter 3 regarding reference management and anaphora interpretation and production with adult native speakers of Spanish and Italian, the goal in chapter 5 will be to observe what the patterns for reference management are in Spanish-Italian bilingual children. As we will now see, there are many factors to consider when analysing bilingual production; in fact, many more than with monolinguals. For that reason, some of the approaches and components of bilingual reference management will be reviewed in this chapter.

Bilingualism studies have gained weight in recent decades. What was earlier seen as a particularity exclusively inherent to simultaneous bilingual children (who received input in both languages from birth), as will be seen in section 4.1.1, has now considerably enlarged its original scope and is currently understood in a broader sense, including simultaneous and successive bilingual children as well as L2 learners, near-native speakers and all hues in between (Hendricks et al. 2014; Montrul 2004; Torregrossa et al. 2017; Schmitz et al. 2012; Tsimpli and Sorace 2006; Kang 2004). This broadened scope is reflected in the development of new concepts such as 'multilingualism' and 'plurilingualism' (Bhatia 2018). Accepting these phenomena as different points on a *continuum* gives us the opportunity to better analyse and comprehend the various mechanisms underlying the acquisition of language, and the roles that proficiency, age, family and society, exposure and other elements play (see Surrain and Luk 2017; Torregrossa and Bongartz 2018). Still, a precise and universal description of these phenomena, mechanisms, and roles has yet to be achieved.

Nor have the effects of learning more than one language been fully clarified. Some studies (see Nicoladis 2018 for a review) reveal a slower language acquisition rate for bilinguals or a smaller lexicon compared to monolinguals, while others show an increased ability in bilingual children to learn new word meanings or an increased processing speed for some aspects of learning. Nonetheless, generalisations have

proven evasive. There are no common improvements or delays that can be assigned to each linguistic component with respect to language acquisition (i.e., phonology, syntax, discourse) or to specific pairs of languages. In addition, the vast majority of studies have focused on bilingualism involving English and some other language, and have been typically set in contexts where English is seen as having higher prestige than the other language (Montrul 2008; Nicoladis 2018). It is therefore important to bear in mind that language acquisition presents a wide range of nuances depending on the linguistic elements observed (phonological, lexical, morpho-syntactic), the combination of language pairs, and the kinds of bilingualism that are being examined.

Speech perception studies (like Nazzi et al. 2000) have found that at birth, infants can already distinguish languages belonging to different classes (syllable-timed languages like Italian versus stress-timed languages like English, for example), and by the age of five months they can distinguish between their native dialect and another dialect or another language belonging to the same family. Bilingual infants have the same ability as their monolingual peers to discriminate between similar languages on the basis of prosodic information, performing with the same accuracy throughout their first year of life (Bosch and Sebastián-Gallés 2001).

Regarding lexical abilities, according to some studies (like Mattock et al. 2010) bilingual children have an adaptive flexibility that links phonetic skills to word learning, allowing them to tune into language-specific phonetic differences and build their vocabulary in both languages by separating phonetic distinctions that are present in one of their two languages but not in the other. As for the size of the lexicon, bilinguals tend to have more words in one language than in the other (Pearson et al. 1993), but this depends on the quantity and quality of input and can vary over time. Moreover, although it has been said that bilingual children may have smaller vocabularies than their monolingual peers, when both languages are considered the coverage of the semantic space (the total conceptual vocabulary) is similar or even larger in bilinguals, according to Pearson et al. (1993).

The size of the lexicon seems to be also important for developing grammatical and syntactic abilities in both monolinguals and bilinguals, even more than the effects of age, input or general language abilities (Marchman et al. 2004). For bilinguals, the extent to which the two independent grammatical systems may interact has been the focus of considerable research in the last thirty years. Hulk and Müller (2000) originally formulated the cross-linguistic influence hypothesis, whereby children may

transfer the use of grammatical constructions from one language to the other if the construction in question is at the interface between two modules of grammar, like syntax and pragmatics (Serratrice 2012). One attested instance of cross-linguistic influence is the use of a construction that is available in language A in contexts in which it is not semantically or pragmatically appropriate in language B, like the overproduction of overt pronominal subjects in Spanish for an English-Spanish bilingual children due to the obligatoriness of overt subjects in English (for more, see Sorace et al. 2009; Schmitz et al. 2012; Serratrice et al. 2004; Paradis and Navarro 2003).

One of the best ways to observe the full range of facets of language development in bilingual children is through the analysis of child-produced narratives. Narratives have been largely examined in the recent literature (Arnold 2010; Torregrossa et al. 2018; Gagarina 2016; Andreou et al. 2023) because they allow for bilingual language acquisition to be observed from two different points of view, a linguistic one and a discourse-related one. Narratives are interesting from a linguistic point of view because through them we can observe a variety of morphosyntactic structures as used in context–and, more specifically for the purposes of this dissertation, the referential relations established by pronouns, anaphors, and referring expressions. From a semantic point of view, on the other hand, they permit us to look at potential differences in the structure of discourse relations and narrative analysis (Labov and Waletzky 1967).

Moreover, narratives involve linguistic interfaces, since they have a bearing on both syntactic and pragmatic structures. This idea of an 'interface' was seen by Jackendoff (2002) as the correlation between one level of structure (e.g. syntactic) and another (e.g. semantic or pragmatic). It is seen as a module having a high 'bi-domain specificity', because it deals exclusively with the aspects of the two modules that are directly correlated, as we will see in section 4.2. Because of this, it is to be understood that an interface poses a more "challenging" context for both production and interpretation in that more elements need to be considered if a felicitous interpretation is the intended outcome of our linguistic interaction.

Of course, the daily experience of dealing with two languages from infancy is already challenging because it requires bilingual children to pay constant attention to the incoming input and their own production by selecting the one language and suppressing the other. Regular exposure and use of two languages have further

implications for mental representations and processing (Bialystok and Craik 2012), particularly the executive function network that processes and adjusts goals depending on the context requirements. Some studies, like Adesope et al. (2010), have reported a positive overall effect of bilingualism on cognitive measures such as attention control or problem solving. Contexts like those in which we find narratives, like storytelling and story retelling, require speakers to process and adapt continuously to the discourse-related circumstances, as we will now see.

This chapter is organised as follows. In section 4.1 I will provide a general overview of the state of the art and define some basic concepts in the study of bilingual acquisition (for more on bilingualism in early and late childhood see Montrul 2008; Andreou 2015). Section 4.2 presents some approaches based on cross-linguistic effects (Sorace and Filiaci 2006; Belletti et al. 2007), section 4.3 is devoted to processing approaches (Sorace 2011; Lozano 2009; Bel et al. 2016), and section 4.4 introduces studies based on proficiency and language experience (Torregrossa et al. 2018; Andreou et al. 2023; Torregrossa et al. 2021; Di Domenico and Baroncini 2019; Giannakou 2023). Section 4.5 will shift from these linguistic approaches to more discourse-related ones (Gagarina 2016; Lindgren et al. 2023; Grüter et al. 2017). Finally, section 4.6 will summarise the chapter.

4.1. Theoretical background on child bilingualism

4.1.1 Child bilingualism: concepts and factors

The issue of how to define bilingualism has generated a certain amount of scholarly debate. Bloomfield defined it as the ability to achieve "native-like control of two languages" (Bloomfield 1933:55). More recent studies, on the other hand, have claimed that the label "bilingual" is applicable to anyone who is able to use two languages whether in a native-like way or not (Lim et al. 2008). High proficiency, which was originally a defining feature, has been thus replaced by for a wider notion based on general communicative ability. Regardless of the definition, however, there are various factors that seem to be fundamental for approaching bilingualism in research,

including age of exposure to the language, the external context, and the amount and quality of language. All these factors will play a major role in shaping a bilingual's vocabulary and narrative skills, as well as their overall mastery of the languages they speak.

The age of a bilingual's first exposure to each of her or his two languages (Age of Onset, AoO) is what distinguishes different types of bilingualism. *Simultaneous bilinguals* have been exposed to both languages since birth or before the age of 3– roughly the age when basic syntactic knowledge is assumed to be in place (Montrul 2008)–, either because they are children of first-generation immigrants or because they are born in multilingual communities. Following Montrul (2008:94),

> many simultaneous bilingual children are born to parents who speak different languages and are raised under the one-parent/one-language strategy (by which each parent speaks almost exclusively his/ her native language to the child). Sometimes the two parents speak the same language, but the child is under the care of a caregiver who speaks another language. Even in these cases, the child is exposed very early to two languages.

These cases have been called "bilingual first language acquisition" when the simultaneous acquisition happens under the age of 3 and is similar to that of a monolingual (Meisel 2009).

Sequential or *successive bilinguals*, on the other hand, are children who first acquired one language, and only after the rudiments of the first language were established (after age 3–4) did they acquire a second. This distinction is an important variable, because age 4 seems to be the end of a critical period for native-like acquisition of some linguistic features, such as morphosyntax. Late bilinguals have been found to produce more different types of errors than early bilinguals (Meisel 2009). Some authors claim that if the acquisition of a second language takes place after a child has begun schooling at around age six, the child should be considered a L2 learner rather than a bilingual (Rothweiler 2006). However, other authors argue that these differences in types of bilingualism have not yet been investigated deeply enough (Unsworth 2010).

The amount and quality of input from each of the two languages that a bilingual child receives is another key factor. It is widely accepted that bilingual children are exposed to half as much input in a language as their monolingual peers by virtue of the

fact that they are receiving input from two languages, not one (Unsworth 2010). Among the multiple factors that influence the input received are the length of time they are exposed to that language at home or at school, the quality of that input, their parents' proficiency, the number and age of speakers of that language in the immediate environment, etc. (Andreou 2015). According to Unsworth (2010), quantity and quality of input can be difficult to tease apart, but they both play fundamental roles in building the linguistic profile of a speaker: quantity-related variables seem to interact with overall proficiency as well as with the acquisition of vocabulary and morphosyntax, while quality-related variables, heavily influenced by the child's socioeconomic status and educational setting can affect pragmatic aspects of communicative performance and register.

Regarding the external context, educational setting naturally plays a major role. Kohnert and Bates (2002) distinguish between submersion bilingualism (study of a language in a specific context), immersion (full exposure to the target language), or a maintenance/heritage bilingual education. In-depth research regarding how these different contexts impact bilingualism is lacking, but some studies seem to indicate that, in general, formal education that is fully bilingual delivers cognitive advantages to children, particularly in terms of metacognitive abilities and cognitive control (Marinis et al. 2016; Vogelzang et al. 2022).

Socioeconomic status seems to have a significant effect (whether positive or negative) on bilinguals' linguistic and cognitive skills, although research findings in this regard are inconclusive some scholars claim that lower socioeconomic status leads to lower cognitive control (Morton and Harper 2007), while others report that bilinguals have an advantage in cognitive skills regardless of their socioeconomic status (Calvo and Bialystok 2014). Socioeconomic status is a concept that applies to both speakers and languages: in heritage contexts, the minority language can be associated with a lower socioeconomic status, and speakers may choose to set it aside in order to more quickly integrate into the more prestigious community of the majority language.

4.1.2 Language dominance

The concept of dominance refers to the greater use by a bilingual speaker of one language relative to the other. Dominance is usually linked to the concept of language proficiency, but it can also refer to the quality or quantity of input in one language over the other, for example (Montrul and Potowski 2007).

Following Tsimpli (2014), it is commonly accepted that very few children grow up as balanced bilinguals–for whom neither language is dominant relative to the other–because it is difficult that the conditions will exist whereby a child can acquire two languages to the same extent and at the same rate. Because of this, bilingual speakers end up developing one language faster than the other, creating a dominance which can nevertheless change over time, because it depends on context (home/school), register (formal/informal) and input quality and quantity. Moreover, particularly in the case of children, it is important to remember that the linguistic knowledge in all areas continues to undergo significant changes even after the age of acquired native competence, with the ongoing acquisition of complex structures, vocabulary, pragmatics, etc.

Dominance has been shown to affect different areas of morphosyntax (Paradis 2011), syntax (Chondrogianni and Marinis 2011), discourse-related domains (Kehler et al. 2008; Rodhe and Kehler 2014), and lexical production (Kohnert and Medina 2009), which means that it can also be detected in many different ways. As we will see in section 5.2, the most common method used to assess dominance in bilinguals is to have them carry out exactly the same task in both languages, in which elements of the areas under study are tested. Each individual's score for one language are subtracted from their score for the other, and if the result is close to zero, it means that that person can be categorised as a balanced bilingual (see Romaine 1995 for an overview).

4.1.3 Narrative skills

Measuring children's narrative skills will offer insights into their overall linguistic capacities, as narrative skills provide information on cognitive, semantic, and social abilities, as well as pragmatic skills, since inferencing and referencing are primary features of narration (Perkins 2007): in order to produce a felicitous narration, the

narrator must recount the story's events in a way that is suitable to the listener's needs, in terms of context, characters, and results. This also means having the ability to rearrange the narration from one listener to the next and explain the motivations and reactions of each character accordingly.

Since Kintch and van Dijk (1978), narratives have been analysed as consisting of different levels, microstructure and macrostructure, the former being understood as sentence-level analysis (lexicon and syntax), while the latter represents the whole discourse as one large unit. At the level of microstructure, there are many approaches to analysing linguistic forms. According to one of them, grammatical and lexical forms, as well as lexical-grammatical features, can be analysed in terms of communication units (that is, syntactic complexes that consist of a main clause and its subordinate clause or clauses; Hughes et al. 1997) and their degree of complexity. This kind of analysis will be used in section 5.3. Thus, linguistic content can be measured by counting the number of different content words uttered (nouns, adjectives, verbs and adverbs) in order to assess productive vocabulary skills.

The macrostructural level, on the other hand, requires universal knowledge about the basics of storytelling, such as how characters are introduced and change in the course of narration, and how events are usually segmented in a sequence along the lines of *introduction–problem–result*. The introduction must present the characters and the context. The ensuing segment has two elements: firstly, an external event that modifies the context thereby creating a problem, then the actions intended to solve the problem. Finally, the consequences or outcome of these actions makes up the result.

Macrostructure is also characterised by coherence and cohesion, as we will see in section 5.4. Perkins (2007) defines coherence as a procedure demanding memory and executive function abilities, and cohesion as a procedure demanding the use of explicit linguistic devices. Cohesion can be found at the microstructural level by means of devices such as reference use and conjunctions, and at the macrostructural level in referential cohesion (e.g., maintaining a character reference through the story), though clearly both levels are intertwined. Finally, the macrostructural level requires meta-representational skills (i.e., 'theory of mind', see Tsimpli et al. 2016) and pragmatic capacities that allow the narrator to represent the characters taking into consideration the listeners' perspectives (see Bialystok 2009).

4.2 Previous bilingual studies

Among the different accounts that seek to explain how bilingual language acquisition works, those that are called structural are based on an analysis of the respective linguistic features of the languages in contact. While some of these structural studies (e.g., Francis 2011) claim that bilinguals can keep their two languages perfectly separate from an early stage, others argue that transfer from one language to the other is a characteristic of bilinguals throughout their lives (Montrul 2010; Sorace 2004).

One of the main contributions to the latter view is that made in Müller and Hulk (2001), which investigated the structural (i.e., language-internal) conditions that make transfer from one language to the other possible. As we saw in the overview, if one language has two morpho-syntactic exponents of a linguistic category and the other language allows for only one of these options, transfer from the second language to the first may occur. This does not necessary mean, however, that transfer is always unidirectional: the bilinguals' two languages can interact with each other bidirectionally, in a 'feature-recombination' way that is specific to each pair of languages (Müller and Hulk 2001).

Other studies focus on processing capacities to explain certain specific linguistic patterns shown by bilinguals. A reduced processing capacity may explain why bilinguals have sometimes been shown to take longer to retrieve lexical items. This slower speed could be due either to the fact that both languages are competing in the mental lexicon (Bialystok et al. 2018) or to a lower frequency of usage of one of the languages relative to the other (Gollan et al. 2008). The difficulties exhibited in processing may impact how bilinguals map abstract mental representations and the lexicon, which in turn could account for the production of non-canonical forms and referential expressions (Torregrossa et al. 2018, 2019). Sorace uses this approach to explain inappropriate bilingual reference use in her *Interface Hypothesis* (Sorace 2011): the processing difficulty arises when grammar and discourse information meet, as I will explain later.

In what follows, we will concentrate on reference management and the interpretation of anaphoric expressions. To this end, we will revisit some experimental studies based on cross-linguistic effects (Sorace and Filiaci 2006; Belletti et al. 2007), a processing approach (Sorace 2011) and a proficiency-based one (Torregrossa et al. 2018, 2021).

4.2.1 Cross-linguistic variation in near-natives speakers' anaphora interpretation (Sorace and Filiaci 2006)

In studies of near-native speakers, it has been observed that grammatical phenomena involving the interface between syntax and other cognitive systems (e.g., discourse/pragmatics) often present residual traces of the L1 on the L2 (Sorace 2003), meaning that specific features at the interface of syntax and discourse may or may not be felicitously acquired in the L2. In the words of Robertson and Sorace (1999:666),

> In the typical L2 endstate characterised by optionality, optional variants are not in free variation: a steady state is reached, in which the target option is strongly but not categorically preferred, and the non-target option surfaces in some circumstances.

However, according to Sorace and Filiaci (2006), there is no evidence regarding these traces in syntactic properties in a narrow sense (when they do not interact with other cognitive systems), which leads to the idea that such proprieties can be completely acquirable in a second language.

In order to better understand the reasons that may underlie the developmental optionality found at the interfaces, this study by Sorace and Filiaci presented data and results from an interpretation experiment on intra-sentential anaphora in Italian, comparing native Italian-speakers with English near-native speakers of Italian. Specifically, the aim was to observe whether the near-native speakers had fully acquired the Italian syntactic constraints on pronominal subjects or if instead their syntactic system presented residual first language effects. The syntax of pronominal subjects is an excellent ground for testing this because, as we saw in chapter 2, in NSLs null subjects are syntactically licensed but present a pragmatically-determined distribution. Therefore, in order to master pronominal subjects in a NSL, the correct setting of the null parameter is needed, as well as knowledge of the pragmatic interface conditions that govern the contextual use of null or overt subject pronouns.

The experiment in Sorace and Filiaci (2006) was based on an offline interpretation task in which participants had to choose between various sentences with null or overt pronouns and inter-sentential antecedents in order to match the sentence with a given picture. A sentence of this sort can be seen in (1).

(1) *Maria$_i$ scriveva spesso a Piera$_k$ quando lei$_{??i/k}$ era negli Stati Uniti.*
'Maria used to write often to Piera when she was in the US.'

The hypothesis was that natives and near-natives would show a similar behaviour in their interpretation of null pronouns but would differ in their interpretation of overt pronouns, because near-native speakers of Italian would allow more overt pronouns in the subordinate clause to co-refer with the subject of the main clause. Similarly, forward and backward anaphora would pose different processing demands, and near-natives would differ more from natives with respect to forward anaphora than backward anaphora (Sorace and Filiaci 2006:350).

According to the authors' analysis, both predictions were supported by the overall results: they found more differences with respect to overt pronouns than with null pronouns. Likewise, natives and near-natives differed more in their interpretation of forward anaphora (2a) relative to backward anaphora (2b).

(2) a. *Mentre* lei$_{k/l}$/pro$_i$ *si mette il cappotto, la mamma$_i$ dà un bacio alla figlia$_k$.*
'While she/*pro* is putting on her coat, the mother kisses her daughter.'
b. *La mamma$_i$ da un bacio alla figlia$_k$ mentre* lei$_{k/l}$/pro$_i$ *si mette il cappotto*.
'The mother kisses the daughter, while she/pro is putting on her coat.'

Nevertheless, some unexpected results were found as well. Following Carminati's PAH (2002), it is assumed that native speakers will prefer the matrix subject as the antecedent for null pronouns. However, as Sorace and Filiaci (2006:357) point out, according to their results this was generally the case only in backward anaphora sentences; in forward anaphora sentences, preferences were divided between the subject and the complement of the matrix clause. This suggests that in forward anaphora contexts pragmatic plausibility, topicality, and accessibility of the complement can override the PAS and its bias against non-subject referents. Both native and near-native speakers displayed similar patterns of preferences in forward and backward anaphora sentences, thus showing similar processing strategies for anaphora resolution and null pronouns across the two groups.

The experimental results for anaphora resolution with overt pronouns presented a different outcome. The PAH predicts that overt pronouns (i.e. *lei* 'she') will be biased towards non-subject antecedents (i.e. *la figlia* 'the daughter'), especially in

ambiguous contexts, and this bias was indeed found for native speakers, but not for near natives. While in forward anaphora contexts they showed similar preferences (although they selected the matrix subject more often than natives), in backward anaphora the subject (i.e. *la mamma* 'the mother') was selected as the best antecedent in most cases, while the object antecedent referent -the preferred option in native responses- was chosen far less frequently, thus violating the PAH (Sorace and Filiaci 2006:359). For instance, in a sentence like (3), near-native speakers tended to select *il portiere* 'the doorman' as the antecedent of the overt pronoun *lui* 'he'.

(3) *Mentre lui$_i$ apre la porta, il portiere$_i$ saluta il postino.*
'While he opens the door, the doorman greets the postman.'

These results led the authors to postulate that near-native speakers do have both a null-subject grammar and the PAH, but they may not have the necessary processing resources to consistently integrate multiple sources of information, given the enormous difference in antecedent assignment strategies between natives and near-natives in the backward anaphora context. Therefore, these data supported the view that the residual optionality found in the pronominal subjects of near-natives may be a result of indeterminacy at the syntax-discourse interface, specifically in the processing strategies that link pronouns to their antecedents.

4.2.2 Cross-linguistic variation in near-native speakers' anaphora production (Belletti et al. 2007)

In this article, Belletti and colleagues explored the production and interpretation of post-verbal subjects and null and overt pronominal subjects in near-native speakers of Italian whose native language was English. The basis for their analysis is the null subject parameter (i.e., the licensing of a referential pronominal element in a dedicated preverbal subject position of the clause; Rizzi 1982). The experiments showed that near-native speakers seemed to have reset the null subject parameter to the Italian value, because both interpretation and production of null subjects were correct, but still some important differences between native and non-native grammars remained, as we will see in what follows.

The study, conducted with both American and British native speakers who had been residents in Italy for different periods of time (as well as a control group of Italian monolinguals), included four off-line tasks to test both elicited and spontaneous production and interpretation of subjects in Italian (Belletti et al. 2007:663). The first task was created to observe the production of narrow focus (new information) post-verbal subjects. Participants were shown some short videos and were then asked some questions about what they had just seen, after being instructed to include the verb in their answer, as seen in (4).

(4) a. *Chi ha telefonato?*
'Who called?'
b. *Ha telefonato una ragazza.*
'A girl called.'

The second experiment was a story-telling task to test spontaneous production of subjects with triggered eventive unaccusatives in which participants were shown a short silent film[9] and then asked to recount the events in the film in their own words. The situation represented in the film was designed to lead participants into choosing post-verbal subjects, as in (5).

(5) a. *Cade una pera.*
'A pear falls.'
b. *Manca un cesto.*
'A basket is missing.'

The third experiment was a picture verification task meant to test the interpretation of null and overt pronominal subjects in bi-clausal forward and backward anaphora contexts. Participants were shown a sentence and three pictures, and had to indicate which picture corresponded to the meaning of the sentence. Two sample items are given in (6).

[9] 'The Pear Film', by the University of California at Berkeley (1975). Also see Chafe (1980).

(6) a. *L'anziana signora saluta la ragazza, quando lei attraversa la strada.*
'The old lady greets the girl, when she crosses the street.'
b. *Mentre sbadiglia, il controllore prende il biglietto al passeggero.*
'While (he) yawns, the inspector takes the ticket from the passenger.'

The last task was intended to test the production of pre- and postverbal definite and indefinite lexical subjects in an all-focus context. Participants were shown a photograph representing an event and sentence fragments in random order below it, which they had to reorder pretending to be reporting the news, as seen in (7).

(7) *Hai sentito che molti voli sono stati cancellati per sciopero?*
'Have you heard that a lot of flights have been cancelled for a strike?'
(Belletti et al. 2007:666-670)

In line with the results from Sorace and Filiaci (2006) previously mentioned, there appeared to be a discrepancy in near-natives between the appropriate use and interpretation of null pronominal subjects, on the one hand, and the overuse of overt pronominal subjects in inappropriate discursive contexts, on the other. The results of these experiments showed a significantly higher use of overt pronominal subjects in the near-native group as compared to the control group; moreover, these overt subject pronouns were interpreted as coreferential with the matrix subject at a higher rate by near-natives. Similarly, near-natives produced more pre-verbal subjects than did controls.

The overall results showed that while near-natives appeared to behave native-like regarding crucial properties of Universal Grammar and the null subject parameter, they also showed some grammatical and discourse-related features that belonged to their non-null-subject L1 system and that seemed to remain embedded in their choices, despite their near-nativeness, all resulting in residual difficulties at the syntax-discourse interface.

4.2.3 At the interfaces: processing in near-native speakers' anaphora resolution (Sorace 2011)

As noted above, the Interface Hypothesis (IH) was first developed by Sorace and Filiaci (2006) to account for patterns of non-convergence and residual optionality in very advanced stages of adult L2 acquisition. According to the IH, while properties within narrow syntax (properties that do not work at the interfaces) are fully acquirable during L2 acquisition and remain rather stable during L1 attrition, the properties at the interface between syntax and other domains, such as discourse or pragmatics, tend to present a certain degree of indeterminacy or residual and emerging optionality. The IH predicts for anaphora resolution in bilinguals that while null pronouns will follow their expected pattern, overt pronouns will show an imbalance in the form of overextension. Thus, as we seen in example (8) from Sorace (2005:8), English near-native speakers of Italian may optionally produce an overt subject pronoun (8a) where monolingual Italian speakers would have a clear preference for a null pronoun (8b).

(8) *Perché Maria non ha parlato con nessuno*?
   a. Perché lei è troppo timida.
   b. Perché Ø è troppo timida.
   'Why didn't Maria talk with anyone?'
   'Because she is too shy.'

The broadened use of overt pronouns could be a strategy when failure to compute the correct syntax-pragmatics mappings in real time occurs; at the same time, despite being a redundant option, the use of overt pronouns eliminates any ambiguity might exist.

As we saw in section 4.2.1, Sorace and Filiaci (2006) found that near native speakers of L2 Italian gave significantly different responses from monolingual native speakers with respect to overt subject pronouns, while their interpretation of null subject pronouns was very native-like (Sorace 2011:2). This kind of asymmetry has also been seen in L1 attrition (Sorace et al. 2004), different language combinations (as seen in Wilson et al. 2009 for German-English bilinguals), and bilingual L1 acquisition (see Serratrice et al. 2004 and Sorace et al. 2009 for studies involving Italian-English and Italian-Spanish bilingual children, respectively).

The IH put forward in Sorace (2011) also considers non-linguistic factors, such as input and executive control. As we saw in 4.1, input quantity and quality are extremely important for understanding the integration ability of bilingual speakers. A decrease in the overall quantity of input has been linked to more inappropriate usage of pronominal forms. For example, according to Sorace et al. (2009), English-Italian bilingual children living in the UK (and therefore receiving more English input) performed less accurately in Italian in terms of their use of pronominal forms than Italian-English bilinguals living in Italy.

Regarding executive control, it seems that both languages are always simultaneously active in bilinguals. This results in the need to rely on executive control in order to avoid interference between the language that is being used and the one that is not. While this might be the reason for a bilingual advantage in non-linguistic tasks, it may draw attentional resources away from other tasks, including linguistic ones (Sorace 2011:24).

To sum up, the purpose of the IH is, firstly, to indicate that a structured model of bilingual development is needed that will formally define linguistic phenomena and then account for their interactions with other cognitive systems (Sorace 2011:27); and secondly, to point out the need for a common framework that can accommodate the bilingual research by both linguistics and psychology as well as multiple methodologies and perspectives. Moreover, the IH lends itself to comparisons across the different types of bilingualism, such as L1 and L2 acquisition or L1 attrition.

4.2.4. Selective deficits at the syntax-discourse interface (Lozano 2009)

This study is based on the IH and previous L2 studies (Sorace and Filiaci 2006; Liceras and Díaz 1998; Serratrice 2004; and others), according to which the prediction would be that native speakers of English that were highly advanced learners of L2 Spanish would show deficits at the syntax-discourse interface, in particular, by overproducing of overt pronouns in topic contexts were a null pronoun was required (Lozano 2009:137). Additionally, following Harley and Ritter's (2002) notion of Feature Geometry, deficits at the syntax-discourse interface do not affect the whole pronominal paradigm, but are rather selective. Thus, Lozano's expectations were that near-native

speakers would show native-like knowledge with 1st and 2nd person singular and 3rd person plural pronouns, but vulnerability with 3rd person animate, which creates the most ambiguity, as we have seen in previous studies.

In order to analyse these sensitivities, Lozano (2009) examined data from the *Corpus Escrito del Español L2* ('L2 Spanish Written Corpus', CEDEL2[10]) that included both L1 English-L2 Spanish and native Spanish data. Participants had to complete in a learning background questionnaire and write a composition in Spanish, choosing from twelve different topics. Participants who were L2 learners also had to fill in a placement test to assess their grammatical proficiency.

Using the UAM Corpus Tool[11] and following Harley and Ritter's (2002) pronominal Feature Geometry, Lozano analysed the written compositions produced by 30 participants' (both L2s and natives). Each subject in finite sentences was tagged for its syntax (full NP, null or overt pronoun), number (1st, 2nd or 3rd person singular or plural), animacy (animate or inanimate), information status (topic or topic shift) and appropriateness (underproduction, i.e. using a null pronoun in a context requiring overt material; or overproduction, i.e. using overt material where a null pronoun was required).

Regarding the syntax and information status of the subject, the results showed a clear preference for null pronouns in topic-continuity contexts for both native and L2 Spanish-speakers. The L2 group produced a significantly higher number of overt and pragmatically inappropriate items than the native-speaking group. As for topic-shift, there was a clear preference for full NPs in all groups, followed by overt pronouns. Lozano noted that both natives and learners displayed a preference for full NPs (rather than overt pronouns) to encode topic-shift, which is an important finding considering the common assumption in the literature that in NSLs topic-shift is normally encoded via an overt pronoun (e.g., Alonso-Ovalle et al. 2002).

As for number and animacy, 1st and 2nd person singular and plural pronouns were correctly used by both native speakers and L2 learners. With the 3rd person singular animate pronoun, however, learners produced a considerable number of pragmatically incorrect and overproduced forms, as well as some underproduced ones. Interestingly, learners exhibited native-like behaviour with 3rd person singular inanimate pronouns. Some infelicitous forms were found for 3rd person plural animate

[10] Available at http://cedel2.learnercorpora.com/
[11] Available at http://www.corpustool.com/

pronouns as well, but they were not statistically significant compared to the native speakers' productions; these small differences were not found for 3rd person plural inanimate pronouns. To summarise, L2 learners showed native-like behaviour in all the pronominal paradigm except with 3rd person animate pronouns, in particular in the singular number, suggesting that deficits at the syntax-discourse interface are selective (Lozano 2009:151).

Regarding the pragmaticality of the subject, results showed a large number of unpragmatic topics in topic-continuity contexts (overt material overproduction) in the compositions by L2 learners. This difference also accounts for the author's hypothesis regarding selective deficits at the syntax-discourse interface with discursive features. While L2 speakers did produce some residual null pronouns in topic-shift contexts (where overt material was expected), these results were not statistically significant if compared to natives' production.

Overall, these findings confirmed that L2 learners show deficits at the syntax-discourse interface with pronominal subjects; particularly, they overproduce overt material in contexts where a null pronoun would be pragmatically more acceptable and more native-like. Most L2 Spanish studies report unidirectionality in the type of production (i.e., overproduction) (Sorace 2006; Sorace and Filiaci 2006; Alonso-Ovalle et al. 2002); this study showed significant differences in overproduction and also an unpragmatic behaviour in Spanish natives, who also produced some overt material in topic-continuity contexts (like some other studies: see Montrul and Rodríguez-Louro 2006). Following Sorace (2006), it seems that interpretable discursive features such as topichood could be the ones in which imbalances arise, since they operate at the interface between the computational system and other systems of thought.

4.2.5 Applying the IH to understudied language pairs: the case of Moroccan Arabic and Spanish (Bel et al. 2016)

This study focuses on the production and comprehension of null and overt subject pronouns by bilinguals of a language combination that has received little attention so far, Moroccan Arabic (MA) and Spanish. Because both are NSLs that present two types of pronouns with a very parallel distribution, the aim here was to test Sorace's IH

(2011) on the syntax-pragmatics interface by observing sensitivity exhibited by these bilinguals to syntactic prominence, topichood, and pragmatic principles.

In order to test bilinguals' preferences in pronoun resolution, the authors created two experiments, one involving production and the other comprehension. There were two groups of participants, one consisting of early sequential bilinguals of L1 MA/L2 Spanish (who had either been born in Spain to Moroccan immigrant families or had immigrated before the age of 6) and a control group of monolingual Spanish-speakers. Participants were shown a videoclip with scenes of interpersonal conflicts at school, and then asked to write and tell similar stories, which were then subsequently transcribed. The transcripts were then divided in one-clause tiers for coding and analysis.

In the second experiment, which was intended to test interpretation, an acceptability judgement task was designed for ambiguous null and overt pronouns in Spanish. Each sentence introduced two same gender characters and then either a null or an overt pronoun in subject position that provided an interpretation favouring either the subject or object antecedent, as in (9).

(9) a. *María sorprendió a Raquel mientras se casaba. María se casaba.*
'María surprised Raquel while *pro* was getting married. María was getting married.'
b. *Cuando Daniel formaba a Ramón, se relajaba. Ramón se relajaba.*
'When Daniel was training Ramón, *pro* relaxed. Ramón relaxed.

(Bel et al. 2016:13)

All items were ambiguous and offered no semantic clues that would favour a particular interpretation. Three conditions were tested: type of pronoun (null versus overt), antecedent (subject versus object), and sentence clause order (main-subordinate clause versus subordinate-main clause). Participants were requested to judge the acceptability of the sentence using a four-value Likert scale.

Results of the first experiment testing production revealed a strong preference for null pronouns to select antecedents in subject position in both MA/Spanish bilinguals and the Spanish control group, confirming Carminati's (2002) PAH. As for overt pronouns, the results showed an uneven behaviour: no residual optionality (the overproduction of overt pronouns) was attested in the bilinguals' results. According to

the authors, the high frequency of null pronouns, together with the low frequency of overt referential pronouns, indicates that the bilinguals tested had a native-like behaviour with respect to discourse-related conditions of the realisations of pronouns (Bel et al. 2016:18). However, there were some infelicitous uses in the bilinguals' narratives compared to the monolinguals': there were observed, on the one hand, a larger incidence of ambiguous null pronouns and, on the other, a greater occurrence of redundant full pronouns and lexical DPs (overexplicitness), indicating a misuse of overt subjects in optional contexts in which a null pronoun would be a more natural option in Spanish. These results are consistent with previous findings (Liceras 1989; Sorace 2011; Lozano 2009), and could indicate that bilinguals become desensitised to certain pragmatic constraints: in other words, positive crosslinguistic influence does not seem to have an impact on the acquisition of this specific pragmatic phenomenon or remains at least neutral (Bel et al. 2016:20).

Results from the acceptability task were slightly different, as they did not support the idea that there was a clear-cut division of labour between null and overt pronouns. Here bilinguals accepted null pronouns referring to the subject antecedent and overt pronouns referring to the object antecedent to a degree similar to that shown by controls, but they were also willing to accept more object antecedents assigned to null pronouns and subject antecedents assigned to overt pronouns (Bel et al. 2016:22). This seems to indicate that the interpretation task may have been more demanding and complex than the spontaneous production task.

Since Carminati's PAH may not have been completely operative in the bilingual grammar of the participants and there seems to have been no cross-linguistic transfer, it appears that these findings are in line with Sorace's IH, which predicts that in solving pronominal anaphora in completely ambiguous contexts, bilinguals will rely more on semantic and pragmatic cues than on syntactic and structural constrains.

Having reviewed experimental studies based on cross-linguistic effects and processing constrains, in what follows we will review a different approach based on the effects of dominance, input, and proficiency.

4.2.6 Proficiency, dominance and reference management in bilingual speakers (Torregrossa et al. 2018; Andreou et al. 2023; Torregrossa et al. 2021)

In Torregrossa et al. (2018), the authors' aim is to compare the distribution of referential expressions across two languages, Greek and German, in bilingual speakers, correlating the use of referential expressions with a measure of processing (speed of lexical retrieval). As the authors point out, bilinguals have been shown to produce either overspecified or underspecified referential expressions; similarly, cross-linguistic influence has been pointed out as having a major role in bilingual referential strategies. The aim of the authors was to examine reference production in these bilinguals' languages, in order to tease apart cross-linguistic effects from the effects of bilingualism on the cognitive mechanisms of language production, as well as processing.

For the study, the authors analysed reference production among bilingual children in both their languages and compared them to their monolingual peers. A central concept in their work is the notion of referent activation *à la* Kibrik (2011) whereby discourse referents are assigned an 'activation score' at any given point in discourse, independently of the referential expression used to refer to them and their being actually mentioned. This makes it possible to compare the use of REs across languages and speakers.

Another aim was to understand whether processing factors affected bilingual reference production and, if so, how these mechanisms worked. Processing was observed in terms of lexical retrieval speed: bilinguals with a slower processing speed were expected to produce fewer REs with low-activated referents (Torregrossa et al. 2018:5).

The twenty bilingual children participating in the study were attending a school in Greece where German was the primary language of instruction, and ranged between 8 and 10 years in age. The group included simultaneous and early sequential bilinguals, as well as late bilinguals. The monolingual children making up the control groups were attending primary schools in Greece and Germany, respectively.

Participants had to perform a vocabulary test to assess the size of their lexicon, a lexical decision task (LDT), and a narrative retelling task. For the LDT, children were asked to read a letter string on the computer screen and then decide whether it was a

real word or not by pressing keys on the computer keyboard, while reaction times were being recorded. The narrative retelling task was performed by participants working individually using the *Edmonton Narrative Norms Instrument* (ENNI) by Schneider et al. (2006). The procedure consisted of showing the children a sequence of 13 PowerPoint slides of pictures representing a series of events. Participants simultaneously saw the pictures and heard a narrator telling the story that the images depicted, which made the decoding of the pictures and comprehension of the story easier for the children (Gagarina 2016). Then, participants were asked to retell the stories to the experimenter, while being audio-recorded. Finally, the resulting recordings were transcribed by native speakers for subsequent analysis (Torregrossa et al. 2018:8).

Regarding results, first, the vocabulary test revealed a relatively balanced group in terms of lexicon size. The results of the narrative experiment showed that in both Greek and German, the bilingual children tended to underspecify, leading to ambiguity in their answers, as they chose, for example, pronouns that could refer to all the possible antecedents in German (Torregrossa et al. 2018:23). Since the underspecified use of REs occurred in both languages, it could not be accounted for in terms of cross-linguistic influence. This underspecification could be related, according to the authors, to the interface between language and cognition. The results of LDT gave further evidence to support this claim: it was found that the slower the lexical processing, the lower the activation scores corresponding to the use of pronominal forms, which meant that underspecified uses of REs were an effect of slow lexical processing. As Torregrossa et al. (2018:25) point out,

> given that under slow processing, the retrieval of a full noun may be costly, speakers resort to the production of pronouns, which involve the retrieval of only a subset of the information associated with a full noun, and are thus easier to access and produce.

The authors emphasise the methodological need for multi-factorial approaches and underline the importance of analysing bilingual reference by means of the interaction between different cognitive and linguistic factors such as dominance, cross-linguistic influence, processing, ToM, etc.

In Andreou et al. (2023), the authors tested the production and interpretation of REs by Greek-Italian bilingual children. Greek and Italian are assumed to share the same forms for the marking of a referent's activation, despite Greek being slightly more complex from the morphological point of view since it has both a three-way gender distinction and a four-way case distinction (for more on the Greek and Italian systems see section 2.3.6. and Andreou et al. 2023).

As mentioned above, it has been observed that bilinguals tend to use and accept overspecified REs in one of their two languages; this behaviour has been analysed in terms of cross-linguistic effects (mainly from a non-NS language to a NS one) or as a result of the quantity and/or quality of language exposure. The aim of Andreou et al. (2023) was to show that, beyond these factors, individual patterns of reference management also underlie these behaviours, which are maintained separately in the two languages, regardless of language dominance or proficiency.

Thus, the aim of the study was, on the one hand, to investigate whether bilingual children shared patterns of reference use across their two languages and, on the other hand, to see whether these reference strategies were shared in both production and interpretation. To this end, 31 Greek-Italian bilingual children from an Italian immersion school in Athens were recruited. In order to assess language dominance, questionnaires regarding home language use and other activities were given to the parents: the results showed that overall the group consisted of balanced bilinguals. To assess lexical and syntactic proficiency, a vocabulary test and two sentence repetition tasks were administered. Then, following the procedures used in their previous studies, the authors had participants perform a narrative oral retelling task using ENNI. As in the preceding experiments, the children watched a PowerPoint slid show of 13 pictures while listening to a narrator tell the story. Finally, participants were audio-recorded retelling the story.

The last experiment was an Overspecification Detection Online Task (ODOT) in which participants watched a silent video story presenting a continuous series of actions performed by one character that were accompanied by written stimuli. These stimuli were two sentences, with reference to the character by means of a null subject in one and by means of a DP in the other. DP-containing sentences were as in (9) for Greek and (10) for Italian. The children were asked to read the two sentences and choose the most appropriate subtitle.

(10) a. *Prota, o pirosvestis dokimazi ta klidia me diaforetiki dinami.*
'First, the fireman tries the keys with a different force.'
b. *Meta, o pirosvestis sproxni to kollimeno xerouli.*
'Then, the fireman pushes the stuck door handle.'
c. Meta, o pirosvestis klotsai tin porta xoris epitixia.
'Then, the fireman kicks the door without success.'

(11) a. *Per prima cosa, la dottoressa spegne la videocamera nascosta.*
'First, the doctor turns off the hidden camera.'
b. *Poi, la dottoressa prova diverse chiavi con molta forza.*
'Then, the doctor tries different keys with a lot of force.'
c. *Poi, la dottoressa cerca i codici segreti nello scaffale.*
'Then, the doctor looks for the secret codes on the shelf.'

(Andreou et al. 2023:15)

As shown by the questionnaires and the lexical and syntactic proficiency tasks, children were relatively balanced across the two languages, which meant that whatever overspecification they might produce or accept would be the result of language dominance or more limited proficiency in one language relative to the other.

The results from the other tasks revealed that the children produced many DPs in both languages, but only a small percentage were overspecified (slightly more in Greek than in Italian). 18 children showed the same behaviour for overspecification in both languages, while the other 13 produced overspecified DPs in only one language (11 of these 13 only in Greek). For the ODOT, the extent to which overspecified DPs were accepted did not differ across the languages.

Overall, both reference production and comprehension results provided evidence related to the sharing of patterns of referential use across the two languages (Andreou et al. 2023:21). However, the results of the narrative retelling and judgement tasks did not correlate with each other: there was an asymmetry in the behaviour in reference production and reference interpretation that may have been generated by the nature of the tasks, giving an important role to metalinguistic skills regarding the sensitivity to overspecification. Taken together, these results suggest that individual patterns of development are as crucial in understanding bilingualism as cross-linguistic, language exposure, or proficiency effects (see Schmitz et al. 2016 for similar results).

Finally, in Torregrossa et al. (2021), the factors that contribute to individual strategies of reference production were analysed in bilingual children of various combinations of Greek with Albanian, English and German, considering language experience and proficiency, executive functions and cross-linguistic effects and focusing on the use of over and underspecified REs.

Participants were 125 bilingual children, of whom 24 were Greek-Albanian bilinguals living in Albania, 49 were Greek-English bilinguals living in the UK or the US, and 52 were Greek-German bilinguals living in Germany. Before their children took part in the study, parents were given a questionnaire about their child's exposure to the two languages. The first tasks undertaken by the participating children were intended to assess their lexicon size as a proxy measure of overall language proficiency. Then, in order to assess executive functions, the children performed an updating task. The results were expected to vary depending on the respective degree of language experience in the two languages; similarly, language experience would also lead to different results depending on whether the child was dominant in Greek or the other language, or relatively balanced across the two. According to the authors, overspecified REs would be the result of dominance in Albanian, English, or German, while underspecified uses would be associated with balanced bilinguals (Torregrossa et al. 2018).

Following a methodology similar to that applied to their earlier studies, Torregrossa and colleagues developed a narrative elicitation task for Greek targeting the production of REs based on the ENNI. Executive functions were tested by means of a 2-back task in which participants were shown a sequence of numbers appearing one after another on a computer screen at a constant rate of 4/s, and had to press a key whenever the currently presented number was the same as the number that had appeared two items previously (Torregrossa et al. 2021:15).

Regarding language proficiency, the results showed that most of the children had greater language experience in the language of the respective majority community (Albanian, English, or German), but 36% were more dominant in Greek. Regarding the analysis of overspecified REs in Greek, Greek-dominant children's executive function scores correlated negatively with the number of overspecified REs and emerged as the only significant predictor. In the non-Greek-dominant children, on the other hand, executive function scores and language experience were negative predictors for the

production of overspecified REs. As for underspecified REs, they were not predicted by any factor for Greek-dominant children, while language experience proved to be a significant predictor among non-Greek-dominant children.

Overall, the results showed that children with lower executive functions tended to produce a greater number of overspecified REs, particularly DPs, suggesting that low executive functions could lead to a decay of reference activation, since the information associated with the referent fades more rapidly from memory (Torregrossa et al. 2021:30). While it is expected that low executive functions should give rise to overspecification anyway, bilingualism may aggravate processing issues. In fact, the effect of these skills for the production of overspecified REs was more visible among children whose dominant language was Albanian, English or German than among the children who were Greek dominant, which points to the conclusion that the impact of executive function skills is modulated by language experience and dominance. This in turn suggests that overspecification is not a pragmatic strategy, but rather an expected "automatic" outcome when the grammatical options for reference available in a language are not completely in place (because of limited language experience in the target language). In terms of the triangular relationship among executive functions, language experience, and cross-linguistic structures, this study showed that individual variation in language experience and proficiency is key to understanding and analysing the conditions of use of REs in discourse.

4.2.7 The role of age of onset and dominance in Italian and Greek (Di Domenico and Baroncini 2019)

In line with the previous approach, in this study Di Domenico and Baroncini sought to analyse the role of factors other than cross-linguistic effects, that can influence the choice of anaphoric expressions in Greek and Italian near-native speakers, such as age of onset and dominance (as seen in sections 4.1.1 and 4.1.2). To this end, the authors created three experiments with both native bilinguals and near-native speakers of an L2.

Following Filiaci et al. (2013), in the first experiment the authors compared the productions of groups of monolingual Italian and Greek native speakers, in order to measure the proportion of null and overt pronouns and lexical DPs. If results were

similar in both languages, it would mean that hypothetical differences in bilingual production could not be attributed to cross-linguistics effects. For this task, the monolingual participants were asked to watch a short silent movie[12] and then tell the story depicted; their productions were then transcribed and analysed. Statistical analysis revealed a very similar pattern in both languages with regard to choosing referential expressions: the preferred REs were null pronouns, followed by lexical DPs and then overt pronouns. This means that Greek and Italian, despite their differences, are comparable languages for anaphora resolution in production.

The second experiment involved Italian native speakers, simultaneous Greek-Italian bilinguals, and Greek near-native speakers of L2 Italian who had started to learn Italian after puberty. The same short movie as in the first study was used, and participants had to tell the story first in Italian and then in Greek. The statistical results showed that L2 learners used significantly more overt pronouns than natives and bilinguals, while bilinguals behaved like natives. The factor that seemed to play a key role in these differences was the age of onset to Italian. While Tsimpli (2014) argued that phenomena acquired late (such as pragmatically conditioned aspects of pronominal choices) do not cause differences among bilinguals with different ages of initial exposure, the results of this experiment suggest that these claims are valid when exposure begins pre-puberty, but not when it begins post-puberty (Di Domenico and Baroncini 2019:14).

Because age of onset to Italian seemed to be a significant factor in determining the over-use of overt pronouns in near-natives of Italian in the absence of cross-linguistic effects (Di Domenico and Baroncini 2019:9), it was important to verify the role of other factors, such as dominance. In order to do so, in the third experiment two groups of bilinguals (one group living in Greece and the other in Italy) were tested. What differentiated these groups was the prevalence and use of the two languages: the bilinguals living in Greece used both languages in everyday life, while the bilinguals living in Italy used Italian for everyday life and Greek only when interacting with their Greek family.

The results from the retelling of the short movie with the bilingual groups were as follows. When the narrative production was compared in each language of the two groups of bilinguals, it was observed that the Italian output was quite uniform, while

[12] Again, 'The Pear Film', by the University of California at Berkeley (1975).

the Greek output presented some differences across groups in that the bilinguals living in Italy used significantly less *pro* and significantly more lexical DPs than the bilinguals living in Greece. The within-group comparisons, on the other hand, revealed that while the bilinguals living in Italy made the same choice of REs in Italian (their daily language) and in Greek (their more seldomly used language), the bilinguals living in Greece behaved differently: they used significantly more *pro* in Greek than in Italian, and more lexical DPs in Italian than in Greek. This suggests that the difference is related to the predominance of the language, in this case Greek (Di Domenico and Baroncini 2019:11).

To sum up, while the language that predominated in daily use had no effects on the choice of overt pronouns, it did exert an effect on the selection of anaphoric devices such as null pronouns and lexical DPs, given that it was in the predominant language that differences between native speakers and bilinguals were observed. According to the authors, these differences might arise from the bilinguals' need to keep the two languages used daily as separate as possible.

4.2.8 The role of age of onset and dominance in Spanish and Greek (Giannakou 2023)

Following Sorace's IH (2011) and in line with the previous study, Giannakou (2023) compared anaphora resolution data from Greek and Spanish monolinguals and Greek-Spanish bilinguals living in Chile, with the bilinguals divided in three different groups: first-generation immigrants, heritage speakers, and L2 speakers.

The aim of the study was to understand, firstly, if there were any differences in anaphora resolution between Greek in contact with Spanish and monolingual Greek and, if so, in which contexts they occurred; and secondly, whether there was any effect of age on the interpretation of ambiguous anaphoric subjects.

For the task, participants responded to a previously recorded set of sentences modified from Mastropavlou et al. (2014) in a self-paced offline task. The test sentences presented a sequence of two events in a subordinating discourse structure. First, a SVO clause introduced two same-gender referents, one in subject position and the other in object position. This sentence was followed by a temporal clause consisting of either a null or an overt pronoun, and participants were asked to choose an

antecedent for this pronoun (in the same fashion as in our experiment 1 in section 3.2). An example of the same prompt sentence in Greek and Spanish can be seen in (12).

(12) a. *O iefthindis xeretuse ton jatro otan Ø/aftos evjene apo to asanser. Pjos evjene apo to asanser?*
b. *El director saludaba al doctor cuando Ø/él salía del ascensor. ¿Quién salía del ascensor?*
'The director was greeting the doctor when he was exiting the lift. Who was exiting the lift?'

(Giannakou 2023:9)

The results showed that, with regard to null subject pronouns, both monolinguals and bilinguals performed similarly by linking them to the subject antecedents, with the exception of heritage speakers, who linked the null pronoun to the object antecedent more often than the other groups. Interestingly, a distinction between age groups was found: older speakers (whether monolingual, bilingual, or L2) clearly preferred to match the null pronoun to the object antecedent (perhaps following the 'recency of mention' strategy; see Hendricks et al. 2014 for more), while younger speakers did not show a homogenous pattern: the behavior of recent immigrants and Greek monolinguals was consistent with Carminati's PAH, while heritage and L2 speakers presented a weakened PAH. The latter pattern was also attested in older Greek monolingual participants, which suggests an effect of age and memory effects. The unclear pattern of heritage and L2 speakers was similar to that of Spanish monolinguals, with more ambiguous null pronouns, and is consistent with other findings regarding the same dominance pattern in these two groups (Montrul 2016). Overall, these findings suggest that null subject pronouns involve discourse pragmatic interface conditions and are thus vulnerable in language contact situations, which is not predicted by the IH (Giannakou 2023:25).

The expectations regarding the overt subject pronouns were that they would be used to refer to subject antecedents more often by bilinguals than monolinguals. However, all the bilingual groups preferred to associate them with the object antecedents, like Greek monolinguals (and differently from Spanish monolinguals), and therefore against the predictions of the IH.

Regarding cross-linguistic influence, the reported findings support Tsimpli et al.'s (2004) account, according to which when combining prototypical NSLs, no differences between monolinguals and bilinguals should be expected. What arises from comparing Greek and Spanish in this study is that the interpretation of overt pronouns in Greek tends to be grammatically determined by the constraints limiting their use to more specific contexts, while in Spanish overt pronouns depend more on pragmatics and therefore can be used more flexibly (as seen also in Giannakou and Sitaridou 2022, and in line with our reasoning in section 3.2).

4.3 Discourse competence by bilingual children

As mentioned at the beginning of this chapter, the interest in analysing narratives from a discourse point of view is motivated by different things. Firstly, narratives require a large set of linguistic abilities that concern discourse features, syntax, and structure, as well as more cognitive, semantic and social abilities. In addition, narratives provide a large amount of data in a relatively natural context and are particularly appropriate for bilingual children, because "language tasks that require a cognitive component might also be less biased against dual language children, because the cognitive component could be tapping into language-general capacities" (Paradis et al., 2011:221). In fact, narratives contain valuable information about both macro- and microstructure. As we saw, macrostructure analysis focuses on hierarchical organisation and story grammar components; microstructure analysis, on the other hand, focuses on the linguistic structures that are necessary to create a coherent discourse, such lexical diversity tense-aspect marking, or the use of referential noun phrases.

Traditional macrostructure analysis (for instance, the story grammar model in Mandler and Johnson 1977) assumes that all stories have a setting and episode structure that captures a universal organization pattern for story knowledge (Gagarina 2016:5): stories begin by specifying the time and place of the events and identifying the protagonist; this is followed by three episodes, which consist of the setting of a goal (G) for the protagonist, an attempt (A) by the protagonist to achieve that goal, and an outcome (O) of the attempt in terms of the goal. The analysis of structural complexity in stories provides information about narrative development and can be used to compare languages.

In addition, cohesive and coherent narratives presuppose an awareness of others' states of mind (Tsimpli 2014). In other words, for the listener to understand a story, the teller must provide information about the emotions and goals of the protagonists. In the analysis of narratives retold by children, therefore, the degree to which a child can understand and transmit this sort of information is an indicator of their metalinguistic and cognitive knowledge as well as their 'theory of mind' abilities.

4.3.1 The Multilingual Assessment Instrument for Narratives (Gagarina et al. 2016, Lindgren et al. 2023)

On the basis of these discourse-related factors in bilingualism studies, Gagarina and colleagues (2012, 2016) developed the Multilingual Assessment Instrument for Narratives (MAIN), a set of standardised tasks and materials designed to evaluate the narrative abilities acquiring two or more language from birth or from an early age along a continuum of complexity based on the telling and/or retelling of a story. The MAIN is one component of the Language Impairment Testing in Multilingual Settings (LITMUS) battery of tests, which are intended to screen and identify children at risk for Specific Language Impairment (SLI). In the words of Gagarina et al. (2016:24),

> the instrument can be used to collect data from bilingual children with and without diagnosed language impairment for a variety of languages and language combinations. This allows for cross-linguistic comparisons and the development of theoretical perspectives. LITMUS-MAIN also provides clinicians with a diagnostic tool to guide and inform intervention in children with language impairment.

They can also be asked to retell the story after either hearing the examiner tell if first, or after they have already told it once (i.e., generated it). This 'retelling' modality obliges the children to reconstruct and reinterpret the story, which gives the examiner information about how vocabulary, grammatical structures, and content have been assimilated (Gillam & Carlisle 1997; Gagarina 2016). First presented in Gülzow and Gagarina (2007), the materials comprising the MAIN are two sets of parallel picture sequences and scripts controlled for macro- and microstructure, as well as specific guidelines and protocols for using the materials. The instrument is intended to be

appropriate for children aged between 3 and 9 coming from any cultural or socioeconomic background. Since animals feature prominently in stories for children around the globe, the pictures sequence stories whose main characters are birds, goats, cats, and dogs.

Following Serratrice (2007), children undergoing the MAIN first chose one of the four stories without letting the examiner know which story they have chosen, in order to control for effects of shared knowledge and joint attention. The child then uses the six pictures comprising each sequence to tell the story of what is happening. The four sequences are carefully designed to portray the context and content of the stories as well as the characters' emotions and intentions through facial expressions, gaze, and movements. One of the MAIN's picture sequences serving as a story prompt can be seen in Figure 1.

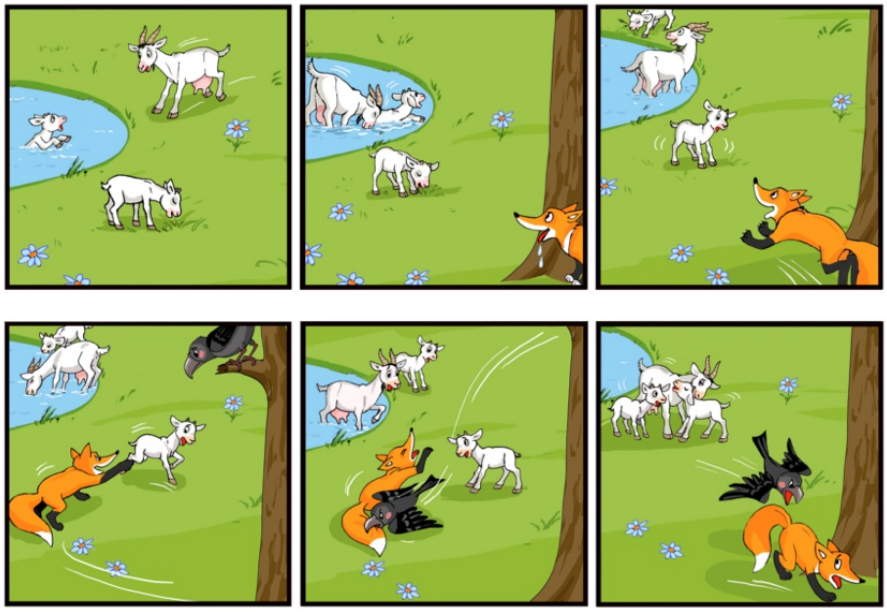


Figure 1. Baby Goats stimulus pictures (from Gülzow and Gagarina 2007).

After an interval of at least four days, the whole procedure is repeated, this time in the second language. According to the authors, it is important that the examiner for each language must be a native speaker of that language so that the examination context feels fully monolingual to the child being examined.

All sessions are audio-recorded and the children's output is subsequently transcribed for analysis purposes. This analysis involves identifying and coding both

the macrostructural features of the transcript such as Setting, Goals, Attempts, Outcomes, and Internal State Terms, and ten different microstructural features related to length, lexicon, syntactic complexity, discourse cohesion, and bilingualism (see Gagarina 2016 and section 4.2 above).

Since the creation of MAIN more than ten years ago, it has been used to test over 90 languages and many combinations of bilingual pairs. Results indicate that bilinguals tend to perform similarly in their two languages and that they do not differ from monolinguals, although some factors such as vocabulary knowledge do influence their performance to some extent (Lindgren et al. 2023).

Gagarina et al. (2012, 2016) represent a crucial contribution to the analysis of narratives and reference management in bilingual children. Their work has been taken into account in our own investigation (see sections 5.3 and 5.4): tasks have been created in accordance with their idea that a "natural" activity such as storytelling is the most appropriate context for investigating discourse-related aspects of language with children.

4.3.2 Coreference and discourse coherence in L2 (Grüter et al. 2017)

In section 2.4.2 we reviewed discourse-related approaches (mainly Kehler and Rodhe 2013). Later on, in section 3.4, a discourse-oriented experiment was created specifically for Spanish in an attempt to understand how some discourse features such as the occurrence of IC and coherence relations interact with reference management. In this section, further work by Rodhe and colleagues (Grüter et al. 2017) regarding the influence of such features (as well as event structure) in L2 will be introduced.

The interface between syntactic elements and discourse-level information is important because, as we saw, linguistic phenomena such as reference resolution can lead to persistent L1-L2 differences (as shown in Sorace and Filiaci 2006; Sorace 2011). Various related phenomena can be involved. For instance, the expression of aspectual information in event structure (e.g., perfective versus imperfective verbs) can be difficult to learn and process in a L2. Regarding referential form manipulation, crosslinguistic differences in the inventories of pronominal forms and form-meaning associations need also to be considered (Carminati 2002; Sorace 2011).

In Grüter et al. (2017) the L2 learners under study were native speakers of Japanese or Korean (both NSLs) in the process of learning English. As mentioned in section 2.4.3 (see also Ueno and Kehler 2016), Japanese uses overt pronouns with little frequency and in very restricted contexts (written and formal genres), which makes it difficult to accept a clear division of labour like that assumed by Carminati's PAH (Carminati 2002) for this language. This could lead L2 English learners to treat overt pronouns in English very differently than native English speakers.

To estimate participants' proficiency in English, three measures were collected: a written cloze-test, self-ratings of language ability, and the oral Versant English Test (Pearson 2011). Test scores were significantly higher in the English native-speakers than in the L2 speakers, although no significant differences between Japanese and Korean participants was found in terms of L2 mastery, with the majority of both groups scoring as A2-B2 users of English.

The main experiment was a story-continuation task with a 2x2 design, varying verb aspect (perfective/imperfective) and referential form in the continuation (pronoun/free), as in (13).

(13) a. Emily brought a drink to Melissa. (She) _____ [perfective]
b. Emily was bringing a drink to Melissa. (She) _____ [imperfective]
(Grüter et al. 2017:18)

The critical 20 items in the experiment contained transfer-of-possession verbs (*give, pass, take*, etc.) and different Source/Goal names, theme objects, and verb aspect each time. Participants were instructed to give a story continuation for each context sentence, avoiding humour.

For the analysis, researchers observed, firstly, who the continuation was about (i.e. whether the subject or the object was chosen as the antecedent), what type of referential expression was used in the free condition (pronoun vs. proper name), and which coherence relation was established between the target sentence and the answer (explanation, elaboration, result or occasion, as seen in section 2.4.2).

Regarding manipulation of the referential form, no substantial differences between the L1 control group and the L2 groups were found. In both cases, continuations with a subject referring back to the Source were chosen more often when they were given a pronoun prompt than when they were free to choose any RE to start

their continuation. A preference for pronouns over names was also observed in the prompt-free condition when participants started their continuation with a subject referring to the previous Goal. A pronoun prompt also created a preference for an ongoing-event-driven coherence relation (like an explanation or an elaboration) (Grüter et al. 2017:38). These findings indicate that these non-native speakers showed considerable awareness of interpretation biases associated with English pronouns.

As for event structure manipulation, native speakers preferred to refer to the Source argument and an ongoing-event coherence relation if the event in the previous sentence was in imperfective aspect. By contrast, L2 speakers' results did not exhibit a significant effect of aspect, although they did show an effect of coherence relation, just like native speakers. The reason for the different impact of aspect relative to coherence in the L2 group could be related to the timing of the respective choices (Grüter et al. 2017:41), following the "linguistic pre-processing" hypothesis regarding updated discourse expectations (DeLong et al. 2014). According to this hypothesis, native speakers construct and update expectations as the new information unfolds in discourse, while L2 speakers delay decisions about the continuation until after their processing of the context sentence is fully completed. This suggests that, overall, "non-native speakers' ability to predict upcoming information at the sentence level based on lexical and morphosyntactic cues is much more variable, and often reduced, when compared to native-speakers" (Grüter et al. 2017:44; see Kaan 2014 for a review), which offers an interesting perspective on expectations at discourse level in both native and non-native speakers.

4.4 Summary

In this chapter we reviewed some of the studies that have explored how reference management works in bilinguals and bilingual narratives. Among previous studies, different features and factors were analysed as possible reasons for the asymmetries found between both natives and non-natives, and monolingual and bilingual speakers. We saw that despite having acquired the necessary features (PAH, null subject parameter, etc.), many non-natives and non-monolinguals seem to be unable to apply them to their linguistic production, which could be a reason for thinking that they may not have the necessary processing resources to consistently integrate multiple sources

of information at the syntax-discourse interface (Sorace and Filiaci 2006; Belletti et al. 2007; Sorace 2011; Lozano 2009; Bel et al. 2016), giving rise to processing constraints. A later contribution to this reasoning is given by Torregrossa et al. (2018, 2021) and Andreou *et al.* (2023) regarding how, in the triangular interface among executive functions, language experience, and cross-linguistic structures, individual variation in language experience and proficiency is key to understanding and analysing the conditions of use of REs in discourse in bilingualism. Finally, the studies by Di Domenico and Baroncini (2019) and Giannakou (2023) on Greek and Italian and Greek and Spanish respectively show other elements that interact with anaphora resolution in non-monolingual contexts, namely age of onset, language dominance, and language contact situations.

The discourse-based approaches focus mainly on story-structure contexts. Gagarina et al.'s (2007, 2016) contribution to this type of analysis was the creation of MAIN, a set of tasks and materials created to evaluate children's narrative abilities along a continuum of complexity. Following the discourse-related approaches presented in 2.4.2, some studies like Grüter et al. (2017) have added implicit causality, coherence relations, and event structure as analysis factors in L1/L2 studies, finding that while L2s behave very native-like regarding some of these features, the differences found between L1 and L2 behaviours in other areas could be related to discourse expectations and a lesser ability to predict upcoming information at the sentence level, which adds a new element to the large puzzle that comprises bilingual anaphora resolution.

In all the mentioned approaches, many factors that seem to play different roles or have different weight in bilingual performance in general and anaphora resolution in particular, depending on the context and on the language or pair of languages. As we saw, though many studies have analysed these phenomena, their results have varied considerably. In large part this is because it is not easy to compare results across language pairs when the stimuli and participants are not the same.

Considering the experiments carried out in chapter 3, it seems that Spanish and Italian are truly comparable languages, despite the differences mentioned (VSO and DOM, see chapter 3), since they share a similar paradigm of pronouns. This reasoning raises the question as to whether the findings of the monolingual experiments (experiments 1 and 2) could be observed in a bilingual context, which is the second research question of this dissertation, repeated from chapter 1 here.

RQ2

a. How do Spanish-Italian bilingual children manage anaphora resolution?
b. How does their performance compare with that of monolingual speakers?
c. How do the two systems of interpretation interact with each other?

My main hypothesis with regard to this research question, as we will see in the next chapter, is that our group of Spanish-Italian bilingual children, being simultaneous bilinguals, will be able to separate the two systems of interpretation and perform accordingly in each language, showing no major signs of cross-linguistic effects. Thus, in Italian, they will display a clearer preference to associate null pronouns with the subject antecedent and overt pronouns with the object antecedent; in Spanish, however, they will exhibit a less clear preference, and we will find more null pronouns in general, referring back to either the subject or the object antecedent. Regarding the influence of discourse-related factors, my hypothesis is that they will have the same effect in both languages.

In order to answer to my RQ2, and bearing in mind the approaches I reviewed in this chapter, two new experiments were carried out with Spanish-Italian bilingual children. Experiment 4 examines anaphora production in a narrative context, following Gagarina (2016) (section 4.3.1) and Torregrossa et al. (2018) (section 4.2.6), whereas experiment 5 examines the effect of discourse-related factors on bilingual anaphora interpretation and production, following Grüter et al. (2017) (section 4.3.2), Kehler and Rodhe (2013) (section 2.4.2) and our own discourse experiment (experiment 2). These two experiments will be presented in what follows (chapter) 5, alongside the results of a preliminary proficiency test to check participants for possible language dominance (experiment 3).

5. TESTING SPANISH-ITALIAN BILINGUAL CHILDREN. THE STUDY

Overview

In chapter 3, following Torregrossa et al. (2020), we recreated an interpretation task on anaphora resolution for adult Spanish speakers, in order to compare the results with those found for other NSLs such as Italian and Greek. The results of the experiment revealed some differences between Spanish and Italian (the two languages we are concerned with in this chapter) in how anaphor reference was interpreted: while Italian speakers relied heavily on syntax, associating null pronouns with subject antecedents and overt pronouns with object antecedents, Spanish speakers seemed to have absolutely no preference for these associations, and the numbers of null or overt pronouns paired with either the subject or the object antecedent were exactly the same (see section 3.2.3). These results seemed inconsistent with some previous approaches (such as Filiaci et al. 2013) and were quite puzzling, because they challenged what was believed to be a common characteristic for all NSLs, particularly with regard to monolingual native speakers.

In order to further understand the particularities of Spanish regarding reference and following Kehler and Rodhe (2013), a second experiment involving semantics- and discourse-related features was performed whose aim was to understand whether or not (and if so, to what extent) non-syntactic elements such as implicit causality, discourse relations, and topichood could play a major role in Spanish anaphora resolution and explain the differences found between Spanish and Italian in this regard. The results of that experiment revealed that Spanish had clear sensitivities to both implicit causality verbs, such as *impress* and *admire*, and coherence relations (explanation, elaboration and result) but topichood, by contrast, did not seem to have more than a mild effect on the results (see section 3.4.4).

Though these features have not been tested for Italian (a direction for future investigation, perhaps), it appears nevertheless clear that Spanish and Italian do not behave the same in regards to reference production and interpretation. It is true that their differences cause no major problems for communication between bilingual

speakers, nor would they yield ungrammatical or unacceptable sentences; however, they could well lead to small misunderstandings.

In chapter 4 we reviewed some of the literature on bilingual acquisition, and we saw that there are many factors involved in language learning that can impact every linguistic aspect, among them cross-linguistic effects (Sorace and Filiaci 2006), processing (Sorace 2011), executive functions and lexical abilities (Mattock et al. 2010), language experience (Giannakou 2023), proficiency (Torregrossa et al. 2018). As with the experiments on monolinguals that we reviewed in chapters 2 and 3, research on bilinguals seems to yield different results across studies; moreover, there are many elements that might play a major role in how bilinguals of different pairs of languages manage reference production and interpretation.

In an effort to shed some light on the matter, the purpose of this chapter is to consider the differences emerging from the experiments in chapter 3 as a starting point and analyse accordingly reference production by Spanish-Italian children. To this end, I carried out three experiments on a group of Spanish-Italian bilingual children attending an immersive Italian school in Madrid, Spain. The first two experiments followed Torregrossa et al. (2018). One was a cloze-test intended to analyse the children's lexical and syntactic knowledge and proficiency in both languages and establish whether one or the other language was dominant, on an either collective or individual level, and the other was a narrative retelling task which would provide data on how children understood reference production. The third experiment was a follow-up to the discourse-related experiment in chapter 3 and consisted of a sentence-continuation task based on a story (see Kehler & Rodhe 2013; Grüter et al. 2015; Gagarina 2016).

The first task, the cloze-test, should be understood simply as a means to obtain background information on the participants (in terms of their language proficiency and dominance), and therefore has no actual research question attached. The informal prediction, however, is that the results will show a well-balanced group of bilinguals, albeit possibly with a slight Spanish dominance in their language use, given that the broader context of their lives outside of school and home is Spanish-speaking.

As for the second task, the narrative retelling experiment, the main research questions are the following:

- RQ 5.1: Does the type of anaphoric expression play a role in reference assignment in bilinguals?
- RQ 5.2: Do dominance, language, and age play a role in reference production among bilinguals?

Regarding the outcome of this task, there are various hypotheses to be considered. In the first one, the relevance of syntactic factors in anaphora resolution in Italian play a major role in children's use of referring expression in discourse, resulting in an Italian-like pattern for both languages, with null subject pronouns associated with subject antecedent and overt subject pronouns associated with object antecedents.

The second is that the reverse would hold. In other words, the more lax syntax of Spanish, which allows for the use of null subject pronouns associated with both the subject and the object antecedent, would override the more rigid Italian syntax, leading to underspecification and an overproduction of null pronouns in Italian (like in other pairs of languages, as seen in Bel et al. 2016 or Torregrossa et al. 2018), thus resulting in a Spanish-style pattern for both languages, with more null pronouns associated with either a subject or an object antecedent.

There is yet a third possible hypothesis, which is the one I will adopt here: this is that bilinguals will behave like monolinguals in in each language respectively. In other words, there will be no cross-linguistic effects, and the pattern characterising each language will remain uninfluenced by each other. Thus the results in Italian will be determined by syntactic constraints, while the ones in Spanish will be determined by pragmatic constraints. If this third hypothesis is confirmed, these results would be consistent with Di Domenico and Baroncini's (2019) findings for Greek and Italian and Giannakou's (2023) findings for Greek and Spanish. As Tsimpli et al. (2004) pointed out, when combining prototypical NSLs, no differences between monolinguals and bilinguals should necessarily be expected. Moreover, this group of bilingual children has been continuously exposed to both languages in every context pertaining to schooling, including classes, play-time, storytelling, interactions with peers and teachers, etc. This means, in my view, that they have been exposed to storytelling styles equally in both languages and will therefore be able to reproduce them appropriately for each language.

Finally, the third task (the sentence-continuation task) picks up some of the research questions from experiment 2 in chapter 3:

- RQ 5.3: Does the type of anaphoric expression play a role in reference assignment?
- RQ 5.4: Does verb bias play a role in reference assignment?
- RQ 5.5: Do discourse relations play a role in reference assignment?

The predictions are, in principle, the same as those I made for experiment 2, and some differences in reference assignment should therefore be expected. More specifically, the prediction is that, consistent with the differences found in chapter 3, Spanish will have more null subject pronouns associated with object antecedents, and Italian will show a more clear-cut distinction between null subject pronouns associated with the subject antecedent and more overt subject pronouns associated with the object antecedent). Regarding the weight of implicit causality and discourse relations, we expect them to play the same role as found in experiment 3 for Spanish (see section 3.4), but I predict a stronger bias in Italian, meaning that Italian will have more null pronouns referring to the subject antecedent with subject-biased verbs, and more overt pronouns referring to the object antecedent with object-biased verbs. As for the discourse relations, a similar effect in both languages is expected. Of course, these predictions are to be verified controlling for dominance, language, and age as relevant factors in reference assignment.

In what follows, all three experimental tasks will be described in details and their results presented.

5.1. The study

5.1.1. Location

The study was conducted at the Scuola Statale Italiana di Madrid *Enrico Fermi*, which uses Italian as the main medium of instruction although some subjects are taught in Spanish. As part of the Italian public education system, the school is free for Italian citizens, while non-Italians must pay a tuition fee.

The experiments were carried out over two weeks in January 2022. Each participating child took part in the study within her or his usual class.

5.1.2. Participants

Eighty-four bilingual children (41 females) took part in the study; they ranged in age from 8 to 12. Participant groups were two groups of third year primary pupils (III Elementare; 38 children), one group of fifth year primary students (V Elementare; 13 children), and two groups of second year secondary students (II-Media; 33 children).

Prior to the experiment, the parents of the participating children were asked to sign a consent form (appendix L), in which they also provided their e-mail address. Each family then received by email a link to a short questionnaire (appendixes M and N) intended to elicit linguistic background information about the child in terms of the language(s) spoke at home, during extracurricular activities, with parents and grandparents, and so on[13]. In terms of nationality, in some cases parents were both Spanish or both Italian while in others one parent was Spanish and the other Italian. Nevertheless, 67% of parents reported the family context to be more Spanish-dominant, although 80% of the families had exposed their children to Italian in some way since the age of 3. Following Montrul (2008), participants can therefore be described as either simultaneous or early successive bilinguals.

[13] Unfortunately, only 27 parents filled in the questionnaire, and many of those who did failed to provide the child's date of birth. The background information for children provided here must therefore be viewed as merely suggestive.

5.1.3. Materials and procedure

Participating pupils performed a set of three experimental tasks in both Spanish and Italian: a cloze-test, a written narrative task, and a sentence-continuation task. The cloze-test was intended to assess language proficiency and dominance; the written narrative task was used to observe the production of REs in a narrative context; and the sentence-continuation task also checked the discourse aspects of narrative production by including subject- and object-biased verbs, following the research questions from experiment 2 (see chapter 3). Tasks in the respective languages were administered on paper during the children's regular Italian and Spanish classes. The order in which the two language versions were administered was randomized across groups, as was the order of tasks. Administration of one language version of the task set was separated by an interval of at least one week from administration of the other language version. The task order could be one of the following:

- Cloze-test; Narrative; Sentence-continuation
- Narrative; Cloze-test; Sentence-continuation
- Cloze-test; Sentence-continuation; Narrative

5.2. Task 1: cloze-test

5.2.1. Materials

The cloze-test was intended to assess the children's proficiency in each language (see Hulstijn 2010 for an overview of instruments of this sort), replicating the task used in Torregrossa et al. (2023) for Portuguese[14], which in turn is based on a textless cartoon story that forms part of the Edmonton Narrative Norms Instrument (ENNI; Story B3 – Balloon; Schneider et al. 2006[15]). The story is written in such a way that it targets structures related to the syntax-discourse interface (e.g., pronouns, clitics, adverbial

[14] We obtained an Italian version from the authors and translated it to Spanish with their permission.
[15] Available at http://www.rehabmed.ualberta.ca/spa/enni/about_the_enni.htm.

clauses). This makes it possible to assess children's mastery of these structures, as well as their comprehension abilities (Torregrossa et al. 2023:16). Excerpts from the Italian and Spanish versions of the test can be seen in (1).

(1) a. *Il coniglio* ***ve***_ _ *che la sua amica sta tirando un carretto con un* ***belli***_ _ _ _ _ _ *palloncino. Il palloncino, il coniglio* _ _ *vuole prendere, per* ***gio***_ _ _ _ _ *con la sua amica, ma la cagnolina* ***g***_ _ *dice che prima devono slegarlo.*
b. *El conejito ve que su amiga está tirando de un carrito con un globo muy* ***bo***_ _ _ _ _. *El conejito quiere* ***coger***_ _, *para* ***ju***_ _ _ _ *con su amiga, pero la perrita* _ _ *dice que antes tienen que desatarlo.*
'The rabbit sees that his friend pulling a wagon with a beautiful balloon tied to it. The little rabbit wants to catch it to play with his friend, but the little dog says that they have to untie it first.'

La cagnolina, il coniglietto e il palloncino

Un giorno una cagnolina **giochere**_ _ _ _ _ e un coniglio **all**_ _ _ _ , che sono amici, decidono di fare una passeggiata **n**_ _ bosco. Splende il **s**_ _ _ e i **fi**_ _ _ sbocciano.

Il coniglio **ve**_ _ che la sua amica sta tirando un carretto con un **belli**_ _ _ _ _ palloncino. Il palloncino, il coniglio _ _ vuole prendere, per **gio**_ _ _ _ con la sua amica, ma la cagnolina **g**_ _ dice che prima devono slegarlo. Il coniglio inizia _ slegarlo e la sua amica aspetta **impa**_ _ _ _ _ _ di cominciare il gioco. Tuttavia il palloncino scivola per sbaglio **d**_ _ _ _ mani del coniglio. La cagnolina salta in alto _ _ _ prenderlo gridando: "Oh no! Il mio palloncino preferito sta volando in aria". La cagnolina è così arrabbiata _ _ _ inizia ad urlare con forza contro il suo amico,
m_ _ _ _ _ lui la guarda impaurito e non sa **c**_ _ **c**_ _ _ fare.

Figure 1. Sample page of the cloze-test in Italian.

5.2.2. Procedure

The cloze-test was administered in paper form during the participants' regular Italian or Spanish language classes, depending on the version of the task being carried out.

Participants completed the task simultaneously but individually and were not allowed to go off-task while doing so. The administration in one language or the other was randomized across the groups, as well as the administration of one task or another. The children had a least one-week interval between language 1 and language 2.

The paper contained the text with gaps as well as the illustrations representing the episodes of the narrative. The illustrations were intended to help the child interpret the task, and this proved to be necessary since some of the youngest children initially were unsure about how to complete the task.

The time used by children to complete the test tended to vary by age: while the twelve-year-olds generally took no longer than 10 minutes, the eight-year-olds tended to take 30 minutes.

5.2.3. Analysis

When the participants had completed the task, the task sheets were collected from them and then coded for analysis by the researcher. Each student-completed item was coded as being 'correct' or 'incorrect'. If the child had produced a word completion solution that was not the one intended but was nevertheless acceptable, this was counted as if it was correct. By the same token, if the child made no attempt to complete a blank, this was counted as an incorrect answer. All 'correct' items were assigned a score of 1, while incorrect or missing items were assigned a score of 0.

Scores were added to yield a total out of 40 points, which was taken as the child's proficiency score for that language. The child's proficiency score for Spanish was then subtracted from their score for Italian. If the result was a positive number, this was taken to be an indication of dominance in Italian, while a negative score reflected dominance in Spanish. The closer the score to zero, the more balanced the child's bilingual skills (Torregrossa & Bongartz 2018).

5.2.4. Results

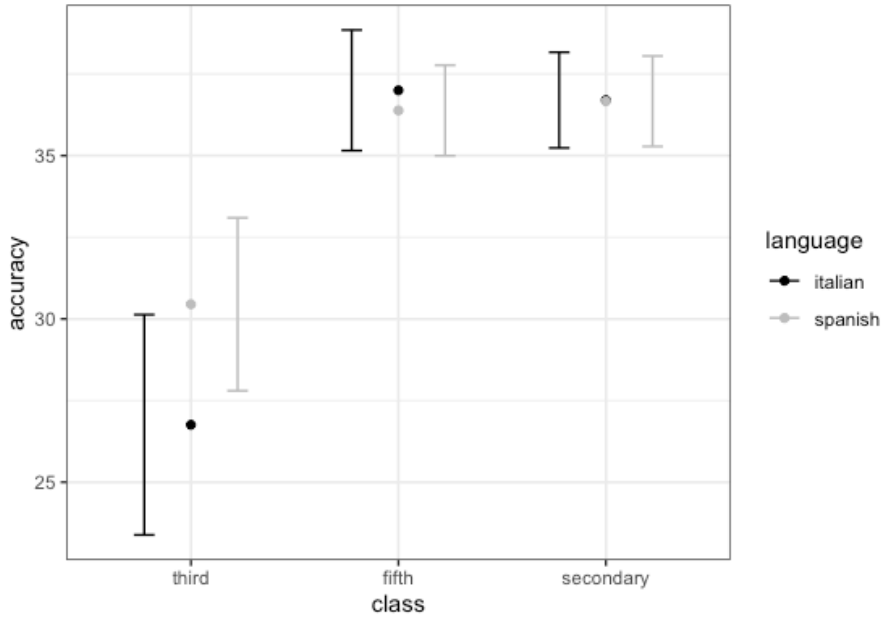


Figure 2. Proficiency score averages (dots) in Italian and Spanish by class group.

The results can be seen in figure 2, where each dot represents the average proficiency score in each language by school level (third and fifth year in primary school, and second year in secondary school). The closer the two dots, the more similar the average proficiency of that group in the two languages. The comparison of the group results reveals that the participants are relatively balanced across the two languages, with similar overall scores in both languages, although slightly increased in Spanish in the youngest group. Despite the fact that I did not receive many responses from parents regarding their children's language environment, these results we see here are what we would expect given that the Scuola offers education from preschool to high school, and most children enter the school either in kindergarten or in the very first years of elementary school Those who enter later must be bilingual because more subjects are taught in Italian.

For the analysis, the answers coded as 'incorrect' (which included incorrect completions and items left blank) were also analysed from a qualitative point of view, in order to understand which type of structures were most difficult for the children. As we see in figure 3, inflection was the most challenging area in both languages. It was

also the one with the highest number of items left blank, followed by subordination. In both cases, more incorrect answers were found in Italian than in Spanish. Prepositions, adverbs and quantifiers, by contrast, showed a slightly higher number of incorrect answers in Spanish.

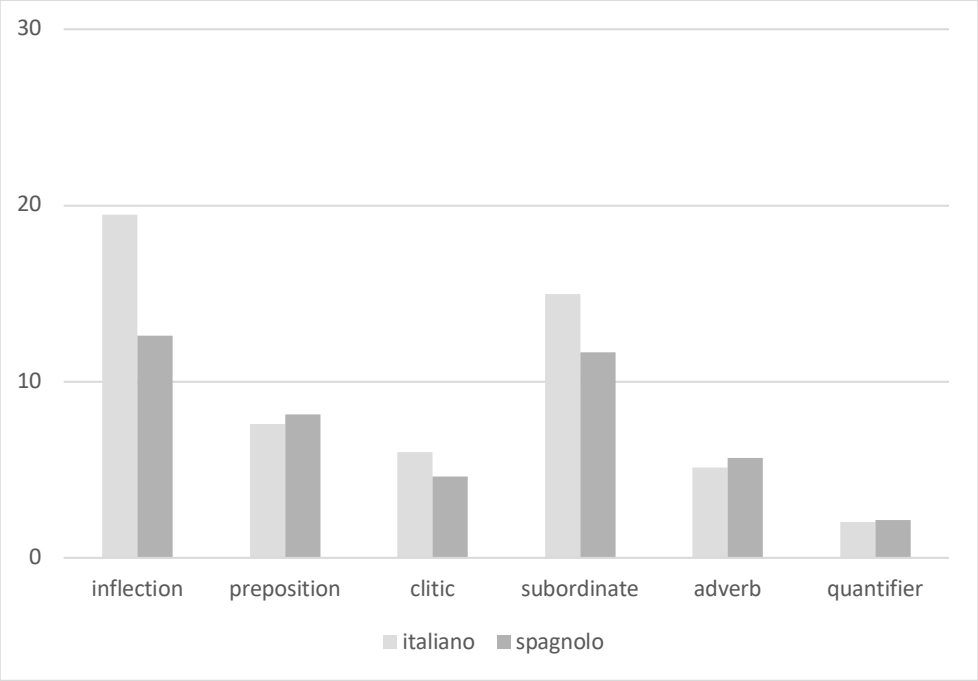


Figure 3. 'Incorrect' answers on the cloze-test (wrong completions or left blank) broken down by grammatical area.

The results obtained from the word stem completion task bear on the interpretation of the next two experiments because they allow us to assess whether language dominance is playing a role in the narrative and sentence-continuation tasks.

5.3. Task 2: narrative task

5.3.1. Materials

Participants' ability to produce referential expressions in Spanish and Italian was tested using a written story-telling task based on activities described in Torregrossa et al. (2018). The written narratives were elicited by asking the children to retell another ENNI story in written form in both languages (Story A3 – Airplane; Schneider et al.

2006). The story consists of 13 pictures with no text, representing a series of events involving two major characters (Elephant Girl and Giraffe Boy) and two minor ones; both sets of characters have different genders. An example of how the narrative task was presented can be seen in figure 4.

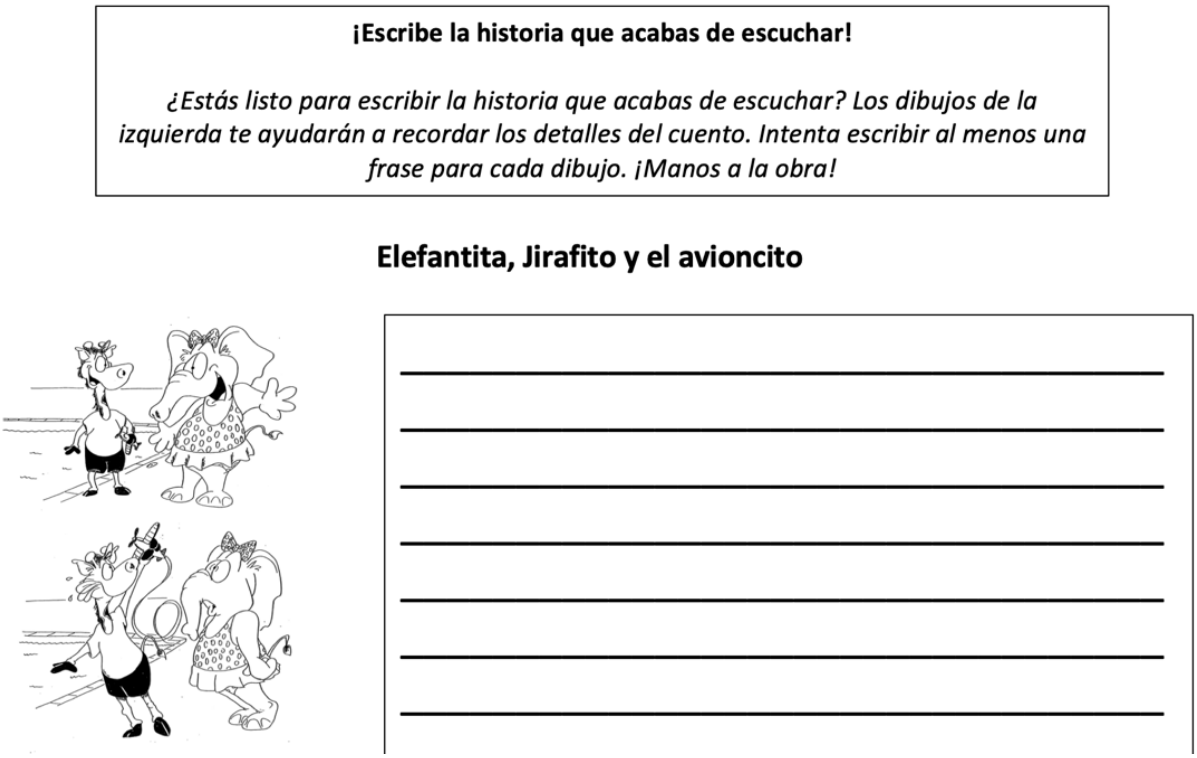


Figure 4. Sample of worksheet used to elicit a written narrative in Spanish.

5.3.2. Procedure

Again, the narrative task was administered on paper form during either Italian or Spanish classes. The administration of the task in one language or in the other was randomized across the groups, as well as the administration of one task or another.

Following the procedure in Torregrossa et al. (2018), we primed the participants by first having them hear a narrator tell the story depicted in the cartoon drawing before they had to retell it, on the grounds that this would render the decoding of the pictures and the comprehension of the story easier for them (Gagarina 2016). The task was administered as a sequence of Power Point slides on the classroom screen. The story pictures appeared two by two, accompanied by the voice of the narrator telling

the story (the Spanish audio was created based on the Italian version, already available from Torregrossa et al. 2018).[16]

The younger groups asked to be able to listen to the story a second time. Unfortunately, in some groups the audio could not be played due to technical issues. In these cases, the story was read aloud.

5.3.3. Analysis

All resulting child-produced texts were subsequently transcribed as digital text and then divided into clauses, based around the occurrence of any verb in the text. In the analysis process, each clause was entered in a table with an additional column indicating any referential expression (RE) contained in that clause. If the clause contained more than one RE, it received an additional column entry. The following column assigned a code number representing the occurrence of a reference to one of the characters in the story 1 for the elephant girl, 2 for the giraffe boy, 3 for the airplane, and 4 and 5 for the adult male and female elephants. When different characters appeared together, they were coded as "1+2". Key inanimate elements in the story such as the toy airplane were also given code numbers. The following columns analysed the type of RE (e.g. full, null, clitic), its grammatical role (e.g. subject, object, etc.) and the number of characters intervening between the antecedent and the RE (except for the first appearance, labelled as "intro").[17] A sample of coding can be seen in tables 1 and 2.[18]

[16] In Torregrossa et al. (2018), the children retold the story orally and were audio-recorded doing so. The present experiment was carried out in a post-Covid environment in which the sanitary protocols of the school permitted us only to test the children by means of a written activity.

[17] CODE: number assigned to a character or inanimate object in the story; RE: reference expression; TYPE: type of RE or antecedent (noun phrase, full pronoun, null pronoun, clitic); GRAMM: grammatical role of the RE's antecedent; DIST: distance between RE and antecedent; INTERV. CH.: intervening characters.

[18] All the provided examples from children maintain the original spelling.

CLAUSE	CODE	RE		ANTECEDENT			
		TYPE		TYPE	GRAMM	DIST.	INTERV. CH.
Un giorno giraffino aveva un aeroplanino *[One day giraffe boy had an airplane]*	2	NP	SUBJ	INTRO	INTRO	INTRO	INTRO
Un giorno giraffino aveva un aeroplanino *[One day giraffe boy had an airplane]*	3	NP	OBJ	INTRO	INTRO	INTRO	INTRO
L'elefantina lo prese *[Elephant girl took it]*	1	NP	SUBJ	INTRO	INTRO	INTRO	INTRO
L'elefantina lo prese *[Elephant girl took it]*	3	CL	OBJ	NP	OBJ	1	1

Table 1. Example of coding for Italian.

CLAUSE	CODE	RE		ANTECEDENT			
		TYPE		TYPE	GRAMM	DIST.	INTERV. CH.
Un día Jirafito y Elefantita jugaban en la pistina, *[One day giraffe boy and elephant girl were playing in the pool]*	2	NP	SUBJ	INTRO	INTRO	INTRO	INTRO
Un día Jirafito y Elefantita jugaban en la pistina, *[One day giraffe boy and elephant girl were playing in the pool]*	1	NP	SUBJ	INTRO	INTRO	INTRO	INTRO
Jirafito habia traido un avión. *[Giraffe boy had brought a plane]*	2	NP	SUBJ	NP	SUBJ	1	1

Jirafito habia traido un avión. *[Giraffe boy had brought a plane]*	3	NP	OBJ	INTRO	INTRO	INTRO	INTRO

Table 2. Example of coding for Spanish.

After all narratives were coded, only the null, overt and full REs used in subject or object position were considered relevant for analysis (see table 3 for raw occurrences). Similarly, cases in which the RE and its antecedent were distant from each other of 1 clause were considered, as here immediate pronominal resumption was the main focus.

ITALIAN						**SPANISH**					
NULL SUBJ	NULL OBJ	OVERT SUBJ	OVERT OBJ	DP SUBJ	DP OBJ	NULL SUBJ	NULL OBJ	OVERT SUBJ	OVERT OBJ	DP SUBJ	DP OBJ
683	65	24	0	266	191	649	83	12	1	181	152

Table 3. Raw occurrences of null pronouns, overt pronouns and full DPs occurring in the narratives.

5.3.4. Results

RQ 2.1: Does the type of anaphoric play a role in reference assignment in bilinguals?
RQ 2.2: Do dominance and language play a role in reference assignment in bilinguals?

Figure 5 represents the overall number of occurrences of null and overt pronouns and full referential expressions as referring to either a subject or an object antecedent. As can be seen, null pronouns are the preferred form used to refer to the subject in both languages.

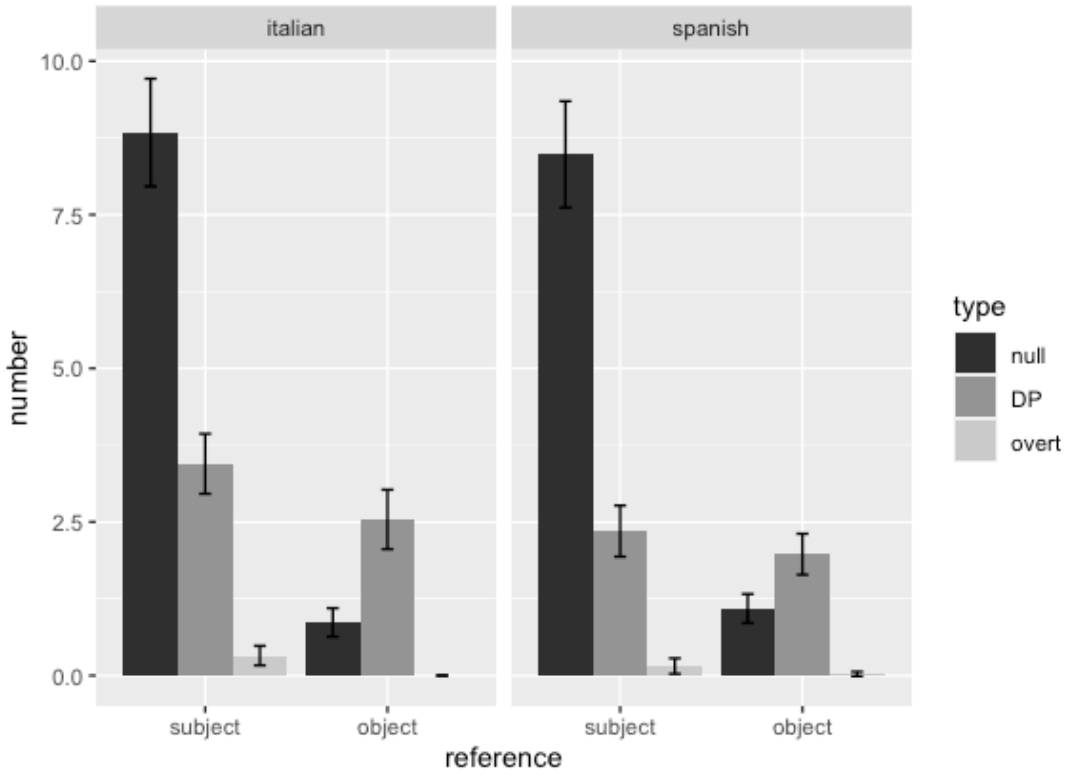


Figure 5. Overall number of occurrences of null and overt pronouns and full REs referring to either a subject or object antecedent.

For the statistical analysis, a LME model was conducted using R software. The model, created for the response variable *Frequency* (representing the frequency of specific REs produced by each child in relation to a specific antecedent), included a random intercept and slopes for each participant and was fitted as a function of the dependent variable *Type* (indicating the type of RE) in a two-way interaction with *Reference* (distinguishing between reference to a subject antecedent vs. reference to an object antecedent) and *Language* (Italian vs. Spanish). Additionally, the variables *Group* (as a proxy for age) and *Dominance* were also included as main effects. The model also included subject intercept and by participant random slope.

The model showed a lower-order effect for the type of RE meaning that in Italian, there were significantly fewer occurrences of DPs (β = -5.19, SE = 0.32, t = -16.02, p = <0.001) and overt pronouns (β = -8.38, SE = 0.31, t = -26.75, p = <0.001) referring to subject antecedents compared to null pronouns. This effect was not different for Spanish for overt pronouns, as seen in the non-significant interaction between language and *type (overt)*, although this was not the case for DPs, which were

less frequently resorted to in Spanish when compared to Italian to refer to a subject antecedent (β = -1.00, SE = 0.36, t = -2.71, p = 0.007).

Additionally, a lower-order effect was also observed in Italian for the variable *reference* on the number of occurrences of null pronouns, which participants used fewer times to refer to subjects (β = - 7.83, SE = 0.29, t = -24.21, p = < 0.001). The interaction of *Reference* with the type of anaphoric expression showed a different pattern in reference to objects: DPs tend to be used in these contexts (β = 6.98, SE = 0.36, t = 18.95, p = < 0.001). Also, a significant interaction was observed between reference and overt pronouns, showing that these expressions have a greater tendency to refer to object antecedents versus subject antecedents (β = 7.56, SE = 0.36, t = 20.53, p = < 0.001). The same applies to Spanish, as shown by the non-significant interactions. Finally, the model showed no effect for the variables of language dominance or age group.

Fixed effects	*Estimate*	*SE*	*t*	*p*
(Intercept)	8.50	0.33	25.53	<0.001***
Type (DP)	-5.19	0.32	-16.02	<0.001***
Type (overt)	-8.38	0.31	-26.75	<0.001***
Reference (object)	-7.83	0.29	-26.89	<0.001***
Language (Spanish)	-0.16	0.27	-0.60	0.54
Dominance	-0.00	0.01	-0.49	0.62
Group (2)	0.06	0.22	0.30	0.76
Group (3)	0.30	0.17	1.70	0.09
Type (DP) x Reference (object)	6.98	0.36	18.95	<0.001***
Type (overt) x Reference (object)	7.56	0.36	20.53	<0.001***
Type (DP) x Language (Spanish)	-1.00	0.36	-2.71	<0.01**

Type (overt) x Language (Spanish)	0.05	0.36	0.16	0.87
Reference (object) x Language (Spanish)	0.48	0.36	1.30	0.19
Type (DP) x Reference (object) x Language (Spanish)	0.05	0.52	0.10	0.91
Type (overt) x Reference (object) x Language (Spanish)	-0.34	0.52	-0.66	0.50

Table 4. Parameters of the LME analysis concerning the REs associated with null and overt subject pronouns referring back to either a subject or object antecedent.

5.4. Task 3: Sentence-continuation task

5.4.1. Materials

This task was created in order to add a discourse dimension to the bilingual analysis. It was designed and formulated on the basis of the discourse experiments described in section 3.4, following Kehler and Rodhe (2013), and considering studies dealing with bilingual children from the discourse literature (see Grüter et al. 2015 in chapter 4). The idea was to offer a task similar to that performed by the monolingual adults in chapter 3, but with a narrative element that would make it more ecological for children. For this reason, the prompt materials were designed as a small "booklet" containing two different stories, each one having two same-gender characters, two boys mountain-biking and two girls swimming.

The stories had a total of 12 paragraphs, each ending with a gap that appeared after a sentence containing either a subject- or object-biased verb (six subject-biased verbs and six object-biased verbs). As mentioned above, the aim of the task was to see whether implicit causality played a role in RE production and interpretation.[19] A

[19] Unfortunately, during the binding of the booklets at the photocopy centre, the last page was omitted from all books, so they ended up without the last sentence gap (containing a subject-biased verb). However, this omission was not crucial for either the story contents or the experimental results.

sample prompt context in Italian and Spanish language versions and a sample page from the booklet are presented in (2).

(2) a. *Sono molto contenti, le previsioni per il meteo sembrano buone. Che voglia di andare in gita! Bisogna solo decidere dove andare. Giovanni ha impressionato Carlo.* _____

b. *Están contentos porque las previsiones para el tiempo son muy buenas. ¡Qué ganas de hacer la excursión! Solo hay que decidir a dónde ir. Juan ha impresionado a Carlos.* _____

'They are very happy because the weather forecast seems good. They can't wait for the hike! The only thing to do is decide where to go. Juan has impressed Carlos.'

Silvia e Giulia sono due sorelle alle quali piace mol-

to andare a nuotare. Ogni giorno vanno in piscina

ad allenarsi; oggi hanno deciso di fare delle gare.

Giulia ha impressionato Silvia. .....

.....

Figure 6. Example of presentation of the sentence-continuation task in Italian.

5.4.2. Procedure

As with the other two tasks, the task was administered on paper during either Italian or Spanish classes. The administration in one language or the other first was randomized across groups, as was the administration of one task or another. As mentioned above, the task was presented as a set of stories contained in a booklet. In each story, each sentence and the blank line that followed it appeared together on a single page. Participants were asked not to read the next pages of the story until they had written a continuation for that page.

5.4.3. Analysis

Participants' story completion sentences were transcribed and then categorised and labelled according to the type of verb (subject or object-biased), the type of RE (null, overt, full DP), the antecedent of the RE (either the subject or the object of the sentence, or both, or a different character), and the discourse relation (explanation, elaboration or result), as shown in tables 5 and 6.

ITEM	STORY PROMPT	CONTINUATION	VERB	TYPE (RE)	ANTEC.	DISC. REL.
1	*Giulia ha impressionato Silvia* 'Giulia surprised Silvia'	*Perché è molto brava e rapida* 'Because she is so good and quick'	SubjBias	null	subj	expl
2	*Silvia ha spaventato Giulia* 'Silvia scared Giulia'	*Si è fatta male* (She) hurt herself	SubjBias	null	subj	expl
3	*Giulia ha sgridato Silvia* 'Giulia scolded Silvia'	*Silvia ha pianto* 'Silvia cried'	ObjBias	overt	obj	result
4	*Silvia ha dato la colpa a Giulia* 'Silvia blamed Giulia'	*E dopo Giulia si è arrabbiata* 'And Giulia got angry'	ObjBias	overt	obj	result

Table 5. Example of coding for Italian.

ITEM	STORY PROMPT	CONTINUATION	VERB	TYPE (RE)	ANTEC.	DISC. REL.
1	*Julia ha impresionado a Silvia* 'Julia surprised Silvia'	*Porque le ganó por muchos segundos* '(She) won'	SubjBias	null	subj	expl
2	*Silvia ha asustado a Julia* 'Silvia scared Julia'	*Porque se había dado fuerte en la cabeza* 'Because (she) hit her head'	SubjBias	null	subj	expl
3	*Julia ha reñido a Silvia* 'Julia scolded Silvia'	*Y habían ido a ver a su madre* 'And (they) went to see their mother'	ObjBias	null	both	elab
4	*Silvia ha echado la culpa a Julia* 'Silvia blamed Julia'	*La limpiadora se enfadó con Julia* 'The cleaning lady got angry at Julia'	ObjBias	full	other	result

Table 6. Example of coding for Spanish.

Story continuations that involved characters other than the subject and the object were excluded from analysis.

5.4.5. Results

RQ 2.1: Does the type of anaphoric expression play a role in reference assignment in bilinguals?

Figure 7 represents the overall number of occurrences of null and overt pronouns and full REs referring to either a subject or an object antecedent in Spanish. 66% of null pronouns were used to refer to the subject antecedent, while 70% of overt pronouns

were used to refer to the object antecedent. As for full REs, 44% referred to the subject antecedent and 55% to the object antecedent.

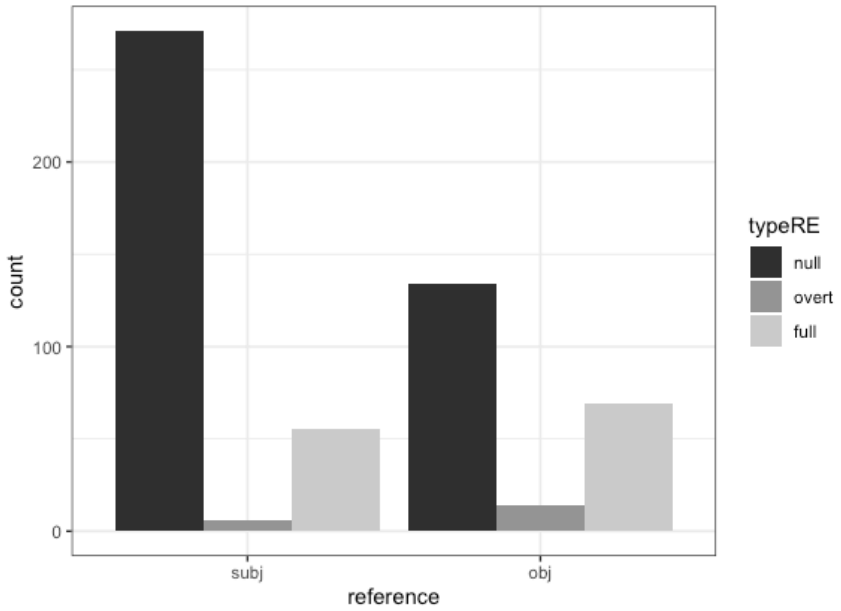


Figure 7. Overall number of occurrences of null and overt pronouns and full REs referring to either a subject or object antecedent in Spanish.

Figure 8 represents the overall number of occurrences of null and overt pronouns and full REs referring to either a subject or an object antecedent in Italian. 72% of null pronouns were used to refer to the subject antecedent, while 63% of overt pronouns were used to refer to the object antecedent. As for full REs, 42% referred to the subject antecedent and 57% to the object antecedent.

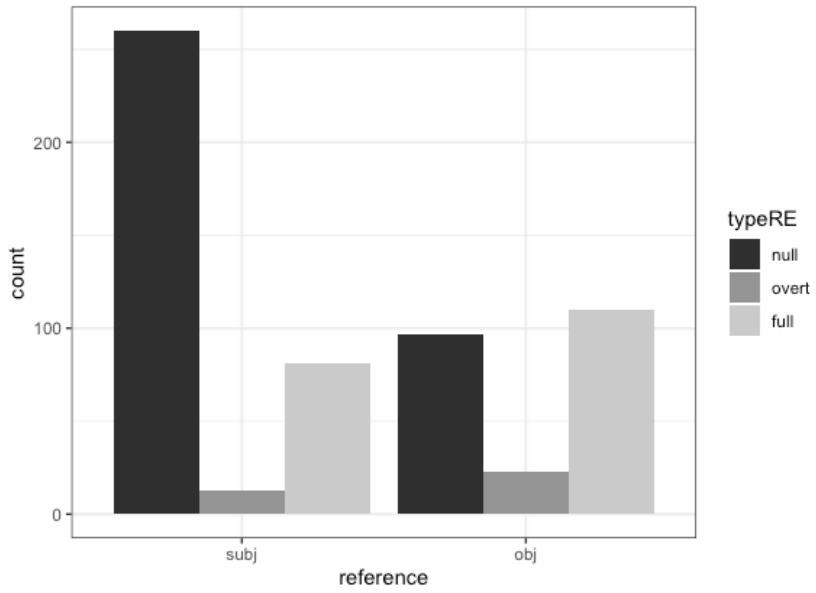


Figure 8. Overall number of occurrences of null and overt pronouns and full REs referring to either a subject or object antecedent in Italian.

For the statistical analysis, a LME model was conducted using R. The model, created for the response variable *Reference* (reference to the subject antecedent vs. reference to the object antecedent) included a random intercept for each participant (*id*) and was fitted with *Type* (indicating the type of RE), which is a categorical variable with three levels (null, overt, and full), as well as *Language* (Italian vs. Spanish), and *Group* (III Elementare, V Elementare, II Media), and *Dominance* as fixed effects.

The results in table 7 indicate that there is a significant effect of the RE on reference across the three forced conditions. Compared to null pronouns referring to subject antecedents ($\beta = -0.29$, $t = -2.05$, $p < 0.05$), overt pronouns are the preferred option when referring to an object antecedent ($\beta = 0.98$, $t = 3.23$, $p < 0.01$), and the same applies to full REs ($\beta = 0.79$, $t = 5.63$, $p < 0.001$). No statistically significant results are found for *Language, Dominance*, or *Group*.

Fixed effects	*Estimate*	*SE*	*t*	*p*
(Intercept)	-0.29	0.14	-2.05	<0.05*
typeRE (overt)	0.98	0.30	3.23	<0.01**

typeRE (full)	0.79	0.14	5.63	<0.001***
Language (Spanish)	0.11	0.11	1.02	0.30
Dominance	0.00	0.01	0.65	0.51
Group (2)	-0.05	0.21	-0.26	0.79
Group (3)	-0.14	0.16	-0.87	0.38

Table 7. Parameters of the LME analysis concerning the REs associated with null and overt subject pronouns referring back to a subject or object antecedent.

RQ 2.1: Does verb play a role in reference assignment in bilinguals?

Figure 9 represents the overall number of occurrences of null and overt pronouns and full REs referring to either a subject or object antecedent depending on verb bias (subject or object bias) in Spanish. With subject biased verbs, 90% of null pronouns referred to a subject antecedent; 62% of overt pronouns referred to an object antecedent; 60% of full REs referred to a subject antecedent. Object biased verbs present a more varied situation: 45% of null pronouns were used to refer to the subject and 54% to refer to the object. Reference to the object antecedent is clearly preferred with overt pronouns (72%) and full REs (75%).

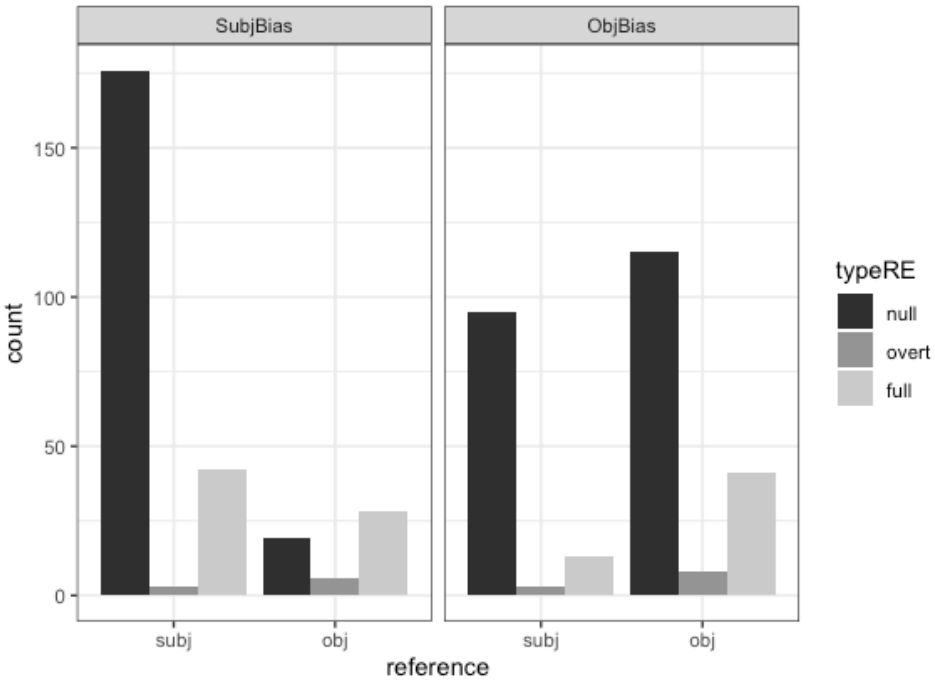


Figure 9. Overall number of occurrences of null and overt pronouns and full REs referring to either a subject or object antecedent with subject and object biased verbs in Spanish.

Figure 10 represents the overall number of occurrences of null and overt pronouns and full REs referring to either a subject or object antecedent depending on verb bias in Italian. With subject biased verbs, 95% of null pronouns referred to a subject antecedent; 40% of overt pronouns referred to an object antecedent; 51% of full REs referred to a subject antecedent. Again, object biased verbs present a more varied situation. 51% of null pronouns were used to refer to the subject and 48% to refer to the object. Reference to the object antecedent is clearly preferred with overt pronouns (80%) and full REs (66%).

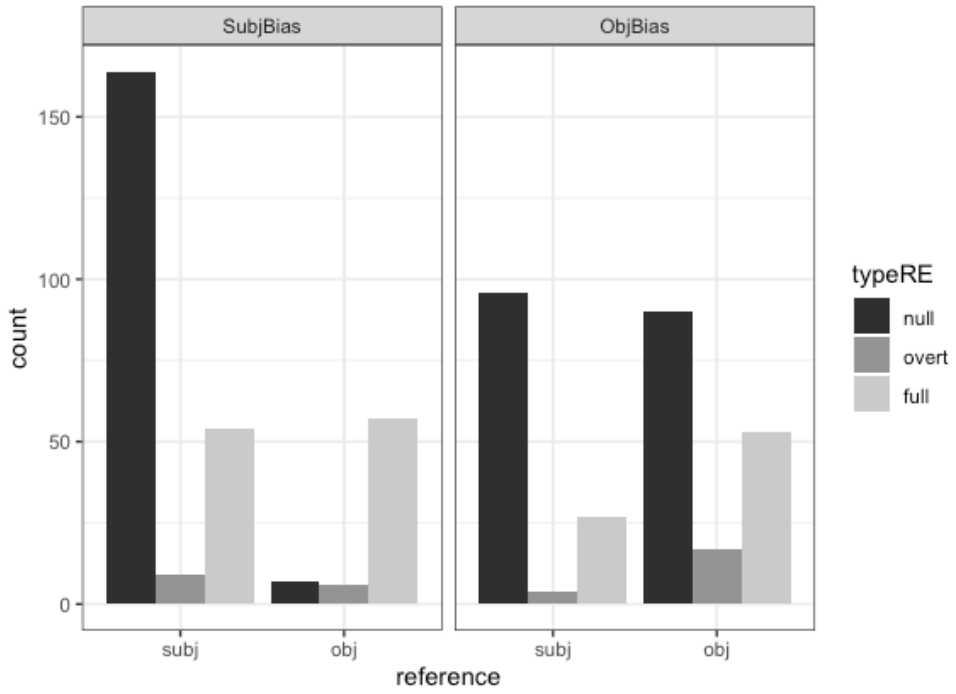


Figure 10. Overall number of occurrences of null and overt pronouns and full REs referring to either a subject or object antecedent with subject and object biased verbs in Italian.

For the statistical analysis, a LME model was conducted using R. The model, created for the response variable *Reference* (reference to the subject antecedent vs. reference to the object antecedent), included a random intercept for each participant (*id*) and was fitted with *Type* (indicating the type of RE), which is a categorical variable with three levels (null, overt, and full), in interaction with *Verb type* (subject bias vs. object bias), as well as *Language*, *Group*, and *Dominance* as fixed effects.

The results in table 8 indicate that there is a significant effect of both the RE and the verb bias on reference across the three forced conditions. With subject bias verbs, null pronouns refer more to subject antecedents ($\beta = -1.39$, $t = -7.24$, $p < 0.001$), while overt pronouns are the preferred option when referring to an object antecedent ($\beta = 1.29$, $t = 2.86$, $p < 0.001$), and the same applies to full REs ($\beta = 1.50$, $t = 7.31$, $p < 0.01$). With object bias verbs, the difference between null pronouns referring to the subject or object antecedent decreases significantly ($\beta = 1.92$, $t = 12.11$, $p < 0.001$), while overt pronouns maintain the same pattern as with subject bias verbs. The significant interaction between full REs and object bias verbs, on the other hand, suggest an increase in the use of full RE referring to an object antecedent with object bias verbs ($\beta = 0.85$, $t = 2.92$, $p < 0.01$). No statistically significant results are found for *Language, Dominance*, or *Group*.

Fixed effects	*Estimate*	*SE*	*t*	*p*
(Intercept)	-1.39	0.19	-7.24	<0.001***
typeRE (overt)	1.29	0.45	2.86	<0.001***
typeRE (full)	1.50	0.20	7.31	<0.01**
Verb (object bias)	1.92	0.15	12.11	<0.001***
Language (Spanish)	0.17	0.12	1.39	0.16
Dominance	0.01	0.01	0.65	0.51
Group (2)	-0.08	0.25	-0.32	0.74
Group (3)	-0.21	0.19	-1.11	0.26
typeRE (overt) x Verb (object bias)	-0.46	0.63	-0.73	0.46
typeRE (full) x Verb (object bias)	0.85	0.29	2.92	<0.01**

Table 8. Parameters of the LME analysis concerning the REs associated with null and overt subject pronouns referring back to a subject or object antecedent in interaction with the verb bias type.

RQ 2.1: Do discourse relations play a role in reference assignment?

Figure 11 represents the overall number of occurrences of null and overt pronouns and full REs referring to either a subject or object antecedent depending on the discourse relation (explanation, elaboration and result) in Spanish.[20]

For the relation 'explanation', 59% of null pronouns refer to the subject antecedent and 40% refer to the object antecedent; 16% of overt pronouns refer to the subject antecedent and 83% to the object antecedent; and 65% of full REs refer to subject antecedents and 32% to the object antecedent.

[20] As seen in Section 2.4.2.

The ‘elaboration’ discourse relation presents a different situation: there is a clear preference for the subject antecedent, which is referred to in 84% of null pronoun occurrences (against 15% referring to an object antecedent), and 83% of overt pronoun occurrences (against 16% referring to an object antecedent). 58% of full REs refer to an object antecedent.

Finally, the ‘result’ relation occurrences are more varied. While null pronouns continue to show a clear preference for a subject antecedent (64% against 34% for the object antecedent), 100% of overt pronouns refer to an object antecedent. 17% of full REs refer to a subject antecedent, while 82% refer to the object antecedent.

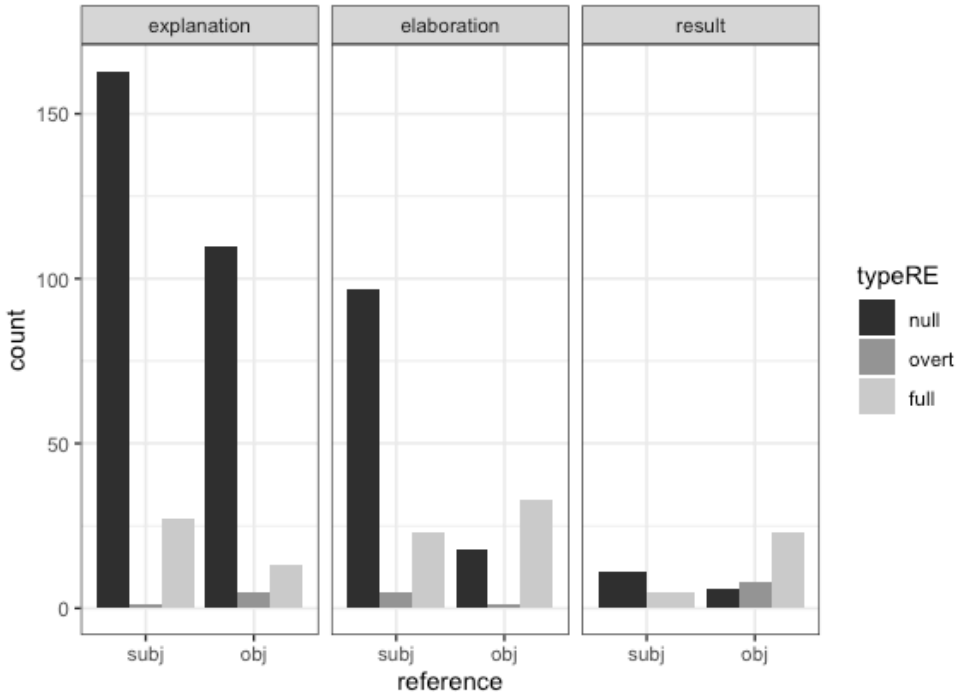


Figure 11. Overall number of occurrences of null and overt pronouns and full REs referring to either a subject or object antecedent with different discourse relations in Spanish.

Figure 12 represents the overall number occurrences of null and overt pronouns and full REs as referring to either a subject or object antecedent depending on the discourse relation (explanation, elaboration and result) in Italian.

For the relation ‘explanation’, 66% of null pronouns refer to the subject antecedent and 33% refer to the object antecedent; 45% of overt pronouns refer to the subject antecedent and 55% to the object antecedent; 58% of full REs refer to subject antecedents and 41% to the object antecedent.

The 'elaboration' discourse relation presents a different situation: there is a clear preference for the subject antecedent, which is referred to with the 86% of null pronoun occurrences (against 13% referring to an object antecedent); 50% of overt pronoun refer to a subject antecedent, and the other 50% to an object antecedent). 42% of full REs refer to an object antecedent.

Finally, the 'result' relation occurrences are more varied. While null pronouns keep showing a clear preference for a subject antecedent (92% against 7% for the object antecedent), 90% of overt pronouns refer to an object antecedent. 23% of full REs refer to a subject antecedent, while 76% refer to the object antecedent.

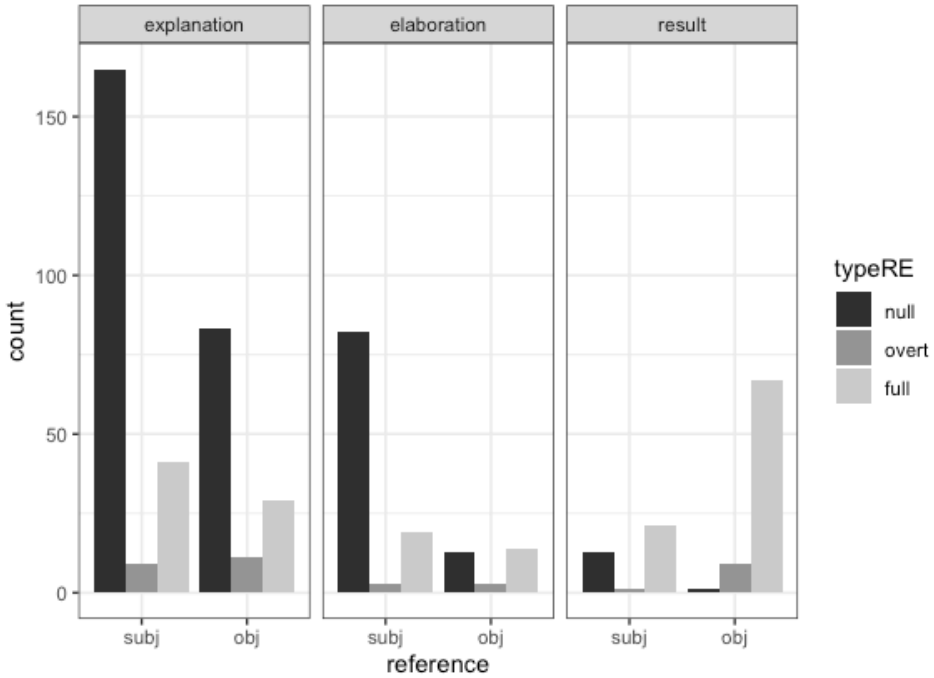


Figure 12. Overall number of occurrences of null and overt pronouns and full REs referring to either a subject or object antecedent with different discourse relations in Italian.

For the statistical analysis, a LME model was conducted using R. The model, created for the response variable *Reference* (reference to the subject antecedent vs. reference to the object antecedent), included a random intercept for each participant (*id*) and was fitted with *Type* (indicating the type of RE), which is a categorical variable with three levels (null, overt, and full), in interaction with *Relation* (explanation, elaboration and result), as well as *Language*, *Group*, and *Dominance* as fixed effects.

The results in table 9 indicate that there is a significant effect of both the RE and the coherence relation on reference across the three forced conditions. With

explanations, null pronouns refer more to subject antecedents than to object antecedents (β = −0.50, t = −23.26, p < 0.01); there is a difference between overt pronouns used to refer to a subject or object antecedent (β = 0.98, t = 2.30, p < .01). With elaborations, there is a significant decrease of null pronouns referring to object antecedents (β= −0.59, t = −3.44, p < 0.001). With results, null pronouns are used more often to refer to object antecedents compared to null pronouns associated with explanation (β= 1.85, t = 12.63, p < 0.001). An effect of *Language (Spanish)* indicates a significant difference between the two languages (β= 0.32, t = 2.63, p < 0.01), whereby in Spanish, there are more references to an object antecedent. We also found an interaction between full REs and elaborations (β= 1.34, t = 3.99, p < 0.001). This indicates that the difference between null subjects and full REs referring to object antecedents tends to decrease in comparison to the difference between null subjects and REs referring to object antecedents with explanations.

Fixed effects	*Estimate*	*SE*	*t*	*p*
(Intercept)	-0.50	0.15	-3.26	<0.01**
typeRE (overt)	0.98	0.42	2.30	<.01*
typeRE (full)	-0.04	0.22	-0.20	0.83
Relation (elaboration)	-0.59	0.17	-3.44	<0.001***
Relation (result)	1.85	0.25	7.28	<0.001***
Language (Spanish)	0.32	0.12	2.63	<0.01**
Dominance	0.01	0.01	1.17	0.24
Group (2)	-0.12	0.21	-0.58	0.56
Group (3)	-0.03	0.16	0.18	0.85
typeRE (overt) x Relation (elaboration)	-0.51	0.73	-0.69	0.48

typeRE (full) x Relation (elaboration)	1.34	0.33	3.99	<0.001***
typeRE (overt) x Relation (result)	0.42	1.14	0.37	0.71
typeRE (full) x Relation (result)	0.13	0.39	0.33	0.73

Table 9. Parameters of the LME analysis concerning the REs associated with null and overt subject pronouns referring back to a subject or object antecedent in interaction with discourse relations.

5.5. Discussion

The experiments reported in this chapter are divided in three parts that, as we saw, target different aspects of reference management.

The first of these activities was a cloze-test, whose purpose was to define the children's linguistic profile and check for language dominance both individually and group-wise. Using the illustrations from the ENNI, a written story with gaps targeting structures related to the syntax-discourse interface was presented. It made it possible to assess participants' mastery of these structures, as well as their comprehension abilities, following Torregrossa et al. (2023). The overall dominance results presented a very balanced group, with a slightly higher (but not significantly) score for Spanish. An analysis of these results by school year revealed that while the younger children (aged 8) were more dominant in Spanish, by age 12 their proficiency was alike in both languages. As explained in section 5.2.4, the reason for this asymmetry may lie in the fact that in the lower grades at the school there are more new successive bilinguals that use Italian only as a communication vehicle in school, but not at home or in other activities.

As we see in the incorrect answers in (3) and (4), inflection is the most problematic area in both languages; it is also the one with the highest number of blank responses. It is followed by subordination. In both cases, more incorrect answers are found in Italian than in Spanish. Prepositions, adverbs, and quantifiers, by contrast, show a slightly increased number of incorrect answers in Spanish.

(3) *Il vecchio coniglio gli chiede dei soldi per il palloncino. Allora il coniglio mette le *ta**sca** dei *s**oldi** pantaloni sotto sopra, ma non trova alcuna moneta.* [21]
'The old rabbit asks [the little rabbit] for money in exchange for the balloon. So the little rabbit looks for money in his pockets, but he can't find a single coin.'

(4) *El señor conejo le pide dinero por el globo. Entonces el conejito se saca los *bol**citito** de *___ pantalones, pero no encuentra ninguna moneda.*[22]
'The old rabbit asks [the little rabbit] for money in exchange for the balloon. So, the little rabbit looks for money in his pockets, but he can't find a single coin.'

The proficiency scores obtained in this test were used to assign a language dominance score to each child. As previously mentioned, this number was essential to interpret the other two experiments' outcomes because it would offer clues about whether dominance, language, or age were playing a role in reference management.

The second part of this experimental set was the narrative task. Following the ENNI materials used in Torregrossa et al. (2018), the aim of this task was to make children retell a story using their own words. The research questions related to this part of the bilingual experiments were whether the type of anaphoric expression played any role in reference assignment (RQ 5.1) and also whether dominance and language were involved (RQ 5.2).

As previously mentioned, only the REs referring to an antecedent that was in close proximity (with either one or zero characters intervening between them) were considered in this experiment. In this context, the number of overt pronouns found both in Spanish and Italian was extremely low, and it might be of interest to investigate in future research instances where there is more than one reference to other story character between a RE and its antecedent. These elements could account for the partial absence of overt pronouns in the children retellings.

The statistically significant differences in the occurrence of anaphoric expressions reveal a clear relationship between them and reference assignment

[21] Correct answers: *tasche, suoi*.
[22] Correct answers: *bolsillos, los*.

(RQ5.1), as there is a clear tendency for null pronouns to refer to a subject antecedent, and for full RE to refer to an object antecedent in both languages. However, in Italian there is a higher occurrence of full REs, with both subject and object antecedents. while Spanish has more null pronouns associated with object antecedents. This difference is consistent to some extent with the data obtained from monolinguals, in the sense that in Italian there is a preference for distinguishing between each RE and its antecedent, and in Spanish there is a general preference for null material, as shown by the statistically significant interactions in the model. However, results from the bilingual children for Spanish are less similar to those of the monolinguals' interpretation experiment in chapter 3, because here there is a preference for null pronouns associated with subject antecedents and full REs associated with object antecedents, following the Italian pattern, although no effect of dominance is found. Again, this could be because only the cases where REs were close to the antecedent were analysed. Overall, there is a preference in both Spanish and Italian to refer to subject antecedents by means of null pronouns and to refer to object antecedents by means of full REs; the overall number of full REs, however, remains higher in Italian. As for overt pronouns, they are few in number but clearly associated with subject antecedents, which is interesting given that similar results were found in Lozano (2009), where both natives and L2 speakers displayed a clear preference for full DPs in topic-shift contexts, and used very few overt pronouns, as well as the findings reported in Giannakou and Sitaridou (2022) for Greek–Italian bilinguals, who used overt pronouns only rarely.

Excerpts (5) and (6) below are taken from the transcribed productions of 12-year-old participants in the present study as they begin the narrative retelling task.[23] In the Italian sentence in (5) there are more occurrences of full REs (Elefantina, Giraffino, aeroplanino), while in the Spanish sentence in (6) there are more null and clitic pronouns.

(5) *Elefantina e Giraffino decidono di andare alla piscina. Giraffino gli fa vedere ad Elefantina il suo aeroplanino. Elefantina si innamora del aeroplanino di Giraffino. Elefantina gli rubba l'aeroplanno a Giraffino.*

[23] All the examples provided maintain the children's' original spelling.

‘Elephant girl and Giraffe boy meet at the pool. Giraffe boy shows Elephant girl his toy airplane. Elephant girl falls in love with Giraffe boy’s toy airplane. Elephant girl steals the airplane from Giraffe boy.’

(6) *Un día Jirafito estaba jugando con un avioncito, y cuando Elefantita lo vio le dio envidia asi que se lo quito y casualmente se le cayo al agua y el Jirafito enfadado le chilla.*

‘One day Giraffe boy was playing with a toy airplane, and when Elephant girl saw it, she got envious so she took it from him and it felt in the water, and Giraffe boy was angry and yelled at her.’

Regarding whether language or language dominance play a role in reference assignment (RQ5.2), statistical analysis showed no significant effect of these two factors. This indicates that the referential choices made by the children were not influenced by one language or the other, or by the children being more dominant in Spanish or Italian. This result is not surprising considering the scores obtained in the cloze-test: we would expect dominance in one of the two languages to translate into cross-linguistic effects (as in Filiaci and Sorace 2006), but the fact that the respective patterns distinguishing Spanish and Italian are maintained means that the children are able to apply separately the referential choices appropriate to each language.

These results are consistent with some of those found in previous research. For example, as we saw in chapter 4, Bel et al. (2016) observed that Moroccan Arabic–Spanish bilinguals performed very much native-like, in accordance with the PAH (Carminati 2002) in terms of associating null pronouns with subject antecedents and exhibiting no residual optionality, in other words, not overproducing overt pronouns in contexts where the preferred RE would be a null subject. Similarly, Di Domenico and Baroncini (2019) compared L2 and bilingual Greek and Italian speakers to monolinguals and found that the bilinguals behaved like the monolinguals; an effect of age, however, was found in this bilingual group. Finally, Giannakou (2023) compared bilingual, heritage, and L2 speakers of Greek and Spanish with monolinguals and found that the bilinguals performed like Greek-speaking monolinguals in linking null pronouns to subject antecedents and overt pronouns to object antecedent in Greek. Heritage speakers were closer to Spanish-speaking monolinguals in that they produced more ambiguous null pronouns. As Giannakou (2023) points out, what arises from her study is that the interpretation of overt pronouns in Greek is more grammatically

determined. As a result, they tend to be used in specific contexts, while in Spanish overt pronouns rely more on pragmatics and therefore can be used more flexibly. In my view, this idea can be used to account for the language combinations at stake here, in line with my previous findings in experiment 1 (see section 3.2).

The last part of this study replicates the style of the discourse experiment carried out in chapter 3 for Spanish (see section 3.4). In this case, two stories with two same-gender characters were created in which a situation that ended with an implicit causality verb was followed by a blank space. Participating bilingual children were instructed to fill in the blank space before continuing with the story. The research questions in this experiment were the same as in experiment 2. The first (RQ 2.1) asked whether the type of anaphoric expression played a role in reference assignment. These results of this experiment proved crucial to this research because here they showed the same pattern as that produced by monolinguals (experiment 1, section 3.2), namely a clear preference to refer to both subjects and objects by means of null pronouns in Spanish, while in Italian full REs were preferred to refer to object antecedents and null pronouns are preferred to refer to subject antecedents. Statistical analysis revealed these preferences to be significant, although language, dominance and age showed no significant effect, which means that they played no role in the children's choice of anaphoric expression in reference assignment.

In the continuation in (7) it can be seen that a full RE (in this case a proper name) is used in Italian to refer to the object antecedent, while in the Spanish continuation in (8) a null pronoun is preferred.

(7) *Giulia ha odiato Silvia. Silvia anche si sentiva male.*
'Giulia hated Silvia. Silvia also felt bad.'

(8) *Julia ha odiado a Silvia. porque le ha echado la culpa.*
'Julia hated Silvia. Because she blamed her.'

Experiment 4 (sentence-continuation task) offers results in line with the findings of experiment 1, that is, a clear preference for null pronouns in Spanish (for both subject and object antecedents) and a distinction between null pronouns for subject antecedents and DPs for object antecedents in Italian. Again, it is interesting to note the preference for DPs over overt pronouns in topic-shifting contexts (as seen in Lozano 2009 for both English near-native speakers of Spanish and Spanish

monolingual speakers), which could suggest that children perceive overt pronouns as more ambiguous and difficult to process, and therefore prefer to select full DPs to dissipate any doubt about their chosen referent.

RQ 2.1 asked whether verb bias played any role in reference assignment. The results of experiment 4 showed that in Spanish there was a clear preference for subject-biased verbs to refer to the subject with null pronouns, and for object-biased verbs to refer to both subject and object antecedents with null pronouns. Italian, on the other hand, exhibited a significantly higher number of full REs referring to the object with subject-biased verbs and to both subject and object antecedents with object-biased verbs; the same was true of overt pronouns, although the overall numbers were smaller. Statistical analysis revealed a significant effect of verb type in both languages, and even a significant interaction between full REs and object biased verbs, proving that verb bias is indeed a relevant factor for reference assignment. Again, language, dominance, and age had no significant effect, which means that they played no role in children's choice of anaphoric expression in reference assignment.

By way of illustration, consider the following examples of sentences continuations. In the Italian continuation in (9a), a subject-biased verb is followed by a null pronoun referring to a subject antecedent. The Spanish continuation in (9b), on the other hand, shows a full RE (a proper name) used to refer to an object antecedent in a subject-biased verb sentence. Moving to object bias verb contexts in Italian, in (9c) an overt pronoun is used to refer to the subject antecedent, while in (9d) a full RE (proper name) is used to refer to the object antecedent.

(9) a. *Giovanni ha impressionato Carlo. Ha deciso di andare in montagna.*
'Giovanni impressed Carlo. (He) decided to go to the mountain.'
b. *Silvia ha sorpreso Giulia. Dopo Giulia si è arrabbiata.*
'Silvia surprised Giulia. Then Giulia got angry.'
c. *Giulia ha gridato Silvia. Perché lei (Giulia) aveva trovato il piano di vendetta nello spogliatoio.*
'Giulia yelled at Silvia. Because she (Giulia) had found the revenge scheme in the changing room.'
d. *Giovanni ha consolato Carlo. Carlo era triste perché la ruota della sua bici si era bucata.*
'Giovanni consoled Carlo. Carlo was sad because the tire of his bike was flat.'

As for the Spanish examples, a null pronoun is used to refer to a subject antecedent in a subject-biased context in (10a), while in (10b) we see a null pronoun referring to an object antecedent. (10c) shows a null pronoun referring to a subject antecedent in an object-biased context, and (10d) shows a null pronoun referring to an object antecedent in an object-biased context.

(10) a. *Silvia ha asustado a Julia. y se ha hecho mucho daño.*
'Silvia scared Julia. And (she) hurt herself badly.'
b. *Carlos ha preocupado a Juan. porque pensaba que se había caído.*
'Carlos worried Juan. Because (he) thought that (he) had fallen.'
c. *Juan ha consolado a Carlos. y a arreglado la rueda.*
'Juan consoled Carlos. And fixed the tire.'
d. *Julia ha odiado a Silvia. Es una mentirosa.*
'Julia hated Silvia. (She) is a liar.'

Finally, RQ 2.1 asked whether discourse relation played any role in reference assignment. The statistically significant results of the analysis showed a clear association between reference assignment and type of discourse relation. Null pronouns referring to a subject antecedent were the clearly preferred form with explanations; they were also the clearly preferred form with elaborations, but in this case the difference between choosing a subject or an object antecedent was sharper, subjects being the preferred antecedent. With results, the opposite pattern was observed: objects were markedly preferred as antecedents, and full REs were the preferred REs, although the number of full REs was clearly higher in Italian compared to Spanish. These results are consistent with the hypothesis set our in section 3.4: an explanation gives us a reason why the action in the first sentence occurred, which explains why both subject and object antecedents are targeted, with subject antecedents being more frequent. With elaborations speakers express the result of the action performed by the subject on the object, with the object being the preferred antecedent.

Observing the Italian sentence continuations, in (11a) we have a null pronoun used to refer to a subject antecedent in an explanation relation. The null subject of the gerund

in (11b) also takes a subject as antecedent but in an elaboration relation. On the other hand, in (11c) a full RE is chosen to refer to an object antecedent in a result relation.

(11) a. *Giulia ha impressionato Silvia. Perché è molto brava e rapida.*
'Giulia impressed Silvia. Because (she) is very good and quick.'
b. *Silvia ha sorpresa Giulia. Facendo a Giulia uno scherzo.*
'Silvia surprised Giulia. By tricking Giulia.'
c. *Giulia ha sgridato Silvia. E Silvia se n'è andata dopo rompere un piatto nella testa di Giulia.*
'Giulia scolded Silvia. And Silvia left after breaking a plate over Giulia's head.'

As for the Spanish examples, we can observe a full RE being used to refer to the subject antecedent in an explanation relation in (12a). In (12b), a null pronoun is used to refer to the subject antecedent in an elaboration. Finally, in (12c) a null pronoun is used, this time to refer to the object antecedent, in a result context.

(12) a. *Carlos ha preocupado a Juan. Carlos se ha caído y se ha hecho daño en el tobillo.*
'Carlos worried Juan. Carlos fell and hurt his ankle.'
b. *Juan ha impresionado a Carlos. dando una voltereta en el aire con la bici.*
'Juan impressed Carlos. By doing a backflip with the bike.'
c. Silvia ha echado la culpa a Julia. Entonces sea [sic] enfadado.
'Silvia blamed Julia. Then (she) got angry.'

As in the narrative experiment, language dominance seems to play no major role in performance on the task (an expected outcome, if we bear in mind the results of the cloze-test). As for the impact of language, a difference can be found in the fact that Italian clearly uses more overt material than Spanish (particularly in the result relation), although Spanish shows a higher number of full REs assigned to the object antecedent in the elaboration relation.

6.3. On the bilingual acquisition of reference

Of the many elements intervening in the acquisition of linguistic features by both native speakers and other types of learners (L2 learners, successive bilinguals, late bilinguals, etc.) it seems that the age of onset of exposure to the language and the quality and quantity of input are the most influential (as we saw in chapter 4; also see Meisel 2009 and Unsworth et al. 2014). According to various studies (e.g., Paradis et al. 2011), simultaneous bilingual children can develop and attain competence in their two languages without any age delay relative to monolingual children, and even early successive bilinguals may pattern similarly to simultaneous bilingual children. Following Tsimpli (2014), in order to account for possible differences in acquisition outcomes, it is important to consider timing differences attested in the monolingual development of features and structures, distinguishing between early, late, or 'very late' acquired phenomena. Early phenomena are narrowly syntactic, while later phenomena involve syntax-external or language-external resources (Tsimpli 2014:284). The reason for this distinction lies in the fact that early bilinguals may differ from late ones in the process of acquisition of the parametric properties of the core, grammatical system (White 2003).

According to Clark (2009), by early school years (around age 5-6) children have usually acquired the formal aspects of their native language, including morpho-syntactic dependencies, the semantics of quantification, or syntactically-encoded properties of information structure, while other aspects of language, like pragmatically conditioned aspects of pronominal use, typically develop later because they have greater semantic complexity or discourse properties (interface phenomena). The earliest grammatical phenomena in monolingual development are those involving macroparameters (like the Null Subject parameter; see Roberts and Holmberg 2010), which characterise languages into types. Such parameters should be acquired with the minimal threshold of input in bilingual children, if we accept that bilingual development is based on the growth of two grammars without a period of language undifferentiation (Meisel 1986; Paradis and Genesee 1996).

In chapter 4 we reviewed a few studies that discuss the role of age of onset in bilingualism. Di Domenico and Baroncini (2019), for example, analysed the effect of the age of onset in anaphora interpretation and production in Greek and Italian monolinguals and bilinguals. Their results showed very similar patterns characterising

Italian native speakers' and Greek native speakers' choice of REs: null pronouns were widely employed, followed by lexical DPs, while overt pronouns were rarer in both groups (Di Domenico and Baroncini 2019:5). These results imply that in bilingual speakers no effect related to cross-linguistic influence is to be expected. In a second experiment, they tested Greek-Italian bilingual speakers living in either Greece or Italy, and compared the results with Greek near-native speakers who had started to learn Italian after puberty. Their findings clearly revealed that L2 learners used significantly more overt pronouns than natives and bilinguals, while bilinguals from birth behaved like natives, suggesting that age of onset is an important variable in canonical anaphora interpretation and production.

Similar results, although through different experiments, were obtained in Giannakou (2023) for Greek and Spanish in a self-paced offline listening task. Here native speakers and bilinguals performed similarly, while heritage speakers followed a different pattern, linking the null pronoun to object antecedents more often than the other groups.

My own experiments do not compare monolinguals and bilinguals of the same age, because the monolingual participants were adults and the bilingual participants were children, so in that sense they differ from the participants in the aforementioned studies. However, the adult group allowed me to understand how the system works.

As mentioned, according to the traditional characterisation of micro- and macro-parameters, the Null Subject parameter is considered a macro-parameter (Roberts 2007). Following Clark (2009), it is known that children learn macro-parameters by the age of 6, which means that when monolingual native speakers enter school, they have already mastered the basic syntax of the Null Subject Parameter. On the other hand, according to Tsimpli (2014) and Paradis et al. (2011), early and successive bilinguals encounter no special learning delays compared to their monolingual peers, if the input has been similar and sufficient in both languages. If bilingual children raised with two NSLs are perfectly able to acquire the Null Subject Parameter of both languages, this is consistent with our results from the experiments in chapter 5. Moreover, we know that children in our experiments have had a balanced input for Spanish and Italian since age 3 or earlier, which would have allowed them to separate the syntactic particularities of anaphora, according to the literature reviewed. If the syntactic constraints of the null subject parameter have been felicitously

acquired, one would expect that the conditions governing the interpretation and selection of antecedents for referential expressions would be mastered as well.

On the other hand, elements related to the interface between syntax and other domains (semantics, pragmatics, or discourse) and micro-parameters require more processing, and are learned and mastered after the age of 6 (following both Clark 2009 and Tsimpli 2014). The children who participated here ranged from 8 to 12, and according to our results were sensitive to these extra-syntactic cues, meaning that at least some of the elements at the discourse interface had already been acquired by the age range tested. It could be said, therefore, that the results obtained are in line with what could be expected according to the literature on this matter.

I am aware that the results of these experiments are just one more contribution to the already considerable volume of research on bilingualism. The fact that the children who participated in my experiments followed patterns appropriate to each language respectively and displayed an advanced sensitivity to syntactic, semantic, and discourse-related cues certainly does not invalidate results obtained in other studies that present the opposite outcome. As we saw, the literature points to the involvement of many elements in bilingual (as well as monolingual) acquisition, including individual patterns (Andreou et al. 2023), so it is no wonder that such heterogeneous results have been obtained. After all, studies have examined a diverse number of languages, often using different methodologies in disparate contexts, with participants from contrasting backgrounds. I would therefore like to regard the results on bilingual anaphora resolution obtained in this investigation simply as one more pattern to add to the literature on Spanish-Italian bilingual children.

5.6. Conclusions of the chapter

The main aim of chapter 5 was to provide a complete battery of material on reference assignment in Italian-Spanish bilingual children, considering their syntactic and lexical capacities, observing their interpretation of anaphora and production of REs, and in addition introducing a discourse-oriented view to the research.

As explained in the introduction to this chapter, the study covers different aspects: the cloze-test was intended to determine and quantify the individual proficiency of each child in both languages; the narrative task sought to observe

children's interpretation and production of reference in a retelling context; and finally, the goal of the sentence-continuation task was to observe how implicit causality and discourse relations impacted on children' decisions regarding reference assignment.

The cloze-test revealed a group of balanced bilinguals with similar levels of proficiency in Spanish and Italian. the mean language dominance score for all 86 children was -0.5, indicating a very slight dominance of Spanish. Some of the elements tested—like inflection—showed higher scores in Italian, while others—such as prepositions—showed higher scores in Spanish. However, these differences are of no significance for the general outcome of the test. The fact that this school context provided me with such a balanced group of bilinguals was ~~is~~ very beneficial for my research purposes because it gave me a context in which to test anaphora resolution knowing that the results would not be biased by a strong language dominance among participants in one language or the other.

The first experiment, the narrative task, revealed that these children, just like adults, already had strong preferences for certain REs in specific contexts and that these preferences were more or less in line with the preferences found among adult monolinguals. The children showed a general preference to associate null pronouns with subject antecedents and full REs with object antecedents. However, in their use of Italian each type of RE was more closely associated with a specific antecedent and more full REs were produced overall. Their use of Spanish was less rigid and allowed for more null pronouns in general. A surprising finding, on the other hand, was the scarce use of overt pronouns in both languages.

In all the literature mentioned (see chapter 4) and in the hypotheses formulated for this study, null and overt pronouns are assumed to be complementary to each other: null for subject antecedents, overt for object antecedents; null when there is topic continuity, overt when the topic changes, etc. But these results show that overt pronouns have a less relevant function. This could indicate, perhaps, a need to be very clear about which character in a narrative is doing what, and to find REs that are overt but not full (like proper names, DPs) as less clear and manifest. In this connection, such behaviour has also been seen in Spanish native speakers and English L2 learners of Spanish (Lozano 2009). It would be of interest to determine whether the reason for this choice is related to age or some other language-external factor.

Lastly, our second experiment, the sentence-continuation task, covered the discourse-related aspects of reference, considering the impact of implicit causality and

discourse relations on reference assignment. The results revealed a significant effect of these factors in both languages, and were consistent with the results for monolinguals reported in chapter 3. Once again, Spanish seems to be freer in its association of a RE with its antecedent. However, the results remained consistent with the expectations listed in this chapter's introduction, particularly regarding null material referring to subject antecedents in elaboration contexts and overt material referring to object antecedents in result contexts; the outcomes of the explanation contexts seem to be in line with the bias of the verb. Therefore, these results prove that children as young as those in this bilingual group, ranging from 8 to 12 years, were already sensitive to these discourse-related aspects and were able to make decisions regarding reference assignment which resemble the adult referential system.

The most important point to underline with regard to this experiment is that, while in experiment 3 (the narrative task) the results differ slightly from my findings for monolinguals (experiment 1), in the free-production context the Spanish-Italian bilingual speakers revert to the patterns we saw in chapter 3, to wit, a stricter division of labour between REs in Italian, and an overuse of null pronouns in Spanish.

Overall, this three-task study on Italian and Spanish bilingual children reveals, on the one hand, that children are able to make syntactic, pragmatic and discourse-related decisions regarding the phenomena tested and, on the other, that these decisions are consistent with what is found in the adult monolingual groups in each language. In other words, it would seem that, contrary to other findings in the literature (as in Sorace and Filiaci 2006 or Belletti et al. 2007 for near-native speakers), Spanish-Italian bilingual children are able to separate each language's pattern and behave according to what is expected in each language respectively, at least in these phenomena. This is proven by the fact that language dominance never proved to be a significant factor in the statistical analyses undertaken here, indicating that it plays no role in reference assignment in Italian-Spanish bilingual children. This also seems to be consistent to some extent with the results found in some of the literature reviewed in chapter 4, such as Andreou et al. (2023) for Greek and Italian bilinguals or Giannakou (2023) for Greek and Spanish bilinguals.

This represents a crucial finding, as two of these three languages–Italian and Spanish–are precisely the ones I have analysed here.

6. CONCLUSIONS

As I have mentioned throughout the chapters, this investigation emerged from an interest in understanding how anaphora interpretation and production works in two NSLs -Spanish and Italian- that may seem very close in this respect but that are actually divergent in several respects, and the extent to which the similarities and differences between them manifest themselves in a bilingual setting. The previous literature provides a variegated picture, with some results pointing sometimes in similar directions for both languages (e.g., Carminati 2002; Alonso-Ovalle et al. 2002) and others pointing to differences (e.g., Filiaci et al. 2013). This is also true for research on either monolinguals or bilinguals (see Belletti et al. 2007, Torregrossa et al. 2021, Giannakou 2023 for bilingualism). In most cases, the problem with previous studies lies in the fact that each researcher uses different criteria and experimental conditions, which means that the results not always easily comparable. This is why a study was needed that collected the date in a way that was comparable with the results of other previous studies to allow for consistent and systematic comparison.

In this context, my aim has been twofold. On the one hand, I sought to gather a new and consistent set of data to determine the behaviour of monolingual native speakers of Spanish and Italian regarding anaphora production and interpretation, and extract my own conclusions albeit informed by the previous literature on the matter. On the other hand, I wanted to obtain a comparable set of findings about the behaviour of bilingual children, in order to observe whether the patterns of monolingual behaviour in each language were maintained or changed by bilinguals.

I therefore had two main sets of research questions, one regarding anaphora resolution in general (RQ1) and one regarding anaphora resolution in bilinguals (RQ2):

RQ1

a. Are there differences between Italian and Spanish in the resolution of anaphora with null and overt pronouns?
b. How can these differences be accounted for in a principled way?

RQ2

a. How do Spanish-Italian bilingual children manage anaphora resolution?
b. How does their performance compare to that of monolingual speakers?
c. How do the two systems of interpretation interact with each other?

These questions were then broken into more specific and concrete research questions. RQ1 was further developed into the questions raised in chapter 3, all of them aimed at ascertaining the various factors determining anaphora resolution.

- RQ1.1: What (if any) are the differences and similarities regarding reference assignment in Spanish, Italian, and Greek?
- RQ1.2: Does the type of anaphoric expression play a role in reference assignment?
- RQ1.3: Does verb bias play a role in reference assignment?
- RQ1.4: Do discourse relations play a role in reference assignment?
- RQ1.5: Does topichood play a role in reference assignment?

RQ2 was further broken down into the questions raised in chapter 5, all of them intended to ascertain the various factors determining bilingual anaphora management:

- RQ 2.1: Is the type of anaphoric expression a relevant factor for reference assignment in bilinguals?
- RQ 2.2: Do dominance, language, and age play a role in reference assignment in bilinguals?

In what follows, I will summarise the steps I took to answer my specific research questions, the methodology I used to collect the data, and the main findings I obtained. I will also address my broader research questions, RQ1 and RQ2.

6.1. On anaphora interpretation in Spanish, Italian, and Greek

In chapter 2 of this dissertation I reviewed some of the most well-known approaches and proposals regarding anaphora resolution. Some theories, like the Accessibility Theory (Ariel 1990), seem to be easily applicable to most languages, perhaps because they describe elements that are more universal; other approaches, like the Position of Antecedent Strategy (Carminati 2002), require specific settings in order to be felicitously applied. In general, the approaches can be divided according to the main orientation they take, namely, syntactic, semantic or pragmatic.

My review of the literature led me to pose two main questions regarding NSLs, the first (RQ1.1) seeking to identify the differences and similarities between Spanish, Italian, and Greek in terms of reference assignment, and the second (RQ1.2), concerned with whether the type of anaphoric expression played the same role in reference assignment in these three languages. These questions arose from the fact that previous studies (Alonso-Ovalle et al. 2002, Filiaci et al. 2013, Torregrossa et al. 2020) yielded results that could not be directly compared because different methodologies had been applied. I therefore felt that it was necessary to carry out a new study in which participants had a similar background and age to participants in the previous studies.

For this reason, in chapter 3 we tested reference interpretation in Greek, Spanish, and Italian, building on the study by Torregrossa et al. (2018) by adding comparable data from speakers of Spanish to the dataset. An interpretation task was administered in which participants had to indicate the degree, as measured on a five-point Likert scale, to which they accepted either a null or an overt subject pronoun in a subordinate clause taking the subject or the object in the main clause as their antecedent. As we saw in 3.3., the results of this first experiment were very different across the three languages: Italian showed a strong preference for null pronouns as referring expressions for subject antecedents and overt pronouns as referring expressions for object antecedents; Greek followed the same pattern but was clearly less restrictive; and Spanish showed no preference between null and overt pronouns as anaphoric referring expressions for either subject or object antecedents. To account for these differences, we invoked the Hierarchical Height Principle proposed by Torregrossa et al. (2020), according to which anaphora resolution is sensitive to the

difference between constituents in terms of hierarchical height: the greater the difference between constituents in terms of the amount of c-commanded syntactic material, the more likely it is that the hierarchically higher constituent will be picked by a null subject pronoun as its antecedent. Following this principle, certain morphological and syntactic features of Greek and Spanish allowed a less restrictive setting in anaphora resolution: for Greek, it was case-marking and the possibility of having VSO orders; for Spanish, it was DOM (a remnant of case-marking) and VSO orders as well, as we saw in 3.1.

However, these particularities of Spanish did not explain how this apparent lack of preferences for matching referring expressions and antecedents worked, nor did it explain whether Spanish speakers relied on different aspects of language in order to felicitously interpret anaphora. For this reason, we examined other semantic and discourse phenomena. More specifically, we considered semantic-related features, such as implicit causality, and discourse-related elements, such as discourse relations and topichood, following the coherence approach proposed by Kehler and Rodhe (2013). This is the focal area of the remaining research questions (RQ1.3, RQ1.4, RQ1.5), that is, whether verb bias, discourse relations, or topichood were factors that influenced reference assignment. The results showed that Spanish speakers are indeed sensitive to the first two, as I found a preference for subject antecedents with subject-biased verbs and a preference for object antecedents with object-biased verbs, as well as a preference for subject antecedents with explanation and elaboration relations, but a preference for object antecedents with result relations. Topichood, on the other hand, seemed to play no significant role. I did not test such elements on the other two languages, Greek and Italian, but it could well be a new research direction for the future.

Thus far, therefore, I had considered three languages with an allegedly similar pronominal system that, nevertheless, do not work in the same way regarding anaphora interpretation and reference. Different aspects of language–morphosyntax, semantics, discourse coherence, and discourse articulation–all seem to be involved in reference production in each language, but to different degrees in each.

My examination of monolingual reference management yielded surprising results that allowed me to view the NSL patterns through a new and slightly different lens. By comparing Italian, Greek and Spanish, it became apparent to me that variation starting at the syntactic and morphosyntactic level created a dissimilarity in the

interpretation of null and overt pronouns in these languages. The fact that my results for Spanish displayed no preference for one or another referential expression prompted me to look for explanations from a different perspective, which required me to scrutinise other features that had not been analysed in this language before, namely semantic and discourse-related elements that can influence the decisions native speakers make in order to produce and interpret null and overt pronouns. Realising how crucial these elements were in Spanish was what motivated me to search for a new framework of analysis that would accommodate all these factors in a single explanation. The observation of the influence of each aspect of language on anaphora resolution led me to a new proposal, which I called the *Layered Structure* (LS) hypothesis. This hypothesis centres around an implicative scale that makes it possible to categorise languages based on the features they need for anaphora resolution. For some languages, more local formal features apply; for others, however, the structure opens a range of possibilities that forces us to consider other aspects found in semantics or located at the interfaces. It allows languages to be characterized based on the point they reach on the scale and therefore allows predictions to be made about what types of interpretations will be possible. An additional advantage of this proposal is that it is scalable and can be expanded with new elements if necessary.

Since I only tested the elements of RQ1.3, RQ1.4, RQ1.5 for Spanish, it is the only language which I can safely say requires all the layers in the LS to felicitously interpret anaphoric expressions, as we saw in the results of experiment 2 in chapter 3. However, considering the results of the interpretation task in experiment 1, I can make some predictions regarding how the other two languages, Italian and Greek, fit into this scheme.

As mentioned in section 3.4, my prediction regarding the LS in Italian is that Italian would only need the first, syntactic layer, to felicitously interpret anaphoric expressions. As we saw in experiment 1, Italian relies strongly on c-command and has very specific interpretative preferences; this would mean that it does not need any additional element. However, we saw in chapter 2 (see Leonetti 2022) that it can be sensitive to more external layers, such as discourse relations; nonetheless, these other layers play no critical role when it comes to interpreting anaphora. The difference with Spanish is that while in Spanish these elements seem crucial for anaphora interpretation, in Italian this is rather exceptional, and probably applies only to more specific contexts such as those described in Leonetti (2022).

As for Greek, my intuition is less strong because I am not a speaker of the language, but my prediction is that it needs at least the grammar-related layers (syntax and morphology) for anaphora interpretation, and may rely more on information structure as well; there would be a sensitivity to less local layers, such as semantics or pragmatics, but they would not be as fundamental as in Spanish.

A non-*pro-drop* language like English, on the other hand, cannot rely on the first syntactic layer alone because pronouns are always needed, and we know that it is very sensitive to more external layers, such as implicit causality and coherence relations. Moreover, it would lean on strongly on prosody.

As I mentioned above, I would like to apply a LS analysis to other languages in the future. It would make it easier to map and compare languages in a more complete way, and it should prove useful to researchers from diverse perspectives. The LS framework could also help us understand the differing results in previous studies of Spanish, Italian, and Greek, and serve as a valuable tool for future investigations involving other contexts less strongly governed by syntax than subordinate clauses.

6.2. On anaphora management in bilinguals

In order to set out the background for my research questions concerning dominance, language, and age in multilingual contexts, in chapter 4 I reviewed the large body of literature on bilingualism to choose the works most relevant to anaphora resolution. The elements that need to be taken into consideration are many, particularly age of onset, quantity and quality of input, and linguistic background. As with the previous topic, research has yielded very different results across languages and language pairs. Moreover, the results from previous experiments with speakers of various language combinations and stages of acquisition do not provide a uniform picture either: some of them suggest that bilingual speakers tend to be very balanced (such as Bel et al. 2016), but others see signs of attrition or cross-linguistic influences (such as Belletti et al. 2007). To these elements it is necessary to add individual variety (Andreou et al. 2023): no two children have the same input, or a similarly activated lexicon or linguistic background. Bilingualism is, therefore, a difficult realm about which to make sweeping generalisations. What clearly emerges from any overview of the literature is that many factors need to be taken into consideration, both linguistic and extra-

linguistic. Our next research question was therefore whether dominance, language or age played any role in reference assignment in bilingual speakers of Spanish and Italian (RQ2.2).

My aim in chapter 5 was to create a set of experiments that would offer a large body of data through which to analyse the interface between syntax-, discourse- and semantics-oriented aspects of anaphora resolution. Following other studies (such as Di Domenico and Baroncini 2019; Andreou et al. 2023; Giannakou 2023) I hypothesised that this specific group of children would behave like native speakers in both languages, since it was a balanced group that scored close to zero in the language dominance test. Note that I defend this idea only for this particular linguistic pair and situation: other language combinations (such as a non *pro-drop* language paired with a *pro-drop* one) or different linguistic backgrounds (adult near-native speakers, successive bilinguals, etc.) might well yield other results; and even this group of bilingual children might conceivably yield different results if tested in a different direction.

For my first study of bilinguals, I replicated the experiments from Torregrossa et al. (2018), that is a cloze-test and a narrative retelling task. This offered me a set of data that would be perfectly comparable to other research, which is crucial for such an investigation. The cloze-test allowed me to determine the proficiency level of participants in both languages and to check for language dominance. The narrative task provided me with information regarding how they produced and interpreted referential expressions in a story-retelling context. Here, I detected a pattern closer to that of Italian, with null pronouns referring to subject antecedents and DPs and overt pronouns referring to object antecedents. Finally, the sentence-continuation task aimed at testing bilinguals' sensitivity to semantic and pragmatic elements. Here I observed more separate patterns for each language, similar to those of adult monolinguals: in Italian there were overall more overt referential expressions, while in Spanish null pronouns referring to object antecedents were more frequent. Thus, the most important finding of this experiment is the fact that it proves the fundamental role that both syntactic and discourse-related factors play in anaphora resolution in both Spanish and Italian, while maintaining their different patterns, because children as young as 8 are sensitive to them and behave like adults in this respect.

6.3. The main RQs, revisited

After reviewing the more specific RQs, I would like to return now to the two general research questions of this dissertation.

With regard to RQ1 and anaphora interpretation, we have seen that Spanish and Italian (and Greek) indeed have differences regarding the resolution of pronominal anaphora involving null and overt pronouns; and as for why, we have found the root of their difference at the syntactic, more local level of c-command, following the HHP (Torregrossa et al. 2020). The possibility of having non-canonical word orders in Spanish and Greek, as well as the availability of case-marking for Greek and DOM for Spanish, are a clear indication of how morphological features can license a less strict interpretative pattern, and then trigger the search for or activation of other elements in order to felicitously interpret anaphora. These differences can be accounted for by looking at these syntactic phenomena, and the different behaviour seen in these three NSLs can be accounted for in terms of the LS I have set out here. This is because LS considers all the layers of language that can influence anaphora interpretation, from the more local and internal ones, such as grammatical layers (syntax, morphology) to the more global and external ones, such as extra-linguistics elements (like world knowledge), as well as all the layers in between (syntax-discourse interfaces, conceptual structure, discourse articulation). This allows for all the differences and particularities of each language to be accounted for and, as I have noted above, the structure allows for more layers to be added if needed.

I therefore feel that through experiments 1 and 2 (chapter 3) we have come to better understand anaphora interpretation by integrating in a coherent picture syntactic approaches such as Torregrossa et al. (2020), discourse-related proposals such as Kehler and Rodhe (2013) and the pragmatic considerations made by Leonetti (2022). Observing the results of these two experiments and understanding the significance of the many elements intertwined in anaphora interpretation has helped us accommodate everything in a single framework, LS, which thus constitutes the answer to RQ1(b), and because it accounts for the differences in a principled way, it also answers RQ1(a).

RQ2, on the other hand, encompasses my questions regarding anaphora interpretation in Spanish-Italian bilingual children. The results of the experiments in chapter 5 have provided us with answers for these questions. Both the narrative and

the sentence-continuation tasks showed that language, dominance or age played no role in choosing one specific referential expression for each antecedent–the answer toRQ2(a). Compared to monolingual speakers–to answerRQ2(b)–bilingual children exhibit less marked patterns in the distinction between Spanish and Italian, although they can be spotted: in Italian there is a higher number of overt elements overall (as seen in experiment 3), while in Spanish there are more null pronouns referring to the object antecedent in object-biased contexts, for example (as seen in experiment 4). As for how the two systems of interpretation interact with each other–RQ2(c)–Spanish and Italian maintain their separate preferences, as can be seen in the interaction of reference management with elements such as implicit causality and discourse relations, but such preferences are subtler in bilingual children than in monolingual adults. Overall, bilingual children generally manage anaphora resolution by choosing subject antecedents for null pronouns and object antecedents for overt referential expressions, with a clear preference for DPs instead of overt pronouns (as seen in previous studies, like Lozano 2009 for near-native speakers).

6.4. Future research

There are three tasks that I am leaving for future investigations. The first one is to replicate the experiment on discourse-related elements from chapter 3 on Italian monolingual speakers. Having created the Spanish language version of the sentence-continuation task, I would like to prepare an Italian version and test it, in order to see under what conditions and to what extent discourse elements such as topichood, implicit causality, and coherence relations interact with the rigid syntactic structure governing the interpretation of Italian anaphora. It would be ideal to also test it for Greek, and compare the results of the three languages as I did with the interpretation task.

The second topic I leave for future investigations is further development of the LS. I would like to work out its consequences and implications for Italian in the light of the results and comparisons of the sentence-continuation task and draw a concrete map based on statistical analysis. Of course, in subsequent work it would be desirable to expand the LS model by applying it to different languages with new and diverse layers.

The last task is related to the experiments with children. Because it was carried during the COVID-19 pandemic, one of the things I did not manage to do in this study was to test children orally for the narrative retelling task, as was done in Torregrossa et al. (2018). Since conditions have returned to normal, it would be of interest to do this. I am sure an oral task would prove easier for child participants and would provide data to confirm or refine the previous analysis.

Overall, this dissertation offers new data and new results on both monolingual and bilingual aspects of reference management, and provides a new way of analysis through the LS that can be implemented to observe and study reference in all languages without omitting any elements that might be fundamental for anaphora interpretation. On a personal level, it was also extremely interesting to be able to devise and test my own experiments regarding discourse-related elements for both mono- and bilinguals.

6. CONCLUSIONES

Esta investigación surgió del interés por comprender, por un lado, cómo funcionan la interpretación y producción de la anáfora en dos lenguas de sujeto tácito -español e italiano- que podrían parecer muy cercanas pero que en realidad son divergentes en varios aspectos y, por otro lado, hasta qué punto las semejanzas y diferencias entre ellas se hacen visibles en un entorno bilingüe. La bibliografía previa ofrece un panorama heterogéneo, con resultados que apuntan a veces en direcciones similares para ambas lenguas (Carminati 2002; Alonso-Ovalle et al. 2002), mientras que otros señalan diferencias (Filiaci et al. 2013). Esto es así tanto para los monolingües como para los bilingües (véase Belletti et al. 2007, Torregrossa et al. 2021, Giannakou 2023 para el bilingüismo). En la mayoría de los casos, el problema de la bibliografía anterior radica en que cada investigador utiliza criterios y condiciones experimentales diferentes, lo que hace que los resultados no siempre sean fácilmente comparables. Por eso era necesario un estudio que recogiera los datos de forma equiparable con los resultados de otros estudios anteriores para obtener una comparación coherente y sistemática.

En este contexto, mi objetivo ha sido doble: por un lado, reunir un conjunto de datos nuevo y consistente para determinar el comportamiento de los hablantes nativos monolingües de español e italiano en cuanto a la producción e interpretación de la anáfora, y extraer mis propias conclusiones a la luz de la bibliografía previa sobre la materia; por otro lado, extender mis hallazgos al comportamiento de los niños bilingües, con el fin de observar si los patrones de cada lengua se mantienen o cambian.

En este sentido, tenía dos conjuntos principales de preguntas de investigación, uno relativo a la resolución de anáforas en general (RQ1) y otro relativo a la resolución de anáforas en bilingües (RQ2):

RQ1

a. ¿Por qué existen diferencias entre el italiano y el español en la resolución de anáforas con pronombres tácitos y explícitos?
b. ¿Cómo se pueden representar y explicar estas diferencias?

RQ2

a. ¿Cómo resuelven la anáfora los niños bilingües español-italiano?
b. ¿Cómo es su interpretación en comparación con el de los hablantes monolingües?
c. ¿Cómo interactúan entre sí los dos sistemas de interpretación?

Estas preguntas se desdoblan y se dividen a su vez en preguntas de investigación más específicas y concretas. La RQ1 se desarrolló posteriormente en las preguntas planteadas en el capítulo 3, todas ellas destinadas a averiguar los distintos factores que determinan la resolución de la anáfora.

- RQ1.1: ¿Cuáles son (si las hay) las diferencias y similitudes en cuanto a la asignación de referencia en español, italiano y griego?
- RQ1.2: ¿Es el tipo de expresión anafórica un factor relevante para la asignación de la referencia?
- RQ1.3: ¿Es el sesgo verbal un factor relevante para la asignación de la referencia?
- RQ1.4: ¿Son las relaciones discursivas un factor relevante para la asignación de la referencia?
- RQ1.5: ¿Es la topicidad un factor relevante para la asignación de la referencia?

La RQ2 se desdobla en las preguntas planteadas en el capítulo 5, todas ellas destinadas a averiguar los distintos factores que determinan la gestión de la anáfora en bilingües:

- RQ 2.1: ¿Es el tipo de expresión anafórica un factor relevante para la asignación de la referencia en bilingües?
- RQ 2.2: ¿Son la dominancia, la lengua y la edad factores relevantes para la asignación de la referencia en bilingües?

A continuación, resumiré los pasos dados en relación con mis preguntas de investigación específicas, la metodología utilizada para recoger los datos y las principales conclusiones.

6.1. Sobre la interpretación de la anáfora en español, italiano y griego

En el capítulo 2 repasamos algunos de los enfoques y propuestas más conocidos sobre la resolución de la anáfora. Algunas teorías, como la Teoría de la Accesibilidad (Ariel 1990), parecen adaptarse fácilmente a la mayoría de las lenguas, porque describe elementos que son más universales, quizás; otros enfoques, como la PAH (Carminati 2002), necesitan entornos específicos para poder aplicarse con éxito. La cantidad de bibliografía es muy extensa. Los enfoques pueden dividirse según la orientación principal que adopten, a saber, sintáctica, semántica o pragmática.

De la revisión bibliográfica surgieron dos preguntas principales, relativas a las lenguas de sujeto tácito: la primera (RQ1.1), cuáles son las diferencias y similitudes entre español, italiano y griego; la segunda, si el tipo de expresión referencial es un factor relevante para la asignación de la referencia de la misma manera en estas tres lenguas (RQ1.2). La razón de estas preguntas radica en el hecho de que algunos estudios anteriores (Alonso-Ovalle et al. 2002, Filiaci et al. 2013, Torregrossa et al. 2020) obtuvieron resultados que no son comparables entre ellos porque utilizaban metodologías diferentes, por lo que parecía necesario desarrollar un nuevo estudio, en el que los participantes tuvieran una formación y una edad similares.

Por este motivo, en el capítulo 3 examinamos la interpretación de la referencia en griego, español e italiano, siguiendo el estudio de Torregrossa et al. (2018) y añadiendo el español al experimento, con el fin de disponer de un conjunto de datos realmente comparables. Se administró una tarea de interpretación en la que los participantes debían indicar en qué medida interpretaban un pronombre de sujeto tácito o explícito en una oración subordinada como antecedente del sujeto o del objeto de la oración principal, basándose en una escala Likert de cinco puntos. Como se muestra en el apartado 3.3., los resultados de este primer experimento fueron muy diferentes en las tres lenguas: el italiano mantuvo una fuerte preferencia por los pronombres tácitos para referirse a los antecedentes sujeto, y por los pronombres explícitos para referirse a los antecedentes objeto; el griego siguió el mismo patrón, pero de forma menos restrictiva; por último, el español no mostró ninguna preferencia entre los pronombres tácitos y explícitos para referirse a un antecedente u otro. Según Torregrossa et al. (2020), la resolución de la anáfora es sensible a la diferencia entre constituyentes en términos de altura jerárquica: cuanto mayor sea la diferencia entre

constituyentes en términos de cantidad de material sintáctico en mando-c, más probable será que el constituyente jerárquicamente más alto sea el escogido por un pronombre tácito como antecedente. Siguiendo este principio, algunos rasgos gramaticales, morfológicos y sintácticos del griego y el español explican que estas lenguas tengan una configuración menos restrictiva para la resolución de la anáfora: en el caso del griego, la marca de caso y la posibilidad de tener órdenes marcados; en el caso del español, el DOM (un remanente de la marca de caso) y los órdenes marcados, como vimos en 3.1.

Sin embargo, estas particularidades del español no explican cómo funciona esta aparente falta de preferencias por la concordancia entre expresiones referenciales y antecedentes, ni si los hispanohablantes se basan en otros aspectos de la lengua para interpretar con acierto las expresiones anafóricas. Por esta razón, era necesario examinar otros fenómenos semánticos y discursivos. Más concretamente, quise poner a prueba rasgos relacionados con la semántica, como la causalidad implícita, y elementos relacionados con el discurso, como las relaciones de coherencia y la topicidad, siguiendo el enfoque de coherencia de Kehler & Rodhe (2013). Este era el objetivo de las RQ restantes (RQ1.3, RQ1.4, RQ1.5), es decir, si el sesgo verbal, las relaciones discursivas y la topicidad son factores relevantes para la asignación de un referente. Los resultados demostraron que los hispanohablantes sí son sensibles a estos elementos, ya que se observó una preferencia por los antecedentes sujeto con verbos con sesgo de sujeto y por los antecedentes objeto con verbos con sesgo de objeto; del mismo modo se observó una preferencia por los antecedentes sujeto con relaciones de coherencia de explicación y elaboración, y por los antecedentes de objeto con relaciones de resultado. Por otro lado, la topicidad no parece desempeñar un papel muy relevante. El impacto de estos elementos en las otras dos lenguas, el griego y el italiano, podría ser una nueva dirección de investigación para el futuro.

En resumen, pese a tener un sistema pronominal a primera vista parecido, estas lenguas no funcionan de la misma manera en cuanto a la interpretación y referencia de la anáfora. Algunos aspectos del lenguaje (morfosintaxis, semántica, coherencia discursiva y articulación del discurso) parecen estar implicados en la producción de la referencia en cada lengua, pero en distinto grado en cada una de ellas.

Estos experimentos me permitieron ver los patrones de las lenguas de sujeto tácito a través de una lente nueva y ligeramente diferente. Al comparar italiano, griego y

español, se hizo patente una variación que comenzaba en el nivel sintáctico y morfosintáctico y creaba una disimilitud en la interpretación de los pronombres tácitos y explícitos en estas lenguas. El hecho de que los resultados en español no mostraran preferencia por una u otra expresión referencial permite buscar explicaciones desde una perspectiva diferente, observando otros rasgos que no se habían analizado antes en esta lengua, es decir, elementos semánticos y relacionados con el discurso que pueden influir en las decisiones que toman los hablantes nativos para la producción e interpretación pronominal. Descubrir lo cruciales que son estos elementos en español fue la motivación para buscar un nuevo esquema de análisis que permitiera que todos estos factores coexistieran en una explicación adecuada. Al observar la influencia de cada aspecto de la lengua para la resolución de la anáfora desarrollé una nueva propuesta, la hipótesis de la *Layered Structure*: una escala implicativa que permite observar las lenguas en función de los rasgos que necesitan para la resolución de la anáfora; para algunas lenguas se aplican rasgos formales más locales; para otras, sin embargo, la estructura abre un abanico de posibilidades que nos obliga a considerar otros aspectos que se encuentran en la semántica o en las interfaces. Permite caracterizar las lenguas en función del punto que alcanzan en la escala y, por tanto, permite hacer predicciones sobre qué tipos de interpretaciones serán posibles. Además de esto, otra ventaja adicional es que la propuesta es escalable y puede ampliarse con nuevos elementos si es necesario.

Puesto que sólo se han probado los elementos de (RQ1.3/RQ1.4/RQ1.5) en español, es la única lengua para la que se puede afirmar con seguridad que necesita todas las capas de la LS para interpretar las expresiones anafóricas, como vimos en los resultados del experimento 2 en el capítulo 3. Sin embargo, teniendo en cuenta el resultado de la tarea de interpretación del experimento 1, se pueden hacer algunas predicciones sobre cómo encajan en este esquema las otras dos lenguas, el italiano y el griego.

Como vimos en la sección 3.4, la predicción con respecto a la LS en italiano es que el italiano sólo necesitaría la primera capa sintáctica para interpretar las expresiones anafóricas: como vimos en el experimento 1, el italiano depende en gran medida del mando-c y tiene preferencias interpretativas muy específicas; esto significaría que no necesita más elementos. Sin embargo, en el capítulo 2 (véase Leonetti 2022, sección 2.5) también vimos que puede ser sensible a más capas externas, como las relaciones discursivas; simplemente no las necesita de manera

obligatoria para interpretar la anáfora. La diferencia con el español es que mientras que en español estos elementos parecen cruciales para la interpretación de la anáfora, en italiano esto es más bien excepcional, y probablemente se aplica sólo a contextos más específicos, como los de Leonetti (2022).

En cuanto al griego, la predicción es que necesita al menos los estratos relacionados con la gramática (sintaxis y morfología) para la interpretación de la anáfora, y quizá también dependa más de la estructura informativa; puede ser sensible a estratos menos locales, como la semántica o la pragmática, pero no serían tan fundamentales como en español.

En cambio, una lengua como el inglés no podría apoyarse en la primera capa sintáctica porque los pronombres son obligatorios, pero sabemos que es muy sensible a capas más externas, como la causalidad implícita y las relaciones de coherencia; además, se apoyaría mucho en la prosodia.

Como he mencionado antes, me gustaría aplicar la LS a otras lenguas en el futuro; la LS podría ayudar a cartografiar y comparar lenguas de una forma más completa, y puede resultar útil a investigadores de diversas perspectivas. La LS también podría ayudar a entender las diferencias encontradas en investigaciones anteriores en español, italiano y griego, y es una herramienta valiosa para futuras investigaciones que incluyan otros contextos no tan fuertemente regidos por la sintaxis como las oraciones subordinadas.

6.2. Sobre la gestión de la anáfora en bilingües

En el capítulo 4 revisamos la amplia bibliografía relativa al bilingüismo y a la resolución de la anáfora. En este tema, los elementos que hay que tener en cuenta son muchos, sobre todo la edad, el input y el bagaje lingüístico. Como en el caso anterior, los resultados de estos estudios arrojan resultados muy diferentes según las lenguas y los pares lingüísticos. Además, no ofrecen una imagen estable: algunos sugieren que los hablantes bilingües tienden a estar muy equilibrados (como Bel et al. 2016), pero otros sugieren atrición o influencias interlingüísticas (como Belletti et al. 2007). A estos elementos hay que añadir la variedad individual (Andreou et al. 2023): no hay dos niños que tengan el mismo input, ni un léxico o un bagaje lingüístico activado de forma similar. Parece distinto, por tanto, hacer grandes generalizaciones. Lo que se

desprende claramente de la revisión bibliográfica es que hay que tener en cuenta muchos factores, tanto lingüísticos como extralingüísticos. La siguiente pregunta de investigación era, por tanto, si la dominancia, la lengua y la edad son factores relevantes para la asignación de referencia en contextos bilingües de español e italiano (RQ2.2).

El objetivo en el capítulo 5 era crear un conjunto de experimentos que ofrecieran una gran cantidad de material para analizar la interfaz entre los aspectos sintácticos, discursivos y semánticos de la resolución de anáforas. Siguiendo otros estudios (como Di Domenico & Baroncini 2019; Andreou 2023; Giannakou 2023) planteamos la hipótesis de que nuestro grupo específico de niños se comportaría de manera nativa en ambas lenguas, ya que se trataba de un grupo equilibrado con una puntuación cercana a cero en la prueba de dominancia. Esta idea es defendible aquí para este par lingüístico y esta situación en particular: otras combinaciones lingüísticas (como una lengua con sujetos tácitos y una sin) o diferentes contextos lingüísticos (adultos casi nativos, bilingües tardíos, etc.) pueden dar otros resultados; nuestro propio grupo podría dar resultados diferentes si se pusiera a prueba en otra cosa.

Repliqué los experimentos de Torregrossa et al. (2018), es decir, el *cloze-test* y la tarea narrativa, para mi primer experimento bilingüe. Esto ofrece un conjunto de datos perfectamente comparables, lo cual es crucial para una investigación de este tipo.

El *cloze-test* permitió conocer el nivel de competencia de nuestros grupos evaluados en ambas lenguas y establecer su dominancia. La tarea narrativa proporcionó información sobre cómo estos niños bilingües producían e interpretaban expresiones referenciales en un contexto de narración. Aquí encontramos un patrón más parecido al del italiano, con pronombres tácitos referidos a antecedentes sujeto y DPs y pronombres explícitos referidos a antecedentes objeto. Por último, la tarea de continuación de frases tenía como objetivo comprobar la sensibilidad de los bilingües a los elementos semánticos y pragmáticos. Aquí observamos patrones más separados, similares a los de los adultos monolingües: en italiano había, en general, más expresiones referenciales explícitas; en español eran más frecuentes los pronombres tácitos referidos a antecedentes objeto. En este sentido, el hallazgo más importante de este experimento es el papel fundamental que tanto los factores sintácticos como los relacionados con el discurso tienen en la resolución de la anáfora en español y en italiano, manteniendo al mismo tiempo sus diferentes patrones, ya que los niños de tan sólo 8 años son sensibles a ellos y se comportan como adultos al respecto.

6.3. Retomando las preguntas de investigación principales

Después de revisar las RQs más específicas, me gustaría volver a las dos preguntas generales de investigación de este trabajo.

Sobre la RQ1 y la interpretación de la anáfora, hemos visto que el español y el italiano (y también el griego) son efectivamente diferentes con respecto a la resolución de la anáfora pronominal; en cuanto al porqué, la raíz de sus diferencias parece estar en el nivel sintáctico, más local, del mando-c, siguiendo el HHP (Torregrossa et al. 2020). La posibilidad de tener órdenes de palabras marcados en español y en griego, así como la disponibilidad de la marca de caso para el griego y del DOM para el español, son un claro indicio de cómo los rasgos morfológicos pueden licenciar un patrón interpretativo menos estricto, y desencadenar entonces la búsqueda o la activación de otros elementos para la interpretación anafórica. En este sentido, estas diferencias pueden explicarse observando estos fenómenos sintácticos, y el diferente comportamiento encontrado en estas tres lenguas de sujeto tácito puede explicarse en términos de la hipótesis de la LS. El análisis que propongo considera todos los estratos del lenguaje que pueden influir en la interpretación de la anáfora, desde los más locales e internos, como los estratos gramaticales (sintaxis, morfología) hasta los más globales y externos, como los elementos extralingüísticos (como el conocimiento del mundo), y todos los estratos intermedios (interfaces sintaxis-discurso, estructura conceptual, articulación del discurso). Esto permite tener en cuenta todas las diferencias y particularidades de cada lengua y, como he mencionado antes, permite añadir más capas si es necesario.

Por lo tanto, creo que a través de los experimentos 1 y 2 (capítulo 3) hemos llegado a comprender mejor la interpretación de la anáfora integrando en una imagen coherente los enfoques sintácticos como el de Torregrossa et al. (2020), las propuestas relacionadas con el discurso como las de Kehler & Rodhe (2013) y las consideraciones pragmáticas de Leonetti (2022). La observación de los resultados de estos dos experimentos y la comprensión de la importancia de los muchos elementos entrelazados en la interpretación de la anáfora nos ha ayudado a ordenar todo a través de la LS, que es la respuesta a la RQ1(b), ya que permite dar cuenta de las diferencias de una manera basada en principios: esto responde a nuestra RQ1(a).

La RQ2, por su parte, abarca nuestras preguntas relativas a la interpretación de la anáfora en niños bilingües español-italiano. Los resultados de los experimentos del capítulo 5 nos han proporcionado respuestas a estas preguntas. Tanto las tareas narrativas como las de continuación de frases demuestran que la lengua, la dominancia o la edad no desempeñan ningún papel en la elección de una expresión referencial específica para cada antecedente -RQ2(a)-. En comparación con los hablantes monolingües -RQ2(b)-, los niños bilingües muestran patrones menos marcados en la distinción entre español e italiano, aunque éstos pueden detectarse: en italiano hay un mayor número de expresiones referenciales explícitas en general (como se ve en el experimento 4), mientras que en español hay más pronombres tácitos que se refieren al antecedente objeto en contextos con sesgo de objeto, por ejemplo (como se ve en el experimento 5). En cuanto a cómo interactúan entre sí los dos sistemas de interpretación -RQ2(c)-, el español y el italiano mantienen sus preferencias, como puede verse en la interacción de la gestión de referencias con elementos como la causalidad implícita y las relaciones discursivas, pero estas preferencias son más sutiles en los niños bilingües que en los adultos monolingües. En general, los niños bilingües gestionan la resolución de la anáfora eligiendo pronombres tácitos para los antecedentes sujeto y expresiones referenciales explícitas para los antecedentes objeto, con una clara preferencia por los DPs frente a los pronombres explícitos (como se ha visto en estudios anteriores, como el de Lozano 2009 para los casi nativos).

6.4. Futuras investigaciones

Por último, hay tres cosas que dejo para futuras investigaciones. La primera es replicar el experimento sobre los elementos relacionados con el discurso del capítulo 3 en hablantes monolingües italianos. Tras crear la tarea de continuación de frases para el español, me gustaría traducirla y probarla en italiano, para ver hasta qué punto y bajo qué condiciones interactúan los elementos discursivos como la topicidad, la causalidad implícita y las relaciones de coherencia con la rígida estructura sintáctica que rige la interpretación de la anáfora en italiano. Sería ideal probarlo también en griego, y comparar los resultados de las tres lenguas como con la tarea de interpretación.

El segundo tema que dejo para futuras investigaciones es seguir analizando y completando mi propuesta, la LS, como ya he mencionado antes. Me gustaría elaborar

sus consecuencias e implicaciones para el italiano a la luz de los resultados y comparaciones de la tarea de continuación de frases y dibujar un mapa concreto basado en el análisis estadístico. Por supuesto, en trabajos posteriores sería deseable ampliar la LS a diferentes idiomas con nuevas y diversas capas.

La última cuestión está relacionada con los experimentos con niños. Una de las cosas que no conseguí hacer en esta investigación por culpa del COVID fue llevar a cabo la tarea narrativa de forma oral, como se hizo en Torregrossa et al. (2018): probablemente una tarea oral proporcionaría datos interesantes para confirmar o refinar el análisis anterior.

En general, esta tesis ofrece nuevos datos y resultados sobre la gestión de la referencia tanto en monolingües como en bilingües, y proporciona una nueva forma de análisis a través de la propuesta de la LS, que puede implementarse para observar y estudiar la referencia en todas las lenguas sin omitir ningún elemento que pueda ser fundamental para la interpretación de la anáfora. Ha sido muy interesante idear y poner a prueba mis propios experimentos sobre elementos relacionados con el discurso, tanto para monolingües como para bilingües.

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Appendix A – Experiment 1

SpanRef1

¡Te agradecemos mucho tu participación en nuestra investigación!
Este cuestionario forma parte de un trabajo de doctorado que se incluye en el proyecto de un grupo de investigadores con base en Alemania, interesados en el estudio de los procesos de interpretación y comprensión de una lengua.

Nos gustaría que contestases siguiendo tus intuiciones como hablante de español. ¡No lo pienses mucho! Contesta a las preguntas de la manera más rápida y natural posible. Y recuerda: ¡no existen respuestas correctas e incorrectas!

Los datos que recojamos serán tratados y analizados de manera anónima, y nunca se compartirán con personas que no estén ligadas directamente con nuestra investigación. Para participar en este estudio, debes de ser adulto (+18) y hablante nativo de español.

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De nuevo, ¡gracias por tu contribución a nuestra investigación!
*Obligatorio

Para conocernos mejor…

Para completar el cuestionario, hay que leer e interpretar algunas frases: leerás una frase que menciona a dos personajes, A y B (por ejemplo, “A saluda a B […]”) y una frase, continuación de la primera, que describe una acción llevada a cabo solo por uno de los dos personajes (por ejemplo, “[…] mientras A/B corre”). Después de haber leído las dos frases, tendrás que decidir cómo de probable te parece que sea el personaje A o el personaje B quien lleva a cabo la acción descrita.

Recuerda que 1 indica una probabilidad baja, mientras que 5 una probabilidad alta.

¿Listo para empezar? Después de haber respondido a algunas preguntas sobre ti, ¡podrás comenzar la actividad!

1. Iniciales de tu nombre y apellidos *
2. Edad *
3. Dirección Email *
4. Nivel de estudios * *Marca solo un ovalo.*
   E.S.O.
   Bachillerato
   Estudios universitarios (grado o licenciatura) Master o Doctorado
5. Si eres estudiante universitario, ¿en qué especialidad estas inscrito?
6. ¿Eres bilingüe? *
7. ¿Hablas alguna lengua extranjera? Si tu respuesta es afirmativa, indica por favor tu nivel según el Marco Común Europeo para las Lenguas (A1, A2, B1, B2, C1, C2). Si hablas más de una lengua, sepáralas con un guión [ejemplo: español (C2) ingles (C1) alemán (B1)]. *
8. ¿En qué comunidad autónoma has crecido? *
9. ¿Eres hablante de alguna variedad dialectal? *

Los datos que se obtengan de tu participación serán utilizados únicamente con los fines mencionados anteriormente y solamente por parte del equipo que forma parte de la investigación, guardándose siempre en un lugar seguro de tal manera que ninguna persona ajena pueda acceder a esta información y atendiendo a un estricto cumplimiento de la Ley Orgánica 03/2018 sobre la Protección de Datos de Carácter Personal.

- El director dio las gracias al enfermero mientras Ø/él escribía la carta.
  ¿Cómo de probable es que fuera el director/el enfermero el que escribía la carta?

- El doctor pagó al arquitecto mientras Ø/él cerraba la carpeta.
  ¿Cómo de probable es que fuera el doctor/el arquitecto el que cerraba la carpeta?

- Raúl dice: “Juan no va a venir a la fiesta porque está enfadado.”
  ¿Cómo de probable es que Raúl haya visto enfadado a Juan?

- El cocinero miró al panadero mientras Ø/él vertía el agua.

¿Cómo de probable es que fuera el cocinero/el panadero el que vertía el agua?

- El actor golpeó al bailarín mientras Ø/él se ponía la chaqueta.
  ¿Cómo de probable es que fuera el actor/el bailarín el que se ponía la chaqueta?

- Marta dice: "Tenemos que cambiar de suavizante. Las toallas están muy ásperas."
  ¿Cómo de probable es que Marta haya tocado las toallas?

- El cura saludó al turista mientras Ø/él iba en bicicleta.
  ¿Cómo de probable es que fuera el cura/el turista el que iba en bicicleta?

- El controlador vio al policía mientras Ø/él cruzaba la calle.
  ¿Cómo de probable es que fuera el controlador/el policía el que cruzaba la calle?

- Julia dice: "Inés está muy enferma."
  ¿Cómo de probable es que Julia haya visto a Inés?

- El juez llamó al abogado mientras Ø/él recogía las cartas.
  ¿Cómo de probable es que fuera el juez/el abogado el que recogía las cartas?

- El marinero consultó al capitán mientras Ø/él observaba las olas.
  ¿Cómo de probable es que fuera el marinero/el capitán el que observaba las olas?

- La señora castigó al ama de llaves porque tocó las joyas sin permiso.
  ¿Cómo de probable es que fuera el ama de llaves la que tocase las joyas?

- El atleta insultó al entrenador mientras Ø/él se iba del gimnasio.
  ¿Cómo de probable es que fuera el atleta/el entrenador el que se iba del gimnasio?

- El técnico consultó al piloto mientras Ø/él preparaba el vuelo.

¿Cómo de probable es que fuera el técnico/el piloto el que preparaba el vuelo?

- Juan dice: “Ahí Pablo estuvo inteligente.”
  ¿Cómo de probable es que Juan haya sido testigo directo de una acción concreta de Pablo?

- El cliente preguntó al vendedor mientras Ø/él cogía la camiseta.
  ¿Cómo de probable es que fuera el cliente/el vendedor el que cogía la camiseta?

- El portero reconoció al cartero mientras Ø/él abría la puerta.
  ¿Cómo de probable es que fuera el portero/el cartero el que abría la puerta?

- El viejo sorprendió al doctor porque abordó la enfermedad con coraje.
  ¿Cómo de probable es que fuera el doctor el que abordase la enfermedad?

- El presidente regañó al atleta mientas Ø/él blandía la botella.
  ¿Cómo de probable es que fuera el presidente/el atleta el que blandía la botella?

- El pintor abrazó al escritor mientras Ø/él veía la película.
  ¿Cómo de probable es que fuera el pintor/el escritor el que veía la película?

- María dice: “Las tiendas están cerradas.”
  ¿Cómo de probable es que María haya visto directamente que las tiendas están cerradas?

- El vigilante paró al hombre mientras Ø/él se ponía el sombrero.
  ¿Cómo de probable es que fuera el vigilante/el hombre el que se ponía el sombrero?

- El guardia arrestó al mendigo mientras Ø/él cruzaba el parque.
  ¿Cómo de probable es que fuera el guardia/el mendigo el que cruzaba el parque?

- Luisito dice: “La comida del gato está riquísima.”
  ¿Cómo de probable es que Luisito haya probado la comida del gato?

- El profesor elogió al estudiante mientras Ø/él encendía el proyector.
  ¿Cómo de probable es que fuera el profesor/el estudiante el que encendía el proyector?

- El periodista escuchó al político mientras Ø/él visitaba la biblioteca.
  ¿Cómo de probable es que fuera el periodista/el político el que visitaba la biblioteca?

- Aitor dice: “El nuevo disco de ‘Los Ases’ está genial.”
  ¿Cómo de probable es que Aitor haya escuchado el nuevo disco de ‘Los Ases’?

- El sastre encontró al carnicero mientras Ø/él esperaba el autobús.
  ¿Cómo de probable es que fuera el sastre/el carnicero el que esperaba el autobús?

- El director escuchó al actor mientras Ø/él observaba el escenario.
  ¿Cómo de probable es que fuera el director/el actor el que observaba el escenario?

- Álex dice: “Esta vez Blanca ha sido simpática.”
  ¿Cómo de probable es que Álex haya visto a Blanca comportarse de manera simpática?

- El violinista animó al guitarrista mientras Ø/él repasaba la partitura.
  ¿Cómo de probable es que fuera el violinista/el guitarrista el que repasaba la partitura?

- El ingeniero ayudó al técnico cuando Ø/él dejaba la sala de máquinas.
  ¿Cómo de probable es que fuera el ingeniero/el técnico el que dejaba la sala de máquinas?

- Antes de que el jefe de estación parase a la ladrona, ella tiró la cartera que había robado.

¿Cómo de probable es que fuera el jefe de estación el que tirase la cartera?

- El camarero metió prisa al barman mientras Ø/él comía tarta.
  ¿Cómo de probable es que fuera el camarero/el barman el que comía tarta?

- El juez condenó al alcalde mientras Ø/él empezaba la campaña.
  ¿Cómo de probable es que fuera el juez/el alcalde el que empezaba la campaña?

- El crítico exaltó al artista porque realizó el cuadro divinamente.
  ¿Cómo de probable es que fuera el crítico el que realizara el cuadro?

- El camionero asustó al taxista mientras Ø/él entraba en la autopista.
  ¿Cómo de probable es que fuera el camionero/el taxista el que entraba en la autopista?

- El ganadero alcanzó al veterinario mientras Ø/él entraba en la habitación.
  ¿Cómo de probable es que fuera el ganadero/el veterinario el que entraba en la habitación?

- Ana dice: "Silvia está muy joven y muy guapa."
  ¿Cómo de probable es que Ana haya visto a Silvia?

- El florista observó al chico mientras Ø/él cogía el ramo de flores.
  ¿Cómo de probable es que fuera el florista/el chico el que cogía el ramo de flores?

- El soldado elogió al general mientras Ø/él abandonaba la trinchera.
  ¿Cómo de probable es que fuera el soldado/el general el que abandonaba la trinchera?

- Laura dice: "Juan no va a venir a la fiesta…Estará cansado."
  ¿Cómo de probable es que Laura haya visto cansado a Juan?

- El psicólogo examinó al paciente mientras Ø/él cogía el vaso.

¿Cómo de probable es que fuera el psicólogo/el paciente el que cogía el vaso?

- El herrero vio al pintor mientras Ø/él llevaba las herramientas.
  ¿Cómo de probable es que fuera el herrero/el pintor el que llevaba las herramientas?

- El tenista sorprendió al oponente porque golpeó la pelota con violencia.
  ¿Cómo de probable es que fuera el tenista el que golpeó la pelota?

Comentarios

- ¿Cuál piensas que puede ser el objetivo de este cuestionario?
- ¿Han sido las instrucciones suficientemente claras para entender el procedimiento?
- ¿Has tenido problemas contestando a las preguntas? En caso afirmativo, ¿cuáles?
- ¿Quieres dejar algún comentario?

Appendix B – Experiment 2

SpanRef2

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Los datos que recojamos serán tratados y analizados de manera anónima, y nunca se compartirán con personas que no estén ligadas directamente con nuestra investigación. Para participar en este estudio, debes de ser adulto (+18) y hablante nativo de español.

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De nuevo, ¡gracias por tu contribución a nuestra investigación!

- Juan ha impresionado a Carlos. Ha/Él ha/Le ha/___
- Julia ha preocupado a Silvia. Ha/Ella ha/Le ha/___
- Juan ha ido al cine.
- María ha irritado a Sofía. Ha/Ella ha/Le ha/___
- Inés ha fascinado a Marta. Ha/Ella ha/Le ha/___
- Marisa ha cantado toda la mañana.

- Felipe ha mentido a Mateo. Ha/Él ha/Le ha/____
- Manuel ha pedido perdón a Arturo. Ha/Él ha/Le ha/____
- Sergio ha vomitado al terminar la carrera.
- Paula ha sorprendido a Ana. Ha/Ella ha/Le ha/____
- Daniel ha aburrido a Mario. Ha/Él ha/Le ha/____
- Marta ha corrido cinco kilómetros.
- El empresario ha decepcionado al jefe. Ha/Él ha/Le ha/____
- El profesor ha intimidado al estudiante. Ha/Él ha/Le ha/____
- Jaime ha delinquido dos veces.
- El atleta ha ganado al principiante. Ha/Él ha/Le ha/____
- El vendedor ha estafado al cliente. Ha/Él ha/Le ha/____
- A Rebeca no le gusta el pescado.
- La enfermera ha engañado a la paciente. Ha/Ella ha/Le ha/____
- El recepcionista ha llamado al botones. Ha/Él ha/Le ha/____
- A Miguel le gustan mucho los perros.
- La volinista ha herido a la violonchelista. Ha/Ella ha/Le ha/____
- El médico ha asombrado al enfermo. Ha/Él ha/Le ha/____

- A Ana le encanta bailar.

- David ha alabado a Nicolás. Ha/Él ha/Le ha/____

- Laura ha envidiado a Sara. Ha/Ella ha/Le ha/____

- A Sonia le gusta mucho ir al mar.

- Luis ha criticado a Diego. Ha/Él ha/Le ha/____

- Lidia ha felicitado a Carmen. Ha/Ella ha/Le ha/____

- Jorge no soporta el olor a flores.

- Manuela ha reñido a María. Ha/Ella ha/Le ha/____

- Marcos ha temido a Iván. Ha/Él ha/Le ha/____

- Julián ha abrazado a Ignacio. Ha/Él ha/Le ha/____

- Álvaro ha denunciado a Alex. Ha/Él ha/Le ha/____

- Silvia ha elogiado a Raquel. Ha/Ella ha/Le ha/____

- Beatriz ha besado a Manuela. Ha/Ella ha/Le ha/____

- El entrenador ha culpado al jugador. Ha/Él ha/Le ha/____

- La jefa ha despedido a la secretaria. Ha/Ella ha/Le ha/____

- Jacobo ha saludado a Eugenio. Ha/Él ha/Le ha/____

- El juez ha consolado al abogado. Ha/Él ha/Le ha/____

- El pinche ha odiado al chef. Ha/Él ha/Le ha/____

- Silvia ha visto un deportivo rojo.

- El adolescente ha respetado al anciano. Ha/Él ha/Le ha/____

- El herrero ha despreciado al aprendiz. Ha/Él ha/Le ha/____

- Después de que Juan se despidiese de Jesús, Ha/Él ha/Le ha/____

- La cantante ha enaltecido a la vocalista. Ha/Ella ha/Le ha/____

- El capitán ha detestado al marinero. Ha/Él ha/Le ha/____

- Después de que Sara felicitase a Sofía, Ha/Él ha/Le ha/____

¡GRACIAS!

Appendix C – Experiment 2 (topic)

SpanRef2

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De nuevo, ¡gracias por tu contribución a nuestra investigación!

- Juan/Carlos es adolescente y le encanta ir a fiestas. Muchos adolescentes van a fiestas en discotecas. Juan ha impresionado a Carlos. Ha/Él ha/Le ha/____

- Julia/Silvia es médico y suele tener guardias. Muchos médicos tienen guardias a menudo. Julia ha preocupado a Silvia. Ha/Ella ha/Le ha/____

- Juan ha ido al cine.

- María/Sofía sale mucho y siempre duerme por la mañana. Los trasnochadores siempre duermen hasta tarde. María ha irritado a Sofía. Ha/Ella ha/Le ha/____

- Inés/Marta es pintora y pinta muchas acuarelas. Muchos pintores sienten predilección por las acuarelas. Inés ha fascinado a Marta. Ha/Ella ha/Le ha/____

- Marisa ha cantado toda la mañana.

- Felipe/Mateo es muy despistado y ha olvidado hacer una llamada. La gente despistada siempre se olvida de lo que tenía que hacer. Felipe ha mentido a Mateo. Ha/Él ha/Le ha/____

- Manuel/Arturo es músico y tiene muchas partituras. Los músicos siempre necesitan llevar muchas partituras. Manuel ha pedido perdón a Arturo. Ha/Él ha/Le ha/____

- Sergio ha vomitado al terminar la carrera.

- Paula/Ana es contorsionista y puede tocarse la cabeza con los pies. los contorsionistas son muy flexibles. Paula ha sorprendido a Ana. Ha/Ella ha/Le ha/____

- Daniel/Mario es historiador y conocedor de la filosofía medieval. Muchos historiadores saben también mucho de filosofía. Daniel ha aburrido a Mario. Ha/Él ha/Le ha/____

- Marta ha corrido cinco kilómetros.

- El empresario/El jefe intenta hacerlo lo mejor posible. En una empresa, es importante esforzarse al máximo. El empresario ha decepcionado al jefe. Ha/Él ha/Le ha/____

- El profesor/El estudiante se toma la enseñanza con seriedad. En el ámbito del estudio es importante ser serio y disciplinado. El profesor ha intimidado al estudiante. Ha/Él ha/Le ha/____

- Jaime ha delinquido dos veces.

- El atleta/El principiante quería ganar la carrera. Para ganar hacen falta muchas horas de entrenamiento y perseverancia. El atleta ha ganado al principiante. Ha/Él ha/Le ha/____

- El vendedor/El cliente quería hacer un buen negocio. El precio es un factor muy importante en una compra-venta. El vendedor ha estafado al cliente. Ha/Él ha/Le ha/____

- A Rebeca no le gusta el pescado.

- La enfermera/La paciente tiene mucha paciencia. Estar enfermo no es fácil. La enfermera ha engañado a la paciente. Ha/Ella ha/Le ha/____

- El recepcionista/ El botones tiene que estar pendiente de lo que pasa en el hall. Es importante que el hotel funcione correctamente. El recepcionista ha llamado al botones. Ha/Él ha/Le ha/____

- A Miguel le gustan mucho los perros.

- La violinista/La violonchelista se ha preparado mucho para el concierto. Para tocar frente al público hay que alcanzar la perfección con el instrumento. La violinista ha herido a la violonchelista. Ha/Ella ha/Le ha/____

- El médico/El enfermo teme los resultados del informe. Las malas noticias son difíciles de asimilar. El médico ha asombrado al enfermo. Ha/Él ha/Le ha/____

- A Ana le encanta bailar.

- David/Nicolás hace maquetas a escala. Los maquetistas siempre son muy cuidadosos. David ha alabado a Nicolás. Ha/Él ha/Le ha/____

- Laura/Sara es francesa y aprende español. A los franceses les cuesta imitar algunos sonidos del español. Laura ha envidiado a Sara. Ha/Ella ha/Le ha/____

- A Sonia le gusta mucho ir al mar.

- Luis/Diego es muy deportista y siempre sale a correr. Los deportistas siempre intentan superarse. Luis ha criticado a Diego. Ha/Él ha/Le ha/____

- A Lidia/Carmen le gusta la repostería y siempre hace tartas. La repostería requiere de técnica y precisión. Lidia ha felicitado a Carmen. Ha/Ella ha/Le ha/____

- Jorge no soporta el olor a flores.

- A Manuela/María le gustan mucho los gatos, pero es alérgica. Los alérgicos siempre estornudan mucho. Manuela ha reñido a María. Ha/Ella ha/Le ha/____

- Marcos/Iván es jugador de rugby y es muy fuerte. Los jugadores de rugby siempre son muy fuertes. Marcos ha temido a Iván. Ha/Él ha/Le ha/____
- Julián ha abrazado a Ignacio. Ha/Él ha/Le ha/____

- Álvaro/Álex es cazador y tiene un coto privado de caza. Muchos cazadores usan cotos privados de caza. Álvaro ha denunciado a Alex. Ha/Él ha/Le ha/____

- Silvia/Raquel es peluquera y hace recogidos muy bonitos. Muchos peluqueros se especializan en recogidos. Silvia ha elogiado a Raquel. Ha/Ella ha/Le ha/____

- Beatriz ha besado a Manuela. Ha/Ella ha/Le ha/____

- El entrenador/el jugador se ha esforzado mucho en los entrenamientos. Ganar un partido es fundamental para la buena relación dentro del equipo. El entrenador ha culpado al jugador. Ha/Él ha/Le ha/____

- La jefa/La secretaria empezaba a tener mucho trabajo acumulado. Llevar la empresa al día es fundamental para su buen funcionamiento. La jefa ha despedido a la secretaria. La jefa ha despedido a la secretaria. Ha/Ella ha/Le ha/____

- Jacobo ha saludado a Eugenio. Ha/Él ha/Le ha/____

- El juez/El abogado quería salvar al prisionero. Los juicios suelen ser muy largos y complicados. El juez ha consolado al abogado. Ha/Él ha/Le ha/____

- El pinche/El chef se ha estresado en la cocina. Las cocinas no deben convertirse en un caos para que nada vaya con retraso. El pinche ha odiado al chef. Ha/Él ha/Le ha/____

- Silvia ha visto un deportivo rojo.

- El adolescente/El anciano quería sentarse. Es importante ceder el asiento a las personas de más edad. El adolescente ha respetado al anciano. Ha/Él ha/Le ha/____

- El herrero/El aprendiz ha creado una nueva pieza. La herrería requiere años de práctica. El herrero ha despreciado al aprendiz. Ha/Él ha/Le ha/____

- Después de que Juan se despidiese de Jesús, Ha/Él ha/Le ha/____

- La cantante/La vocalista tenía que cantar unos compases muy complicados. La voz principal suele ir acompañada por voces secundarias. La cantante ha enaltecido a la vocalista. La cantante ha enaltecido a la vocalista. Ha/Ella ha/Le ha/____

- El capitán/El marinero ha querido establecer un nuevo rumbo. Establecer un rumbo es siempre tarea del capitán del barco. El capitán ha detestado al marinero. El capitán ha detestado al marinero. Ha/Él ha/Le ha/____

- Después de que Sara felicitase a Sofía, Ha/Él ha/Le ha/____

¡GRACIAS!

Appendix D – Cloze-test (Spanish)

En este texto verás que faltan algunas palabras o algunos fragmentos de palabras. La longitud de las partes que faltan está indicada por los guioncitos. ¿Nos ayudarías a completar las palabras? Recuerda, a **cada guion** corresponde solo **una sola letra**.

La perrita, el conejito y el globo

Un día, una perrita **jugue**_ _ _ _ y un conejito muy **aleg**_ _, que son amigos, deciden ir a dar un paseo _ _ _ el bosque. El **s**_ _ brilla y las **fl**_ _ _ _ florecen.

El conejito ve que su amiga está tirando de un carrito con un globo muy **bo**_ _ _ _. El conejito quiere **coger**_ _, para **ju**_ _ _ con su amiga, pero la perrita _ _ dice que antes tienen que desatarlo. El conejito empieza _ desatarlo y su amiga espera **impa**_ _ _ _ _ _ para empezar a jugar. Sin embargo, el globo se resbala _ _ las manos del conejito. La perrita salta muy alto _ _ _ _ intentar cogerlo, gritando: "¡Oh no! ¡Mi globito preferido se va volando!". La perrita está tan enfadada con su amigo _ _ _ empieza a **gritar**_ _, **mie**_ _ _ _ _ él la mira atemorizado y sin saber _ _ _ hacer.

Solo entonces, el conejito ve a un señor conejo que vende **alg**_ _ _ _ globos. Se le ocurre _ _ _ puede comprar un globito nuevo. Es la única oportunidad de volver a hacer feliz a su amiga. Todo lo rápido que puede, va **h**_ _ _ _ el señor conejo y le pide el mejor globo _ _ _ tenga, para regalárselo a su amiga triste. El señor conejo le pide dinero por el globo. Entonces el conejito se saca los **bol**_ _ _ _ _ _ de _ _ _ pantalones, pero no encuentra ninguna moneda. Está triste **p**_ _ _ _ _ no puede darle el globo a su amiga.

La perrita _ _ acerca. Los dos amigos **mir** _ _ al señor conejo con cara triste, pero **a**_ _ _ _ _ se lo pidan muy **amable**_ _ _ _ _, él no **qu**_ _ _ _ darles el globito. Sin embargo, tienen suerte, porque el conejito _ _ a su madre **camin**_ _ _ _ por el bosque y corre a **buscar**_ _. Le explica lo que _ _ pasado y le pregunta _ _ los puede ayudar.
La amable madre _ _ convence enseguida. Le _ _ dinero al señor conejo y compra dos **glob**_ _ _ _ en lugar de uno. Los globos nuevos son _ _ _ bonitos que el que había **perd**_ _ _ el conejito. ¡Cada _ _ _ tiene su globito y todos están listos para empezar a jugar!

FIN

Nombre: _____

Clase:_____

Appendix E – Cloze-test (Italian)

In questo testo troverai alcune parole mancanti o alcuni pezzi di parole mancanti. La lunghezza delle parole o delle parti mancanti è indicata dai trattini. Ci aiuteresti a completare le parole? Ricorda che a **ciascun trattino** corrisponde **una e una sola** lettera.

La cagnolina, il coniglietto e il palloncino

Un giorno una cagnolina **giochere**_ _ _ _ _ e un coniglio **all**_ _ _ _ _ , che sono amici, decidono di fare una passeggiata **n**_ _ bosco. Splende il **s**_ _ _ e i **fi**_ _ _ sbocciano.

Il coniglio **ve**_ _ che la sua amica sta tirando un carretto con un **belli**_ _ _ _ _ palloncino. Il palloncino, il coniglio _ _ vuole prendere, per **gio**_ _ _ _ con la sua amica, ma la cagnolina **g**_ _ dice che prima devono slegarlo. Il coniglio inizia _ slegarlo e la sua amica aspetta **impa**_ _ _ _ _ _ di cominciare il gioco. Tuttavia il palloncino scivola per sbaglio **d**_ _ _ _ mani del coniglio. La cagnolina salta in alto _ _ _ prenderlo gridando: "Oh no! Il mio palloncino preferito sta volando in aria". La cagnolina è così arrabbiata _ _ _ inizia ad urlare con forza contro il suo amico,
m_ _ _ _ _ lui la guarda impaurito e non sa **c**_ _ **c**_ _ _ fare.

Solo allora il coniglio vede un vecchio coniglio che vende un po' _ _ palloncini. Pensa _ _ _ può comprare da lui un nuovo palloncino. È l'unica possibilità per rendere la sua amica **nuov**_ _ _ _ _ _ felice. Più veloce che può, va **d**_ _ vecchio coniglio e gli chiede il più bel palloncino _ _ _ ha, per regalarlo alla sua amica triste. Il vecchio coniglio gli chiede dei soldi per il palloncino. Allora il coniglio mette le **ta**_ _ _ _ dei **s**_ _ _ pantaloni sotto sopra, ma non trova alcuna moneta. È triste **p**_ _ _ _ _ non riesce a dare il palloncino alla sua amica.

La cagnolina _ _ avvicina. I due amici **guar**_ _ _ _ il vecchio coniglio con sguardo triste, ma **nono**_ _ _ _ _ _ glielo chiedano molto gentilmente, lui non **v**_ _ _ _ dar loro il palloncino. Però sono fortunati, perché il coniglietto _ _ visto sua madre _ _ _ cammina nel bosco e si affretta a raggiunger_ _ . Le spiega cosa _ successo e le chiede _ _ li può aiutare. La gentile madre viene convinta _ _ loro. Dà i soldi al vecchio coniglio e compra due **pallon**_ _ _ _ invece di uno. I nuovi palloncini sono _ _ _ belli del palloncino che il coniglio ha **pe**_ _ _. **Og**_ _ _ _ ha il proprio palloncino e tutti sono pronti a cominciare il gioco.

FINE






Nome: _____
Classe:_____

Appendix F – Experiment 3 (Spanish)

¡Escribe la historia que acabas de escuchar!

¿Estás listo para escribir la historia que acabas de escuchar? Los dibujos de la izquierda te ayudarán a recordar los detalles del cuento. Intenta escribir al menos una frase para cada dibujo. ¡Manos a la obra!

Elefantita, Jirafito y el avioncito

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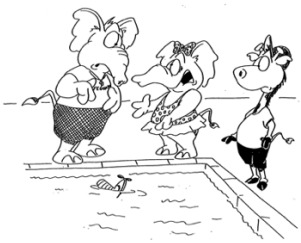
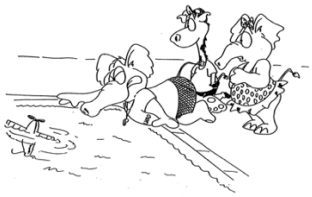
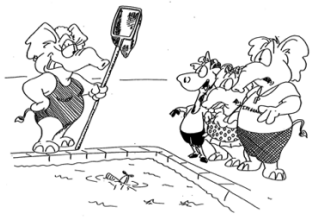






FIN

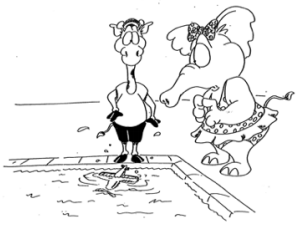
Nombre: _____
Clase: _____
Prof.: _____

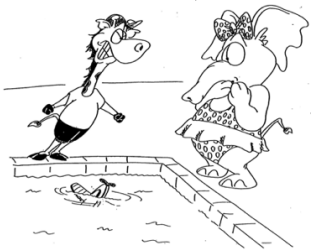
Appendix G – Experiment 3 (Italian)

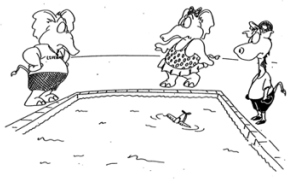
Scrivi la storia che hai appena ascoltato!

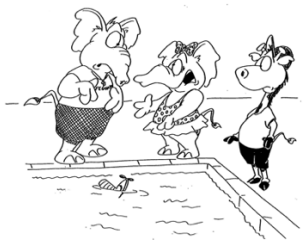
Sei pronto a scrivere la storia che hai appena ascoltato? Le figure sulla sinistra ti aiuteranno a ricordare i dettagli della storia. Prova a scrivere almeno una frase per ogni figura! Buon lavoro!

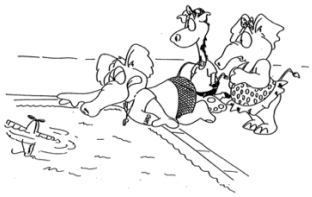
Elefantina, Giraffino e l'aeroplanino

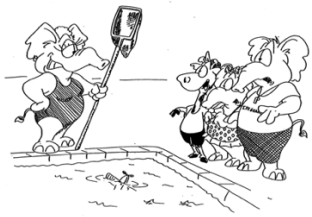












FINE

Nome: _____
Classe: _____
Prof.: _____

Appendix H – Experiment 3 (Spanish audio transcription)

Un día un jirafito juguetón y una elefantita muy alegre, que eran muy amigos, se encontraron en la piscina de al lado de su casa. La elefantita vio que su amigo tenía en la mano un avioncito. Jugaba con él mientras su amiga lo miraba llena de admiración.

Después de un rato, la elefantita se puso celosa porque quería jugar con el avioncito. De repente, decidió robárselo. El jirafito gritó: "Oh no! ¿Porqué me quitas el juguete?". Mientras la elefantita jugaba, el avioncito se le cayó al agua sin querer. El jirafito se puso muy triste porque pensaba que su juguete se había roto.

Estaba tan enfadado que empezó a gritarle muy fuerte a su amiga. Ella le miró aterrorizada.

En ese momento llegó otro elefante, que había visto lo que había ocurrido, y quiso ayudarles. La elefantita fue corriendo hacia él. Le pidió que encontrara una manera de sacar el avioncito del agua, mientras el jirafito miraba ansioso como se hundía su juguete.

Los dos amigos miraban al elefante, que se estiraba mientras intentaba en vano sacar el avioncito del agua sin lograrlo. Les explicó que el avioncito estaba demasiado lejos y que no conseguía alcanzarlo. Entonces el jirafito empezó a llorar y la elefantita se dio cuenta de que había hecho que se pusiera triste.

En ese momento, una señora elefante que estaba cerca decidió ayudarles. Se acercó a ellos con una red, y empezó a acercar el avioncito hacia sí mientras los demás observaban muy contentos.

En cuanto la señora elefante lo cogió, se lo dio a jirafito llenándolo de alegría. Los dos amigos volvían a ser felices: jirafito recuperó su juguete, y elefantita vio a su amigo feliz otra vez.

Appendix I – Experiment 3 (Italian audio transcription)

Un giorno, un giraffino giocherello e un'elefantina allegra, che erano amici, si incontrarono nella piscina vicina alla loro casa. Elefantina vide che il suo amico teneva in mano un aeroplanino. Giocava con esso mentre la sua amica lo guardava ammirata.

Ad un certo punto, l'elefantina divenne gelosa perché voleva giocare con l'aeroplanino. Improvvisamente decise di rubarglielo. Il giraffino gridò: "Oh no! Perché mi hai portato via il gioco? Mentre l'elefantina continuava a giocare, l'aeroplanino le cadde in acqua per sbaglio. Il giraffino si rattristò, perché pensava che il suo giocattolo si fosse distrutto.

Era così arrabbiato, che iniziò ad urlare con forza contro la sua amica. Lei lo guardò impaurita.

A quel punto, sopraggiunse un altro elefante, che aveva visto cosa era accaduto e volle aiutarli. L'elefantina andò velocemente verso di lui. Nel frattempo, gli chiese di trovare un modo per tirare fuori l'aeroplanino dall'acqua, mentre il giraffino guardava con ansia il suo giocattolo che stava affondando.

I due amici guardavano l'elefante che si sporgeva mentre tentava in vano di tirar fuori l'aeroplanino dall'acqua, senza successo. Spiegò loro che l'aeroplanino era troppo lontano e che non riusciva a raggiungerlo. Nel frattempo, il giraffino iniziò a piangere e l'elefantina si rese conto di averlo reso triste.

Allora, una astuta signora elefantessa che stava lì vicino decise di aiutarli. Si avvicinò a loro tenendo nelle sue mani una rete. Iniziò a tirarle l'aeroplanino a sé, mentre gli altri osservavano felici.

Non appena la signora elefantessa lo prese, lo diede al giraffino riempiendolo di gioia. I due amici erano di nuovo felici. Il giraffino riebbe il suo giocattolo e l'elefantina vide il suo amico di nuovo felice.

Appendix J – Experiment 4 (Spanish)

¿Nos ayudas a continuar estas historias?
Estas historias se han quedado un poco vacías, ¿podrías rellenar los huecos? ¡Así estarán completas!
Escribe una frase después de cada trozo de historia.

Nombre:
Clase:

Silvia y Julia son dos hermanas a las que les gusta mucho ir a nadar. Todos los días van a la piscina a entrenar; hoy han decidido hacer carreras. Julia ha impresionado a Silvia.

_____

Al salir del agua, han querido seguir haciendo carreras, así que Julia ha propuesto ver quién llegaba antes a los vestuarios, aún sabiendo que está prohibido correr en la piscina. Como no se han secado bien, Silvia se ha resbalado, se ha caído y se ha quedado sin moverse. Silvia ha asustado a Julia.

_____

Silvia está muy triste, la caída parece grave. Julia ha reñido a Silvia.

_____

Cuando han llegado al vestuario, Silvia se ha sentado en un banco y su hermana ha ido a pedir hielo para ponerle en el tobillo. Al entrar una de las limpiadoras, le ha preguntado qué le había pasado, y Silvia ha echado la culpa a Julia.

_____

Al volver Julia, la limpiadora la ha reñido, y en ese momento Julia ha odiado a Silvia.

_____

Después de ponerse hielo, Silvia se ha sentido mucho mejor, y las dos hermanas han decidido volver a casa, porque se ha hecho tarde. Al salir del vestuario, se han encontrado con su entrenadora, que les ha dado una buenísima noticia: ¡están seleccionadas para los campeonatos regionales! Cuando han oído la noticia, han llamado a sus padres. Silvia ha asombrado a Julia.

_____

Juan y Carlos son amigos del colegio y les encanta hacer rutas en bicicleta por la montaña; además Carlos es ciclista profesional. Los fines de semanas se organizan para ir juntos por ahí con sus bicis. Antes de la siguiente salida, han querido arreglar algunas piezas. Carlos ha felicitado a Juan.

_____

Están contentos porque las previsiones para el tiempo son muy buenas. ¡Qué ganas de hacer la excursión! Sólo hay que decidir a dónde ir. Juan ha impresionado a Carlos.

_____

Llegado el día y después de un rato pedaleando, los dos amigos han llegado a un sendero estrecho y lleno de piedras. Aunque intentan ir con cuidado, las piedras están mojadas porque ha llovido y es muy fácil resbalar. Carlos ha preocupado a Juan.

_____

Al final, Carlos se ha caído, pero por suerte la herida no ha sido más que un rasguño, y con un poco de alcohol que llevan en la mochila la han desinfectado. Después han comprobado el estado de la bicicleta: parece que está todo bien, hasta que han notado que una rueda se ha pinchado. Juan ha consolado a Carlos.

_____

Tras esperar un rato y ver que no pasa nadie, a Juan se le ha ocurrido coger un trozo de resina para tapar el agujero de la rueda. Carlos ha alabado a Juan.

_____

Con la bici más o menos lista, Juan y Carlos han podido llegar hasta el siguiente pueblo para arreglar totalmente la bicicleta. Mientras le cambian la rueda, han ido al bar a tomar algo y hablar de lo ocurrido. Juan ha sorprendido a Carlos.

_____

Appendix K – Experiment 4 (Italian)

Ci aiuteresti a continuare queste storie?

A queste storie mancano alcune frasi, potresti riempire tu i buchi?
Così saranno complete!
Scrivi una frase sotto a ogni pezzo di storia.

Nome:
Classe:

Silvia e Giulia sono due sorelle alle quali piace molto andare a nuotare. Ogni giorno vanno in piscina ad allenarsi; oggi hanno deciso di fare delle gare. Giulia ha impressionato Silvia.

Quando sono uscite dall'acqua hanno voluto continuare a gareggiare, e Giulia ha proposto di vedere chi arrivava prima agli spogliatoi, anche se sanno che è proibito correre in piscina. Siccome non si sono asciugate per bene, Silvia è scivolata, è caduta ed è rimasta per terra senza muoversi. Silvia ha spaventato Giulia.

_____

Silvia è molto triste, sembra qualcosa di grave. Giulia ha sgridato Silvia.

_____

Quando sono arrivate nello spogliatoio, Silvia si è seduta e sua sorella è andata a cercare del ghiaccio da metterle sulla caviglia. Nel mentre è entrata una donna delle pulizie, le ha chiesto cosa fosse successo e Silvia ha dato la colpa a Giulia.

_____

Quando Giulia è tornata, la donna delle pulizie l'ha sgridata, e in quel momento Giulia ha odiato Silvia.

_____

Dopo essersi messa il ghiaccio, Silvia è stata un po' meglio, ed entrambe le sorelle hanno deciso di tornare a casa, si è fatto tardi. Mentre uscivano dallo spogliatoio hanno incontrato la loro allenatrice, che ha dato loro una bellissima notizia: sono state selezionate per i campionati regionali! Quando hanno sentito la notizia, hanno subito chiamato i genitori. Silvia ha sorpreso Giulia.

_____

Carlo e Giovanni sono amici di scuola e ad entrambi piace fare gite in montagna con le loro biciclette; Carlo è un ciclista professionista. Ogni weekend si organizzano per andare insieme in giro con le bici. Prima della prossima uscita, hanno voluto aggiustare le loro biciclette. Carlo si è congratulato con Giovanni.

Sono molto contenti, le previsioni per il meteo sembrano buone. Che voglia di andare in gita! Bisogna solo decidere dove andare. Giovanni ha impressionato Carlo.

Una volta usciti, dopo aver pedalato un po', i due amici arrivano in un sentiero stretto e pieno di pietre. Fanno attenzione, ma le pietre sono bagnate perché è piovuto, è molto facile scivolare. Carlo ha preoccupato Giovanni.

Carlo è caduto, ma per fortuna la ferita non sembra grave, e con un po' di alcol che hanno nello zaino la disinfettano. Dopo controllano la bicicletta: sembra tutto in ordine, ma notano che una ruota si è bucata. Giovanni ha consolato Carlo.

Aspettano a lungo e non passa nessuno che li possa aiutare, ma Giovanni ha pensato di prendere un pezzo di resina per coprire il buco alla ruota. Carlo ha lodato Giovanni.

La bicicletta è più o meno pronta, e Giovanni e Carlo raggiungono un paesino dove far aggiustare la bicicletta del tutto. Mentre la bicicletta viene aggiustata, vanno al bar a prendere qualcosa e a parlare dell'accaduto. Giovanni ha sorpreso Carlo.

Appendix L – Consent forms (Spanish/Italian)

Formulario de consentimiento
COMPETENCIAS NARRATIVAS EN NIÑOS BILINGÜES ESPAÑOL-ITALIANO

Este proyecto de investigación pretende comprender algunas ventajas lingüísticas y cognitivas relacionados con el bilingüismo español-italiano. Concretamente, nuestro interés está enfocado en cómo los niños bilingües interpretan y producen algunos tipos de frases y de qué manera su comportamiento lingüístico está motivado por sus perfiles lingüísticos y cognitivos. El bilingüismo puede generar ciertas ventajas, entre las cuales una especie de "flexibilidad mental" (a nivel cognitivo) y la capacidad de compartir competencias lingüísticas y metalingüísticas -incluida la narrativa- entre los dos sistemas lingüísticos. En este estudio queremos observar estas competencias de los niños bilingües a través de algunas actividades propuestas como juego: los participantes deberán contar historias, incitadas a través de un cómic. Primero, el niño escuchará una historia modelo mirando unas imágenes, y después tendrá que contar la historia por escrito. Cada niño contará en total dos narraciones, una en italiano y otra en español. Además, los textos narrativos se presentarán también en otra actividad de manera escrita. La recogida de datos se desarrollará en cuatro sesiones distintas (dos para italiano y dos para español), durante el horario escolar habitual.

La participación en el proyecto es totalmente voluntaria. Todas las respuestas son estrictamente confidenciales y el anonimato de los niños será preservado en todo momento. Además, los datos de los participantes se almacenarán y analizarán en un ordenador protegido con contraseña y solo serán accesibles a los investigadores y supervisores del proyecto. Le estaremos muy agradecidos si permite que su hijo participe en el estudio. Estaremos siempre disponibles para comentar con usted cualquier pregunta, duda o comentario que pueda surgir antes, durante o incluso después de la encuesta. No dude en contactarnos para obtener más aclaraciones o información. Este consentimiento puede ser revocado en cualquier momento sin que sea necesario proporcionar ninguna justificación.

Para que su hijo participe en el estudio, necesitaríamos también que contestase a un cuestionario con el que pretendemos entender cómo de expuesto está cada niño a cada una de las dos lenguas. Le pedimos que nos facilite su dirección email para podérselo enviar. Email: .....

Gracias por tomarse el tiempo de leer esto. ¡Su cooperación es muy apreciada!

El abajo firmante consiente la participación de su hijo ..... (nombre y apellido, clase) en el estudio "Interpretación y producción de expresiones referenciales en niños bilingües español-italiano".

Modulo di consenso
COMPETENZE NARRATIVE NEI BAMBINI BILINGUI ITALO-SPAGNOLI

Il presente progetto di ricerca mira a comprendere alcuni vantaggi linguistici e cognitivi legati al bilinguismo italo-spagnolo. In particolare, il nostro interesse è focalizzato su come i bambini bilingui interpretano e producono alcune frasi in entrambe le lingue e come il loro comportamento linguistico sia motivato dai loro profili linguistici e cognitivi.
Il bilinguismo può portare a determinati vantaggi, tra cui una sorta di "flessibilità mentale" (a livello cognitivo) e la capacità di condividere competenze linguistiche e metalinguistiche -inclusa quella narrativa- tra i due sistemi linguistici. In questo studio vogliamo osservare le competenze narrative dei bambini bilingui attraverso alcune attività proposte in forma di gioco: i partecipanti dovranno raccontare storie, elicitate per mezzo di un fumetto. In primo luogo, il bambino ascolterà una storia-modello guardando delle immagini. Quindi, dovrà riprodurre la storia in forma scritta. Ciascun bambino racconterà due narrazioni, una in italiano e una in spagnolo.
La raccolta dati avverrà in quattro sessioni differenti (due per l'italiano e due per lo spagnolo) durante il normale svolgimento delle lezioni.

La partecipazione al progetto è completamente volontaria. Tutti i dati raccolti saranno trattati anonimamente, così da garantire che i partecipanti non siano identificabili. Inoltre, i dati dei partecipanti verranno archiviati e analizzati su un computer protetto da password e saranno accessibili solo ai ricercatori e ai supervisori del progetto di ricerca.
Le saremmo molto grati se consentisse la partecipazione di Suo figlio allo studio. Siamo sempre disponibili per eventuali domande, dubbi o chiarimenti che possano sorgere prima, durante o dopo lo studio.
Il presente consenso può essere revocato in qualsiasi momento senza che sia necessario fornire alcuna giustificazione.

La preghiamo inoltre di rispondere a un questionario per comprendere quanto ciascun bambino sia esposto a ciascuna delle due lingue. Il questionario sarà inviato alla Vostra email, che preghiamo di fornirci qui di seguito. Email: .....

Grazie per aver dedicato del tempo a leggere questo documento. La ringraziamo molto per a Sua collaborazione!

Il sottoscritto acconsente alla partecipazione del figlio ..... (nome e cognome, classe) allo studio "Interpretazione e produzione di espressioni referenziali da parte di bambini bilingui italo-spagnolo".

Firma del genitore o tutore legale

.....

Madrid, ... / ..... / .....

Ricercatore: Vicky Leonetti, vleonett@ucm.es
Supervisori: Margarita Borreguero, mbzuloag@filol.ucm.es
Jacopo Torregrossa, torregrossa@lingua.uni-frankfurt.de

Appendix M – Linguistic background questionnaire (Spanish)

CÓDIGO:_____

CUESTIONARIO SOBRE LOS HÁBITOS LINGÜÍSTICOS FAMILIARES

Lea este cuestionario con atención y devuélvalo al investigador junto con la declaración de consentimiento. Toda la información es voluntaria y será tratada de manera confidencial. ¡Muchas gracias!

1. Fecha de nacimiento:

2. Género: Masculino □ Femenino □

3. ¿La audición de su hijo es natural?
   Sí □ No □
   Si no, indique anomalías:

4. ¿Su hijo ha utilizado alguna vez terapia del habla?
   Sí □ No □
   Si es así, ¿cuáles fueron una o más de las áreas principales de tratamiento?

   Si es así, ¿desde cuándo hasta cuándo se realizó el tratamiento de logopedia?

5. ¿Algún pariente cercano a su hijo (hermano, padre, abuelo) ha sido diagnosticado con dificultad para hablar o aprender un idioma? Si es así, ¿qué pariente se vio afectado y cuál de las siguientes dificultades ocurrió (problemas de pronunciación, dificultad para leer y escribir, otros)?

6. ¿En qué país nació su hijo?

7. Si su hijo no nació en España, ¿a qué edad vino aquí?

8. ¿Tiene su hijo hermanos?
   Sí □ No □
   ¿Cuantos años tienen?

9. ¿A qué se dedica? ¿Cual es su nivel más alto de educación?

10. ¿Qué hace su pareja para ganarse la vida? ¿Cual es su nivel más alto de educación?

11. ¿Su hijo habla algún otro idioma además del italiano y el español?
    Sí □ No □
    Si es así, ¿cuál? ¿Cómo lo aprendió?

12. ¿Qué lengua usan su hijo y las siguientes personas para comunicarse? Marque el número de 1 a 5.

> ***1*** *Nunca en italiano, siempre en español*
> ***2*** *Rara vez en italiano, generalmente en español*
> ***3*** *Mitad italiano, mitad español*
> ***4*** *Rara vez en español, generalmente en italiano*
> ***5*** *Nunca en español, siempre en italiano*

La madre habla con el niño…	1 □ 2 □ 3 □ 4 □ 5 □
El niño habla con la madre…	1 □ 2 □ 3 □ 4 □ 5 □
El padre habla con el niño…	1 □ 2 □ 3 □ 4 □ 5 □
El niño habla con el padre…	1 □ 2 □ 3 □ 4 □ 5 □
Los hermanos hablan con el niño…	1 □ 2 □ 3 □ 4 □ 5 □
El niño habla con los hermanos…	1 □ 2 □ 3 □ 4 □ 5 □
Los abuelos hablan con el niño…	1 □ 2 □ 3 □ 4 □ 5 □
El niño habla con los abuelos…	1 □ 2 □ 3 □ 4 □ 5 □

13. ¿Cómo de bien hablan y entienden el **italiano** las siguientes personas? Marque el número de 1 a 5.

	HABLAR (Italiano)	**ENTENDER (Italiano)**
	1 *Apenas (palabras y expresiones simples)* ***2*** *Casi fluido (conversaciones simples)* ***3*** *Fluido (conversaciones más largas)* ***4*** *Muy fluido* ***5*** *Lengua materna*	***1*** *Comprensión limitada (palabras y expresiones simples)* ***2*** *Algo de comprensión (conversaciones simples)* ***3*** *Buen entendimiento (conversaciones más largas)* ***4*** *Excelente comprensión* ***5*** *Lengua materna*
Madre	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Padre	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Hermanos	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Abuelos	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □

14. ¿Cómo de bien hablan y entienden el **español** las siguientes personas? Marque el número de 1 a 5.

	HABLAR (Español)	**ENTENDER (Español)**
	1 *Apenas (palabras y expresiones simples)* ***2*** *Casi fluido (conversaciones simples)* ***3*** *Fluido (conversaciones más largas)* ***4*** *Muy fluido* ***5*** *Lengua materna*	***1*** *Comprensión limitada (palabras y expresiones simples)* ***2*** *Algo de comprensión (conversaciones simples)* ***3*** *Buen entendimiento (conversaciones más largas)* ***4*** *Excelente comprensión* ***5*** *Lengua materna*

Madre	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Padre	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Hermanos	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Abuelos	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □

15. Aproximadamente, ¿cuántas horas a la semana dedica su hijo a las siguientes actividades? ¿Qué idioma(s) usa en cada actividad?

1 *Nunca en italiano, siempre en español*
2 *Rara vez en italiano, generalmente en español*
3 *Mitad italiano, mitad español*
4 *Rara vez en español, generalmente en italiano*
5 *Nunca en español, siempre en italiano*

Actividad	***Horas a la semana***	***Lengua***
Deporte		1 □ 2 □ 3 □ 4 □ 5 □
Amigos		1 □ 2 □ 3 □ 4 □ 5 □
Lectura		1 □ 2 □ 3 □ 4 □ 5 □
Jugar al ordenador		1 □ 2 □ 3 □ 4 □ 5 □
Ver la televisión		1 □ 2 □ 3 □ 4 □ 5 □
Otras actividades		1 □ 2 □ 3 □ 4 □ 5 □

16. ¿Qué idioma escuchó y usó su hijo durante las siguientes edades? Marque el número de 1 a 5.

1 *Nunca en italiano, siempre en español*
2 *Rara vez en italiano, generalmente en español*
3 *Mitad italiano, mitad español*
4 *Rara vez en español, generalmente en italiano*
5 *Nunca en español, siempre en italiano*

	Hasta los 3	***De 3 a 6***	***A partir de los 6***
Madre	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Padre	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Hermanos	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Abuelos	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Amigos	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □

Este cuestionario ha sido completado por:
Madre □ Padre □ Otro:

Appendix N – Linguistic background questionnaire (Italian)

CODICE: _____

QUESTIONARIO SULLE ABITUDINI LINGUISTICHE FAMILIARI

Si prega di leggere attentamente questo questionario e di restituirlo allo sperimentatore insieme al modulo di consenso. Tutte le informazioni sono volontarie e saranno trattate in modo confidenziale. Grazie!

1. Data di nascita:

2. Genere: Maschile □ Femminile □

3. La capacità auditiva di suo figlio è regolare?
   Sì □ No □
   Se no, indicare le anomalie:

4. Suo figlio ha mai usato la logopedia?
   Sì □ No □
   In caso affermativo, quali erano una o più delle principali aree di trattamento?

   Se sì, da quando fino a quando è stato eseguito il trattamento logopedico?

5. È stata diagnosticata una difficoltà nel parlare o nell'apprendimento di una lingua a qualche parente stretto di suo figlio (fratello, padre, nonno)?
In caso affermativo, a quale parente e quale difficoltà si è verificata (problemi di pronuncia, difficoltà di lettura e scrittura, altro)?

6. In quale paese è nato suo figlio?

7. Se suo figlio non è nato in Spagna, a che età vi si è trasferito?

8. Lei ha altri figli?
   Sì □ No □
   Quanti anni hanno?

9. Qual'è il suo mestiere? Qual è il suo livello di istruzione?

10. Cosa fa il suo partner? Qual è il suo livello di istruzione?

11. Suo figlio parla un'altra lingua oltre all'italiano e allo spagnolo?
   Sì □ No □
   Se sì, quale? Come l'ha imparato?

12. Quale lingua viene parlata tra il bambino e ognuna delle seguenti persone
Scegliere il numero tra 1 e 5.

> ***1*** *Mai in italiano, sempre in spagnolo*
> ***2*** *Raramente in italiano, di solito in spagnolo*
> ***3*** *Metà italiana, metà spagnola*
> ***4*** *Raramente in spagnolo, di solito in italiano*
> ***5*** *Mai in spagnolo, sempre in italiano*

La madre parla col bambino…	1 □ 2 □ 3 □ 4 □ 5 □
Il bambino parla con la madre…	1 □ 2 □ 3 □ 4 □ 5 □
Il padre parla col bambino…	1 □ 2 □ 3 □ 4 □ 5 □
Il bambino parla col padre…	1 □ 2 □ 3 □ 4 □ 5 □
I fratelli parlano col bambino…	1 □ 2 □ 3 □ 4 □ 5 □
Il bambino parla con i fratelli…	1 □ 2 □ 3 □ 4 □ 5 □
I nonni parlano col bambino…	1 □ 2 □ 3 □ 4 □ 5 □
Il bambino parla con i nonni…	1 □ 2 □ 3 □ 4 □ 5 □

13. Quanto bene parlano e capiscono l'**italiano** le seguenti persone? Scegliere il numero tra 1 e 5.

	PARLARE (Italiano)	**CAPIRE (Italiano)**
	1 *Appena (parole ed espressioni semplici)* ***2*** *Quasi fluente (conversazioni semplici)* ***3*** *Fluente (conversazioni più lunghe)* ***4*** *Molto fluente* ***5*** *Madrelingua*	*1 Comprensione limitata (parole ed espressioni semplici)* *2 Un po' di comprensione (conv. semplici)* *3 Buona comprensione (conv. più lunghe)* *4 Ottima comprensione* *5 Madrelingua*
Madre	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Padre	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Fratelli	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Nonni	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □

14. Quanto bene parlano e capiscono lo **spagnolo** le seguenti persone?
Scegliere il numero tra 1 e 5.

	PARLARE (Italiano)	**CAPIRE (Italiano)**
	1 *Appena (parole ed espressioni semplici)* ***2*** *Quasi fluente (conversazioni semplici)* ***3*** *Fluente (conversazioni più lunghe)* ***4*** *Molto fluente* ***5*** *Madrelingua*	*1 Comprensione limitata (parole ed espressioni semplici)* *2 Un po' di comprensione (conv. semplici)* *3 Buona comprensione (conv. più lunghe)* *4 Ottima comprensione* *5 Madrelingua*
Madre	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Padre	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □

Fratelli	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Nonni	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □

15. Circa quante ore alla settimana dedica suo figlio alle seguenti attività? Che lingua/e usi in ogni attività?

1 *Mai in italiano, sempre in spagnolo*
2 *Raramente in italiano, di solito in spagnolo*
3 *Metà italiana, metà spagnola*
4 *Raramente in spagnolo, di solito in italiano*
5 *Mai in spagnolo, sempre in italiano*

Attività	***Ore a settimana***	***Lingua***
Sport		1 □ 2 □ 3 □ 4 □ 5 □
Amici		1 □ 2 □ 3 □ 4 □ 5 □
Lettura		1 □ 2 □ 3 □ 4 □ 5 □
Giocare al computer		1 □ 2 □ 3 □ 4 □ 5 □
Guardare la TV		1 □ 2 □ 3 □ 4 □ 5 □
Altre attività		1 □ 2 □ 3 □ 4 □ 5 □

16. Che lingua ha sentito e usato suo figlio durante le seguenti età? Scegliere il numero tra 1 a 5.

1 *Mai in italiano, sempre in spagnolo*
2 *Raramente in italiano, di solito in spagnolo*
3 *Metà italiana, metà spagnola*
4 *Raramente in spagnolo, di solito in italiano*
5 *Mai in spagnolo, sempre in italiano*

	Hasta los 3	***De 3 a 6***	***A partir de los 6***
Madre	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Padre	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Hermanos	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Abuelos	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □
Amigos	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □	1 □ 2 □ 3 □ 4 □ 5 □

Questo questionario è stato compilato da:
Madre □ Padre □ Altro: