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First language attrition in native contexts

A study on anaphora resolution by Italian speakers of L2 English

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"The high hurdler blends two types of competencies, that of high jumping and that of sprinting. When compared individually with the sprinter or the high jumper, the hurdler meets neither level of competence, and yet when taken as a whole the hurdler is an athlete in his or her own right. No expert in track and field would ever compare a high hurdler to a sprinter or to a high jumper, even though the former blends certain characteristics of the latter two. A high hurdler is an integrated whole, a unique and specific athlete; he or she can attain the highest levels of world competition in the same way that the sprinter and the high jumper can. In many ways, the bilingual is like the high hurdler: an integrated whole, a unique and specific speaker-hearer, and not the sum of two monolinguals. He or she has developed competencies (in the two languages and possibly in a third system that is a combination of the first two) to the extent required by his or her needs and those of the environment."

F. Grosjean, *Brain and Language, 36:6 (1989)*

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Introduction

When bilingualism became a topic of interest in linguistic research, the conception of linguistic competence, its development and the approach towards the coexistence of multiple languages in the speaker's mind were very different from today's.

The focus on the influence of the L1 on the L2, which has been prevalent for a long time, contributed to the definition of L1 as a stable and unchanging system (Schmid & Kopke, 2007). Consequently, the native speaker was elevated as "the norm against which L2 users should be measured" (Cook, 2003, p. 3). The setting of a native-speaker standard – compared to which the L2 learner's competence was often investigated in terms of deficiencies – and the conception of the two language systems as separated in the bilingual's mind (Weinreich, 1953), have thus long precluded the study of the effects of the L2 on the L1.

The increase of studies in psycholinguistics, in particular language processing in bilingual speakers, has challenged the above-mentioned view on the separation of the language systems. Research has suggested that the different languages of the bilingual do not exist in isolation, but they are linked, dependent on each other and in constant interaction (Shook & Marian, 2013). Crucially, this holistic view has legitimated the reciprocal influence of the two languages, while raising a number of new questions concerning how and when this interaction occurs.

From the 1980s, but especially after the publication of the volume by Seliger and Vago (1991), researchers have begun investigating *language attrition*, defined as the "disintegration of the structure of a first language (LI) in contact situations with a second language (L2)" (Seliger and Vago, 1991, p. 3). The first studies concerned sociolinguistic phenomena that affect communities, namely language shift and dialect death, rather than an individual-speaker linguistic behaviour, as attrition is intended today.

The refinement of the definition of language attrition – which crucially is still an ongoing process – resulted in the individuation of a number of determining factors: its non-pathological nature, a decline in the speaker's L1 proficiency, a significant exposure to L2 and reduction of L1 use (Kopke, 2018). However, much is still debated concerning the causes, effects, and scope of attrition. Moreover, since the outcomes of attrition are most evident in speakers who have migrated to another country and thus live in the L2 dominant environment, the majority of studies have dealt with such type of attriters; these sociolinguistic contexts are rather

exceptional and entail a series of socio-psychological factors that are linked to the dynamics of migration.

The investigation on language attrition has proven enlightening in a number of fields, such as language acquisition, psycholinguistics, cognition, and bilingual development. In particular, psycholinguistic studies have demonstrated that bilingual language processing is slightly different from monolingual processing (Van Hell & Dijkstra, 2002). If language attrition can potentially affect any bilingual inasmuch as bilingual, it may be a much more common phenomenon than generally attested.

The research presented here has been inspired by these last remarks and aims at investigating the possibility that attrition effects can be found in proficient L2 speakers who live in their L1 speaking country. In so doing, it challenges the definition of language attrition in its most conservative acceptation, namely one that sees emigration, extensive use of L2 and extremely reduced use of L1 as essential prerequisites for attrition. The study focuses on syntactic attrition, in particular on the interpretation of null and overt pronouns. It replicates the picture verification task presented in Tsimpli et al. (2004), on an experimental group composed of native speakers of Italian who are proficient in L2 English and who live in Italy, thus not experiencing a significant lack of L1 exposure. The same task is administered to a second group consisting of Italian monolingual adults and a third group of middle school students (13-14 years old) as controls.

The present work is articulated as follows: Part I is dedicated to a literature review on syntactic subjects and first language attrition, in particular from the point of view of generative theory. Part II describes the details of the experimental study, its results and discussion.

PART I

Before presenting the details of the experimental research, this section is dedicated to the illustration of some theoretical aspects, in order to establish the general framework to which the present work refers, as well as provide the key theoretical concepts on the topics of the research:

1. The generative framework
2. The null subject parameter
3. The pronominal systems of Italian and English
4. Language attrition from a generative perspective

1. The generative framework

Variation in the syntactic component of natural languages is widely acknowledged and well documented. This phenomenon has fed a lively debate as to how the human language faculty has come to produce such a rich tapestry of diverse linguistic varieties, and how these different languages can be acquired rather effortlessly by children. The issue of language acquisition and learnability is in fact crucial for theoretical linguistics: any theory that posits specific features, structures and constraints of language must also explain how these are compatible with acquisition and the fact that children learn the specific language(s) they are exposed to (Chomsky, 1986).

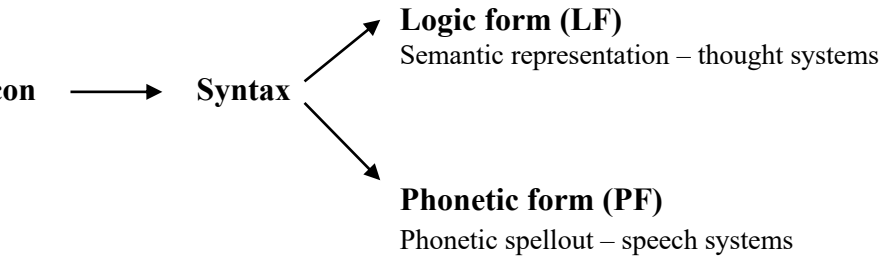
Generative grammar argues that speakers possess a system of rules (i.e., a grammar) that is generative, which means it can generate infinite novel utterances on the basis of a limited set of structures and rules. One of the most influential and accredited generative theories is the Principles and Parameters theory – whose main strength is the ability to account for similarities as well as variations in natural languages. According to this view introduced by Chomsky (1981), the human language faculty, which holds a unique status among other cognitive abilities, is innate. Humans are considered to be endowed with a set of principles that allows them to acquire a grammar under the exposure to linguistic input. The main logical arguments in support of the claim of innate syntactic content are the underdetermination and uniformity

of the language learning process (Chomsky, 1975; 1988)[1]. To account for the great variation that exists among natural languages, this model posits the existence of parameters, which can be set to different values, thus differentiating one language from another. Principles and parameters constitute Universal Grammar (UG), which all humans are endowed with at birth and which is applicable to all the languages of the world, discriminating possible languages from impossible ones. A particular language grammar is therefore the combination of universal principles with a specific set of parametric values.

In this view, language acquisition is defined as a parameter setting operation which requires the learner, equipped with the innate UG structure, to set the parameters of her language system basing on the linguistic input she is exposed to.[2]

Consequently, if any natural language inevitably conforms to UG, even the study of one single language variety is crucially important in that it represents a manifestation of UG principles, and as such it must be accounted for by the theory. Of course, comparative approaches are extremely important and have in fact contributed greatly to the development of generative theories; however, in spite of the often-claimed Anglocentrism or Western-centrism of such theories, if all language data must be reconducted to abstract principles and parameters, then even focusing on one single language (or a restricted set of them) is worthwhile.

The architecture of a language grammar in the generative framework can be represented as follows:

(1) 

[1] This is commonly referred to as the Poverty of the Stimulus argument. The claim is essentially that the grammatical system is too abstract and complex to be acquired by a learner with no knowledge of the language system. Without the postulation of innate content to guide language acquisition, even if the child heard nothing but well-formed sentences, there would be an infinite number of possible rules that she could formulate to account for syntactic aspects, and she would have no means to discriminate the correct ones (Ambridge & Lieven, 2011).

[2] For a review on language acquisition from a generative perspective see Guasti (2002).

The scheme in (1) represents the modules of language. The conception of these modules as separate is not only conventional and convenient to simplify the complex articulation of language, but is also consistent with their functions. They appear to operate rather independently from the others.

The lexicon provides a list of all the words of a given language together with their linguistic properties. The lexical items are then combined by the syntactic component, which organizes them in a syntactic structure. Syntax is the central component in this system, and it is the only generative component. At this point, the syntactic structure is "shipped" to the interfaces: the semantic component (LF) and the phonetic component (PF). LF and PF are called interfaces because they mediate (i.e., provide instructions) between the syntactic component and the external systems, the conceptual-intentional systems and the articulatory-perceptual, respectively. LF maps (converts) the syntactic representation into the corresponding semantic representation, that is, a representation of the linguistic aspects of its meaning, which interfaces with thought systems. PF maps the syntactic structure into a phonetic form, providing a phonetic spellout for each item, interfacing with speech systems (Radford, 2004).

The organization of the language modules sketched above will be particularly relevant in Part II, where the peculiar nature of the interfaces will prove crucial for some aspects of second language acquisition.

2. The null- subject parameter

The research presented here deals with a specific instance of parametric variation, namely the null subject parameter, which is set differently in the two languages under investigation, Italian and English. As we said above, in the generative framework this different setting of parametric values is held responsible for crosslinguistic variation.
Consider the contrast between Italian and English:

(2) a. Emma vive a Londra
b. Emma lives in London
c. Vive a Londra
d. *Lives in London

Sentences (2a) and (2c) are the counterpart of those in (2b) and (2d). The literal translation from Italian to English is not problematic in (2a-b): both sentences have a subject *Emma*, the verb *to live*, which in both languages agrees with the subject's third person singular form, and a prepositional phrase *in London.* On the other hand, although (2c) is perfectly acceptable in Italian, its counterpart in (2d) is ungrammatical. The contrast between these two sentences is caused by the so called null-subject parameter (NSP). Several analyses have been proposed to account for this crosslinguistic difference, one of which has been put forward most influentially by Rizzi (1982; 1986).[3] In what follows, we will base on his account to provide a general overview of the key issues concerning null subjects in a comparative perspective, especially for Italian and English. We will also illustrate how Rizzi's analysis fits well within the generative framework illustrated above, in particular with regard to the principles and parameters theory.
According to this view, null subjects are occurrences of a phonologically unrealized pronoun, conventionally designated as *pro,* which can be considered as a silent counterpart of the pronominal element that appears in the appropriate English translation of (3a):

(3) a. *pro* vive a Londra
b. He/she lives in London

Therefore, the underlying form of (2c) is in fact (3a), in which *pro* is phonologically omitted, but present in the syntactic structure.

[3] For an overview on alternative analyses see Roberts & Holmberg (2009)

Three main questions arise at this point: what are the characteristics of *pro*? Why is it necessary to postulate its existence at all? Why do some languages allow it and some others do not? The following sections will address each of these questions.

2.1 The characteristics of pro

The initial observation is that in some languages an overt pronominal subject is not required in finite clauses:

(4) a. *pro* vive a Londra
b. Lei vive a Londra
c. Ha deciso di Ø visitare Westminster
d. *Ha deciso di lei visitare Westminster

Null-subject languages (NSLs) also allow overt pronouns in the same contexts (4b), although overt pronouns tend to have a rather emphatic interpretation, as we will see in 2.5. As the contrast between (4c) and (4d) illustrates, this holds only in finite clauses, while the obligatory absence of an overt pronoun in (4d) is to be considered a different phenomenon.[4]
Note that even when omitted as in (4a), the (null) subject is still interpreted as the subject: crucially, the absence of its overt realization does not prevent the identification of a referent at an interpretative level. In fact, in a context in which there is no referent to interpret as subject in (4a), the sentence does not make sense because it violates structural rules, as we will see below.[5] This aspect will frequently be referred to as a crucial argument in favour of the postulation of *pro* and its pronominal nature: just like overt pronouns, it needs a proper referent so that a sentence can be correctly understood, other than correctly structured. The presence of *pro* is in fact bound to a context which is informative enough to allow the absence of an overtly expressed referent.

[4] This phenomenon is known as subject control and entails a silent subject pronoun conventionally designated as PRO. The different nature of PRO and *pro* is demonstrated by the fact that a phonologically null subject is obligatory in non-finite clauses also in non-null-subject languages like English:

a) She decided to PRO visit Westminster
b) *She decided to she visit Westminster

[5] Here we prefer the expression "does not make sense" to "is ungrammatical" because (4a) is a grammatical sentence. If there is no referent to be interpreted as subject, the sentence lacks meaning, not a well-formed structure. The distinction between ungrammaticality and meaninglessness has been most influentially testified by a famous meaningless but grammatical sentence by Chomsky (1957/2002): "Colorless green ideas sleep furiously" (p.15)

(5) a. Ieri ho parlato con Emma. *pro* si trasferisce a Londra.
b. Ieri ho parlato con Emma. *pro* si è ferita un'ala.

Despite both sentences in (5) are grammatically well-formed, sentence (5b) does not make sense, in that the context does not allow us to understand who *pro* is referring to: the only referent in the previous sentence is a human, and as such it does not have wings. On the contrary, in (5a) the subject can be omitted, because the first sentence provides a suitable referent, *Emma*.
This shows that even in null-subject languages *pro* is not always available: it is licensed by a context in which the referent is retrievable from contextual cues.
We have shown in (4a-b) that *pro* in finite clauses can be replaced by an overt pronoun. However, (6b) seems to contradict this generalization:

(6) a. Oggi *pro* piove a Londra
b. *Oggi esso/lui piove a Londra

The reason has to do with the nature of the verb *piovere* (to rain) and its valency. Consider a verb like *dormire* (to sleep) or *comprare* (to buy). In order to make sense of a sentence containing those verbs, we need a number of arguments (syntactic elements) that depend on the event described by the verb. The number of arguments that are necessary to complete the meaning of a verb defines the verb's valency. For example, a sentence with *dormire* needs a sleeper, that is, someone who is sleeping (7a). *Dormire* is thus a monovalent verb. A sentence with the verb *comprare* (7b) needs a buyer and an object representing something that is bought. *Comprare* is thus a divalent verb.
In the following examples, arguments are highlighted in bold:

(7) a. **[SUBJ La bambina]** dorme [COMP nella culla]
a'. **[SUBJ La bambina]** dorme ~~[COMP nella culla]~~
a". ***[SUBJ ~~La bambina~~]** dorme [COMP nella culla]

b. **[SUBJ Emma]** ha comprato **[OBJ un regalo]** [COMP per la festeggiata]
b'. **[SUBJ Emma]** ha comprato **[OBJ un regalo]** ~~[COMP per la festeggiata]~~
b". ***[SUBJ Emma]** ha comprato ~~**[OBJ un regalo]**~~ [COMP per la festeggiata]

If any of the arguments is missing, the sentence is not well formed, as demonstrated by the ungrammaticality of (7b"). Note that we take the strikethrough text in (7) to indicate a complete absence of the argument in the syntactic structure, which is crucially different from the phonologically null subject represented by *pro*: as mentioned above, *pro* is pronominal in nature, which means it has the ability to refer to another nominal entity in the discourse. Therefore, if it was inserted in (7a"), the sentence would be correct, and *pro* would be interpreted as the subject. Note also that the lack of the prepositional phrase (PP) in both (7a') and (7b') does not impact on the grammaticality of the sentence. This is because these elements are not crucial for the meaning of the verb: they are in fact adjuncts, which add some non-core information to the sentence.

We can now return to the contrast in (6). We have seen that verbs require a certain number of arguments. Pronouns can be fully-fledged arguments and fulfil the valency requirements of a verb, in which case they have referential capacity: they refer to some entity at a mental level.[6] *Piovere* and the other weather verbs seem to require no argument at all, in that not only do they disallow overt pronouns (6b), but it is also difficult to establish which entity a potential subject argument would refer to. Chomsky (1981) proposed that these verbs are not avalent, but require quasi-arguments: an argument which cannot be referential but behaves like arguments in some respects.[7]

Intuitively, in a language that allows both overt and null pronouns, a phonologically null subject is a better candidate for a subject that lacks referential interpretation. This calls for a revaluation of *pro* in (6a): in this case *pro* is not referential, but expletive – a pronoun with no intrinsic meaning nor referential value.

We have seen above that in non-null subject languages (non-NSLs), which do not allow *pro*, an overt pronoun is obligatory (3). If this holds for referential *pro*, it is not surprising to find overt expletives in these languages. Observe the English translation of (6a):

(8) a. It is raining in London today
b. **pro* is raining in London today

[6] It is important to distinguish this meaning of referentiality from a purely semantic one, which connects language and the entities in the world. "Referential" here is intended as establishing a process involving "the construction of another level of mental representation beyond LF, a level at which arguments at LF are paired with entities of mental representation, this further level then entering into "real semantic interpretation" (Chomsky, 1981/ 1993: 324).

[7] For example, weather *it* in English can control PRO like fully-fledged arguments:

a) It sometimes rains after [PRO snowing] (Chomsky, 1981/1993: 324)

The examples in (8) show that also expletive subjects must be overt in English.
As we have seen for Italian, despite expletives and referentials can be represented by the same phonological (null) form, they can be distinguished basing on their properties. The same holds for non-NSLs: for example, since expletives are not real arguments, they cannot be questioned by the corresponding interrogative words:

(9)	*Expletive pronouns*	*Referential pronouns*
	a. It is raining in London today	c. It is an astonishing discovery
	a'. *What is raining in London today?	c'. What is an astonishing discovery?
	b. There has been no trouble	d. I went there last summer
	b'. *Where has been no trouble?	d'. Where did you go last summer?

Sentence (9a) contains a weather verb, *to rain,* with expletive (quasi-argumental) *it*, while (9b) is an existential sentence with expletive (non-argumental) *there*. The respective wh-questions in (9a') and (9b') are ungrammatical because here expletives are treated as arguments, that is, as if *it* referred to some entity that is raining, and *there* was a locative. In other types of sentences, these functions can be fulfilled by *it* and *there*, as shown by (9c) and (9d): in this case, they can be questioned by the corresponding wh- element (9c') and (9d'), which attests their argument nature.
To sum up, both in Italian and English a (null) pronoun can fulfil two functions: an expletive or a referential one. The crosslinguistic difference we observe is once again linked to the null-subject pronoun availability. In Italian, referential *pro* is allowed but optional, while expletive pronouns are obligatorily null (*pro)*. In English, both pronouns are obligatorily overt.

So far, we have been referring to *pro* as a silent pronoun counterpart. A fairly straightforward argument for considering *pro* a pronoun is that it behaves like one:

(10) a. Emma_i pensa che $\text{lei}_{i/j}$ sia intelligente
b. Emma_i pensa che $\textit{pro}_{i/j}$ sia intelligente

In (10) the overt pronoun *lei* and *pro* show a similar distribution: they can be either coreferential or disjoint from Emma.

Stating that *pro* behaves like a pronoun has a further implication in the generative framework. From the 1980s, a very influential theory on the syntax of coreference took hold in generative theory – Government and Binding Theory (Chomsky, 1981). Binding Theory concerns syntactic restrictions on nominal reference. In particular, it defines the possible coreference relationships between a nominal expression and its antecedent, that is, the nominal that the expression depends on for its reference. Nominal expressions are divided into three different classes: anaphors, pronouns and referential expressions; each of these categories is subject to a different principle of the theory. We will focus on the second one, principle B, which concerns pronouns.[8]

(11) **Principle B of Binding Theory**
A pronoun must be free within its local domain

Before proceeding with the implication of this principle for the nature of *pro*, let us clarify the relevant terminology drawing from Chomsky (1981):

- α is free if and only if it is not bound
- α is bound in β if and only if α and β are coindexed and β c-commands α
- α c-commands β if and only if every branching node dominating α dominates β[9]
- Local domain can be intended as the closest TP projection[10]

The definition in (11) states that a pronoun cannot be bound, that is, it cannot refer to a structurally higher nominal in the same TP projection (roughly, the same one-verb sentence). In other words, pronouns must be locally disjoint in reference. Consider the following examples:

(12) a. $[_{TP2}$ Emma$_i$ $[_{T2}$ spera $[_{CP}$ che $[_{TP1}$ Anna$_j$ $[_{T1}$ nominerà $[_{NP}$ lei$_{i/x}$]]]]]]
b. *$[_{TP2}$ Emma$_i$ $[_{T2}$ spera $[_{CP}$ che $[_{TP1}$ Anna$_j$ $[_{T1}$ nominerà $[_{NP}$ lei$_j$]]]]]]

[8] We refer to Chomsky (1981) for the original argumentation of Binging Theory and to Poole (2002) for an introductory illustration of the principles.

[9] The terminology here refers to a particular structural relation on a syntactic tree according to X' theory. See Adger (2003) for an overview.

[10] Again, the terminology refers to phrase structure theory, see Adger (2003). In simple words, the locality condition allows the identification of a portion of the tree where the pronoun can or cannot look for an antecedent.

In (12a) the pronoun *lei* may refer to *Emma* (or to another referent); the two nominals are therefore coindexed. Since the TP_2 node dominates the TP_1 node, *Emma* also c-commands the pronoun. The locality condition states that binding rules apply only locally. In fact, the pronoun is not in the same TP (local) projection as the referent *Emma*, and as such it is not bound by it. Therefore, the grammaticality of the sentence is correctly predicted by its structural configuration in conformity with Principle B.

On the contrary, (12b) is ungrammatical because it violates Principle B. In this case, *lei* is coindexed with *Anna*, which c-commands the pronoun. The crucial difference with (12a) is that here *Anna* binds the pronoun, since they are in the same local domain TP_1. Hence the ungrammaticality of the sentence.

We now return to the initial reasoning on *pro* and its characteristics. If pro is a (silent) pronoun and, as shown above, pronouns obey Principle B, it follows that *pro* should also conform to Principle B. This is in fact what we observe:

(13) a. $[_{TP2}$ Emma$_i$ $[_{T2}$ spera $[_{CP}$ che $[_{TP1}$ *pro*$_{i/x}$ $[_{T}$ sarà nominata]]]]]

The distribution of *pro* and its grammaticality-ungrammaticality effects in relation to Principle B are exactly the same we have observed in (12a) with overt pronouns: *pro* must be free in its local domain. In fact, *pro* can refer to the subject *Emma* or a third referent, since they are in a different TP and therefore they do not bind *pro*. A parallel example to (12b) is ungrammatical a priori because there are no null object pronouns in Italian.

In the light of this discussion, the identification of *pro* as a phonologically null pronoun seems legitimate and compelling.

2.2 Reasons for postulating *pro*

So far we have established, following Rizzi (1982; 1986), that *pro* is a silent pronoun with a similar distribution to its overt counterpart. Nevertheless, we may wonder if it is really necessary to postulate its existence: why can't we say that in (3b) there is no *pro*, but instead the missing subject has been completely deleted from the structure, or even that it has never been there at all?

There are several reasons why it is desirable to postulate the existence of a null pronoun, whether we name it *pro* or something else, for both theory-internal and empirical reasons.

First of all, we have shown above that referential *pro* is interpreted as an argument (contrary to expletives). On the assumption that interpretative properties are linked and constrained by syntax, this suggests that even when the subject is null, there is something in the structure that we can still interpret as such. Alternatively, we could say that the nominal subject (not a pronoun) in those cases is merged (inserted) in the structure and then elided. In what follows, we will consider this possibility and its consequences.

If subject omission was in fact a case of ellipsis, it should have the same interpretative properties of a lexical DP, which allows both strict and sloppy readings. Consider the sentences in (14):

(14) Emma's daughter = d(i); Anna's daughter = d(j)

a. $[\text{Emma}]_i$ crede che $[\text{sua figlia}]_{d(i)}$ sarà promossa …

b'. …e anche $[\text{Anna}]_j$ crede che $[_{DP}\ \text{sua figlia}]_{d(i)/d(j)}$ sarà promossa

b". …e anche $[\text{Anna}]_j$ crede che $[pro]_{d(i)/*d(j)}$ sarà promossa

b'''. … e anche $[\text{Anna}]_j$ crede che $[\text{lei}]_{d(i)/*d(j)}$ sarà promossa

Let us suppose that a speaker utters (14a), followed by (14b'). In this case, the DP *sua figlia* in (14b') allows two different readings:

(15) a. **Strict reading**: the lower DP refers to the main clause DP *Emma* and it is interpreted as the antecedent DP *sua figlia*, that is, Emma's daughter

b. **Sloppy reading:** the lower DP refers to the newly introduced subject of the coordinate, *Anna*; *sua figlia* is interpreted as Anna's daughter

Suppose now that a speaker utters (14a) followed by (14b"). Here the null subject cannot be interpreted as Anna's daughter, that is, it does not allow a sloppy interpretation. It is also worth noting that the same holds for the overt pronoun: if *pro* is replaced in (14b") by its overt counterpart *lei,* as in (14b'''), the interpretation constraints that compel it to a strict reading are unaltered.

The different interpretative possibilities that lexical DPs and null subjects show, strongly suggest that the phenomenon of null subjects is not a case of DP ellipsis (Oku, 1998). Moreover, the similarities attested between *pro* and overt pronouns advocate once again for its null pronominal nature.

A further support to the postulation of *pro* comes from a general principle of generative theory, the Extended Projection Principle (EPP), which requires that all clauses have a filled subject position (Chomsky, 1982:10). The subject position is identified in the syntactic tree as the Specifier of TP. This theory has been particularly influential for the syntax of Agree and A-movement, which we will not discuss here; suffice it to say that there is enough empirical evidence to make the claim that all sentences need a filled subject position.[11] For example, we have seen that expletives are not necessary for sentence interpretation, yet they are present in the structure. The EPP offers an explanation as to why it is so: the subject position must be filled even in cases when a subject argument is not required by the verb. In fact, it seems that expletives fulfil a purely syntactic requirement such as the EPP: filling the subject position that otherwise would remain empty.

Consider as one last piece of evidence the agreement morphology of verbs of null subject sentences:

(16) a. Emma$_{[3PS\text{-}F]}$ si è$_{[3PS]}$ trasferita$_{[3PS\text{-}F]}$ a Londra

a'. *pro* si è trasferita a Londra

b. Loro$_{[3PP\text{-}M]}$ sono$_{[3PP]}$ andati$_{[3PP\text{-}M]}$ a Westminster

c. *pro* sono andati a Westminster

Sentences (16a) and (16b) show a typical subject – verb – complement structure. Here the subject and the verb agree, that is, they share the same features: they are both third person singular, feminine in (16a) and third person plural, masculine in (16b). In their null-subject counterpart, (16a') and (16b') respectively, although the subject is not overt, we still observe agreement morphology on the verb. On the assumption that agreement is determined by shared features between subjects and verbs, since verbs in (16a') and (16b') still show agreement morphology, we must assume that something is occupying the subject position allowing for agreement to be present. If those sentences were subjectless, it is not clear how we would account for the relevant agreement facts.

[11] See Adger (2003) chapter 6. The postulation of EPP has been criticised on the basis of evidence from VSO languages like Welsh. See McCloskey (1996) for evidence that the syntax of these languages complicates the picture, challenging EPP in relation to A-movement.

If all sentences need a subject, and agreement features are present also in verbs of null-subject sentences, the postulation of *pro* in null subject languages is not only empirically supported, but also theoretically consistent.

2.3 What licenses *pro*?

The correlation of *pro* with verb agreement features is a rather straightforward observation. In many languages, the verb has person and number agreement features that match those of the subject. This agreement can be more or less rich depending on the language, as the contrast between Italian and English shows:

(17)	a. *Italian*	b. *English*
	bevo	drink
	bevi	drink
	beve	drinks
	beviamo	drink
	bevete	drink
	bevono	drink

For example, in Italian there is a one-to-one matching between the verbal ending and number-person features (17a), while English morphologically marks the 3rd person singular (17b). In languages like Italian, called consistent null-subjects languages (CNSLs), subjects can be omitted in any person-number combination and in any tense.[12] The opposite case is represented by non-null-subject languages (non-NSL) like English, which always require an overt subject.[13]

These facts are well established and reported in all traditional grammars. It has long been suggested that the richness of subject-verb agreement is a key factor discriminating between null and non-null subject languages. This intuition is rather simple: if a language can

[12] With the exception of the 2SG pronoun *tu* in the subjunctive, arguably because of the identity of the singular forms of the verbs in this tense: *che (io) vada, che tu vada, che (egli) vada*.

[13] With some exceptions such as control structures and topic drop. Crucially, these cases are not to be considered instances of pro drop (see Haegeman, 2019).

unequivocally express subject features on the verb, there is no need for the subject to be overt. On the other hand, if agreement is weak, then the subject must be expressed.

However, the overt morphology-*pro* proposal, which can account for the distinction between Italian and English, does not hold in all languages (examples from Cardinaletti 1990: 6)

(18) a. Gestern war *(es) geschlossen (German)
yesterday was (it) closed
'yesterday it was closed'

b. Gestern hat *(es) geregnet
yesterday has (it) rained
'yesterday it rained'

c. Gestern wurde (*es) getanzt
yesterday was (it) danced
'yesterday there was dancing'

German is a fairly morphologically rich language; nevertheless, it does not allow null referential subjects (18a) nor quasi-argumental null expletives (18b), but it allows null non-argumental expletives (18c). The same restriction applies to some varieties of Dutch, Afrikaans and a range of creoles (Nicolis, 2008). These languages are called semi-pro-drop, since they allow dummy null pronouns – a property which further supports the distinction between expletive and referential *pro*.

On the other hand, some morphologically impoverished languages permit pro-drop (examples from Huang 1984: 533)

(19) a. – kanjian ta le (Chinese)
(he) see he ASP
'he saw him'

b. Ta kanjian – le
he see (him) ASP
'he saw him'

Many East-Asian languages, including Japanese and Chinese, appear to allow null arguments very freely despite the absence of agreement-marking on the verb. These languages allow not only null subjects (19a) but also null objects (19b) and are called radical null-subject languages (RNSLs).

Evidence from German and Chinese type of languages thus seems to discard the overt morphology-*pro* proposal. However, there may be alternative explanations to account for crosslinguistic differences which do not impact on the intuitive correlation between rich

agreement and *pro*. For example, as for German, the unavailability of referential *pro* could be linked to other parameters, i.e. the verb-second (V2) parameter.[14] This leads to the interesting but very complicated question of the interaction of parameter-settings, but it could justify the semi-pro drop categorization of German without calling into question the richness of its verbal inflection.[15]

As for East-Asian languages, the picture is more complicated. The presence of *pro* is not expected in these languages because of the lack of agreement morphology; moreover, we have seen in (19) that also objects can be omitted, unlike all the other above-mentioned languages. A further difference in the syntax of RNSLs languages is the absence of determiners.[16] These peculiarities seem specific to a kind of pro-drop which is different from the one we have observed until now. On this basis, it has been suggested that in East-Asian languages what appears to be an instance of *pro* is in fact argument ellipsis. Recall that in (16), we supported the postulation of *pro* on the basis of its interpretative restrictions; specifically, we concluded that subject omission should not be considered an instance of nominal ellipsis because it does not allow sloppy readings on a par with lexical nouns. Crucially, RNSLs null arguments do allow sloppy readings of the kind in (15b"). This suggests that the phenomenon of null arguments in these languages is in fact NP ellipsis rather than *pro* (Tomioka, 2003). Moreover, since there is no morphological agreement to account for argument omission, what licenses the null arguments in RNSLs is discourse familiarity. Hence, this phenomenon is also called discourse pro-drop, or topic drop.

In conclusion, what licenses *pro* in CNSLs is rich verb agreement, whereas argument omission in RNSL is licensed by discourse familiarity.

The picture defining the NSP proves more complicated than we might have expected: there is not a clear-cut binary distinction between null and non-null subject languages, but rather, in Roberts' (2009) words, a "scale of liberality" (p.12) along which the different language types can be placed.

[14] The V2 parameter requires the finite verb to be obligatorily the second constituent in main clauses.

[15] See Biberauer (2009).

[16] This is relevant for the following reasoning: if referential *pro* is interpreted as an argument, and arguments are canonically DPs, then we should treat *pro* as a DP. This is not an issue in languages which have determiners, but it poses a problem for languages that lack D, e.g. Chinese and Japanese.

(20)

	Language type	*example*
↓	a. Non-null subject	English
	b. Semi-pro drop	German
	c. Partial null subject	Finnish
	d. Consistent null subject	Italian
	e. Radical null subject	Japanese

In ascending order, we first have non-NSLs like English, which do not allow *pro*. Then semi-pro drop languages like German, which allow non-argumental null subjects, but not quasi-argumental and referential ones (18). A third class is composed of partial null subject languages (PNSLs) like Finnish, Russian, Icelandic and several Indic languages. Their characteristics distinguish them from the other null-subject categories; for example, they allow only first and second null person pronouns (21).[17] Moreover, in Partial null subject languages (PNSLs), generic pronouns must be null (22), contrary to those in Consistent null subject languages (CNSLs) like Italian.[18] (examples from Holmberg, 2005: 539)

(21) a. (Minä) puhun englantia (Finnish)
I speak-1SG English
'I speak English'

b. *(Hän) puhuu englantia
He/she speak-3SG English
'He/she speaks English'

(22) Täällä ei saa polttaa
Here not may smoke
'One cannot smoke here'

CNSLs like Italian allow null subjects in any person-number combination and in any tense; in these languages, the use of the overt pronoun instead of *pro* usually gives rise to a different

[17] Holmberg (2005) shows that also third person null pronouns are allowed in Finnish, but not as freely as first and second person ones. In particular, they can be null when they are bound by a higher argument, but the conditions that allow such phenomenon are not completely clear:

Pekka$_i$ väittää [että hän$_{i/j}$ / Ø$_{i/*j}$ puhuu englantia hyvin]
Pekka claims that he speaks English well

[18] In Italian, the counterpart of (22) can be grammatical, but in this case, the null pronoun can only be interpreted as definite: 'Here he/she cannot smoke'. To express a generic (impersonal) subject, the clitic *si* must be inserted.

interpretation (see chapter 2.5). The key features that allow null pronouns in many contexts in these languages have to do with rich verbal agreement and a rich D head (Barbosa, 2019).[19] Finally, Radical null subject languages (RNSLs) like many East-Asian languages do not allow *pro* as a surface analysis would suggest (19): the unrestricted licensing of null arguments in these languages and their syntactic features indicate that they concern NP ellipsis.

2.4 The NSP in generative theory

The NSP has played a crucial role for the development of syntactic theory, because it lends itself very well to exemplify how apparently unrelated phenomena can be reconducted to one single abstract property. This is in fact the scope of generative grammar: defining abstract rules that can account for crosslinguistic variation, while being learnable by children on the basis of UG and language exposure. Specifically, it allows the achievement of explanatory adequacy, – the highest level of adequacy in linguistic theory. Chomsky (1965/1985) draws a clear distinction between descriptively and explanatory levels of adequacy. A descriptively adequate theory specifies empirical data in terms of generalizations and regularities in a given language: "a linguistic theory is descriptively adequate if it makes a descriptively adequate grammar available for each natural language" (p.24). Explanatory adequacy takes a step further: it shows how a descriptively adequate phenomenon can be deduced from UG:

> "To the extent that a linguistic theory succeeds in selecting a descriptively adequate grammar on the basis of primary linguistic data, we can say that it meets the condition of *explanatory adequacy*. That is, to this extent, it offers an explanation for the intuition of the native speaker on the basis of an empirical hypothesis concerning the innate predisposition of the child to develop a certain kind of theory to deal with the evidence presented to him." (pp. 25-26)

[19] The richness of the DP structure, in particular the mark of definiteness/indefiniteness in DP, which usually goes along with person and number features on articles, seems to be a crucial but not sufficient condition for the possibility of null subjects. In particular, the combination of a rich D head and rich verb agreement appears to be the key factor for a consistent licensing of null subjects (Barbosa, 2019):

Language type	*null subjects DPs*	*Rich D*	*Rich verb agreement*
Non-NSL (English)	$[_{DP}\ D_{[\Phi\ /+def]} \dots [_{NP}\ *pro]]$	+	–
PNSL (Finnish)	$[_{DP}\ D_{[-def]} \dots [_{NP}\ pro]]$	–	+
CNSL (Italian)	$[_{DP}\ D_{[\Phi\ /+def]} \dots [_{NP}\ pro]]$	+	+
RNSL (Japanese)	$[_{DP}\ \emptyset_{[-\Phi]} \dots [_{NP}\ e]]$	–	–

The difference between null and non-null subject languages lies in the possibility of D to incorporate with T, providing the link between rich D and rich verb agreement.

The Principles and Parameters theory goes precisely in the direction of explanatory adequacy. It relates a set of empirical data directly to UG: it states that a given syntactic feature in a given language is due to a parameter setting operation. It is also descriptively adequate in that it correctly describes the properties of the relevant language (Roberts & Holmberg, 2009).
The importance of achieving explanatory adequacy in linguistic theory demonstrates the close link to language acquisition and learnability: it stresses the necessity to provide an explanation of how children can arrive at building an internal grammar with no formal instruction on the basis of linguistic exposure which constitutes only a minimal sample of such grammar.[20] The great potential of the parametric account is its ability to provide an explanation as to how this is possible. We have already observed that the positive value setting of the NSP in a language implies the possibility of a silent, referential subject in finite clauses and the presence of a rich morphological verb agreement. There are also further syntactic properties that are linked to the NSP, such as subject inversion and that-trace effects (Rizzi, 1982). Subject inversion refers to the possibility of expressing an overt subject in post-verbal position:

(23) a. È arrivata Emma
b. *Is arrived Emma

A post-verbal subject is possible in Italian (23a), but ungrammatical in English (23b).[21] Similarly to the distribution of overt pronouns in NSL, postverbal subjects are commonly associated with a focus interpretation.
That-trace effects relates to the possibility of the subject of a finite clause to undergo wh-movement in the presence of a complementiser. Once again, Italian and English show the opposite behaviour in allowing such possibility:[22]

(24) a. Chi hai detto che è arrivato?
b. *Who did you say that has arrived?

[20] This refers once again to the Poverty of the Stimulus issue (see note 1)

[21] Rizzi (1982) argues that the subject moved to postverbal position is adjoined to the VP (Rizzi, 1982: 132)

[22] Specifically, Rizzi (1982) relates this contrast to the position of the subject before extraction: in Italian, (24a) is grammatical because *chi* is extracted from the postverbal position, a position which is not available in English inasmuch as non–NSL. In fact, that-trace effects are present also in Italian but, as a NSL, it can avoid ungrammaticality "by first moving the subject to postverbal position and then wh extracting it" (Rizzi, 1982: 147).

In Rizzi's (1982) terms, all of these properties are connected to the availability of a silent *pro* in subject position. In fact, they are allowed by CNSLs (Italian) and ungrammatical in non-NSLs (English).
Fixing the NSP at a positive value thus entails the following cluster of syntactic properties: (From Roberts & Holmberg, 2009:16):

(25) a. The possibility of a silent, referential, definite subject of finite clauses
b. "Free subject inversion"
c. The apparent absence of complementiser-trace effects
d. Rich agreement inflection on finite verbs

The parametric account enhances explanatory adequacy because it shows how from just one (negative or positive) parameter value, a number of features can be derived. The parametric cluster hypothesis, if applied potentially to all parameters, has immediate desirable implications in language acquisition: if a large set of syntactic features can be reconducted to one single parameter, it may account for the rapidity and the underdetermination of the acquisition process. It also solves the issue of the (in)accessibility of features. Consider the properties in (25); if a child had to learn each of them individually and basing on linguistic input, it would be very hard for her to ever form a grammar that includes infrequent and complex features (e.g. 25c). Whereas, on the assumption that all the properties in (25) are related to the positive setting of the NSP, all of them could be derived directly from the correct setting of that parameter. Importantly, parameter-setting is done through language exposure, which surely includes many easily accessible features, such as (25a) and (25d). Once the parameter has been set correctly on the basis of accessible features, relatively inaccessible features will be acquired, too.

2.5 The interpretation of pronouns

In chapter 1, we have established that core syntax has a central and autonomous role in the architecture of language, providing the essential operations that allow the combination of lexical entries. These operations are driven by uninterpretable features, that is, features that do not apport any semantic meaning, but serve as triggers for syntactic processes (e.g. Movement and Agreement). Such features include Case and Agreement on verbs and all items not intrinsically specified for person, number and gender. As uninterpretable features have a purely

syntactic nature, they are concerned with core syntax only; this means that they are invisible to the semantic module of language and hence not legible at LF.

On the other hand, interpretable features have interpretive and semantic effects, that is, they contribute to the semantic interpretation of syntactic expressions. Interpretability implies visibility at the LF interface and thus relevance to the conceptual-intentional systems of cognition. Interpretable features include referentiality on nouns and pronouns, and person, number and gender features on nouns.

Within the Principle and Parameters framework, parameters such as the NSP are concerned with uninterpretable features only, since they are associated with variation in the core syntactic component. We have shown how the setting of the NSP gives rise to crosslinguistic differences in the syntax of languages, for example the distinction between NSLs like Italian, which allow both null and overt subjects, and non-NSL like English, which only allows overt subjects. Despite the purely syntactic nature of parameter setting, such operation can give rise to additional effects which affect interpretable features, hence the syntax-discourse interface (LF). This is the case of pronoun interpretation in NSLs. Pronouns are expressions that lack inherent semantic content, and thus they have to be interpreted as coreferential to an antecedent. The interpretation process, which is resolved at the syntax-discourse interface, is sensitive to a number of factors, including syntactic structure, discourse factors and socio-cognitive knowledge (Sorace et al., 2009). The setting of the NSP to a positive value in these languages does not affect the interpretive component directly, but crucially, it gives rise to a double possibility: the use of the null pronoun or the overt one. This dualism can be exploited by the conceptual system to create additional interpretive shades. The resulting effects are not restricted to core syntax anymore, but call into question the syntax-discourse interface.[23]

We have already mentioned in chapter 2, that overt pronouns in NSLs tend to be interpreted as emphatic. This idea is consistent with the "Avoid Pronoun" principle (Chomsky, 1981:65), which requires pronouns to be realised only for emphasis, contrast or discourse recoverability reasons and hence avoided whenever possible.

Carminati (2002) proposed a theory which implies a division of labour between null and overt pronouns. In her view, pronominal reference is based on a "Position of Antecedent Strategy"

[23] The same occurs with another syntactic phenomenon of the NSP cluster: postverbal subjects. Here too, the positive setting of the NSP allows for two structural positions of the subject, each of which has specialised in particular semantic effects. In particular, the choice of pre- and post-verbal subjects is regulated by the definiteness of the subject and the thematic properties of the verb (see Tsimpli, 2004).

(PAS) that assigns pronouns to antecedents basing on structural positions: null pronouns are assigned to the constituent in SpecTP, normally the subject (26a), while overt pronouns prefer an antecedent in a position lower than SpecTP (26b):
(examples adapted from Carminati, 2002)

(26) a. [$_{TP2}$ Maria$_i$ [$_{T2}$ scriveva frequentemente [$_{PP}$ a Piera$_j$] [quando [$_{TP1}$ pro$_i$ era negli Stati Uniti]]]]
b. [$_{TP2}$ Maria$_i$ [$_{T2}$ scriveva frequentemente [$_{PP}$ a Piera$_j$] [quando [$_{TP1}$ lei$_j$ era negli Stati Uniti]]]]

Carminati (2002) conducted a series of experiments to test the validity of PAS. In particular, in a self-paced reading experiment with a subordinate clause introducing subject and object referents followed by a main clause with either null or overt pronoun, she found that reading times were faster for null pronouns when they were coreferential with the subject in comparison to the object:

(27) a. Dopo che Giovanni ha messo in imbarazzo Giorgio di fronte a tutti, *pro*/lui si è scusato ripetutamente
b. Dopo che Giovanni ha messo in imbarazzo Giorgio di fronte a tutti, *pro*/lui si è sentito offeso

On the other hand, sentences with overt pronouns were read faster when they referred to the object (non-subject constituent).
Besides empirical evidence, there are further factors in support of PAS: for example, the reliable correspondence between the structural position of the subject (SpecTP) and the notion of Topic, as well as pragmatic-economy reasons: using an overt pronoun to refer to an established topic would imply the more costly use of a complex form when a simpler one is available – i.e., the null pronoun. (Sorace & Filiaci, 2006).
Therefore, PAS seems to be an efficient processing principle to resolve pronoun-antecedent dependencies. However, there is a difference between null and overt pronouns as subject antecedents that PAS does not capture: while the preference of null pronouns for subject antecedents is very consistent and solid, overt pronouns are more flexible in their antecedent choices. In addition to be more permissive with overt pronouns, PAS violations seem to be more tolerated in unambiguous sentences (such as those in (27), where the semantics of the main clause verb has a strong bias towards one of the two interpretations). Pragmatically, this

is justified by the low probability of misinterpretation in these sentences. On the other hand, speakers tend to conform to PAS when overt pronouns could ambiguously refer to both antecedents (27b).

The above-mentioned peculiarities of pronoun interpretation hitherto illustrated in a monolingual perspective raise a number of questions concerning second language acquisition, especially in relation to the generative framework: What happens when a monolingual learns a second language which displays a different setting of the NSP? How vulnerable is the NSP? Is there any change in the interpretive constraints illustrated above? We will return to these issues in Chapter 4. Before proceeding, we will complete the theoretical overview on pronouns illustrating the Italian and English pronominal systems.

3. The pronominal system of Italian and English

3.1 The Italian pronominal system

The Italian pronominal system, in line with most Romance languages, has been traditionally divided into two classes of pronouns: strong and clitic. The differences between such classes are evident in terms of both their phonological and syntactic properties: strong pronouns have a more independent and complete structure and phonetic realization (they have word stress), whereas clitics are considered deficient, in that they cannot receive independent stress or word accent and bound to a specific syntactic position. More recent approaches to the study of pronominal forms have argued for a third intermediate class of pronouns: weak pronouns (Cardinaletti & Starke, 1999). Italian pronouns are thus categorised in three classes as follows:

Table 1 – The categorization of Italian pronouns

Pronominal class	Subject pronouns	Object pronouns
Strong	*io, tu, lui/lei, noi, voi, loro*	*me, te, lui/lei, noi, voi, loro*
Weak	*pro, tu*$_{SBJ}$*, egli/esso*	*loro*$_{DAT}$
Clitic		*mi, ti, lo/la, gli/le, ci, vi, li/le, si; ne*

The table illustrates the tripartite categorization of Italian subject and object pronouns

Subject pronouns include a strong class and a weak class. The latter is composed of elements such as the quintessentially weak null pronoun *pro*, the second person singular pronoun *tu* in subjunctive clauses, and the third person singular pair *egli/esso*, only used in formal contexts and otherwise replaced by *lui* or the demonstrative *questo*. Note that standard Italian does not have a clitic class of subject pronouns.

Object pronouns display elements in all the three classes: strong, weak and clitic. Strong and clitic classes are particularly rich, whereas the only weak object pronoun is the formal-register dative *loro*. In colloquial Italian, dative *loro* is replaced by the third person (masculine singular) dative clitic *gli*.

This categorization, based on Cardinaletti and Starke (1999), is dictated by the different properties of pronouns. Crucially, the choice of the pronominal form is not free, but determined by the semantic and syntactic context of the sentence.

The three pronominal classes form a hierarchy which is represented at all levels of linguistic analysis:

Table 2 – Properties of pronoun classes in Italian

Level of analysis		Property		Strong	Deficient	
					weak	clitic
(28)	Semantics	a	prominent topic referent	–	+	+
		b	reference [– human]	–	+	+
		c	deictic use	+	–	–
		d	expletive	–	+	
		e	impersonal	–	+	+
(29)	Syntax	f	coordination	+	–	–
		g	isolation	+	–	–
		h	post-verbal subject	+	–	
		i	marked positions	+	–	–
		l	modification	+	–	–
		m	adjacency to the verb	–	–	+
(30)	Phonology	n	word stress	+	+/–	–
(31)	Morphology	o	morphology	**S** > W > C	S > **W** > C	S > W > **C**

The table illustrates the respective semantic, syntactic, phonological and morphological properties of strong, weak and clitic pronouns. The [+] value indicates that the pronoun allows for the relevant property, while the [–] value indicates the lack of such property. The numbers in the first column, which follow the numeration of examples, and the letters assigned to properties in the third column are used solely for identification purposes.

Below we illustrate the relevant examples for each of the properties in Table 2.

(28) *Semantic properties*

a. Claudio$_i$ ha visto Marco$_j$ quando **lui**$_{j/x}$ era sul palco *strong*

a'. Claudio$_i$ ha visto Marco$_j$ quando ***pro***$_{i/(x)}$ era sul palco *weak*

a". Claudio$_i$ spera che **l'**$_{i/(x)}$ abbiano visto sul palco *clitic*

a"'. *Claudio$_i$ spera che abbiano visto **lui**$_i$ sul palco

context: Emma and Claudio are playing with a vase

b. Emma l'ha colpito e **lui**$_{[+human]/ *[–human]}$ è caduto

b'. Emma l'ha colpito e ***pro*** $_{[\pm human]}$ è caduto

b". Emma **l'**$_{[\pm human]}$ ha fatto cadere

c. Emma ha incontrato **lei** → a Londra

c'. *Emma ha incontrato ***pro*** → a Londra

c". *Emma **l'** → ha incontrata a Londra

d. ***Lui** piove

d'. ***pro*** piove

e. ***Loro**$_{IMP}$ mi hanno fatto i complimenti

e'. ***pro***$_{IMP}$ mi hanno fatto i complimenti

e". In Italia **si** mangia bene

Strong pronouns are commonly used to introduce a new referent in the discourse, whereas the null pronoun, an instance of weak pronoun, is normally used anaphorically.[24] Examples (28a-a'), on par with those in (26) above, show that a strong pronoun is interpreted as a topic-shift (the non-subject element in 28a), while a weak pronoun refers to the existing subject topic (28a'). Clitics behave similarly to weak pronouns, in that they are also interpreted as anaphoric to the subject antecedent (28a"). Note that, provided a wider context in (28a'-a"), it could be possible for *pro* and the clitic to be interpreted as a third person, as suggested by the parenthesised (x). Crucially, this third referent needs to be previously introduced in the discourse. This is another case in which both the weak and clitic form are used anaphorically.
Strong pronoun referents can only be interpreted as humans (28b), contrarily to weak and clitic pronouns, which can be either human or not, as (28b') and (28b") show, respectively. Similarly, only strong pronouns can be used in a deictic way (28c), for example in combination with pointing (the arrow → in examples (28c-c") stands for the pointing gesture).
As shown in (6), expletive subjects of weather verbs are obligatorily null in Italian (28d'); clitic expletive subjects are impossible since there are no subject clitics in standard Italian. Impersonal structures can display null pronouns (28e') and clitic pronouns (28e"). In both expletive and impersonal structures, strong pronouns are ungrammatical (28d; 28e).

(29) *Syntactic properties*

f. Ho dato **a loro** e a Emma l'invito al matrimonio.

f'. *Ho dato **loro** e Emma l'invito al matrimonio.

f". ***Li** ho invitati e Emma al matrimonio

[24] These properties refer to standard Italian and do not take into account more recent linguistic trends. See chapter 3.3 for a discussion on how many of these properties can be altered due to linguistic change.

context: Speaker A asks "A chi hai consegnato l'invito?". Speaker B answers:

g. A loro

g'. *Loro$_{DAT}$

g". *Gli

h. È arrivato **lui**

h'. *È arrivato ***egli***

context: Speaker A mistakenly says they gave her a prize. Speaker B corrects speaker A:

i. **A LORO** hanno dato il premio

i'. ***LORO$_{DAT}$** hanno dato il premio

i". ***GLI** hanno dato il premio

l. Hanno dato il premio solo **a loro**

l'. *Hanno dato solo **loro$_{DAT}$** il premio

l". *Solo **gli** hanno dato il premio

m. Non dirò mai **a loro** il tuo segreto

m'. Non dirò mai **loro** il tuo segreto

m". *Non **gli** mai dirò il tuo segreto

As for syntactic properties, we observe a rather rigorous systematicity in allowing only strong pronouns in specific syntactic contexts where deficient pronouns are ungrammatical. These include coordination (29f-f"'), isolation (29g-g"'), post-verbal subjects (29h-h"'), marked positions such as contrastive focus (29i-i") and modification (29l-l"). In all these contexts, weak and clitic pronouns behave uniformly, being ungrammatical and setting a clear-cut distinction between strong and deficient pronouns. There is however a syntactic restriction that only applies to clitics, thus distinguishing them from weak pronouns: they must be adjacent to the verb (29m"). On the other hand, strong and weak pronouns can be separated from the verb by an interposed element (e.g. an adverb), as shown in (29m) and (29m'), respectively.

Note that syntactic properties are independent from semantic ones. For example, since strong pronouns are obligatory in coordination, they do not necessarily entail a topic shift as they would in other contexts (e.g. 28a). This is a further evidence of the independence of syntax and the central role it plays constraining semantic interpretation at the interfaces.

(30) *Phonological properties*

n. Emma **mi** ha salutato
n'. Saluta**mi** Emma
n''. **Me la** saluti
n'''. Saluta**mela**

(31) *Morphological properties*

o. a loro > loro > gli

Phonological and morphological properties are strictly linked. Strong pronouns are fully-fledged words with word stress and a relatively rich morphology. On the other hand, clitics are monosyllabic and unstressed, with a reduced morphology. In fact, they typically form a single prosodic unit with the host word. They can be either proclitic or enclitic, as (30n) and (30n') show, respectively. When they are enclitic, clitics are also graphically attached to the verb; they can also attach to another clitic and form clitic clusters (30n"-n'''). Weak pronouns are morphologically and phonologically more similar to strong pronouns than clitics: they have word stress, they may be either monosyllabic (tu_{SBJ}) or disyllabic (*loro*$_{DAT}$**)** and cannot be enclitic.
All the above-mentioned properties support the hierarchical classification in (31).[25]

With respect to the properties in (Table 2), most of the times clitics and weak pronouns uniform to the same (positive or negative) value, systematically opposite to that of strong pronouns. This asymmetry stems from their respective syntactic structure (Cardinaletti & Starke, 1999):

(32) a. strong > weak > clitic
[CP [ΣP [IP [LP]]]]

Strong pronouns have the most complex structure which comprises a CP layer carrying referential features. On the other hand, weak pronouns' highest projection is ΣP, which is the

[25] For the relevant argumentation supporting the hierarchy in (28) from a morpho-syntactic point of view, see Cardinaletti and Starke (1999), chapters 4-6.

locus of prosody-related features of the lexical category (L). Clitics lack both CP and ΣP, their highest projection being the inflectional phrase (IP).[26]

The crucial factor that makes strong pronouns strong and deficient pronouns deficient is the presence and lack of the CP layer, respectively. For example, the impossibility of strong pronouns to occur in expletive and impersonal contexts follows from the presence of their CP projection. Strong pronouns must be referential; referential features are indexes encoded in C, and consequently strong pronouns obligatorily contain an index. Moreover, they also imply a range restriction: a finite set of entities to which they can refer in a given context. Since reference and range are encoded in CP and by definition incompatible with semantically void or impersonal subjects, strong pronouns can be neither expletives nor impersonal (28d-e). On the contrary, because of the lack of CP, deficient pronouns cannot be autonomously referential, and cannot have range-restrictions of their own. More precisely, they can be referential and have range-restriction but only indirectly, through co-reference: their referential and range properties are not intrinsic, but acquired through the obligatory association of deficient pronouns with a non-deficient antecedent. The obligatory [+human] reference illustrated in (28b) can be seen as an example of a range restriction, once again following from the presence of CP: on the assumption that the [+human] feature value is the default option in CP, the possibility of deficient pronouns to refer to both human and non-human antecedents arises from the lack of CP and the relative default positive value.[27]

As for purely syntactic properties, these also stem from the different structure of strong and deficient pronouns. The impossibility of modification of deficient pronouns is once again attributable to the absence of CP, since modifiers can only modify a full clause and not a subpart of it. [28] Similarly, the ban on coordination for deficient pronouns can also be traced back to the lack of CP, on the assumption that only CPs can be coordinated.

In the light of this discussion, we can achieve a better understanding of the asymmetries between strong and deficient pronouns. The crucial deficiency of the latter is the lack of a CP projection, which prevents them from being "referentially independent" and appear in specific syntactic contexts. Once again, syntax proves to constrain not only strictly syntactic

[26] Note that the structure in (32) draws a clear parallelism between the structure of functional projections in the verb and noun phrase.

[27] Cardinaletti & Starke (1999) reduce all the semantic properties in (28) to a rather simple property: having an (intrinsic) range or not. This is a very desirable result, since "the link between the lack of CP and the wide number of apparently disparate surface semantic asymmetries […] is thus established without special assumptions, through the notion of index (and range) in C^0". (p. 190)

[28] This represents a further parallelism with the verb phrase structure

phenomena, but also semantic ones. Despite the analysis on asymmetries mainly results in a binary classification, the differences found in morpho-syntactic, semantic and phonological properties above, still advocate for the need of a further subclassification of deficient pronouns into weak and clitic classes.

3.2 The English pronominal system

English has a less complex pronominal system with two classes of pronouns: weak and strong. Moreover, there are only two morphologically distinct series: one for subject pronouns and the other for object pronouns. In fact, strong and weak pronouns are homophonous. The only exception is the weak pronoun *it*, which does not have a strong counterpart:

Table 4 – The categorization of English pronouns

Pronominal class	Subject pronouns	Object pronouns
Strong	*I, you, he/she, we, you, they*	*me, you, him/her, us, you, them*
Weak	*I, you, he/she/it, we, you, they*	*me, you, him/her/it, us, you, them*

The table illustrates the categorization of the English pronominal system in subject and object pronouns.

The sameness of the two pronominal classes could lead to the belief that there is only one class of strong pronouns in English. However, as we have shown for Italian, syntactic properties are particularly informative of the distinction between strong and deficient pronouns. As far as English is concerned, a clear distinction can be made looking at the syntax of particle verbs. Object DPs can appear in two syntactic orders with transitive particle verbs: they can either precede the particle (33a) or follow it (33b):

(33) a. Emma looked the information up
b. Emma looked up the information

Object pronouns can also appear in both positions, but with some restrictions that advocate for a categorial distinction.
(examples from Cardinaletti, 2004a: 134)

(34) a. They took in **him** and her
a'. They took in only **him**
a". They took in **HIM**
b. *They turned on **it** and the other one
b'. *They turned on only **it**
b". *They turned on **IT**

As we saw above for Italian, coordination, modification and focus are specific syntactic contexts that require a strong pronoun. In these contexts, in English the pronoun obligatorily follows the particle and has a full phonological form (34a-a"), an indicator of their affinity to the strong class. Note that *it* cannot be used in these contexts (34b-b"), suggesting it should not be classified with pronouns that can appear in the aforementioned position: it is in fact a weak pronoun. In all other cases, object pronouns must precede the particle and have a reduced phonological form, like *it*:

(35) a. They took **him/her/it** in
b. Hanno comunicato **loro** la bella notizia

This suggests that in such instances, these pronouns are not to be considered strong, but weak homophonous counterparts of the strong pronouns we find in (34). Note that the obligatory position *it* and the other weak pronouns occupy (i.e., preceding the particle and to the left with respect to the position in (34)) is analogous to the position of weak *loro*$_{\text{DAT}}$, which precedes the direct object (35b): a further support to their weak nature.

3.3 Linguistic change

The categorization hitherto illustrated is not and should not be intended to be prescriptive. Quite the opposite, the pronominal system, inasmuch as a part of the language system, is subject to change. Linguistic change refers to the natural and ongoing evolution of language over time. This alteration, which encompasses all the modules of language, happens gradually and is thus often difficult to acknowledge.

There are several aspects concerning the Italian pronominal system that are currently undergoing linguistic change, such as the overextension of the use of *gli* in feminine and plural contexts and the weakening of strong subject pronouns. These dynamics are not new to the Italian language, as in the past there have been similar processes that resulted in a distinction

between old and modern Italian, for example the shift of *egli* from strong to weak pronoun (Cardinaletti, 2004b).

3.3.1 Gli/le and gli/loro

At first glance, the use of *gli* instead of *le* and *gli* instead of *loro* may seem two consequences of one single process. However, despite they both result in an overextension of the same form *gli,* these changes have a different nature and pace in the contemporary Italian language.
First of all, the categorization illustrated in (Table 1) calls for an important distinction between the two phenomena. The use of *gli* instead of *le* involves a change in the lexicon, specifically the gender mark of *gli* changes from [+ masculine] to [α masculine], the unmarked form for gender.[29] Since both *gli* and *le* are clitics, no syntactic consequences arise from this change: the categorization in (Table 1) remains unaltered. Moreover, the use of *le* is still productive in both adult and child language (Cardinaletti, 2004b)
On the other hand, the use of *gli* instead of *loro*$_{\text{DAT}}$ involves a dual change. The first is lexical: as above, the features of *gli* change from [+ singular] to [α singular]. The second is grammatical: the use of *gli* instead of *loro*$_{\text{DAT}}$ implies the use of a clitic form instead of a weak form. This has consequences in the grammar of the language because it entails the loss of a weak form, which, as shown above, has specific syntactic properties that differ from clitics (36c) and strong pronouns (36b). In particular, its syntactic position precedes the direct object and does not need to be immediately adjacent to the verb (36a).
(examples from Cardinaletti 2004b: 61)

(36)	a. Non	regalerò mai	**loro**	un libro	
	b. Non	regalerò mai		un libro	**a loro** / ***loro**
	c. Non **gli** / ***loro**	regalerò mai		un libro	

If the substitution of *loro*$_{\text{DAT}}$ with *gli* was definitive, Italian would lose its only weak object pronoun *loro*$_{\text{DAT}}$ and therefore the competence of its syntactic properties. However, as Cardinaletti (2004b) argues, despite data from corpus analysis and elicited production tasks

[29] Cardinaletti (2004b) suggests that this change may be encouraged by the gender neutralization which is obligatory in 3rd person dative clitics groups (e.g. *glielo* and *gliene*):

a) L'ho dato a Claudio → glielo ho dato
b) L'ho dato a Emma → glielo ho dato (*le lo ho dato)

show a consistent reduction of the use of *loro*$_{DAT}$ in contemporary Italian, there is proof of the speakers' competence of *loro*$_{DAT.}$ In particular, both adults and children are able to correctly assess the grammaticality of sentences with *loro*$_{DAT}$ targeting its particular distribution in syntactic and semantic contexts.

Therefore, evidence suggests that the use of *gli* instead of *le* involves a limited linguistic change, in terms of both its implications and productivity. On the other hand, the use of *gli* instead of *loro*$_{DAT}$ entails both a lexical and a grammatical change; the latter, however, is not definitive yet. It differs from *gli/le* also in terms of the stage of change, since the use of *loro* is very limited and exclusively restricted to formal contexts.[30]

3.3.2 Weakening of strong subject pronouns

A further ongoing change in the Italian pronominal system concerns the weakening of strong subject pronouns, in particular in relation to their semantic properties.

It has been observed that weak pronouns such as *egli* and *pro* are often replaced by *lui/lei* forms, which we categorised as strong pronouns. Interestingly, in these contexts *lui/lei* do not show the canonical properties of strong pronouns illustrated in (Table 2), but conform to some of the properties we so far attributed to deficient pronouns: they can be used in anaphoric contexts (37a), and they can have a [– human] referent (37b):

(37) a. Se un amico gli sollecitava una pratica familiare **lui** la trattava come le altre.
(C. Piersanti, *L'amore degli adulti*, Feltrinelli, 1989: 77)

b. (I quadri) Stanno lì attaccati al chiodo, nessuno gli fa niente, ma **loro** a un certo punto, *fran*, cadono giù, come sassi (A. Baricco, *Novecento*, Feltrinelli, 1994: 44)

This phenomenon is symptomatic of a gradual weakening of the strong forms *lui/lei*. As for the masculine, the modern pronominal system still displays the weak pronoun *egli*, which is more

[30] Renzi (2000) identifies three stages of linguistic change. Given a pre-existing form A and a new form B, the following phases can be described as follows:

1) B is used in contexts of A
2) A and B coexist in competition, where A is generally and increasingly limited to formal contexts
3) A becomes less and less common, relegated to the over-literary aspects of language and finally disappears

In this view then, A forms undergo a gradual reduction of use, so much so that there is never a moment when speakers suddenly stop using one form to favour another. Drawing on Renzi's analysis, Cardinaletti (2004b) suggests *gli/le* and *gli/loro* are at different phases of linguistic change: *gli/le* is in the early-stage 2, while *gli/loro* is almost definitive and should be placed in phase 3.

and more restricted to formal registers and commonly substituted by weak *lui*. This is the same process that the now obsolete feminine *ella* underwent: the strong pronoun *lei* used to have a weak counterpart *ella*, which has been completely replaced by weak *lei*. The use of weak *lei/lui* thus replace obsolete *ella* and the increasingly disused *egli/esso,* respectively.
In the light of this discussion, (Table 1) can be revisited as follows to capture the current configuration of the Italian pronominal system:

Table 3 – The categorization of Italian pronouns revisited

Pronominal class	Subject pronouns	Object pronouns
Strong	*io, tu, lui/lei, noi, voi, loro*	*me, te, lui/lei, noi, voi, loro*
Weak	*pro, tu*$_{SBJ}$, ***(****egli/esso****), lui****$_W$*** */* ***lei****$_W$*	***(*** *loro*$_{DAT}$ **)**
Clitic		*mi, ti, lo/la, gli/le, ci, vi, li/le, si; ne*

The table presents a revisited version of (Table 1) according to the outcomes of linguistic change. It features the weak forms of the third person pronouns lui$_W$ /lei$_W$, indicated by the subscript. The parenthesis signal the increasing disuse of egli/esso and loro$_{DAT.}$

Note that all the linguistic changes hitherto illustrated involve processes that lead to a gradual simplification of the system: the use of one single form for all genders and numbers, and the weakening of strong forms into weak homophonous counterparts, which can be used in alternative to the null pronoun. This seems to hold as a general principle, so that when a given form undergoes change, it is always towards a weaker form. Cardinaletti and Starke (1999:198) propose that this generalisation follows a principle of economy:

(38) *Economy of Representations*
Minimise Structure

This principle is based on the above-mentioned assumption that each pronominal class has an additional structural layer with respect to the preceding one, in compliance with the hierarchy illustrated above and repeated here:

(39) a. Strong > weak > clitic
b. [CP [ΣP [IP [LP]]]]

Therefore, in all cases where a strong pronoun is not needed for independent reasons such as coordination, modification and focus (i.e., whenever possible), the weaker form is chosen. Note

importantly, that this principle does not make any prediction as to which of the weaker forms is preferred. For example, consider the following sentence:
(examples from Cardinaletti & Starke, 1999: 198)

(40) a. Gianni$_i$ partirà quando egli$_i$ avrà finito il lavoro
b. Gianni$_i$ partirà quando *pro*$_i$ avrà finito il lavoro

Since there are no clitic subjects in Italian, the clitic – the form with the most minimal structure – is ruled out. Therefore, a weak-class element is necessary, because it represents the most minimal possible structure. Minimise Structure (MS) only ensures that the most economical structure is chosen, but does not go further in its predictions as to which of the most-economic-structure forms should be selected. Paradoxically, this does make a further prediction: that of a free choice among pronominal forms, provided that they belong to a class whose structure is the most minimal possible. This is precisely what we observe empirically: both (40a) and (40b) are possible, since they are both weak forms.
We have introduced above the Avoid Pronoun Principle (APP), which determines the selection of a null pronoun over an overt counterpart whenever possible. In the light of this discussion, careful consideration should be paid as to the predictions this principle entails. Despite both APP and MS are manifestations of some kind of economy principle, they do not always lead to the same predictions. Since both principles imply a "whenever possible" condition, they both take into consideration the exceptional syntactic contexts such as coordination, modification and focus, where a null (i.e., weak) pronoun is unavailable. Therefore, in such cases both principles lead to the same conclusion. In all other contexts, the two principles make different predictions: MS, as shown above, leaves a free choice, whereas APP forces the selection of the null pronoun. Consequently, if applied to (40) APP would rule out (40a), despite it being a grammatical counterpart. APP thus proves to be too strict in its predictions, while MS captures the nature of this specific type of economy requirement which concerns structural economy.
Note that without the postulation of a weak series of pronouns homophonous to the strong series (*lui*$_w$/*lei*$_w$), the linguistic change illustrated in 3.3.2 would not obey MS: without the assumption of weak *lui*/*lei,* those pronouns would be analysed as strong and consequently sentences in (37) would be ruled out by MS because of the unnecessary complex structure of the pronouns.

The weakening of strong pronouns leads Italian to look more like English in allowing the same morphological series to be both strong and weak; in the next chapter we will see how this fact is both cause and consequence of several syntax-related phenomena in bilingualism.

4. Language attrition

4.1 Second language acquisition

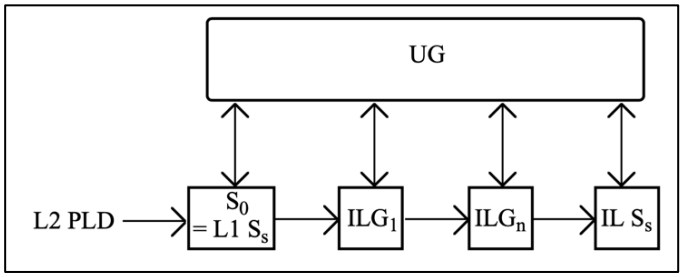
We have said that the generative framework considers UG as a system of principles and parameters constraining the development of L1 acquisition, which allows the achievement of a mature native-speaker grammar. In particular, as far as the NSP is concerned, we have seen how the different parametric features of English and Italian lead to different pronominal systems. We have also said that the postulation of UG is motivated by learnability premises: the abstract linguistic system native speakers attain is by far more complex and comprehensive than the input they receive as children. This picture, which is in itself complex, is further complicated by the possible acquisition of a second (and subsequent) language and the relative theoretical implications.

If first language acquisition (FLA) is rather easily defined as infants' acquisition of their native language, the definition of second language acquisition (SLA) is broader and less straightforward. In its broad acceptation, it defines the acquisition of "any language, at any level, provided only that […] it takes place sometime later than the acquisition of the first language" (Mitchell et al., 2013:1).[31] Consequently, the population of acquirers is consistently more variegated in SLA, as well as the space-time coordinates in which the acquisition takes place, the cognitive and maturational level of learners, and the type of input they are exposed to. Moreover, the fact that when SLA begins, a first language has already been acquired advocates for a fundamental difference between FLA and SLA. At the same time, however, L2 acquirers are faced with a similar task to that of L1 acquirers: the need to arrive at an abstract system accounting for L2 input (White, 2003). As mentioned above, in FLA this constitutes a learnability issue because of the underdetermination of the input – an issue which is addressed by generativists with the postulation of UG. Therefore, we could imagine the same issue (and possibly the same solution) arises in SLA: how can L2 learners build an abstract and complex knowledge of their second language through linguistic input alone? However, unlike in FLA, L2 learners do possess a representation of language: the grammar of their L1. This crucial difference could potentially solve the underdetermination problem: SLA could be drawing on the L1 grammar rather than UG. Various theories within (but not limited to) the generative

[31] This definition intentionally leaves aside simultaneous bilingualism, which is considered a specialist topic with its own literature and relative theories. See Döpke (2000) for an overview.

framework have been proposed to address this issue, which concerns what is referred to as *the initial state*: "the kind of unconscious linguistic knowledge that the L2 learner starts out with in advance of the L2 input" (White, 2003: 58). Some theories argue for a specific grammar (the L1 grammar) as the L2 initial state. For example, the Full Access Full Transfer Hypothesis (Schwartz and Sprouse, 1996) claims that the L1 steady state grammar in its entirety is initially transferred to constitute the L2 system.[32] However, L2 learners are not limited to the L1-based representations: whenever the L1 grammar is unable to account for specific L2 input, the learner can recur to UG options (e.g. parameter settings, functional categories and feature values) in order to build a grammar that can accommodate the L2 input appropriately. In this view, SLA consists of a series of restructuring operations that lead the initial grammar (based completely on the L1) to converge with the system underlying the L2 input.[33]

Figure 1 – Full Access Full Transfer



Source: White (2003:61)

The image visualises the initial state (S_0) of SLA according to the Full Access Full Transfer Hypothesis. L2 primary linguistic data (PLD) are initially analysed according to the L1 steady-state grammar (S_S). Subsequently, interlanguage grammars (ILG) are characterised by parameter resetting operations allowed by access to UG.

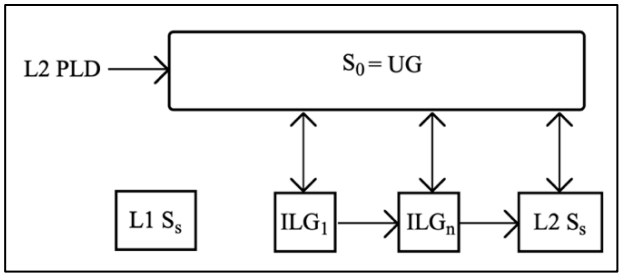
Other approaches that fall under the category of Full Access (without transfer) refuse the involvement of the L1 in the initial state, which – they claim – is constituted by UG. For example, the Initial Hypothesis of Syntax (Platzack, 1996) argues that the initial state (i.e., UG)

[32] Other approaches argue for a partial transfer of L1 rather than full transfer. For example, the Minimal Tree Hypothesis (Vainikka &Young-Scholten, 1996) states the L1 grammar "copy" used as basis for the L2 grammar lacks functional categories, while the Valueless Features Hypothesis (Eubank, 1994) claims functional categories are available, but their values are not. For a comparative analysis see (White, 2003).

[33] The evidence in support of such hypothesis is the presence of L1 properties in the interlanguage grammar and a gradual restructuring away from the L1 grammar. For example, a study by Haznedar (1997) showed how a Turkish child learning English consistently reproduced the L1 verb final word order for the first three months, and then switched to the correct English head-initial order. More generally, the prediction made by the Full Access Full Transfer Hypothesis is that, at least initially, learners of different L1s will have a different grammar for the same L2. (White, 2003)

includes functional categories whose features default value is set to weak and later confirmed or rearranged basing on L2 input. Note that in this view, since UG is the initial state in SLA, it follows that the initial state of L1 and L2 acquisition is identical.

Figure 2 – Full Access no transfer



Source: White (2003:90)

The image visualises the initial state (S_0) of SLA according to the Full Access no transfer Hypothesis. The L1 grammar is dissociated from the interlanguage grammars, which tap directly into UG.

Crucially, despite the hypotheses presented in this section concern specifically the initial state, they also make predictions in terms of the L2 later development and ultimate attainment.[34] For example, the Full Access Full Transfer hypothesis implies that parameters can also be accessed after FLA. L2 development is thus characterized by the resetting of those parameters that are different from the learner's L1. In this view, interlanguage grammars (the unconscious underlying linguistic systems of L2 learners) are natural-language systems constrained by UG. On the other hand, the Full Access theory implies the L1 cannot be used a source for L2 learning so that the relevant L2 parameters are potentially effective immediately without the need for resetting. Despite this difference, under both the Full Access Full Transfer and Full Access without transfer perspectives, interlanguage grammars are claimed to be constrained by UG, as opposed to other views, which argue for a global or local impairment.[35] As for ultimate

[34] The investigation of SLA has also contributed to a deeper understanding of FLA dynamics. For example, all the initial state hypotheses presented here entail some kind of access to UG in SLA. This calls into question some aspects of L1 acquisition which are somewhat marginal in FLA theories but crucial for SLA. For example, as we said, there is agreement on UG being the initial state of L1 acquisition; but what happens later is less clear: does UG turn into the L1 specific grammar so that "the application program is now a particular program for your machine" as Bley-Vroman (1990: 19) suggests? Or does UG remain separated from L1, and thus directly accessible in SLA? The hypotheses on the L2 initial state imply the latter is the case. One of the arguments in favour of UG as constant and distinct from the L1 is the fact that simultaneous bilingual children can acquire two grammars that can present opposite parameter settings. If UG was to become one specific grammar, it would be hard to account for bilingual FLA in these cases.

[35] These positions argue for a breakdown (i.e., impairment) in L2 grammatical representations. In these views, interlanguage grammars are not (fully) UG constrained. Researchers support these claims resorting to the absence

attainment (i.e., the steady-state grammar L2 users achieve as a result of SLA), different outcomes are predicted by the different theories illustrated above. For example, the Full Access Full Transfer Hypothesis predicts a possible but not guaranteed convergence to the L2 grammar: since in this view, parameters can be reset, it is possible, in principle, that an L2 learner arrives at a perfect convergence of settings; however, where input is insufficient to trigger the resetting operation, the L2 end-state will diverge from native grammars. Full Access without transfer predicts that convergence to the L2 grammar should be unproblematic, at least as far as competence in concerned. On the contrary, approaches that refuse UG-constrained interlanguages predict that end-state grammars will be necessarily divergent from native ones.

Because of the great relevance the abovementioned topics concerning SLA had in linguistic theory, and in particular because, as we have seen, their natural development fosters the simplification of the L1 as the fixed system on which the L2 is established, the major focus of the first studies on SLA concerned the L2 in itself, and potential crosslinguistic influences (if at all mentioned) were only investigated unidirectionally, that is, from the L1 on the L2. The L1 grammar was in fact considered, perhaps implicitly rather than consciously, as a stable and unchanging system, having a clear predominance on the newly developing L2 system (Schmid & Köpke, 2007).

The approach to L2 learners was also representative of this asymmetrical hierarchy: L2 performance was often investigated in terms of deficiency with respect to the native-speaker standard.[36] This is not only unprofitable from a psycholinguistic point of view, but also tautological with respect to the definition of native speaker: if a native speaker is "a monolingual person who still speaks the language they learnt in childhood" (Cook, 1999:187), then by definition it is impossible for an L2 acquirer to ever become a native speaker. This attitude is beneficial for neither FLA nor SLA research and has progressively been abandoned (perhaps more rapidly in research than in L2 teaching) in favour of a view of the L2 as a system in its own right. The newfound status of the L2 and the numerous studies in psycholinguistics suggesting that bilingual language processing is "profoundly nonselective with respect to language" (Van Hell & Dijkastra, 2002:786) and therefore different from monolingual

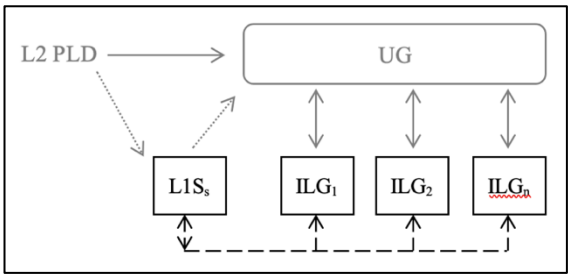
of parametric clusters (e.g., the NSP cluster illustrated in chapter 2.4) in interlanguage grammars (Clashen and Hong, 1995).

[36] For example, Cook (1999) reports that in *The Practice of English Teaching* (Harmer, 1991), the different areas of language competence are described in a chapter entitled "What a Native Speaker Knows", which contains statements like "students need to get an idea of how the language is used by native speakers" (p. 57).

processing, finally brought to the attention the influence that the L2 exerts on the L1. In particular, the contribution of psycholinguistic studies has been crucial to attest that learning a second language does not only entail additional linguistic processes, but also the cognitive costs of the management of multiple language systems. This is captured by the term "multicompetence" coined by Cook (1991), who defines the knowledge of multiple languages in one and the same mind as a unified super-system within which all languages can potentially affect each other. The premises for such change in paradigm were there from the 1980s, as attested by Grosjean's influential manifesto stating that "the bilingual is not two monolinguals in one person" (1989:3).

Notwithstanding the approaches to SLA could offer a coherent account of the characteristics of its initial state, development and end-state, including the attested influence of the L1, they did not take into account the influence that a second (or subsequent) language system can have on the L1. This influence is visualized in (Figure 3), an enriched version of (Figure 1) and (Figure 2), which, independently of the theory-specific implication of the L1 as initial state, illustrates that since the very early stages of SLA, crosslinguistic influence is bidirectional, that is, from both the L1 on the L2 and the L2 on the L1. This view supports the idea that the steady state of the L1 is never completely steady, nor immune to change.

Figure 3 – L2 development and influence of/on L1



The image combines the UG-constrained theoretical views on L2 development and the two-way interaction of L1 and L2 (as illustrated by the dashed line)

To sum up, in the light of theoretical and psycholinguistic research of the past thirty years, the characteristics of the L2 user can be stated as follows:
(From Cook, 2002: 4–8)

(41) a. the L2 user has other uses of language than the monolingual speaker

b. the L2 user's knowledge of the second language is typically not identical to that of a native speaker

c. the L2 user's knowledge of his or her first language is in some respects not the same as that of a monolingual speaker

d. L2 users have different minds from those of monolinguals

The awareness of the characteristics in (41) has encouraged the continuation of studies in SLA with the aim of defining the nature and scope of crosslinguistic influences, producing a rather variegated body of research, which has called for a further division in sub-fields. In particular, a phenomenon that has been investigated since the 1980s is language attrition. The following section will explore its historical background and the evidence its investigation has unveiled.

4.2 Historical background on language attrition

The definition of language attrition has given rise to what Köpke (2004) calls a "terminological jungle" (p. 1331), so much so that the acceptation in which it is used often determines the validity and reliability of experimental results.[37] The reason for such a wide number of acceptations is possibly linked with the historical background on the study of this linguistic phenomenon, whose multifaceted nature has called for several categorizations and refinements. Let us start with a simple and minimal definition, which sees language attrition as a decrease in language proficiency. This fact in itself could be caused by a multitude of factors, such as pathological reasons, migration, political factors, language change or death, and so on. Initially, all these possible causes were analysed together under the banner of "Loss of language skills" (Lambert & Freed, 1982). Moreover, for the reasons discussed in chapter 4.1, the default language to be considered attrited was the L2, as an effect of L1 influence. From the 1990s, especially with the publication of the influential volume by Seliger and Vago (1991), researchers have begun to focus more explicitly on L1 attrition, defined as the "disintegration of the structure of a first language (L1) in contact situations with a second language (L2)" (Seliger & Vago, 1991, p. 3). At the same time, however, many of the studies in the volume concern language shift, death and aphasia, thus entailing a wide acceptation of the term

[37] Köpke (2004, ch. 3.1) presents a very long list of definitions given for language attrition in the literature, dependant on the approach of the researcher. The length of this list in itself can reveal how multifaceted this phenomenon is and indicates the "need to delimit the field and to situate it with respect to other language contact phenomena" (Köpke, 2004: 1337)

attrition, analogous to the one given one decade before by Freed (1982): "the loss of any language or any portion of a language by an individual or a speech community" (p.1).
A first crucial advancement was the subcategorization of the types of attrition according to the language that is "lost" and the environment in which the loss takes place, resulting in a fourfold classification:

Figure 4 – Types of language attrition

	Linguistic environment	
Language lost	L1	L2
L1	Dialect loss	L1 attrition
L2	L2 attrition	Language reversion (in the elderly)

Source: Schmid & Köpke (2004:9)

This categorization allowed for the recognition of different fields within the umbrella term of language attrition, and consequently, a consistent terminological and taxonomical framework for language attrition research. After the turn of the millennium, with the well-established distinctions illustrated in (Figure 4), the field of L1 attrition started to consolidate. In particular, the increasing interest in psycholinguistics and the non-correspondence of predictions made on L1 attrition when analyzed from a language change perspective, suggested that language attrition is "a psycholinguistic phenomenon that affects individual linguistic behavior" (Schmid & Köpke, 2013:2) as opposed to a long-term intergenerational change that affects speech communities. A further important distinction concerns the age of onset of bilingualism. As we have said above, simultaneous bilinguals represent a specific case, which is not comparable to sequential bilingualism. Furthermore, the cognitive and linguistic differences between the age of onset of bilingualism in children (early bilinguals) and adults (late bilinguals) call for an additional distinction. Many approaches hypothesise a maturational stage in the lifespan (usually until puberty) during which the child is especially sensitive to linguistic stimuli, and thus more prone to acquiring a second language.[38] In this view, predictions on L2 development, ultimate attainment and attrition phenomena can be substantially different in early versus late bilinguals.

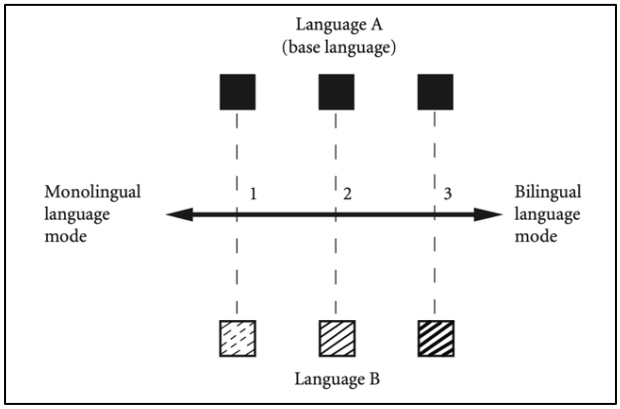
[38] For example, the concept of *Critical Period* is often used to refer to this ideal time window for language acquisition, both in L1 and L2. Many generativists see a connection between the Critical Period and UG access, in that the latter delimits the time span of the former. However, the question is still debated (see Martohardjono, Epstein, Flynn's commentary on Epstein et al., 1998)

A number of studies thus began to investigate L1 attrition on these premises, typically analysing its most significant representative: the migrant (Köpke, 1999; Schmid, 2002; Montrul, 2002; Pavlenko, 2003). The resulting common profile of the L1 attriter entails the following characteristics:

(42) a. decline in L1 proficiency
b. migration to the L2 speaking country
c. nonuse or less frequent use of the L1

Because the migrant was identified as the default subject of attrition studies, and since migration inevitably entails a great exposure to the L2 environment and a limitation in the use of the L1, the characteristics in (42b-c) were thought to be the best predictors for attrition.
For example, the Activation Threshold Hypothesis claims that language disuse leads to difficulties in language retrieval and that the most frequent elements in L2 will replace their L1(infrequent) counterparts (Paradis, 1993). In this view then, the accessibility of linguistic items depends on an activation threshold, which is a function of frequency and time. In particular, activation and inhibition are the two processes that determine the threshold. Activation refers to the frequency and recency of use of an item, while inhibition entails blocking possible competitors for a given item in L1/L2. In the case of L1 attrition, the activation process predicts that speakers who often use and have recently used their L1 will be less affected by attrition. As for inhibition, the activation threshold is predicted to be higher, since speakers living in an L2 environment have to constantly inhibit their L1 (Schimd, 2007).
A further interesting aspect related to the notion of activation concerns the so-called language modes (Grosjean, 2001). As illustrated in (Figure 5), the languages of the bilingual are placed on a continuum, which goes from monolingual mode (1), in which only one of the two languages is highly activated, to bilingual mode (3), in which both languages are highly active. The intermediate mode (2) captures a situation in which one language is not completely inhibited, but consistently less active than the other. Note that, as reported above, there is evidence that bilinguals can never completely switch off either language even in mode (1). In this sense, monolingual mode in bilinguals does not equal a monolingual person's mode, in that the inhibited language system is still present, no matter how inactive.

Figure 5 – The language mode continuum



Source: Grosjean (2001: 3)

The image shows the languages of the bilingual placed on a continuum, defining the three language modes. The colour of the squares represents the level of activation of the relative linguistic system: the darker the colour, the more activated the corresponding system.

The language mode depends on a number of factors, such as the communicative setting, the communicative function, participants, the content of the conversation, and so on. Little interference is expected in the monolingual mode, for example during a conversation between a bilingual and a monolingual. Formal interaction with other bilinguals can take place in the intermediate mode, in which only one language is used, but the other is still active, thus possibly triggering interference. On the other hand, informal interactions with other bilinguals favour the bilingual mode, in which there can be codeswitching and interference. On the assumption that every communicative act of bilinguals is situated along the continuum in (Figure 5), Schmid (2007) distinguishes five types of everyday language use among potential attriters:

(43) a. **Type I**: monolingual mode L1 use
- distance communication with country of origin (telephone, email, letters)
- visits to and from country of origin

b. **Type II**: intermediate mode L1 use
- professional L1 use
- L1 use in clubs and societies with an (explicit or tacit) non-mixing policy

c. **Type III**: bilingual mode L1 or L2 use
- L1 use within the family
- L1 use with friends, acquaintances, colleagues

d. **Type IV**: intermediate mode L2 use
- L2 use with recent emigrants wishing to acquire L2
- L2 use with native speakers who have a rudimentary knowledge of L1

e. **Type V**: monolingual mode L2 use
   - L2 use with monolingual speakers
   - L2 use with bilingual native speakers of other languages

Different language modes can imply different activation levels; consequently, it is important to distinguish between them when researching language attrition. In particular, the prediction is that Type I mode may prevent L1 attrition, while Type V may encourage it. However, research showed the correlation between those factors is not as straightforward as one could intuitively expect. In particular, where studies tried to investigate the correlation between the degree of L1 use and attrition, results were contradictory: for example, Köpke (1999) reports a correlation between extremely infrequent L1 use and the manifestation of attrition effects over time; on the other hand, Schmid (2007) is rather categorical in excluding a correlation between L1 use and attrition effect.[39]

This notwithstanding, the majority of research has continued to investigate migrants in the L2 environment as typical subjects for attrition studies, implicitly neglecting any attriter profile other than the migrant. However, if bilinguals, inasmuch as bilinguals, process language differently from monolinguals (Van Hell & Dijkastra, 2002) and attrition begins when bilingualism begins (Schmid & Köpke, 2017), it follows that, at least potentially, emigration and a clear dominance of the L2 on the L1 are possible but not necessary conditions for language attrition. In particular, L1 attrition may not be a rare condition as it was considered in the past, but a natural consequence of bilingualism. It does not follow that factors such as emigration, L2 exposure, and L1 use are not relevant at all, but rather, as Schmid and Köpke (2007) suggest "this particular mix of circumstances brings about a more immediately visible version of a process of change in the L1 that all bilinguals undergo to some degree" (p. 3).

At this point it became clear that not only does attrition research benefit of SLA theories from an internal point of view, but it can also offer a crucial contribute to SLA studies in validating or rejecting their theoretical implications. In fact, the different linguistic frameworks, such as those illustrated in chapter 4.1, have started investigating language attrition according to their own perspective, integrating it with existing theories on SLA, FLA and, more generally, language structure. For the purpose of this work, in what follows we will limit to the generative approach to language attrition.

[39] Schmid (2007) reports that "there is absolutely no interaction between any of the lexical access, lexical diversity and fluency measures used here on the one hand and frequency of L1 use in daily life in any language mode" (p. 149). However, we acknowledge that notwithstanding this could be true for lexical access, in other modules of language subject to attrition, the use of L1 may potentially be more or less relevant.

4.3 Language attrition from a generative perspective

From the very beginning, research on L1 attrition has questioned which (if any) linguistic domains are more vulnerable to attrition – a question which still remains largely unanswered to date. The lexicon has been frequently mentioned as a candidate, with a multitude of studies on lexical access and retrieval difficulties (Köpke, 2002). However, if on the one hand attrition effects at a lexical level are undeniable and possibly the most frequent, they could just be more directly visible than others and not necessarily the only ones, nor the "major" ones (Köpke, 2018).

More recently, research has focused on other linguistic domains to look for attrition effects. The generative approach, whose main focus is the syntactic component, has unsurprisingly investigated syntactic attrition. One of the main results of such investigations was the observation of a selective pattern as to the syntactic areas that are more vulnerable to attrition, which led to the assumption of the Interface Hypothesis (IH). The original claim of the IH by Sorace and Filiaci (2006) concerned SLA and suggested that structures involving interface between syntax and other cognitive systems are less likely to be acquired completely than those structures which do not involve such interfaces. Note that in claiming that incomplete acquisition may characterize L2 development, the original IH concerns the level of competence.

This view resulted in a bipartition of syntax in a narrow (internal) component and interface (external) component, where the former is responsible for the integration of semantic/morphological information and the latter concerns the integration of contextual and pragmatic information. When the IH was extended to first language acquisition studies, such dichotomous system was maintained, but with an essential distinction: in this case (at least for older bilinguals), the scope of attrition was limited to processing abilities, and thus a performance level, rather than competence itself (Sorace, 2011). As far as first language attrition is concerned, the IH has been supported by research exploring differences in vulnerability to attrition of interface versus core syntactic structures.[40] In particular, many

[40] The similarity of results between the IH in SLA and L1 attrition suggests that the distinction between core syntax and the interfaces is an important one, possibly at the root of several phenomena of bilingual development. On the other hand, the IH has been criticised for various reasons, among which the fact that the distinction between narrow syntax and interfaces is too broad and vague, that all structures involve some kind of interface, and that not all interfaces are equally problematic for bilinguals. Moreover, there are studies that report attrition can affect narrow syntax (Dominguez, 2013; Gürel, 2004), thus representing an important counter evidence to the predictions of the IH. See Sorace (2011, ch. 5) for her discussion on the IH criticism.

studies have focused on the interpretation of null and overt pronouns by bilinguals. In fact, as illustrated in chapter 2.5, anaphora resolution represents precisely one of those occurrences in which syntax interfaces with discourse factors. The investigation of this phenomenon in bilinguals is relevant for the following series of factors, already mentioned at different points of the discussion above, and now repeated in the attempt to illustrate the logical reasoning:

(44) a. The bilingual's language systems do not exist in isolation

b. The bilingual's languages can have different parameter setting (e.g., NSP in Italian and English)

c. Consistent null subject languages (e.g., Italian) have more options for pronominal forms (i.e., null vs overt) than non-null subject languages (e.g., English), but the choice among these is not free in monolinguals

d. The interpretation of pronominal forms requires interaction between syntax and the interfaces

e. Interface structures are more likely to be affected by attrition

In the specific case of Italian native speakers of L2 English experiencing attrition, the evidence in (44) predicts that attrition can affect the interpretation of null and overt pronouns in the L1. In particular, research suggests that these effects may surface as an increased optionality in the use of overt pronominal forms in the L1 (Italian). For example, Sorace (2000) investigated anaphora resolution in Italian near-native speakers of English. The results showed that attriters overextend the use of overt pronouns in Italian, under the influence of their L2 (English). In particular, they would use an overt pronoun in those cases where monolinguals would use the null pronoun (as suggested by PAS in chapter 2.5).

The important question for generative theory is whether the architecture of language, such as that described in (1), can in some way predict or justify the selective pattern of attrition effects in the various language areas. We have mentioned in chapter 2.5 that uninterpretable features, which play a very important role in the syntactic computation, are limited to what we have now defined as narrow/internal syntax. On the other hand, interpretable features (e.g., referentiality on pronouns) are visible at the interfaces. On this assumption, the selectivity of attrition may be linked to the distinction between uninterpretable and interpretable features, and consequently internal vs external syntax, in that only the latter require further discourse-related

cognitive processing.[41] This is the approach proposed by Tsimpli et al. (2004), who suggest that an interpretable feature specified for a given value in the L1 can become unspecified because of the absence of a corresponding interpretable feature in the L2.[42] In particular, their hypothesis relies on the following assumptions (Tsimpli et al., 2004: 263):

(45) a. Once the Critical Period is over, the native speaker's competence is steady and does not allow for optional syntactic processes

b. The syntactic computation driven by uninterpretable features which determine parameters is modular and therefore does not allow for top-down effects (e.g., the influence of interpretative properties) on syntactic derivations

c. The LF-interface and the representation it yields is not modular, unlike the process of syntactic derivation

They hypothesise that attrition affects interpretable features linked to a different parametric configuration between the L1 and the L2. Therefore, they investigate anaphora resolution in Greek and Italian near-native speakers of English. As shown above, despite all these languages make use of overt subject pronouns, their distribution in null subject languages (in this case, Italian and Greek) is regulated by the different specification of discourse interpretable features such as [± topic shift] or [± focus]. On the other hand, in non-null subject languages (English) such features are not specified, since overt pronouns are the only available option. In the light of these factors, assumption (45c), in line with (44d), predicts vulnerability to attrition, emerging in particular as increased optionality in the use of overt pronouns. In fact, under the influence of the L2, overt pronouns are no longer specified, resulting in a certain ambiguity in the interpretation of such forms, since conflicting options are available in the L1 and L2 of the

[41] This account concerns the level of knowledge of representation, and as such it looks for explanations in the structure of the grammatical system – the main focus of generative studies. In addition, precisely because interface structures require the speaker to integrate real-time information from different domains, a further crucial question when investigating the causes of optionality at the interfaces is possible processing difficulties. This approach has been mainly pursued by psycholinguistic studies, resulting in a vast body of research, often arguing that attrition derives primarily from the difficult task of processing two languages at the same time (Sorace, 2011). See the discussion on Chamorro et al.'s studies below.

[42] Note that, as the authors themselves recognize, "the directionality of the attrition effects with respect to interpretative properties is predicted to be from the more to the least "economical" grammar" (Tsimpli et al., 2004: 263). As Sorace (2011) points out, this can be a limit of the underspecification account, because it is dependent on a combination of languages which differ on the syntax-discourse conditions. However, there is evidence of overuse of overt pronominal forms also when both languages allow null subjects (e.g. Spanish-Italian bilinguals in Sorace et al., 2009), which suggests the possibility that the overextension of overt pronouns is in fact a strategy employed by bilinguals in case of processing overload, regardless of the language combination.

bilingual. On the other hand, (45a-b) predict that uninterpretable features such as the availability of null subjects will not be affected by attrition, and consequently monolinguals and bilinguals should not differ in their interpretation. In this view, the reason underlying the overextension of overt pronouns is the underspecification of the [topic shift] feature:

(46) *Italian monolingual grammar (as suggested by PAS)*

a. Overt subjects [+ topic shift] [43]

b. Null subjects [– topic shift]

(47) *Attrited grammar*

a. Overt subjects [± topic shift]

b. Null subjects [– topic shift]

The experiment tested production and comprehension of null and overt pronouns.[44] For example, participants were presented with sentences with overt pronominal subjects (48a), for which PAS predicts monolingual preference for an object antecedent, and null pronouns (48b), for which monolinguals are predicted to prefer a subject antecedent interpretation.

(48) a. L'anziana signora$_i$ saluta la ragazza$_j$ mentre lei$_j$ attraversa la strada

b. La nonna$_i$ mostra la foto alla nipote$_j$ mentre *pro$_i$* fa colazione

[43] Note that, according to the discussion in chapter 3.3.2, overt pronouns can be weak or strong, the former not necessarily requiring a [+ focus shift] interpretation. This distinction could be crucial for an updated account of the distribution of null and overt pronouns in relation to the [topic shift] feature. The intriguing and complex question is whether linguistic change or attrition (or both) are to be held responsible for the overextension of overt (weak) pronouns.

[44] In particular, the results presented in Tsimpli et al., (2004) concern a production task called "Headlines", in which participants had to produce a sentence with a given verb, an NP and an adverb, starting with the phrase *did you hear that…*? The aim of this task was to test the use of preverbal vs postverbal subjects. This relates to the NSP, in that, as illustrated in (25), the availability of a postverbal subject position is part of the NSP parametric cluster. Since postverbal subjects are impossible in English, the prediction was that attrition would lead to an increased use of preverbal subjects in bilinguals, even when not context-appropriate. The comprehension task was a Picture Verification Task, in which participants were presented with a sentence and a set of three pictures, and they had to indicate which of the three pictures represented correctly the sentence. There were two types of items in this task: in the first, the sentence was composed of a main clause and a subordinate; the subject of the subordinate could be an overt pronoun or a null subject. The pictures presented three participants, allowing the embedded subject pronoun to be the antecedent of the main clause subject, the object or a third referent. The other test items aimed at investigating the preference for old or new referent interpretation. These items presented two sentences; in the former, a possible set of referents was provided, while the second one presented a singular subject in either preverbal or postverbal position.

The results confirmed the hypotheses in that attrition effects were found, emerging as an increased indeterminacy in the bilingual antecedent preferences for overt subjects with respect to the monolingual control group. In contrast, no attrition was found in sentences with the null pronoun, where the preferred antecedent was the subject for both bilinguals and monolinguals. The results also show that the monolingual control group did not perform categorically with respect to the interpretation of overt pronouns, which showed more flexibility in the antecedent preferences, as previously noted in chapter 2.5 in relation to PAS violations.

More recent studies have tested the validity of the IH, investigating structures involving the external syntax-pragmatic interface (Chamorro et al., 2016a), and the internal syntax-semantics interface (Chamorro et al., 2016b) in L1 Spanish attriter in an English L2 environment. Following the IH, the prediction is that the former but not the latter would present attrition effects. Moreover, these studies aimed at testing the proposal in Sorace (2011; 2016) that attrition concerns the processing level rather than the representational one, as implied in Tsimpli et al. (2004). Chamorro et al. (2016a) looked at pronominal subject interpretation with an offline naturalness judgment task and online eye-tracking reading task, in which participants had to choose between possible antecedents for null and overt pronominal forms, predicted to be regulated by PAS in monolinguals. On the other hand, Chamorro et al. (2016b) investigated the interpretation of the Spanish Differential Object Marking (DOM), which establishes a distinction between animate and specific direct objects requiring the preposition *a* and inanimate direct objects that do not require such preposition. Contrary to subject interpretation, this requirement does not depend on context, but is regulated by semantic features such as animacy and specificity.

Chamorro et al.'s (2016a) results on pronominal subjects reported attrition effects in the structure under investigation. In particular, the eye-tracking task showed significant differences between the bilingual and control groups, while the offline judgement task did not present such a high rate of optionality. This led the researchers to confirm the hypothesis that attrition affects processing rather than linguistic representations.[45] The IH validity was also accounted for, since no attrition effects were found in the DOM task.

While some of the studies reviewed above allow for the possibility that L1 disuse may not be a determining factor in L1 attrition (Tsimpli et al., 2004), they all see long-term contact with

[45] However, it is important to note that there is no way to ensure that offline judgement tasks (or in fact any other task) can tap into linguistic competence (Altenberg & Vago, 2004).

the L2 in L2 contexts and L2 proficiency as essential; in fact, their participants have at least five years of residence in Britain and a near-native level of English. Tsimpli et al. (2004) also tested for the correlation between length of residency, balance of L1 and L2 use, L2 proficiency and the degree of attrition, but could not establish any such correlation. This is not surprising in the light of the numerous investigations that have tried to establish a correlation between extralinguistic factors (e.g. age of onset, language exposure and use, motivation, education) but failed to establish the degree to which these can be predictive of vulnerability on the one hand, and language maintenance on the other.[46] Because no conclusive evidence has been provided to show that length of residence is an essential factor in attrition, and studies in other linguistic domains have demonstrated that there can be attrition effects in exclusively native contexts (Van Hell & Dijkastra, 2002), the present research originates from the hypothesis that syntactic attrition effects qualitatively similar to those found in Tsimpli et al. (2004) can be found in proficient L2 speakers living in their L1 country. A further encouragement in this sense comes from studies on attrition effects in translations.

4.4 Language attrition in translations

It has been noted that Italian translations of English texts displays some characteristics that differ from monolingual spontaneous production. Crucially, these differences are equivalent to the alterations found in attrition studies. Resuming the distinction among different language modes proposed by Grosjean (2001), this fact is unsurprising: we can place the translator activity in full bilingual mode; even more so, translating is probably the most extreme case of bilingual mode, in which the translator has to constantly and simultaneously control the two languages. If influences of the source language on the target one at a lexical level are surely the most expected, syntactic deviances in translations represent a further support to the view of a profound interconnection and reciprocal influence of the bilingual's languages.

[46] See Yilmaz & Schmid (2018, ch. 4) and Schmid (2011, ch. 6-8) for an overview on investigations on extralinguistic factors. The one factor that appears particularly relevant is age of onset. In fact, studies comparing pre and post-puberty migrants showed that age of arrival in the L2 country was a significant predictor of L1 proficiency. These results are in line with the Critical Period Hypothesis and suggest once again that pre-puberty bilingualism's effects and scope are different from adult bilingualism, in particular with regard to the competence/performance issue.

In particular, Italian translations from English often present an overuse of overt pronouns, in contexts where a null form would be predicted in monolinguals (Cardinaletti, 2004a)[47]:

(49) a. He knew that if he screwed up his face and wailed, his mother would give him anything he wanted
(J.K.Rowiling, *Harry Potter and the Philosopher's Stone,* Bloomsbury, 1997: 22)

b. ø sapeva che se ø contorceva la faccia e ø si lagnava la madre gli avrebbe dato qualsiasi cosa **lui** avesse chiesto
(trad. Marina Astrologo, *Harry Potter e la pietra filosofale,* Salani Editore, 1998: 26)

Drawing from Cardinaletti and Starke's (1999) threefold classification of pronominal forms described in chapter 3.1, Cardinaletti (2004a) observes that the translation of English weak pronouns often corresponds to a strong form in Italian, as in (49b), where a weak pronoun such as *pro* or *egli* would be expected. This phenomenon is attributable to the interference of the source language, in which the strong and weak pronominal series are homographs. At the same time, the use of null pronouns is not undermined, since such forms are correctly used in appropriate contexts. Crucially, this is the same tendency found in L1 attrition studies, such as those reviewed in the previous section: attrition affects the syntax-discourse interface which regulates the use of strong vs weak lexical forms, but leaves intact core syntax aspects such as the availability of weak null pronouns. The resulting grammar of the translator is therefore comparable to that of the attriter in (47).[48] Analogously, Giusti (2004) reports the overuse of preverbal subjects in translations from English, even in those cases where a postverbal subject would be required by the discourse context. These properties are ascribable to attrition and are consistent with the vulnerability of external interfaces, which regulate the distribution of pre and post-verbal subjects.

It is important to note that, as illustrated in chapter 3.3.2, the increase in use of overt weak pronominal forms is an independent phenomenon of linguistic change that characterises contemporary Italian. In fact, the examples mentioned in (37) are taken from modern Italian novels, but the use of overt weak pronouns described there is comparable to that found in translations. Therefore, it is possible that what originated as a language-internal process of

[47] See Cardinaletti (2004a) and Giusti (2004) for more examples and the relative discussion.

[48] As for attriters, it is hard to determine whether the feature (under)specifications in (47) characterize the translator's competence permanently, or if they are the result of a processing overload due to the high activation of both languages. The important fact is that, independently of where attrition effects stem from, they result in the same relaxation of discourse norms at the interface between syntax and pragmatics.

linguistic change is further encouraged by the undeniable spread of English in everyday activities and linguistic stimuli. At a first level, these directly impact on the Italian L1 system of bilinguals who are directly exposed to the L2 (e.g. on social media, with international friends, literature in the original language, on top of explicit instruction and/or everyday life in the case of migration) provoking the L1 attrition effects reported above. On a further level, Italian monolinguals are exposed to English translations in an ever-increasing number of fields: fiction, scientific articles, social media, automatic translations and so on. Consequently, if translations display attrited-like structures, also monolinguals are potentially influenced by the exposure to such stimuli, especially because these are analogous to the effects of the established process of linguistic change. The resulting picture is that of a complex concausality of linguistic change and attrition effects: the former historically precedes the latter, which in turn further encourages and possibly accelerates the linguistic change; so much so, that attrition effects could be a factor in determining the final outcome of this specific linguistic change with respect to others. In particular, Renzi (2000), drawing on his analysis of linguistic change illustrated in (footnote 30), suggests that after a phase in which both the old and new form are used in competition (in our case, the null pronoun and its overt weak counterpart, respectively), the third and last phase of linguistic change, in which the old form is definitively substituted by the new one, is possible but not guaranteed. Alternatively, the old form could resist the new counterpart, which weakens and disappears, often without speakers noticing any change at all. On this assumption, the impact of "primary" attrition in bilinguals and "secondary" attrition through attrited translations could be a crucial incentive in favour of the new form, thus determining the ultimate success of the linguistic change process.

The fact that translations can display attrition effects is revealing for several reasons: first of all, the translator is a very competent L1 speaker, well aware of the possible influences from the source language; secondly, the translator makes constant and extensive use of the L1, and lastly, in many cases the translator lives in the L1 country and therefore is not immersed in the L2 context as the typical participants to attrition studies. Notwithstanding that the act of translating represents a unique process, in which languages are consciously analysed and used, its vulnerability to attrition further supports the idea that neither a decrease in L1 use, nor total L2 exposure can alone account for L1 attrition effects.

PART II

5. The study

The theoretical background and the experimental evidence presented in Part I lead to further research questions, which have inspired the present study with the aim of investigating the complex phenomenon of language attrition more deeply. In particular, the study focuses on the interpretation of null and overt pronouns, replicating the picture verification task presented in Tsimpli et al. (2004), on an experimental group composed of native speakers of Italian who are proficient in L2 English and who live in Italy. The two control groups are composed by Italian monolingual adults and middle school students, in order to discriminate between potential attrition effects and language change in the L1. In what follows, we illustrate the experimental design, its results and discussion.

5.1 Research questions and hypotheses

The study addresses the following research questions:

- Can attrition effects be found in proficient L2 speakers who are living in their L1 country?
- If present, are attrition effects qualitatively or quantitatively different from those found in studies on L2-immersion contexts?
- Is there a way to discriminate between possible attrition effects and linguistic change?

With respect to these research questions, we hypothesise that L1 attrition effects can also be present in advanced L2 speakers in exclusively native contexts. This hypothesis is motivated by the following evidence: on the one hand, studies such as (Van Hell & Dijkastra, 2002; Cardinaletti, 2004a) attest attrition effects in native contexts and translations; on the other hand, no conclusive evidence has demonstrated a direct effect of length of residence or amount of L2 use onto L1 attrition. Therefore, we expect qualitatively similar results to L1 attrition studies on migrants. As regards the present study, this translates as a wider distribution and interpretation of overt pronouns in Italian-English bilinguals versus Italian monolinguals.

In particular, we hypothesise that attrition leads to the underspecification of the [+ topic shift] feature of overt pronouns, resulting in the increased possibility of an overt pronoun to be interpreted as a continuous topic, rather than forcing a topic-shift interpretation.

Following the IH hypothesis, no differences are expected in the interpretation of the null pronoun, since it represents a core syntactic option which is unavailable in the L2.

While we do not consider migration as an essential factor for attrition, we do recognize that it entails specific psycholinguistic dynamics, which can influence the interplay between languages. What has not been attested in attrition studies on migrants is the correlation between length of residence and the severity of attrition, but it does not follow that the very fact that migration has happened is irrelevant from a psycholinguistic point of view. In this sense, we acknowledge the difference between late bilinguals who emigrated in the L2 speaking country and L1 attriters in native contexts: a total immersion in the L2 environment could result in higher vulnerability to attrition and consequently a greater amount of attrition effects. For this reason, while expecting attrition effects also in native contexts, we allow for the possibility of a quantitative difference between bilinguals in native versus L2 contexts with respect to the interpretation of overt pronouns. The view that this study aims at challenging, in line with Schmid & Kopke (2007), is the limitation of attrition to cases of migration rather than, more widely, any bilingual.

With regard to the linguistic change illustrated in chapter (3.3.2), following Cardinaletti (2004a) and Giusti (2004), we expect effects of such change in terms of an increased optionality in the interpretation of overt pronouns, especially in the teenagers control group. Because of the concausality of linguistic change and attrition effects, we do not expect a clear-cut distinction between the two phenomena. Since, following Schmid & Köpke (2013), we adopt the definition of attrition as affecting individual linguistic behaviour, we expect individual differences among potential attriters. Effects of linguistic change are instead predicted to be rather homogenous among the population. Linguistic change in fact affects the overall grammatical system of communities, while we are more inclined to the view of language attrition, especially in native contexts, as a matter of performance.

Lastly, as for the monolingual control group, we predict conformity to PAS, with the aforementioned increased flexibility in the antecedent options of overt pronouns, especially when the sentence is perceived as unambiguous (see chapter 2.5).

5.2 Method

The literature on attrition has often mentioned the lack of a consistent and systematic methodology in attrition studies as one of the greatest limitations of the field (Schmid & Köpke, 2004; Schmid, 2011). In particular, where every researcher proposes his/her own approach and methodology, results comparability and cross-field generalizations are inevitably precluded. The fact that results are often contradictory is in fact largely dependent on methodological differences (Schmid & Köpke, 2004; 2017).[49] Despite the understandable inclination to design ad hoc experiments to fit at best the aims of a specific research, this prevents a crucial practice for scientific research: replication. Replication research is fundamental to confirm findings, refine them testing different populations and arrive at stable and generalized conclusions on larger samples (Gass et al., 2021). In other words, it is crucial for the advancements of the field, especially considering that studies in second language acquisition often do not have a large number of participants.[50] On these premises, and considering the research questions and hypotheses illustrated in 5.1, a replication of the picture verification task in Tsimpli et al. (2004) was chosen as a suitable methodology for this study. In particular, since the aim of the study is that of extending the potentiality of attrition effects to a different population (i.e., bilinguals in native environments) hypothesising qualitatively similar results, a replication of an existing and influential study on a different experimental group seemed particularly appropriate, and possibly more telling than a new ad-hoc experimental design.

The methodology is therefore the same as in Tsimpli et al.'s picture verification task (PVT). Participants were presented with a sentence in Italian and a set of three pictures in a randomized order on a computer screen; they had to indicate which of the three pictures matched the meaning of the sentence correctly. They were instructed to indicate more than one picture if they thought there was more than one option matching the meaning of the sentence. They were also invited not to spend too much time on each sentence to favour a spontaneous answer. If

[49] Driven by this awareness, Schmid (2011) presents the language attrition test battery, which aims at providing a methodological framework in terms of test types and their potential, which can be replicated (or adapted) according to the area under investigation and the type of data needed.

[50] The recognition of the importance of replication research is demonstrated by the addition of "replication studies" as a specific study type in journals like *Applied Psycholinguistics, Language Teaching, Studies in Second Language Acquisition* (McManus, 2021). However, as Marsden et al.'s (2018) review suggests, the amount of replication studies in applied linguistics remains worryingly low, perhaps because of misconceptions such as that they lack the novelty of a brand-new study, or that their main aim is to question and find fault in existing research (Gass et al., 2021).

they had any questions, they had the opportunity to ask the researcher for clarifications. The experiment was administered between August and November 2023.

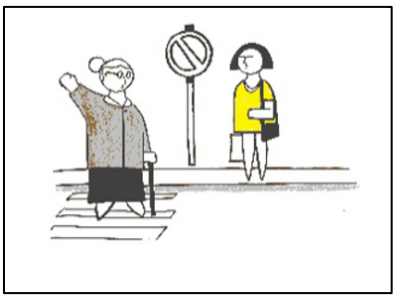
To measure the language dominance of the potential attriters, the Bilingual Language Profile (BLP) was administered to the experimental group prior to the PVT task, with the aim of identifying possible correlations between language dominance and attrition effects (see Appendix A for the BLP items). The two control groups were asked a reduced series of questions to ensure they were not proficient English speakers.

5.3 Stimuli

The PVT presented a total of 20 experimental items, each composed of a sentence consisting of a main clause and a following subordinate clause (backward anaphora).[51] The subject of the main clause was always an NP, while the subject of the subordinate was in half of the cases an overt pronoun (50) and in the other half a null pronoun (51). The three pictures presented at least two participants and three at most, so that the antecedent of the embedded pronoun could be the matrix subject (50a; 51a), the object (50b; 51b) or a third referent (50c; 51c):

(50) L'anziana signora$_i$ saluta la ragazza$_j$ mentre lei$_{i/j/x}$ attraversa la strada.

a)



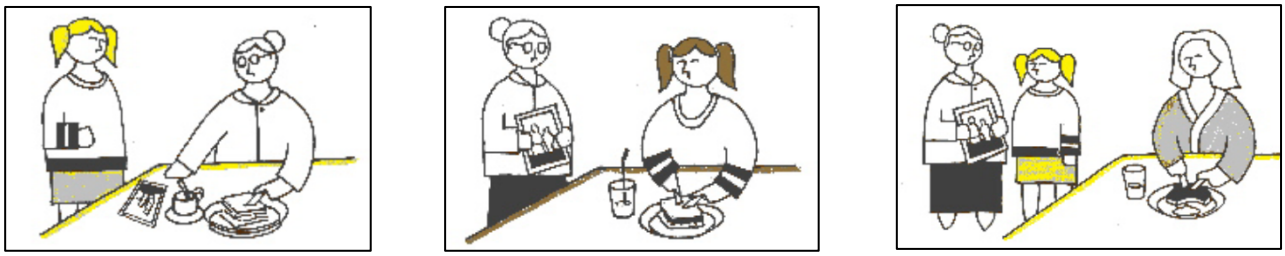
b)

c)

[51] The study was limited to the replication of the first type of PVT items in Tsimpli et al. (2004) with backward anaphora, which was the materials I had access to and for which I thank Professor Tsimpli.

(51) La nonna$_i$ mostra la foto alla nipote$_j$ mentre *pro*$_{i/j/x}$ fa colazione

a) b) c)



The aim of the task was to identify the preferred interpretation for the referent of the embedded subject. The task also contained 10 filler items, which presented the same structure of the experimental items (i.e., one sentence and three pictures). In these items, the meaning of the sentence was never ambiguous, and there was only one picture that matched correctly the meaning of the sentence. Filler and experimental sentences were presented in a random order; for each item, the order of the pictures was also randomized. Before the beginning of the experiment, two practice items were presented to familiarize participants with the experimental items. The sentences of the original test used by Tsimpli et al. (2004) have been translated from English into Italian for the purpose of the study.

5.4 Participants

Three groups of participants participated in the study: one group of Italian proficient speakers of English (n = 20), one group of Italian monolingual controls (n = 20) and one group of Italian middle school students (n = 22). All participants were native speakers of Italian and were from the North East of Italy (Veneto region = 92%).

The age of the bilingual participants ranged from 23 to 34 (mean = 27.9, SD = 3.4), the monolingual controls from 49 to 67 (mean =59.6, SD = 4.3), while the teenager controls all attended the same class of middle school and were 13 years old, except for two 12-year-old students.

All participants were tested individually in a silent environment. The teenagers control group was tested at Sandro Pertini middle school in Volpago del Montello (TV), with prior authorization of the school Principal.

All participants agreed to the consent form (see appendix C), in accordance with the regulation established by BemboLab at Ca' Foscari University of Venice. For the teenagers group, the consent was signed by both parents according to the regulation for minors.

5.5 Results

The data presented here was organised and analysed in JASP.[52] The analysis was conducted both by-subject (n= 62 participants) and by-item (n= 20 experimental items) by means of repeated measures Analyses of Variance (ANOVA).[53]

5.5.1 By-subject analysis

As illustrated in (5.2; 5.3), each participant could choose between three possible answers, indicating one or more pictures that matched the meaning of a given sentence. When analysing the by-subject data, the total number of answers given by each participant for each possible referent (i.e., *other, complement, subject*) was divided by the total number of items (10 with overt pronouns, 10 with null pronouns) and multiplied by 100, so as to obtain the proportion in which a given referent was considered appropriate by each participant.

The *other* referent indicates a third referent as antecedent for the overt/null pronoun; the *complement* referent indicates the matrix object as antecedent, and the *subject* referent indicates the matrix subject as antecedent. Following Tsimpli et al. (2004), two separate analyses were conducted for null and overt pronouns, in order to investigate the behaviour of the groups in terms of their referent preferences.

Figure 6 and 7 visualise the descriptive statistics of the by-subject analysis for overt and null referents, respectively.[54]

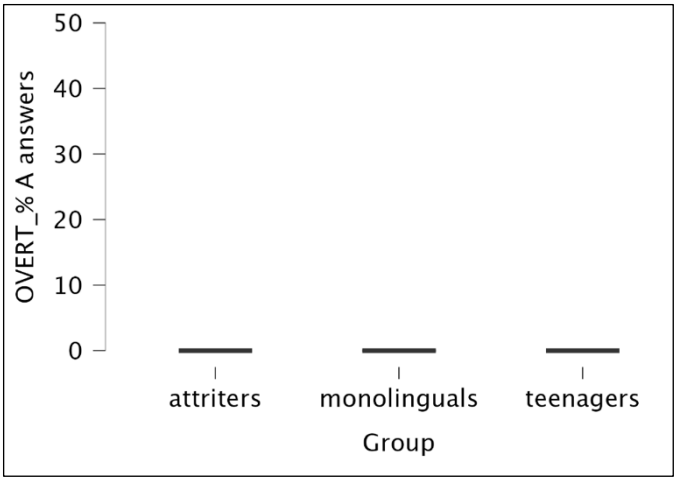
[52] JASP Team (2024). JASP (Version 0.18.3)[Computer software].

[53] Following Forster and Dickinson (1976), the null hypothesis should be rejected only if significant F-values are observed for both the by-subject and the by-item analyses.

[54] See Appendix B (Table A) for the relevant descriptive statistics tables.

Figure 6 – Percentage of referent preferences for overt pronouns

a) Percentage of *other* referent answers



Example:

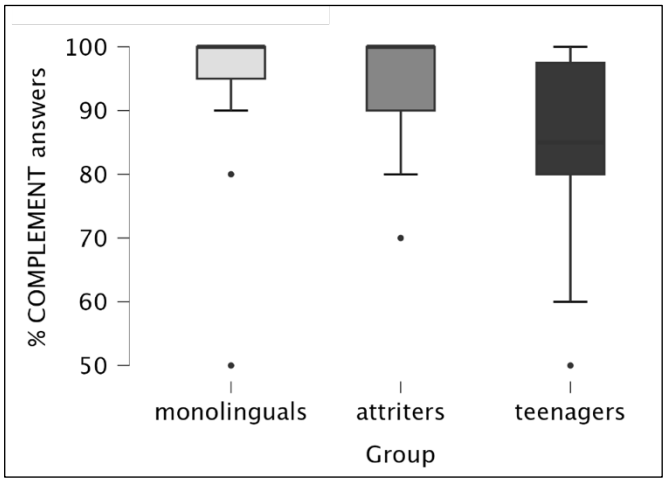
L'anziana signora$_i$ saluta la ragazza$_j$ mentre lei$_x$ attraversa la strada.

Monolinguals
mean = 4.5%. median = 0% SD = 11.9%

Attriters
mean = 18.0% median = 0%. SD = 35.1%

Teens
mean = 2.2% median = 0% SD = 4.2%

b) Percentage of *complement* referent answers



Example:

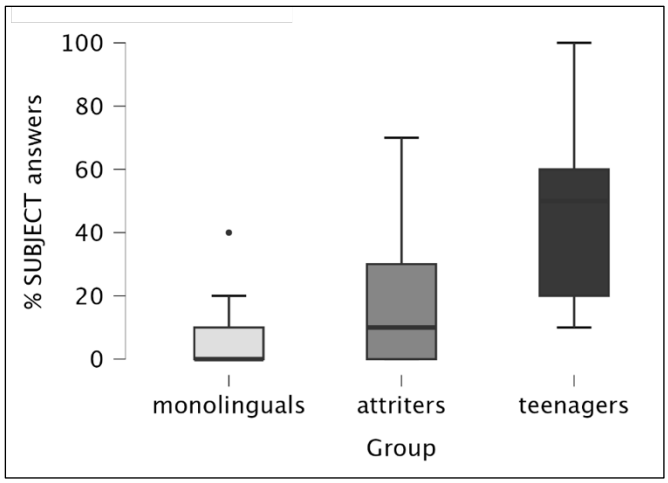
L'anziana signora$_i$ saluta la ragazza$_j$ mentre lei$_j$ attraversa la strada.

Monolinguals
mean = 92.0% median = 100% SD = 17.0%

Attriters
mean = 94.0% median = 100% SD = 9.4%

Teens
mean = 85.0% median = 85% SD = 13.3%

c) Percentage of *subject* referent answers



Example:

L'anziana signora$_i$ saluta la ragazza$_j$ mentre lei$_i$ attraversa la strada.

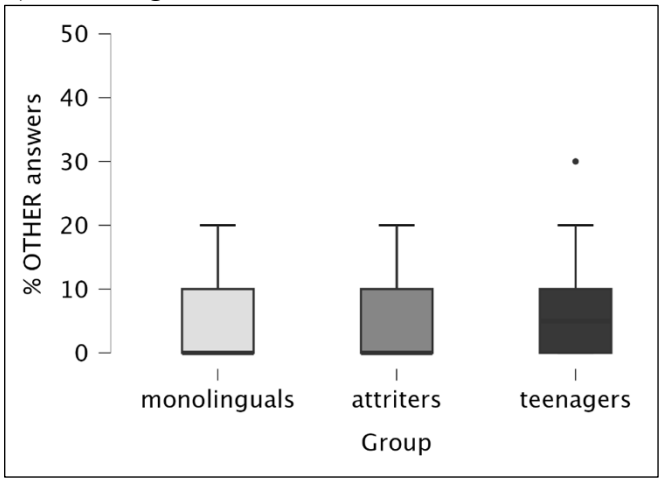
Monolinguals
mean = 6.0% median = 0% SD = 9.9%

Attriters
mean = 18.5% median = 10% SD = 21.3%

Teens
mean = 44.1% median = 50% SD = 24.2%

Figure 7 – Percentage of referent preferences for null pronouns

a) Percentage of *other* referent answers



Example:

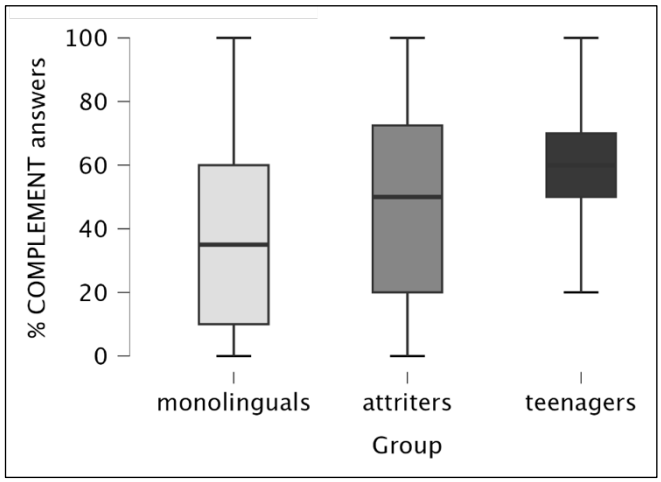
La nonna$_i$ mostra la foto alla nipote$_j$ mentre *pro*$_x$ fa colazione.

Monolinguals
mean = 5.5% median = 0% SD = 7.5%

Attriters
mean = 4.0% median = 0% SD = 5.9%

Teens
mean = 7.2% median = 5% SD = 8.8%

b) Percentage of *complement* referent answers



Example:

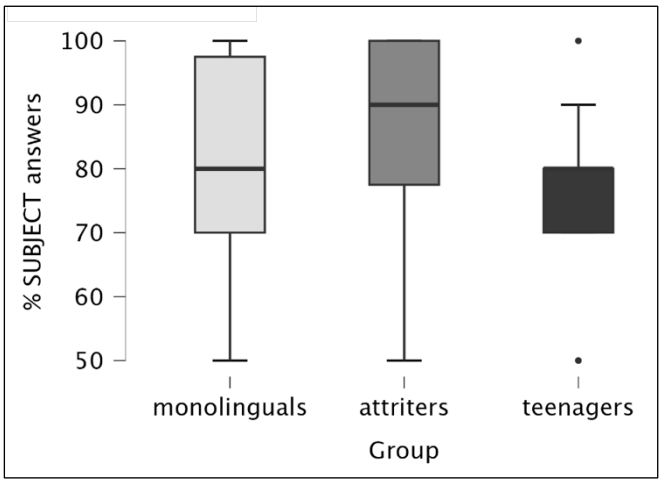
La nonna$_i$ mostra la foto alla nipote$_j$ mentre *pro*$_j$ fa colazione.

Monolinguals
mean = 38.0% median = 35% SD = 29.4%

Attriters
mean = 50.0% median = 50% SD = 30.4%

Teens
mean = 56.8% median = 60% SD = 20.5%

c) Percentage of *subject* referent answers



Example:

La nonna$_i$ mostra la foto alla nipote$_j$ mentre *pro*$_i$ fa colazione.

Monolinguals
mean = 77.0% median = 80% SD = 19.4%

Attriters
mean = 86.5% median = 90% SD = 15.3%

Teens
mean = 74.1% median = 80% SD = 17.9%

Overall, the boxplots in (Figure 6) show that all groups preferred the *complement* referent as antecedent of the overt pronoun (monolinguals mean = 92%; attriters mean = 94%; teenagers mean = 85%). As illustrated in (Figure 6a), the *other* referent was very unfrequently chosen as antecedent for the overt pronoun by all groups (monolinguals mean = 4.5%; attriters mean = 18%; teenagers mean = 2.2%). As for the *subject* referent answers illustrated in (Figure 6c), the three groups show a less homogeneous behaviour, especially monolinguals and teenagers (monolinguals mean = 6%; attriters mean = 18.5%; teenagers mean = 44.1).

Figure 7 shows that the preferred antecedent for the null pronoun is the *subject* for all groups (monolinguals mean = 77%; attriters mean = 86.5%; teenagers mean = 74%). This preference is not as sharp as the one for overt pronouns, in fact also the *complement* referent received a substantial percentage of answers (monolinguals mean = 38%; attriters mean = 50%; teenagers mean = 56.8%). The *other* referent remains the less preferred antecedent (monolinguals mean = 5.5%; attriters mean = 4%; teenagers: mean = 7.2%).

In order to investigate more deeply the behaviour of the three groups and find possible significant differences, repeated measures ANOVAs were conducted on the overt and null pronoun data illustrated above.[55]

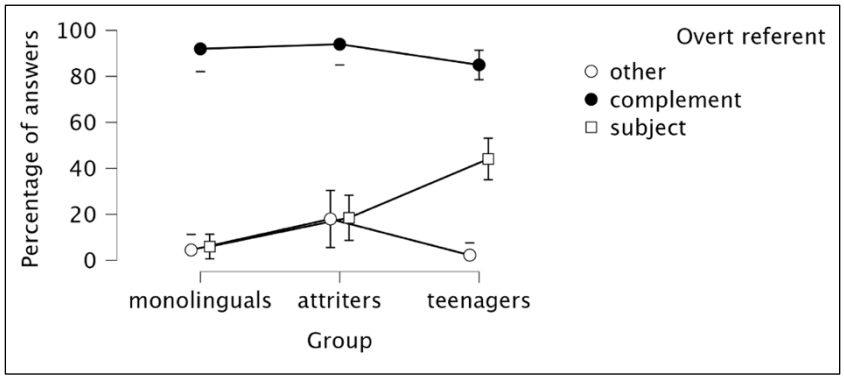
The results concerning the interpretation of overt pronouns show a significant difference between the behaviour of the three groups (Figure 8). In this condition, there is a significant main effect for Referent, $F(2, 118) = 350.713$, $p < .001$, a significant main effect for Group, $F(2, 59) = 5.262$, $p < .001$, and a significant interaction (Referent x Group: $F(4, 118) = 11.981$, $p < .001$). Post Hoc comparisons using the t Test with Holm correction indicate that there is no significant difference between either group in the choice of the *other* referent, nor *complement* referent. As for the *subject* referent, results show a significant difference between the behaviour of the monolinguals and teenagers groups (monolinguals: mean = 6%, SD = 9.9%; teenagers: mean = 44.1%, SD = 24.2%; $p < .001$), and the attriters and teenagers groups ($p < .001$). The difference between monolinguals and attriters for the *subject* referent is not significant.[56]

[55] The resulting JASP tables are reported in Appendix B (Table B).

[56] See Appendix B (Table C) for all by-subject Post Hoc results.

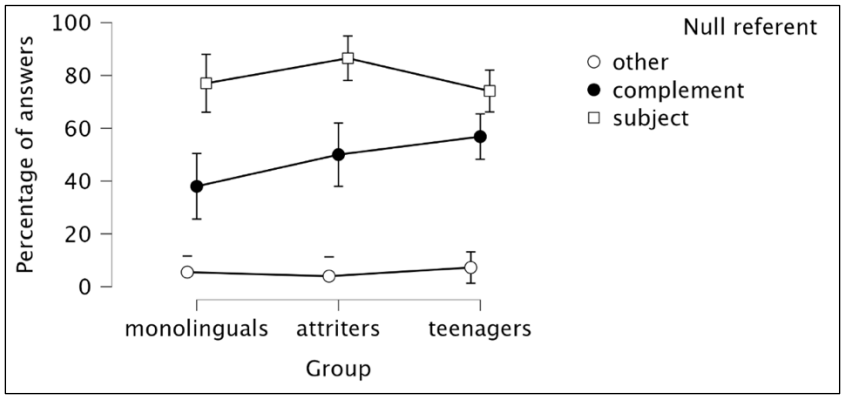
As for the null pronoun condition, the ANOVA with Huynh-Feldt Sphericity correction revealed only a significant main effect for Referent, F (1.554, 91.67) = 218.19, p < .001), but no significant interaction (Figure 9).

Figure 8 – Interaction plot for overt pronoun referents



The image illustrates the significant Referent x Group interaction

Figure 9 – Interaction plot for null pronoun referents



The image shows the lack of significant Referent x Group interaction

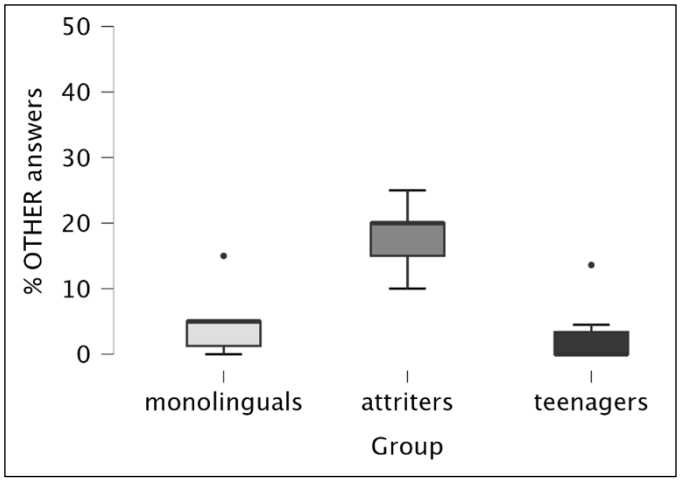
5.5.2 By-item analysis

When analysing the by-item data, the total number of answers given by each group (i.e., the sum of answers of each group's participants) to each referent for each item was divided by the number of the group's participants (representing the total number of times in which it was possible to choose that answer) and multiplied by 100. The resulting number is a balanced figure representing the cross-participants preference given by the three groups to each referent for each item.[57]

[57] All by-item descriptive statistics data can be found in Appendix B (Table D).

Figure 10 – Percentage of referent preferences for overt pronouns

a) Percentage of *other* referent answers



Example:

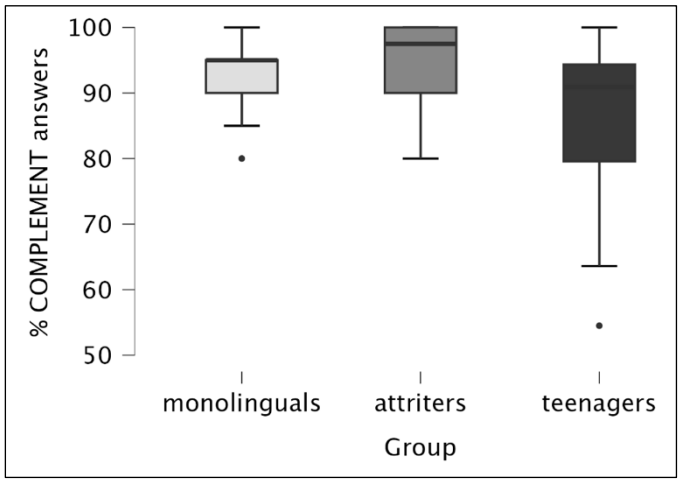
L'anziana signora$_i$ saluta la ragazza$_j$ mentre lei$_x$ attraversa la strada.

Monolinguals
mean = 4.5% median = 5% SD = 4.3%

Attriters
mean = 18.0% median = 20% SD = 4.2%

Teens
mean = 2.2% median = 0% SD = 4.4%

b) Percentage of *complement* referent answers



Example:

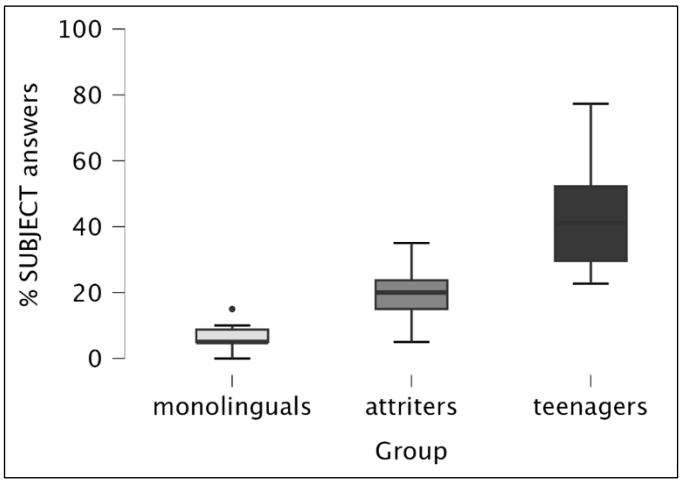
L'anziana signora$_i$ saluta la ragazza$_j$ mentre lei$_j$ attraversa la strada.

Monolinguals
mean = 92.0% median = 95% SD = 5.8%

Attriters
mean = 94.0% median = 97.5% SD = 7.3%

Teens
mean = 85.0% median = 90.9% SD = 15.3%

c) Percentage of *subject* referent answers



Example:

L'anziana signora$_i$ saluta la ragazza$_j$ mentre lei$_i$ attraversa la strada.

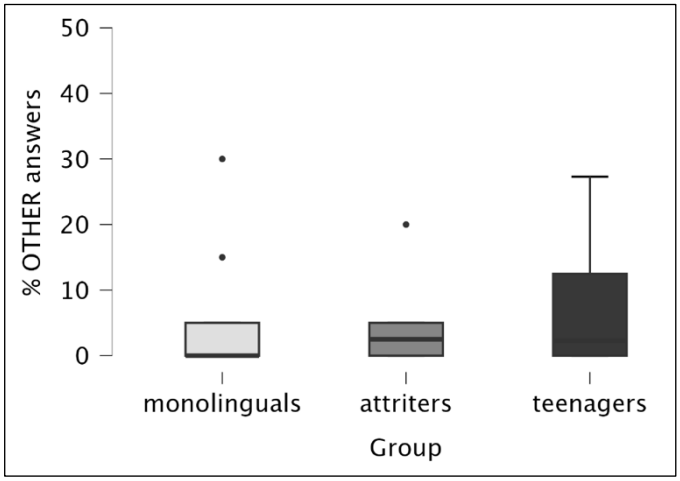
Monolinguals
mean = 6.0% median = 5% SD = 4.5%

Attriters
mean = 18.5% median = 20%. SD = 9.1%

Teens
mean = 44.1%. median = 40.9%. SD = 18.0%

Figure 11 – Percentage of referent preferences for null pronouns

a) Percentage of *other* referent answers



Example:

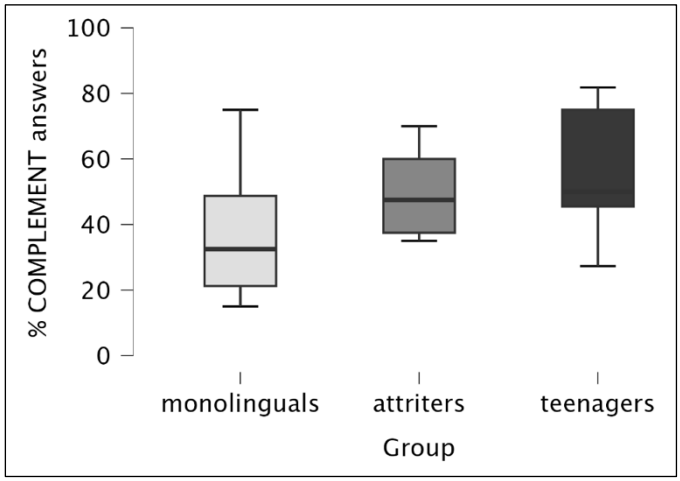
La nonna$_i$ mostra la foto alla nipote$_j$ mentre *pro*$_x$ fa colazione.

Monolinguals
mean = 5.5% median = 0% SD = 9.8%

Attriters
mean = 4.0% median = 2.5% SD = 6.1%

Teens
mean = 7.2% median = 2.2% SD = 9.6%

b) Percentage of *complement* referent answers



Example:

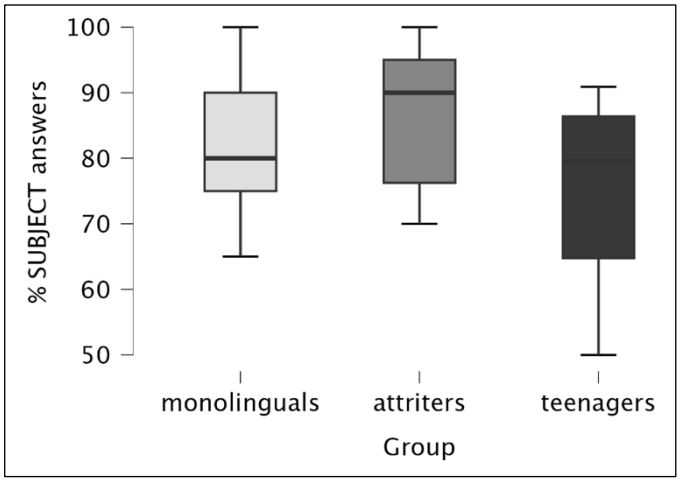
La nonna$_i$ mostra la foto alla nipote$_j$ mentre *pro*$_j$ fa colazione.

Monolinguals
mean = 38.0% median = 32.5% SD = 20.3%

Attriters
mean = 50.0% median = 47.5% SD = 13.1%

Teens
mean = 56.8% median = 50% SD = 19.1%

c) Percentage of *subject* referent answers



Example:

La nonna$_i$ mostra la foto alla nipote$_j$ mentre *pro*$_i$ fa colazione.

Monolinguals
mean = 77.0% median = 77.5% SD = 15.8%

Attriters
mean = 86.5% median = 90% SD = 10.5%

Teens
mean = 74.1% median = 79.5% SD = 15.3%

Figure 10 and 11 report the results of the by-item statistical analyses for null and overt pronoun antecedent preferences.

Although the overall preferences are the same as in the by-subject analysis, some values differ from the previous analysis, especially with respect to the *other* referent for overt pronouns, as illustrated by the contrast of (Figure 6a) and (Figure 10a).

The ANOVA results for overt pronoun preferences with Greenhouse-Geisser Sphericity correction, indicate a significant main effect for Group, $F(1.614, 14.528) = 30.603$, $p < .001$, and for Referent, $F(1.614, 10.480) = 260.006$, $p < .001$. The interaction Referent x Group is also significant, $F(1.674, 15.063) = 27.526$, $p < .001$.[58] Post Hoc comparisons using the t Test with Holm correction indicate that there is a significant difference for the *other* referent choice between monolinguals and attriters (monolinguals: mean = 4.5%, SD = 4.3%; attriters: mean = 18%, SD = 4.2%; $p = 0.002$) and attriters and teenagers (attriters: mean = 18%, SD = 4.2%; teenagers: mean = 2.2%, SD = 4.4%; $p < .001$). This result differs from the by-subject analysis outcome, where no significant difference was found. The three groups do not differ in the *complement* referent choice, in line with the by-subject analysis. As for the *subject* choice, all groups differences are significant: teenagers behave differently from monolinguals (teenagers: mean = 44.1%, SD = 18%; monolinguals: mean = 6%, SD = 4.5%; $p < .001$) and attriters (mean = 18.5%, SD = 9.1%; $p < .001$), as in the by-subject analysis; in addition, the by-item analysis reveals a significant difference also between monolinguals and attriters (monolinguals: mean = 6%, SD = 4.5%; attriters: mean = 18.5%, SD = 9.1%; $p = 0.005$).

The ANOVA results for null pronoun preferences with Greenhouse-Geisser Sphericity correction, contrary to the by-subject analysis, shows a significant interaction (Group x Referent, $F(2.581, 23.23) = 6.18$, $p = 0.004$). Post Hoc comparisons using the t Test with Holm correction indicate a significant difference in the *complement* referent choices between monolinguals and attriters (monolinguals: mean = 38%, SD = 20.3%; attriters: mean = 50%, SD = 13.1%; $p = 0.010$), and monolinguals and teenagers (monolinguals: mean = 38%, SD = 20.3%; teenagers: mean = 56.8%, SD = 19.1%; $p < .001$). There is also a significant difference in the *subject* choices between attriters and teenagers (attriters: mean = 85.5%, SD = 10.5%; teenagers: mean = 74.1%, SD = 15.3%; $p = 0.008$).[59]

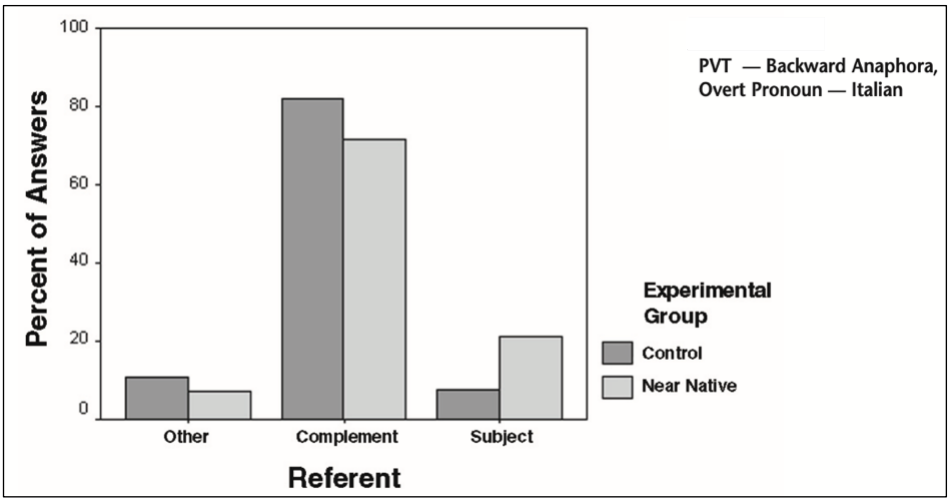
[58] All by-item ANOVAs results can be found in Appendix B (Table E).

[59] See Appendix B (Table F) for all by-item Post Hoc results.

5.5.3 Tsimpli et al. (2004) results

The original study by Tsimpli et al. (2004) involved an experimental group composed of Italian near-native speakers of English (n =20) living in the UK, and a control group composed of Italian monolinguals living in Italy (n =20). The methodology is the same as the one adopted for the present study, illustrated in 5.1 and 5.2. Figure 12 and 13 report the results of the study.

Figure 12 – Tsimpli et al. (2004) results for overt pronoun referent preferences

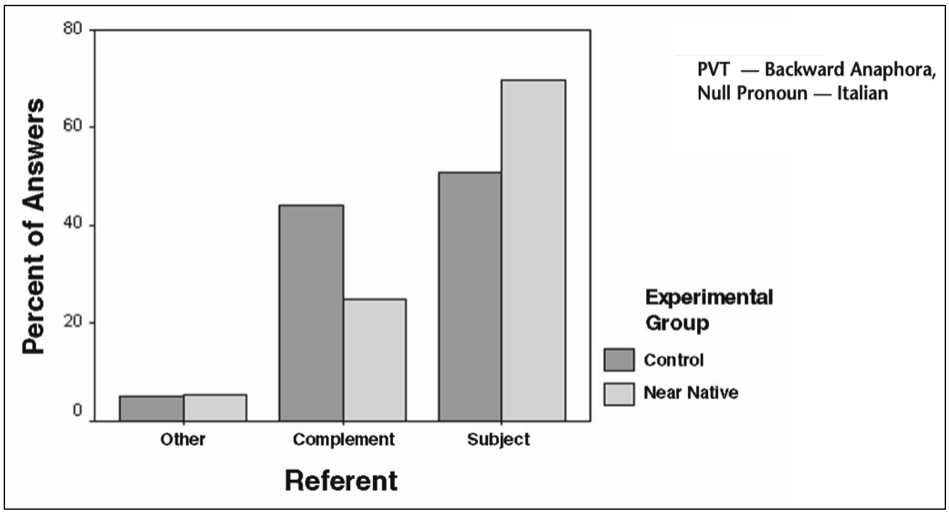


Near Native:
Other: 6.9%
Complement: 72%
Subject: 21%

Controls:
Other: 10.4%
Complement: 82%
Subject: 7.6%

Source: Tsimpli et al. (2004:271), their Figure 7

Figure 13 – Tsimpli et al. (2004) results for null pronoun referent preferences



Near Native:
Other: 5.4%
Complement: 24.8%
Subject: 69.8%

Controls:
Other: 5.2%
Complement: 44.05%
Subject: 50.75%

Source: Tsimpli et al. (2004: 271), their Figure 6

Results of this study for overt referent preferences report a significant interaction between Referent and Group, F (2, 38) = 3.405, p < .049, due to significantly different *subject* referent choices between the monolinguals and attriters group, F (2,38) = 6.682, p < .014. These results are in line with our by-item ANOVA results; however, it is not possible to make a definitive comparison, because the study does not explicitly report the type of analysis conducted.
As for null pronoun referents, the study reports a significant interaction between Referent and Group, F (2, 38) = 8.433, p < .0001, resulting from the difference between monolinguals and attriters for the *subject* choice, F (2, 38) = 8.49, p < .006, and *complement* choice, F (2, 38) = 10.48, p < .003. These results are similar to our by-item ANOVA results.

Table 5 summarises the significant results of the ANOVAs conducted for the present study and compares them with the original study's findings.
Comparing the final results of the present study with the original one's, the data in (Table 5) illustrate that the same behaviour is observed in the overt pronoun condition for *other* and *complement* referents, and partially for the *subject* referent. As for the null pronoun condition, the two studies differ in the significance of findings for the *complement* and *subject* referent. These results and their implications will be discussed in the next section.

Table 5 – Significant results comparison

	Overt pronoun									Null pronoun								
	other			complement			subject			other			complement			subject		
	M/A	M/T	T/A	M/A	M/T	T/A	M/A	M/T	T/A	M/A	M/T	T/A	M/A	M/T	T/A	M/A	M/T	T/A
By-Subject	–	–	–	–	–	–	–	+	+									
By-Item	+	–	+	–	–	–	+	+	+	–	–	–	+	+	–	–	–	+
Final	(✗)	✗	(✗)	✗	✗	✗	(✗)	✓	✓	✗	✗	✗	(✗)	(✗)	✗	✗	✗	(✗)
Tsimpli (2004)	✗	N/A	N/A	✗	N/A	N/A	✓	N/A	N/A	✗	N/A	N/A	✓	N/A	N/A	✓	N/A	N/A

The table reports the significant differences for each group comparison (M = monolinguals, A = attriters, T = teenagers), where [–] indicates lack of significance, and [+] presence of significance. Empty cells indicate the analysis was not conducted because the interaction Referent x Group was not significant, while N/A indicates the analysis is not applicable because the study did not involve the relative groups. Data is reported for the original and the present study, the latter for by-subject and by-item analyses, separately. On the assumption that the null hypothesis should be rejected only if significant results are observed for both the by-subject and by-item analyses, the "final" row reports whether the null hypothesis should be overall rejected [✓], or not [✗]. The bracketed [(✗)] indicates only one of the two analysis found significant differences.

5.5.4 BLP results

The BLP was administered to the attriters group to assess their bilingualism balance and to investigate possible correlations with attrition effects.

The resulting dominance scores (ranging from 32.8 to 149.8) confirm high levels of dominance for the native language Italian, as expected by the fact that the attriters under investigation live in their native country (mean score = 98.07, median = 103.55, SD = 30.04).[60]

A Pearson's correlation analysis was conducted to investigate possible correlations between attrition effects (represented in our study by the percentage of overt *subject* referent choices) and the BLP dominance score, but no such effect was found, r (18) = -0.068, p = 0.775. Additional correlation analyses were conducted for attrition effects and the four modules of the BLP separately, but again no correlation was found: language history, r (18) = 0.288, p = 0.218; language use, r (18) = -0.115, p = 0.628; language proficiency, r (18) = -0.234, p = 0.320; language attitude, r (18) = 0.120, p = 0.614. These results suggest that it is not possible to predict the presence of attrition effects basing on BLP scores.

5.6 Discussion

A preliminary consideration should be done concerning the *other* referent answers. In fact, despite it is certainly possible for an overt pronoun to refer to a third "unknown" referent, as it was intended in the experimental pictures, the percentage of choice of this referent is very low for all groups for null pronouns, as expected (monolinguals mean = 5.5%; attriters mean = 4%; teenagers mean = 7.2%) but also for overt pronouns (monolinguals mean = 4.5%; attriters mean = 18%; teenagers mean = 2.2%), for which it should represent a valid choice. The reason behind this unexpected result could be the difficulty in associating an "unknown" referent with a pronominal form (52a), whose use more commonly assumes shared-knowledge of its antecedent, that is, a referent which has already been introduced in the matrix sentence (i.e., the subject or the object). In fact, a participant who found the *other* picture option systematically "strange" commented that in such cases she would have expected a "real nominal", meaning a referential expression, such as a proper name (52b) or a DP (52c).

[60] The BLP dominance score ranges from –218 to +218. A score near zero indicates balanced bilingualism and more positive or more negative scores reflect respective language dominance. See Appendix A for details of BLP items and scores.

(52) a. L'anziana signora$_i$ saluta la ragazza$_j$ mentre lei$_x$ attraversa la strada
b. L'anziana signora$_i$ saluta la ragazza$_j$ mentre Emma$_x$ attraversa la strada
c. L'anziana signora$_i$ saluta la ragazza$_j$ mentre la donna$_x$ attraversa la strada

Therefore, we interpret the fact that the same unexpected result is found in Tsimpli et al. (2004) as a consequence of the experimental stimuli design, rather than the impossibility of the pronoun to corefer with a third referent.

5.6.1 Attrition effects – monolinguals vs attriters

Following the literature on language attrition, this study hypothesised the presence of attrition effects in the attriters group, manifesting as increased optionality in the overt pronoun referent choices. In particular, as the original study shows, attrition is held responsible for the possibility of an overt pronoun to be interpreted as a continued topic, where monolingual PAS would limit its interpretation to topic-shift contexts. This hypothesis is confirmed by the increased percentage of answers for the *subject* referent given by attriters (mean = 18.5%) vs monolinguals (mean = 6%), both in the by-subject analysis (Figure 6c) and by-item analysis (Figure 10c). Although this difference is significant only in the by-item analysis, and therefore the null hypothesis cannot be definitely rejected, we are inclined to considering this result as evidence of attrition effects, or a co-occurrence of attrition and linguistic change (see the discussion in 5.6.2). As a further support to this view, an additional by-subject one-way ANOVA was conducted specifically for the *subject* referent choices of attriters and monolinguals. The assumption is that attrition does not affect the preference for the *other* and *complement* referents, for which in fact there is no significant difference between the two groups (Figure 8), but only the possibility of the *subject* referent to be interpreted as a continued topic. The results of this analysis showed a significant difference between the *subject* referent choices of monolinguals and attriters, $F(1,38) = 5.636$, $p = 0.023$. This significant difference is probably obscured when the other referents are added in the repeated measures ANOVA, since for those referents there is no difference between the choices of the two groups.
Overall, the results of the present research are quantitatively similar (although with statistical significance differences) to the original study investigating attrition in L2 contexts, and support our prediction that attrition effects can be found in proficient L2 speakers in native contexts.
The results are also qualitatively comparable to those of the original study and support the IH: attrition emerges as increased optionality at the external syntax-discourse interface regulating

the interpretation of overt pronouns. They are also compatible with the underspecification account proposed by Tsimpli et al. (2004), suggesting that an interpretable feature specified for a given value in the L1 (in this case, [+ topic shift]) can become unspecified because of the absence of a corresponding interpretable feature in the L2.

As for null pronouns referents (Figure 7 and 11), the *subject* interpretation is preferred by both groups (monolinguals mean = 77%; attriters mean = 86.5%). Such preference is not as strong as in the overt pronoun case: the null pronoun interpretation seems to be more ambiguous between the *subject* referent and the *complement* referent (monolinguals mean = 38%, attriters mean = 50%). The difference between these preferences is significant in the by-item analysis for the *complement* referent only (Figure 11b), while in the by-subject analysis no Group x Referent interaction is found. Nevertheless, the two groups's preferences are proportionate, suggesting a similar level of ambiguity and a qualitatively similar interpretation between monolinguals and attriters – a result which further supports the IH and underspecification accounts. Note that in the original study (Figure 13), attriters showed a very strong preference for the *subject* referent vs *complement* (mean = 69.8% and 24.8%, respectively), whereas the control group allowed for either referent more indistinctively (*subject* mean = 44.05%; *complement* mean = 50.75%). This disproportion, which Tsimpli et al. hypothesise may stem from the attriters' interpretation of the subordinate clause as a nonfinite one, is not found in our study and could be due to case, or other factors such as age or the regional variety of Italian spoken by the controls, which are not specified in the original study.

The lack of correlations with the BLP scores found in our study is not an exception in attrition literature. On the contrary, it is in line with several other studies (Schmid, 2007; Köpke, 2018; Yilmaz & Schmid, 2018; Gallo et al., 2021), which report that the degree to which internal and external factors impact on attrition is not as straightforward as expected. Nevertheless, it does not follow that these factors do not have an impact whatsoever, but rather, they show that the relationship between attrition and said factors is a complex and non-linear one. Although the BLP investigates in detail various linguistic and extralinguistic aspects, all of which have reasons to be considered predictors of attrition individually and all-together, it could be that the specific aspects targeted by the BLP items are not significantly relevant for the study of attrition, or at least for the specific phenomenon investigated in the present study. It does not mean that these factors do not matter overall, but rather that in our study the BLP items proved unable to establish such correlations. For example, the BLP does not take into account factors such as the *mode* in which language use takes place (as in Grosjean, 2001. See chapter 4.2),

which has proved particularly relevant for attrition (Schmid, 2007). Correlations between attrition effects and language use could thus be undermined by the lack of specific items targeting the relevant aspect for attrition: language mode.

Moreover, the BLP is inevitably limited by its self-report nature, which is influenced by subjective factors which could bias the self-assessed responses. On the other hand, it would be difficult to design an objective assessment for some extralinguistic aspects, such as language attitudes, in speakers like the participants to our study.

The lack of correlations between attrition effects and BLP scores (5.4.4) is not seen as a limitation, but supports the idea that attrition is an individual psycholinguistic phenomenon, linked with bilingualism through yet unclear factors, in line with Schmid & Köpke (2013) and Yilmaz and Schmid (2018).

5.6.2 Linguistic change – teenagers preferences

The literature review illustrated in 3.3.2 indicates an ongoing process of linguistic change concerning the weakening of overt pronouns. This process results in the overextension of overt pronominal forms to [– topic shift] contexts, with the same distribution as weak pronouns such as the null pronoun *pro*.

The results clearly confirm this tendency, as shown by the very high percentage of *subject* referent choices of the teenagers group (mean = 44.1%). This result is significantly different from the monolingual group (mean = 6%), and also from the attriters group (mean = 18.5%), both in by-item and by-subject analyses (Figure 6c and 10c). It can thus be concluded that the interpretation of overt pronouns in the Italian language is subject to a process of linguistic change, independently of attrition effects, since the latter cannot be responsible for the behaviour of the teenagers group. The effects of attrition and linguistic change thus appears to be qualitatively equivalent, as suggested in Cardinaletti (2004). As illustrated in (Table 5), the *subject* choice for overt pronouns is the referent with the highest number of significant variations among all groups (5 significant differences out of 6 comparisons for this referent), whereas the other referents in the other conditions show little to no variation, suggesting the affinity of the effects of this linguistic change to those of attrition. In fact, as for null pronouns, teenagers' choices are not different from the other groups overall, supporting the similarity of scope of attrition effects and linguistic change, in that they are both limited to the interpretation of overt pronouns.

From a quantitative point of view, linguistic change seems to produce a greater optionality than attrition, as demonstrated by the significant difference between attriters (mean = 44.1%) and monolinguals (mean = 18.5%) in *subject* choices.

If teenagers' preferences can rather straightforwardly be attributed to linguistic change, excluding attrition effects because of their minimum knowledge of English, attriters preferences, on the other hand, cannot be attributed to attrition effects only, excluding a priori the possibility of language change effects as a contributing factor. We thus come to the third research question: can we discriminate between attrition effects and linguistic change basing on our data? This is perhaps the most complicated issue for this study. On the assumption that attrition affects individual linguistic behaviour, while linguistic change can affect the overall grammatical system of communities, we hypothesised that the increased possibility of overt pronouns as continued topic would be more homogeneous among teenagers, while for attriters we expected a greater variation in individual behaviour.

In order to test this, we looked at standard deviations (SD) in the by-subject analysis, assuming that, if our prediction was correct, data should have shown a low SD in teenagers, and a higher SD in attriters. However, the prediction was not borne out: the two groups have a very similar standard deviation (attriters: 21.3%; teenagers: 24.2%). This result is unexpected independently of the similarity between the two groups, because the teenagers SD is rather high compared to the monolinguals one (SD = 9.9%). This could suggest that the linguistic change, while undeniably present, is not in its definitive phase and therefore, its effects are not yet stable enough among the population to result in a homogeneous behaviour.

Drawing on Renzi (2000) analysis (see footnote 30), our data suggests the weakening of strong pronouns is only in its initial phases, where a new form is used in new contexts (i.e., overt pronouns are used in [– topic shift] contexts) but the old form (i.e., overt pronouns in [+ topic shift] contexts) is still largely used and preferred. This is confirmed by the preferences of teenagers, where the interpretation of the overt pronoun consistently allows the [– topic shift] subject referent (mean = 44.01%), but its preferred interpretation remains the [+ topic shift] *complement* referent (85%). Moreover, a decrease in *complement* choices can be observed between the teenagers and the monolinguals groups (teenagers mean = 85%; monolinguals mean = 92%), which could indicate that a certain competition between the two forms has been established within the teenagers group; that is, the increase of *subject* interpretations leads to a decrease of the alternative old form *complement.* If this is the typical way in which linguistic change proceeds, then the fact that attriters behave like monolinguals in their *complement*

choices (mean = 94%), since no decrease is observed, favours attrition as the main cause of the attriters behaviour for the *subject* referent. At the same time, we are aware that linguistic change operates over long periods, and therefore, if the teenagers' generation shows significant effects of linguistic change, the attriters' population, which is 10-20 years older, cannot be completely immune to it: even the monolingual group show what could be interpreted as linguistic change effects, since, although rarely, they allow some continued topic interpretation for the overt pronoun (mean = 6%). For this reason, we follow Cardinaletti (2004a) in suggesting that a concausality of attrition effects and linguistic change is responsible for the increased optionality in the attriters group.

Lastly, we report a further comparison that we believe is relevant for the present discussion. We have now established that both attrition and linguistic change cause the increased possibility of a continued topic as an overt pronoun antecedent, an effect that in what follows we will call overextension. We compared the percentages of attriters and teenagers who show overextension, calculated as the ratio between the number of participants who chose the *subject* referent for the overt pronoun at least once, and the total number of participants. The resulting percentages are 65% for attriters and 100% for teenagers. Drawing once again on our initial prediction that attrition affects individual behaviour, while linguistic change involves communities, these results seem to support our view. In fact, the totality (100%) of the teenagers allowed for the overt referent to co-refer with the matrix subject in at least one item. It seems interesting to observe that the percentage of attriters showing overextension effects is consistently lower (65%), although we cannot go further with our predictions as to whether this difference is a matter of competence or performance. As Schmid (2003) points out for lexical attrition, there is no reason to conclude that just because a speaker borrowed an L2 item in a particular circumstance, his/her competence lacks the L1 lexical counterpart; it simply means that in that occasion, the L2 item seemed more appropriate or more easily accessible. The same applies to our results: just because not all attriters indicated the *subject* referent for overt pronouns, it does not follow that they lack the competence of such form. We can only go as far as noticing that in the specific context of our experimental stimuli, 35% of potential attriters never interpreted the overt pronoun as a continued topic.

To sum up, the results of the present study show that syntactic attrition effects can also be found in exclusively native contexts. This study confirms that attrition emerges as the increase of continued topic interpretation for overt pronouns in backward anaphora contexts. This result is

overall qualitatively and quantitatively comparable to those of other attrition studies in L2-immersion contexts and supports the Interface Hypothesis. However, attrition is not the only phenomenon responsible for the increased optionality in overt pronoun interpretations: an independent process of linguistic change with similar effects is ongoing in the Italian language. Our results for the teenagers group confirm the consistent presence of linguistic change effects and their affinity to attrition effects. Lastly, the distinction between attrition and linguistic change effects proved particularly challenging, as hypothesised. Our results provide some hints to distinguish between the two causes, which however remain strictly interwoven.

Conclusions

The present research aimed at challenging the view of attrition as a phenomenon only occurring in L2-immersion contexts, rather than potentially affecting all bilinguals, including those living in their L1 country. In particular, the study investigated the interpretation of null and overt pronouns in backward anaphora by Italian proficient L2 speakers of English living in Italy, replicating the picture verification task in Tsimpli et al. (2004). The same task was administered to an Italian monolingual adults group and a teenagers group, to test the effects of attrition on the one hand, and language change on the other. Both phenomena result in the overextension of overt subjects in continued topic contexts, rather than limit overt forms in contexts of topic shift.

The results of multiple repeated measures ANOVAs showed that attrition effects can be found in proficient L2 speakers in native contexts, supporting our initial hypothesis. Our results are qualitatively in line with the original study and more generally with the Interface Hypothesis (Sorace & Filiaci, 2006), according to which attrition only affects the external syntax-discourse interface, which regulates the interpretation of overt forms, leaving core syntactic options such as the availability of null pronouns unaffected. From a quantitative point of view, our results are overall in line with the original study (although with some statistical significance differences): the percentage of choice of the matrix subject as possible antecedent for an overt pronoun is more than double in the attriters group with respect to the monolingual group.

No correlation could be established between attrition effects and the Bilingual Language Profile score, or any of its modules (i.e., language history, language use, language proficiency and language attitude).

Our results for the teenagers group confirm the consistent presence of linguistic change effects, a result that on the one hand is supported by the studies of Cardinaletti (2004a; 2004b; 2021), and on the other, offers valid quantitative experimental data in support of the aforementioned literature. As expected, the distinction between attrition effects and linguistic change proved particularly challenging, and our analysis could only be limited to the observation of the unlikeliness of attrition being the cause of the observed increased optionality in teenagers, who have minimum knowledge of English. On the other hand, it was not possible to determine in a definitive way if language change or attrition is responsible for the behaviour of attriters, although our discussion pointed at some hints to distinguish between the two phenomena: the

comparison of individual variation within the groups, the percentage of participants showing overextension, and participants' behaviour with respect to the *complement* referent choices.

Basing on our data and following Cardinaletti (2004a), our conclusion is that the peculiarities in the behaviour of the attriters group stem from the concausality of attrition and linguistic change. This integrated view is perhaps even more appropriate for the phenomenon under investigation: it is probably incongruent to try to categorically distinguish the two, because this would deny the complex and ever-evolving nature of languages and their interactions.

APPENDIX

Appendix A

This appendix contains the items of the Bilingual Language Profile (BLP) administered in Italian to the bilingual group. The BLP is an instrument for assessing language dominance through self-reports (Birdsong et al., 2012); it is composed of an introductory section for biographical information and 4 modules designed to assess the different dimensions of dominance:

Biographical Information

- Name
- Age
- Sex
- Place of residence
- Highest level of formal education

Module 1: Language History

- Age of acquisition
- Age at which you became comfortable using each language
- Years of schooling in each language
- Years spent in a country or region where each language is spoken
- Years spent in a family where each language is spoken
- Years spent in a work or school environment where each language is spoken

Module 2: Language Use

- Percentage of use in an average week with friends
- Percentage of use in an average week with family
- Percentage of use in an average week at school or work
- How often you talk to yourself in each language
- How often you use each language when counting

Module 3: Language Proficiency

- How well you speak each language
- How well you understand each language
- How well you write each language
- How well you read each language

Module 4: Language Attitudes

- Degree to which you feel like yourself when speaking each language
- Identification with cultures that speak each language
- Importance of using each language like a native speaker
- Importance of being mistaken for a native speaker

The total number of items is 19. Answers are scalar and associated with a certain point value. Each module has a different number of items, which produces a module-internal score. To ensure that each module receives equal weighting in the global language score, the score for

each module is first calculated separately, and then multiplied by a weighting coefficient. The final dominance score ranges from –218 to +218. A score near zero indicates balanced bilingualism and more positive or more negative scores reflect respective language dominance. The following table reports the BLP items used for the study and the relative answer options:

Module	Item	Answer options
Language history	- A quale età hai iniziato a imparare l'italiano? - A quale età hai iniziato a imparare inglese?	0 (from birth) – 20
	- A quale età hai iniziato a sentirti a tuo agio parlando italiano? - A quale età hai iniziato a sentirti a tuo agio parlando inglese?	
	- Per quanti anni hai ricevuto un'istruzione (grammatica, storia, matematica, etc..) in italiano (a partire dalla scuola primaria fino all'università)? - Per quanti anni hai ricevuto un'istruzione (grammatica, storia, matematica, etc..) in inglese (a partire dalla scuola primaria fino all'università)?	0 – 20
	- Quanti anni hai trascorso in un Paese in cui si parla italiano? - Quanti anni hai trascorso in un Paese in cui si parla inglese?	
	- Quanti anni hai trascorso in famiglia parlando italiano? - Quanti anni hai trascorso in famiglia parlando inglese?	
	- Quanti anni hai trascorso in un ambiente di lavoro in cui si parla italiano? - Quanti anni hai trascorso in un ambiente di lavoro in cui si parla inglese?	
Language use	- In una settimana normale, in che percentuale di tempo usi l'italiano con i tuoi amici? - In una settimana normale, in che percentuale di tempo usi l'inglese con i tuoi amici? - In una settimana normale, in che percentuale di tempo usi altre lingue con i tuoi amici?	0% – 100% *(the sum of the percentages must equal 100%)*
	- In una settimana normale, in che percentuale di tempo usi l'italiano con la tua famiglia? - In una settimana normale, in che percentuale di tempo usi l'inglese con la tua famiglia? - In una settimana normale, in che percentuale di tempo usi altre lingue con la tua famiglia?	
	- In una settimana normale, in che percentuale di tempo usi l'italiano con al lavoro? - In una settimana normale, in che percentuale di tempo usi l'inglese con al lavoro? - In una settimana normale, in che percentuale di tempo usi altre lingue al lavoro?	
	- Quando parli con te stesso, con quale frequenza parli in italiano? - Quando parli con te stesso, con quale frequenza parli in inglese? - Quando parli con te stesso, con quale frequenza parli in altre lingue?	
	- Quando fai calcoli, con quale frequenza conti in italiano? - Quando fai calcoli, con quale frequenza conti in inglese? - Quando fai calcoli, con quale frequenza conti in altre lingue?	

Language proficiency	- Come parli italiano? - Come parli inglese?	0 (= I disagree) – 6 (I agree)
	- Quanto capisci l'italiano? - Quanto capisci lo inglese?	
	- Come leggi in italiano? - Come leggi in inglese?	
	- Come scrivi in italiano? - Come scrivi in inglese?	
Language attitude	- Mi sento "me stesso" quando parlo italiano. - Mi sento "me stesso" quando parlo inglese.	0 (= I disagree) – 6 (I agree)
	- Mi identifico con una cultura italofona. - Mi identifico con una cultura anglofona.	
	- Per me è importante raggiungere e usare l'italiano a livello nativo. - Per me è importante raggiungere e usare l'inglese a livello nativo.	
	- Voglio che gli altri pensino che io sia un parlante nativo di italiano. - Voglio che gli altri pensino che io sia un parlante nativo di inglese.	

Appendix B

This appendix contains additional data and tables of the statistical analysis conducted on JASP and presented in the results section.

Table A1 – Overt referents by-subject descriptives

	% overt OTHER answers			% overt COMPLEMENT answers			% overt SUBJECT answers		
	monolinguals	attriters	teenagers	monolinguals	attriters	teenagers	monolinguals	attriters	teenagers
Valid	20	20	22	20	20	22	20	20	22
Median	0.000	0.000	0.000	100.000	100.000	85.000	0.000	10.000	50.000
Mean	4.500	18.000	2.273	92.000	94.000	85.000	6.000	18.500	44.091
Std. Deviation	11.910	35.184	4.289	17.045	9.403	13.363	9.947	21.343	24.233
Minimum	0.000	0.000	0.000	40.000	70.000	50.000	0.000	0.000	10.000
Maximum	50.000	100.000	10.000	100.000	100.000	100.000	40.000	70.000	100.000

The table reports some descriptive statistics for the overt pronoun preferences between the three experimental groups.

Table A2 – Null referents by-subject descriptives

	% null OTHER answers			% null COMPLEMENT answers			% null SUBJECT answers		
	monolinguals	attriters	teenagers	monolinguals	attriters	teenagers	monolinguals	attriters	teenagers
Valid	20	20	22	20	20	22	20	20	22
Median	0.000	0.000	5.000	35.000	50.000	60.000	80.000	90.000	80.000
Mean	5.500	4.000	7.273	38.000	50.000	56.818	77.000	86.500	74.091
Std. Deviation	7.592	5.982	8.827	29.487	30.435	20.560	19.494	15.313	17.904
Minimum	0.000	0.000	0.000	0.000	0.000	20.000	40.000	50.000	30.000
Maximum	20.000	20.000	30.000	100.000	100.000	100.000	100.000	100.000	100.000

The table reports some descriptive statistics for the null pronoun preferences between the three experimental groups.

Table B1 – by-subject ANOVA results for overt pronoun referent preferences

Within Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p	η_p^2
Overt referent	237227.244	2	118613.622	350.713	< .001	0.856
Overt referent ∗ Group	16208.719	4	4052.180	11.981	< .001	0.289
Residuals	39908.485	118	338.207			

Note. Type III Sum of Squares

Between Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p	η_p^2
Group	3658.583	2	1829.291	5.262	0.008	0.151
Residuals	20509.697	59	347.622			

Note. Type III Sum of Squares

The table reports the outcome of the repeated measures ANOVA conducted on JASP for the overt pronoun referent preferences.

Table B2 – by-subject ANOVA results for null pronoun referent preferences

Within Subjects Effects

Cases	Sphericity Correction	Sum of Squares	df	Mean Square	F	p	η_p^2
Null referent	Huynh-Feldt	169040.407	1.554	108797.029	218.190	< .001	0.787
Null referent ✻ Group	Huynh-Feldt	4007.507	3.107	1289.647	2.586	0.056	0.081
Residuals	Huynh-Feldt	45709.697	91.670	498.635			

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated (p < .05).

Between Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p	η_p^2
Group	1612.522	2	806.261	2.490	0.092	0.078
Residuals	19105.758	59	323.826			

Note. Type III Sum of Squares

The table reports the outcome of the repeated measures ANOVA conducted on JASP for the null pronoun referent preferences.

Table C – Post Hoc test results for by-subject overt pronoun referent preferences

Post Hoc Comparisons - Group ✻ Overt referent ▼

		Mean Difference	SE	t	p_{holm}
monolinguals, other	attriters, other	−13.500	5.842	−2.311	0.220
	teenagers, other	2.227	5.708	0.390	1.000
	monolinguals, complement	−87.500	5.816	−15.046	< .001
	attriters, complement	−89.500	5.842	−15.319	< .001
	teenagers, complement	−80.500	5.708	−14.103	< .001
	monolinguals, subject	−1.500	5.816	−0.258	1.000
	attriters, subject	−14.000	5.842	−2.396	0.194
	teenagers, subject	−39.591	5.708	−6.936	< .001
attriters, other	teenagers, other	15.727	5.708	2.755	0.078
	monolinguals, complement	−74.000	5.842	−12.666	< .001
	attriters, complement	−76.000	5.816	−13.068	< .001
	teenagers, complement	−67.000	5.708	−11.738	< .001
	monolinguals, subject	12.000	5.842	2.054	0.332
	attriters, subject	−0.500	5.816	−0.086	1.000
	teenagers, subject	−26.091	5.708	−4.571	< .001
teenagers, other	monolinguals, complement	−89.727	5.708	−15.719	< .001
	attriters, complement	−91.727	5.708	−16.070	< .001
	teenagers, complement	−82.727	5.545	−14.919	< .001
	monolinguals, subject	−3.727	5.708	−0.653	1.000
	attriters, subject	−16.227	5.708	−2.843	0.065
	teenagers, subject	−41.818	5.545	−7.542	< .001
monolinguals, complement	attriters, complement	−2.000	5.842	−0.342	1.000
	teenagers, complement	7.000	5.708	1.226	1.000
	monolinguals, subject	86.000	5.816	14.788	< .001
	attriters, subject	73.500	5.842	12.580	< .001
	teenagers, subject	47.909	5.708	8.393	< .001
attriters, complement	teenagers, complement	9.000	5.708	1.577	0.817
	monolinguals, subject	88.000	5.842	15.062	< .001
	attriters, subject	75.500	5.816	12.982	< .001
	teenagers, subject	49.909	5.708	8.743	< .001
teenagers, complement	monolinguals, subject	79.000	5.708	13.840	< .001
	attriters, subject	66.500	5.708	11.650	< .001
	teenagers, subject	40.909	5.545	7.378	< .001
monolinguals, subject	attriters, subject	−12.500	5.842	−2.140	0.304
	teenagers, subject	−38.091	5.708	−6.673	< .001
attriters, subject	teenagers, subject	−25.591	5.708	−4.483	< .001

Note. P-value adjusted for comparing a family of 36

Table D1 – Overt referents by-item descriptives

	% overt OTHER answers			% overt COMPLEMENT answers			% overt SUBJECT answers		
	monolinguals	attriters	teenagers	monolinguals	attriters	teenagers	monolinguals	attriters	teenagers
Valid	10	10	10	10	10	10	10	10	10
Median	5.000	20.000	0.000	95.000	97.500	90.900	5.000	20.000	40.950
Mean	4.500	18.000	2.260	92.000	94.000	85.000	6.000	18.500	44.110
Std. Deviation	4.378	4.216	4.402	5.869	7.379	15.327	4.595	9.144	18.062
Minimum	0.000	10.000	0.000	80.000	80.000	54.500	0.000	5.000	22.700
Maximum	15.000	25.000	13.600	100.000	100.000	100.000	15.000	35.000	77.300

The table reports some descriptive statistics for the overt pronoun preferences between the three experimental groups.

Table D2 – Null referents by-item descriptives

	% null OTHER answers			% null COMPLEMENT answers			% null SUBJECT answers		
	monolinguals	attriters	teenagers	monolinguals	attriters	teenagers	monolinguals	attriters	teenagers
Valid	10	10	10	10	10	10	10	10	10
Median	0.000	2.500	2.250	32.500	47.500	50.000	77.500	90.000	79.550
Mean	5.500	4.000	7.270	38.000	50.000	56.830	77.000	86.500	74.100
Std. Deviation	9.846	6.146	9.638	20.303	13.123	19.182	15.846	10.554	15.320
Minimum	0.000	0.000	0.000	15.000	35.000	27.300	45.000	70.000	50.000
Maximum	30.000	20.000	27.300	75.000	70.000	81.800	100.000	100.000	90.900

The table reports some descriptive statistics for the null pronoun preferences between the three experimental groups.

Table E1 – by-item ANOVA results for overt pronoun referent preferences

Within Subjects Effects

Cases	Sphericity Correction	Sum of Squares	df	Mean Square	F	p	η_p^2
Group	Greenhouse-Geisser	1798.038	1.614	1113.851	30.603	< .001	0.773
Residuals	Greenhouse-Geisser	528.782	14.528	36.397			
Overt Referent	Greenhouse-Geisser	115020.747	1.164	98775.449	260.006	< .001	0.967
Residuals	Greenhouse-Geisser	3981.400	10.480	379.897			
Group ∗ Overt Referent	Greenhouse-Geisser	7646.994	1.674	4568.974	27.526	< .001	0.754
Residuals	Greenhouse-Geisser	2500.300	15.063	165.988			

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated (p < .05).

The table reports the outcome of the repeated measures ANOVA conducted on JASP for the overt pronoun referent preferences.

Table E2 – by-item ANOVA results for null pronoun referent preferences

Within Subjects Effects

Cases	Sphericity Correction	Sum of Squares	df	Mean Square	F	p	η_p^2
Group	Greenhouse-Geisser	798.422	1.577	506.187	24.816	< .001	0.734
Residuals	Greenhouse-Geisser	289.569	14.196	20.398			
Null Referent	Greenhouse-Geisser	81968.362	1.212	67608.627	60.513	< .001	0.871
Residuals	Greenhouse-Geisser	12191.003	10.912	1117.256			
Group ∗ Null Referent	Greenhouse-Geisser	1913.956	2.581	741.512	6.180	0.004	0.407
Residuals	Greenhouse-Geisser	2787.439	23.230	119.991			

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated (p < .05).

The table reports the outcome of the repeated measures ANOVA conducted on JASP for the null pronoun referent preferences.

Table F1 – Post Hoc test results for by-item overt pronoun referent preferences

Post Hoc Comparisons - Group ✻ Overt Referent ▼

		Mean Difference	SE	t	p_{holm}
monolinguals, other	attriters, other	−13.500	3.349	−4.031	0.002
	teenagers, other	2.240	3.349	0.669	1.000
	monolinguals, complement	−87.500	4.900	−17.859	< .001
	attriters, complement	−89.500	4.619	−19.377	< .001
	teenagers, complement	−80.500	4.619	−17.428	< .001
	monolinguals, subject	−1.500	4.900	−0.306	1.000
	attriters, subject	−14.000	4.619	−3.031	0.041
	teenagers, subject	−39.610	4.619	−8.576	< .001
attriters, other	teenagers, other	15.740	3.349	4.699	< .001
	monolinguals, complement	−74.000	4.619	−16.021	< .001
	attriters, complement	−76.000	4.900	−15.511	< .001
	teenagers, complement	−67.000	4.619	−14.506	< .001
	monolinguals, subject	12.000	4.619	2.598	0.095
	attriters, subject	−0.500	4.900	−0.102	1.000
	teenagers, subject	−26.110	4.619	−5.653	< .001
teenagers, other	monolinguals, complement	−89.740	4.619	−19.429	< .001
	attriters, complement	−91.740	4.619	−19.862	< .001
	teenagers, complement	−82.740	4.900	−16.887	< .001
	monolinguals, subject	−3.740	4.619	−0.810	1.000
	attriters, subject	−16.240	4.619	−3.516	0.012
	teenagers, subject	−41.850	4.900	−8.541	< .001
monolinguals, complement	attriters, complement	−2.000	3.349	−0.597	1.000
	teenagers, complement	7.000	3.349	2.090	0.251
	monolinguals, subject	86.000	4.900	17.552	< .001
	attriters, subject	73.500	4.619	15.913	< .001
	teenagers, subject	47.890	4.619	10.368	< .001
attriters, complement	teenagers, complement	9.000	3.349	2.687	0.079
	monolinguals, subject	88.000	4.619	19.052	< .001
	attriters, subject	75.500	4.900	15.409	< .001
	teenagers, subject	49.890	4.619	10.801	< .001
teenagers, complement	monolinguals, subject	79.000	4.619	17.104	< .001
	attriters, subject	66.500	4.619	14.397	< .001
	teenagers, subject	40.890	4.900	8.346	< .001
monolinguals, subject	attriters, subject	−12.500	3.349	−3.732	0.005
	teenagers, subject	−38.110	3.349	−11.378	< .001
attriters, subject	teenagers, subject	−25.610	3.349	−7.646	< .001

Note. P-value adjusted for comparing a family of 36

Table F2 – Post Hoc test results for by-item null pronoun referent preferences

Post Hoc Comparisons - Group ✻ Null Referent ▼

		Mean Difference	SE	t	p_{holm}
monolinugals, other	attriters, other	1.500	3.376	0.444	1.000
	teenagers, other	−1.770	3.376	−0.524	1.000
	monolinugals, complement	−32.500	7.448	−4.363	0.003
	attriters, complement	−44.500	7.168	−6.208	< .001
	teenagers, complement	−51.330	7.168	−7.161	< .001
	monolinugals, subject	−71.500	7.448	−9.600	< .001
	attriters, subject	−81.000	7.168	−11.300	< .001
	teenagers, subject	−68.600	7.168	−9.570	< .001
attriters, other	teenagers, other	−3.270	3.376	−0.969	1.000
	monolinugals, complement	−34.000	7.168	−4.743	0.001
	attriters, complement	−46.000	7.448	−6.176	< .001
	teenagers, complement	−52.830	7.168	−7.370	< .001
	monolinugals, subject	−73.000	7.168	−10.184	< .001
	attriters, subject	−82.500	7.448	−11.076	< .001
	teenagers, subject	−70.100	7.168	−9.779	< .001
teenagers, other	monolinugals, complement	−30.730	7.168	−4.287	0.004
	attriters, complement	−42.730	7.168	−5.961	< .001
	teenagers, complement	−49.560	7.448	−6.654	< .001
	monolinugals, subject	−69.730	7.168	−9.727	< .001
	attriters, subject	−79.230	7.168	−11.053	< .001
	teenagers, subject	−66.830	7.448	−8.973	< .001
monolinugals, complement	attriters, complement	−12.000	3.376	−3.555	0.010
	teenagers, complement	−18.830	3.376	−5.578	< .001
	monolinugals, subject	−39.000	7.448	−5.236	< .001
	attriters, subject	−48.500	7.168	−6.766	< .001
	teenagers, subject	−36.100	7.168	−5.036	< .001
attriters, complement	teenagers, complement	−6.830	3.376	−2.023	0.247
	monolinugals, subject	−27.000	7.168	−3.767	0.010
	attriters, subject	−36.500	7.448	−4.901	< .001
	teenagers, subject	−24.100	7.168	−3.362	0.024
teenagers, complement	monolinugals, subject	−20.170	7.168	−2.814	0.069
	attriters, subject	−29.670	7.168	−4.139	0.005
	teenagers, subject	−17.270	7.448	−2.319	0.170
monolinugals, subject	attriters, subject	−9.500	3.376	−2.814	0.059
	teenagers, subject	2.900	3.376	0.859	1.000
attriters, subject	teenagers, subject	12.400	3.376	3.673	0.008

Note. P-value adjusted for comparing a family of 36

Appendix C

This appendix contains the consent forms to which all participants had to agree prior the experiment submission.

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Modulo per l'espressione del consenso informato
Progetto "L'interpretazione dei pronomi personali da parte di adolescenti e adulti italiani"

Gentile partecipante,

il presente studio è condotto in presenza dalla studentessa Marta Visentin sotto la supervisione della prof.ssa Anna Cardinaletti, docente del Dipartimento di Studi Linguistici e Culturali Comparati dell'Università Ca' Foscari Venezia. Sottoscrivendo il modulo Google al link indicato nella mail, Lei esprime il Suo consenso alla partecipazione allo studio e alle attività di seguito descritte.
La partecipazione a questo studio è quindi volontaria e potrà decidere di abbandonarlo in qualsiasi momento successivo alla manifestazione del consenso, salvo quanto di seguito indicato e salvo ove sussistano motivi cogenti che legittimino la prosecuzione dello stesso, senza alcun tipo di conseguenza negativa.
A tutela della sua privacy, i dati personali a Lei relativi, raccolti nell'ambito di interviste audio, verranno resi anonimi (non più quindi riconducibili alla Sua persona) prima di procedere all'analisi degli stessi nell'ambito dello studio, in accordo con il codice etico e di condotta dell'Università Ca' Foscari Venezia e con le normative vigenti. Anche i risultati delle analisi dei dati verranno presentati e pubblicati in tesi, libri o articoli per riviste scientifiche in forma aggregata e anonima. Una volta che i dati raccolti nell'ambito dello studio saranno resi anonimi, non potrà più ritirare il consenso alla partecipazione allo studio, chiedere la cancellazione dei dati personali, in quanto non saranno più riconducibili a Lei, né richiedere che gli stessi vengano modificati o rettificati. Potrà invece chiedere la cancellazione dei dati raccolti al momento della prestazione del consenso alla partecipazione allo studio, che verranno conservati in quanto necessari per lo svolgimento di verifiche sull'autenticità dei dati raccolti. I predetti diritti potranno essere esercitati secondo quanto di seguito indicato.
Lo studio ha ricevuto l'approvazione della Commissione Etica di Ateneo in data 05.02.2020, verbale n. 1/2020 (per ulteriori informazioni: commissione.etica@unive.it).

Metodologia di ricerca
Il presente studio è rivolto ad adulti di madrelingua italiana. L'obiettivo principale della ricerca è indagare la comprensione di frasi con pronomi personali. L'esperimento si svolge in presenza e prevede la lettura di una breve frase e la scelta di una immagine che rappresenti la situazione descritta dalla frase data.

Contatti
Per qualsiasi domanda relativa alle procedure dello studio e per modificare/revocare il consenso alla partecipazione allo studio, ora o in futuro, può contattare:
- supervisore della ricerca: prof. Anna Cardinaletti (0412345724, cardin@unive.it);
- studentessa responsabile della raccolta dati: Marta Visentin (870789@stud.unive.it)

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Informativa sul trattamento dei dati nell'ambito del progetto
"Le frasi complesse in adolescenti e adulti italiani"
ai sensi dell'art.13 del Regolamento UE 2016/679 ("Regolamento")

Con il presente documento, l'Università Ca' Foscari Venezia ("Università") le fornisce informazioni in merito al trattamento dei dati personali raccolti all'interno del progetto di ricerca denominato "L'interpretazione dei pronomi personali da parte di adolescenti e adulti italiani" che si prefigge di indagare la comprensione di frasi con pronomi personali ed è condotto dalla studentessa Marta Visentin e dalla prof.ssa Anna Cardinaletti. Ove necessitasse di ulteriori informazioni relative al progetto, la preghiamo di contattare la prof.ssa Anna Cardinaletti scrivendo all'indirizzo di posta elettronica: cardin@unive.it.
Il progetto è stato redatto conformemente agli standard metodologici del settore disciplinare interessato ed è depositato presso il Laboratorio BemboLab – Dipartimento di Studi Linguistici e Culturali Comparati dell'Università Ca' Foscari Venezia, dove verrà conservato per cinque anni dalla conclusione programmata della ricerca stessa.

1.Titolare del Trattamento. Il Titolare del Trattamento è l'Università Ca' Foscari Venezia con sede legale in Dorsoduro 3246, 30123 Venezia, rappresentata dalla Magnifica Rettrice Tiziana Lippiello.

2.Responsabile della Protezione dei Dati. L'Università Ca' Foscari ha nominato il "Responsabile della Protezione dei Dati", che può essere contattato scrivendo all'indirizzo di posta elettronica dpo@unive.it o al seguente indirizzo: Università Ca' Foscari Venezia, Responsabile della Protezione dei Dati, Dorsoduro 3246, 30123 Venezia (VE).

3.Categorie di Dati Personali, Finalità e Base Giuridica. Il trattamento ha ad oggetto i dati personali (dati anagrafici, *background* linguistico, profilo educativo). La raccolta dati viene effettuata in presenza. Il trattamento dei dati personali verrà effettuato con strumenti cartacei ed informatici, adottando misure tecniche e organizzative adeguate a proteggerli da accessi non autorizzati o illeciti, dalla distruzione, dalla perdita di integrità e riservatezza, anche accidentali.
Per la tutela della riservatezza dei partecipanti, i dati verranno successivamente privati dei riferimenti direttamente identificativi (ad es. nome e cognome, codice fiscale, etc.), in modo che non siano più immediatamente riconducibili alla persona a cui si riferiscono, e analizzati ai soli fini della realizzazione del suddetto progetto.
Le attività di ricerca sono svolte nell'ambito dell'esecuzione delle finalità istituzionali di ricerca scientifica dell'Ateneo, pertanto la base giuridica è rappresentata dall'art. 6.1.e) del Regolamento ("esecuzione di un compito di interesse pubblico"). L'Ateneo si asterrà dal trattare ulteriormente i predetti dati

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personali salvo sussistano motivi cogenti che legittimino la prosecuzione dello stesso.

4.Tempi di Conservazione. I dati saranno conservati per la durata del progetto e successivamente anonimizzati e conservati per 5 anni. I dati anonimizzati potranno essere impiegati in ulteriori progetti di ricerca.

5.Destinatari e Categorie di Destinatari dei Dati Personali. I dati raccolti saranno trattati dai ricercatori dell'Università e dai ricercatori impegnati nel progetto, che agiscono sulla base di specifiche istruzioni fornite in ordine alle finalità e modalità del trattamento medesimo, nonché da soggetti che forniscono servizi ausiliari all'Università nominati 'responsabili del trattamento'. La lista aggiornata dei responsabili del trattamento è disponibile alla pagina: https://www.unive.it/pag/34666/.
I dati, in forma aggregata ed anonima (in modo da non renderla identificabile), potranno inoltre essere comunicati ad altre Università o enti per lo svolgimento delle attività di ricerca e diffusi per attività di disseminazione dei risultati (ad es. in pubblicazioni, rapporti di ricerca, banche dati nonché citazioni durante lezioni, seminari e convegni). Potranno altresì esaminare tutta la documentazione (comprensiva dei dati identificativi dei partecipanti) raccolta nell'ambito del progetto sia organismi nazionali e internazionali sia comitati delle riviste scientifiche italiane e straniere al fine di controllare che la ricerca sia condotta correttamente e in conformità alle disposizioni vigenti, nonché eventuali auditor.

6.Diritti dell'Interessato e Modalità di Esercizio. Lei potrà esercitare nei confronti dell'Università tutti i diritti previsti dagli artt. 15 e ss. del Regolamento; in particolare, potrà ottenere: l'accesso ai dati personali, la loro rettifica o integrazione, la cancellazione (c.d. "diritto all'oblio"), la limitazione e l'opposizione del trattamento. La richiesta potrà essere presentata, senza alcuna formalità, contattando direttamente la prof.ssa Anna Cardinaletti all'indirizzo cardin@unive.it e/o il Responsabile della Protezione dei Dati all'indirizzo dpo@unive.it ovvero inviando una comunicazione al seguente recapito: Università Ca' Foscari Venezia – Responsabile della Protezione dei dati, Dorsoduro 3246, 30123 Venezia. In alternativa, è possibile contattare l'Università, scrivendo a PEC protocollo@pec.unive.it.
Inoltre, se ritiene che i dati personali siano stati trattati in violazione a quanto disposto dal Regolamento, potrà fare reclamo al Garante per la Protezione dei Dati Personali o adire le opportune sedi giudiziarie.

References

Adger, D. (2003). *Core syntax: a minimalist approach.* Oxford: Oxford University Press.

Altemberg, E. P., & Vago, R. M. (2004). The role of grammaticality judgments in investigating first language attrition. In M. S. Schmid, B. Köpke, M. M. Keijzer, & L. Weilemar (eds.), *First language attrition: Interdisciplinary perspectives on methodological issues* (pp. 105–130). Amsterdam: John Benjamins Publishing Company.

Ambridge, B., & Lieven, E. V. M. (2011). *Child Language Acquisition: Contrasting Theoretical Approaches*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511975073

Biberauer, T. (2009). Semi null-subject languages, expletives and expletive pro reconsidered. In T. Biberauer, A. Holmberg, I. Roberts, & M. Sheehan, *Parametric Variation: Null Subjects in Minimalist Theory* (pp. 153–199). Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511770784.005

Bley-Vroman, R. (1990). The logical problem of foreign language learning. *Linguistic Analysis,* 20 (1), 3–49. https://doi.org/10.1017/CBO9781139524544.005

Cardinaletti, A. (1990). *Impersonal constructions and sentential arguments in German.* Padova: Unipress.

Cardinaletti, A., & Starke, M. (1999). The typology of structural deficiency: a case study of the three classes of pronouns. In H. Van Riemsdijk (ed.), *Clitics in the Languages of Europe* (pp. 145–233). New York/Berlin: Mouton de Gruyter.

Cardinaletti, A. (2004a). La traduzione dei pronomi: interferenza sintattica e cambiamento linguistico. In G. Garzone, & A. Cardinaletti (eds.), *Lingua, mediazione linguistica e interferenza* (pp. 129–150) Milano: FrancoAngeli.

Cardinaletti, A. (2004b). L'italiano contemporaneo: cambiamento in atto e competenza dei parlanti. In A. Cardinaletti, & F. Frasnedi, (eds.), *Intorno all'italiano contemporaneo. Tra linguistica e didattica* (pp. 49–75). Milano: FrancoAngeli.

Carminati, M. N. (2002). *The processing of Italian subject pronouns*. [PhD dissertation, University of Massachussetts, Amherst]

Chamorro, G., Sorace, A., & Sturt, P. (2016a). What is the source of L1 attrition? The effect of recent L1 re-exposure on Spanish speakers under L1 attrition. *Bilingualism: Language and Cognition,* 19 (3), 520–532. https://doi.org/10.1017/S1366728915000152

Chamorro, G., Sturt, P., & Sorace, A. (2016b). Selectivity in L1 attrition: Differential Object Marking in Spanish near-native speakers of English. *Journal of Psycholinguistic Research,* 45 (3), 697–715. https://doi.org/10.1007/s10936-015-9372-4

Chomsky, N. (1975). *Reflections On Language*. New York: Pantheon.

Chomsky, N. (1981). *Lectures on Government and Binding*. Dordrecht: Foris.

Chomsky, N. (1985). *Aspects of the Theory of Syntax*. Cambridge MA: MIT Press. (35th ed.; first edition published in 1965).

Chomsky, N. (1982). *Some concepts and consequences of the theory of government and binding*. Cambridge, MA; London: MIT Press.

Chomsky, N. (1986). *Knowledge of Language: Its Nature, Origin, and Use*. Edited by D. Byrne & M. Kölbel. Praeger.

Chomsky, N. (1988). *Language and problems of knowledge.* Cambridge, MA: MIT Press.

Chomsky, N. (2002). *Syntactic structures.* New York/Berlin: Mouton de Gruyter (first edition published in 1957).

Clahsen, H., & U. Hong. (1995). Agreement and null subjects in German L2 development: new evidence from reaction-time experiments. *Second Language Research,* 11 (1), 57–87. https://doi.org/10.1177/0267658395011001

Cook, V. J. (1991). The poverty-of-the-stimulus argument and multicompetence. *Second Language Research*, *7* (2), 103–117. https://doi.org/10.1177/0267658391007002

Cook, V. (1999). Going beyond the Native Speaker in Language Teaching. *TESOL Quarterly*, *33* (2), 185–209. https://doi.org/10.2307/3587717

Cook, V. (2002). *Portraits of the L2 User*. Clevedon: Multilingual Matters. https://doi.org/10.21832/9781853595851

Cook, V. (2003). Introduction: The Changing L1 in the L2 User's Mind. In Cook, V. (Ed.), *Effects of the second language on the first* (pp. 1–18). Clevedon: Multilingual Matters. https://doi.org/10.21832/9781853596346

Domínguez, L. (2013). *Understanding Interfaces: Second language acquisition and first language attrition of Spanish subject realization and word order variation*. Amsterdam: John Benjamins Publishing Company. https://doi.org/10.1075/lald.55

Döpke, S. (2000). *Cross-linguistic structures in simultaneous bilingualism*. Amsterdam: John Benjamins Publishing Company. https://doi.org/10.1075/sibil.21

Eubank, L. (1994). Optionality and the initial state in L2 development. In T. Hoekstra, & B. D. Schwartz (eds.), *Language acquisition studies in generative grammar* (pp. 369–88). Amsterdam: John Benjamins Publishing Company. https://doi.org/10.1075/lald.8.15eub

Forster, K. I., & Dickinson, R. G. (1976). More on the Language-as-fixed-effect fallacy: Monte Carlo estimates of error rates for F1, F2, F', and min F'. *Journal of Verbal Learning & Verbal Behavior*, 15 (2), 135–142. https://doi.org/10.1016/0022-5371(76)90014-1

Gallo, F., Bermudez-Margaretto, B., Shtyrov, Y., Abutalebi, J., Kreiner, H., Chitaya, T., Petrova, A., & Myachykov, A. (2021). First Language Attrition: What It Is, What It Isn't, and What It Can Be. *Frontiers in Human Neurosciences*, 15, 686388. https://doi.org/10.3389/fnhum.2021.686388

Gass, S., Loewen, S., & Plonsky, L. (2021). Coming of age: the past, present, and future of quantitative SLA research. *Language Teaching*, 54 (2), 245–258. https://doi.org/10.1017/S0261444819000430

Giusti, G. (2004). Interferenza dell'inglese sulla posizione del soggetto in italiano: alcune considerazioni sulle traduzioni italiane di Harry Potter. In G. Garzone, & A. Cardinaletti (eds.), *Lingua, mediazione linguistica e interferenza* (pp. 151–166). Milano: FrancoAngeli.

Grosjean F. (1989). Neurolinguists, beware! The bilingual is not two monolinguals in one person. *Brain and language*, *36* (1), 3–15. https://doi.org/10.1016/0093-934x(89)90048-5

Grosjean, F. (2001). The bilingual's language modes. In J. Nicol (ed.), *One Mind, Two Languages: Bilingual Language Processing* (pp. 1–22). Oxford: Blackwell.

Guasti, M. T. (2016). *Language acquisition: the growth of grammar* (2nd ed.). Cambridge, MA: MIT Press.

Gürel, A. (2004). "Selectivity in L2-induced L1 attrition: A psycholinguistic account". *Journal of Neurolinguistics*, 17 (1), 53–78. https://doi.org/10.1016/S0911-6044(03)00054-X

Haegeman, L. (2019). Register-based subject omission in English and its implication for the syntax of adjuncts. *Anglophonia French Journal of English Linguistics*, 28. https://doi.org/10.4000/anglophonia.2873

Haznedar, B. (1997). L2 acquisition by a Turkish-speaking child: evidence for L1 influence. In E. Hughes, M. Hughes, & A. Greenhill (eds.), *Proceedings of the 21st Annual Boston University Conference on Language Development* (pp. 245–56). Somerville, MA: Cascadilla Press.

Holmberg, A. (2005). Is there a little pro? Evidence from Finnish. *Linguistic Inquiry,* 36 (4), 533–64. https://doi.org/10.1162/002438905774464322

Holmberg, A., & Roberst, I. (2009). Introduction: parameters in minimalist theory. In T. Biberauer, A. Holmberg, I. Roberts, & M. Sheehan, *Parametric Variation: Null Subjects in Minimalist Theory* (pp. 1–57). Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511770784.001

Huang, J. (1984). On the distribution and reference of empty pronouns. *Linguistic Inquiry* ,15 (4), 531–74. http://www.jstor.org/stable/4178404

Köpke, B. (1999). *L'attrition de la première langue chez le bilingue tardif: implications pour l'étude psycholinguistique du bilinguisme*. [PhD dissertation, Toulouse, Université de Toulouse-Le Mirail]

Köpke, B. (2002). Activation thresholds and non-pathological L1 attrition. In F. Fabbro (ed.), *Advances in the Neurolinguistics of Bilingualism* (pp. 119–142). Udine: Forum.

Köpke, B. (2004). Attrition is not a unitary phenomenon: on different possible outcomes of language contact situations. In *Proceedings from the Second International Symposium on Bilingualism, Bilingual Socialization and Bilingual Language Acquisition*, 1331–1347.

Köpke, B. (2018). First Language Attrition: From Bilingual to Monolingual Proficiency? In A. De Houwer, & L. Ortega (eds.), *The Cambridge Handbook of Bilingualism* (pp. 349–366). Cambridge: Cambridge University Press.

Köpke, B., & Schmid, M. S. (2004) First language attrition: The next phase. In M. S. Schmid, B. Köpke, M. M. Keijzer, & L. Weilemar (eds.), *First language attrition: Interdisciplinary perspectives on methodological issues* (pp. 1–43). Amsterdam: John Benjamins Publishing Company.

Lambert, R. D., & Freed, B. F. (1982). *The Loss of language skills*. Rowley, Mass: Newbury House.

Marsden, E., Morgan-Short, K., Thompson, S., & Abugaber, D. (2018). Replication in second language research: Narrative and systematic reviews and recommendations for the field. *Language Learning*, 68 (2), 321–391. https://doi.org/10.1111/lang.12286

Martohardjono, G. Epstein, S. D., & Flynn, S. (1998). Universal Grammar: Hypothesis space or grammar selection procedures? Is UG affected by Critical Periods?. [Commentary on S. D. Epstein, S. Flynn and G. Martohardjono (1996). *Second language acquisition: Theoretical and experimental issues in contemporary research.]. Behavioral and Brain Sciences*, 21 (4), 612–614. https://doi.org/10.1017/S0140525X98211289

McCloskey, J. (1996). Subjects and subject positions in Irish. In R. D. Borsley, & I. G. Roberts (eds.), *The syntax of the Celtic languages: a comparative perspective* (pp. 241–283). Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511586279.009

McManus, K. (2021). Replication and Open Science in Applied Linguistics Research. In L. Plonsky (ed.), *Open science in applied linguistics*. Amsterdam: John Benjamins Publishing Company. https://doi.org/10.31219/osf.io/bqr9w

Mitchell, R., Myles, F., & Marsden, E. (2013). *Second language learning theories* (3rd ed.) London: Routledge.

Montrul, S. (2002). Incomplete acquisition and attrition of Spanish tense/aspect distinctions in adult bilinguals. *Bilingualism: Language and Cognition*, 5 (1), 39–68. https://doi.org/10.1017/S1366728902000135

Nicolis, M. (2008). The null subject parameter and correlating properties: the case of creole languages. In T. Biberauer (ed.), *The limits of syntactic variation* (pp. 271–94). Amsterdam: John Benjamins Publishing Company. https://doi.org/10.1075/la.132.11nic

Oku, S. (1998) *A theory of selection and reconstruction in the minimalist perspective.* [PhD dissertation, University of Connecticut]. https://linguistics.uconn.edu/wp-content/uploads/sites/1842/2020/05/Oku-Satoshi-1998-A-theory-of-selection-and-reconstruction-in-the-minimalist-perspective.pdf

Paradis, M. (1993). Linguistic, psycholinguistic, and neurolinguistic aspects of 'interference' in bilingual speakers: The Activation Threshold Hypothesis. *International Journal of Psycholinguistics*, 9 (2), 133–145.

Pavlenko, A. (2003). 'I feel clumsy speaking Russian': L2 influence on L1 in narratives of Russian L2 users of English. In V. Cook (ed.) *Effects of the Second Language on the First* (pp. 32–61). Clevedon: Multilingual Matters. https://doi.org/10.21832/9781853596346-005

Platzack, C. (1996). The initial hypothesis of syntax: a minimalist perspective on language acquisition and attrition. In H. Clahsen (ed.), *Generative perspectives on language acquisition: empirical findings, theoretical considerations, crosslinguistic comparisons* (pp. 369–414). Amsterdam: John Benjamins Publishing Company.

Poole, G. (2002). *Syntactic theory*. Basingstoke: Palgrave.

Radford, A. (2004). *English syntax: an introduction.* Cambridge: Cambridge University Press.

Renzi, L. (2000). Le tendenze dell'italiano contemporaneo. Note sul cambiamento linguistico nel breve periodo. In *Studi di lessicografia italiana*, XVII, (pp. 279–319). Firenze: Accademia della crusca.

Rizzi, L. (1982). *Issues in Italian syntax*. Dordrecht: Foris.

Rizzi, L. (1986). Null objects in Italian and the theory of pro. *Linguistic Inquiry* 17, 501–57. https://www.jstor.org/stable/4178501

Schmid, M. S. (2002). *First language attrition, use, and maintenance. The case of German Jews in Anglophone countries*. Amsterdam: John Benjamins Publishing Company. https://doi.org/10.1075/sibil.24

Schmid, M. S. (2007). The role of L1 use for L1 attrition. In B. Köpke, M. S. Schmid, M. Keijzer, & S. Dostert (eds.), *Language attrition: Theoretical perspectives* (pp. 135–153). Amsterdam: John Benjamins Publishing Company. https://doi.org/10.1075/sibil.33.10sch

Schmid, M. S. (2011). *Language Attrition*. Cambridge: Cambridge University Press.

Schmid, M. S., & Köpke, B. (2007). Bilingualsim and attrition. In B. Köpke, M. S. Schmid, M. Keijzer, & S. Dostert (eds.), *Language attrition: Theoretical perspectives* (pp. 1–7). Amsterdam: John Benjamins Publishing Company. https://doi.org/10.1075/sibil.33

Schmid, M. S., & Köpke, B. (2013). *First language attrition* (pp. 1–36). Amsterdam: John Benjamins Publishing Company.

Schmid, M. S., & Köpke, B. (2017). The relevance of first language attrition to theories of bilingual development. *Linguistic Approaches to Bilingualism*, 7 (6), 637–667. https://doi.org/10.1075/lab.17058.sch

Schwartz, B. D., & Sprouse, R. (1996). L2 cognitive states and the full transfer/full access model. *Second Language Research,* 12 (1), 40–72. http://www.jstor.org/stable/43104504

Seliger, H. W., & Vago, R. M. (1991). The study of first language attrition: an overview. In H. W. Seliger, & R. M. Vago (eds.), *First Language Attrition* (pp. 3–16). Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511620720

Shook, A., & Marian, V. (2013). The bilingual language interaction network for comprehension of speech. *Bilingualism: Language and Cognition*, 16 (2), 304–324. https://doi.org/10.1017/S1366728912000466

Sorace, A. (2000). Differential effects of attrition in the L1 syntax of L2 near-native speakers. In C. Howell, S. Fish, & T. Keith-Lucas (eds.), *Proceedings of the Boston University Conference on Language Development,* 24 (pp. 719–725). Somerville, MA: Cascadilla Press.

Sorace, A. (2011). Pinning down the concept of "interface" in bilingualism. *Linguistic Approaches to Bilingualism*, 1 (1), 1–33. doi: 10.1075/lab.1.1.01sor

Sorace, A., & Filiaci, F. (2006). Anaphora resolution in near-native speakers of Italian. *Second Language Research*, *22* (3), 339–368. http://www.jstor.org/stable/43103710

Sorace, A., Serratrice, L., Filiaci, F., & Baldo, M. (2009). Discourse conditions on subject pronoun realization: Testing the linguistic intuitions of older bilingual children. *Lingua*, 119 (3), 460–477. https://doi.org/10.1016/j.lingua.2008.09.008

Tomioka, S. (2003). The semantics of Japanese null pronouns and its cross-linguistic implications. In K. Schwabe, & S. Winkler (eds.), *The interfaces: Deriving and interpreting omitted structures* (pp. 321–339). Amsterdam: John Benjamins Publishing Company. https://doi.org/10.1075/la.61.16tom

Tsimpli, I., Sorace, A., Heycock, C., & Filiaci, F. (2004). First language attrition and syntactic subjects: A study of Greek and Italian near-native speakers of English. *International Journal of Bilingualism*, 8 (3), 257-277. https://doi.org/10.1177/13670069040080030601

Vainikka, A., & Young-Scholten, M. (1996). Gradual development of L2 phrase structure. *Second Language Research,* 12 (1), 7–39. https://doi.org/10.1177/026765839601200102

Van Hell, J. G., & Dijkstra, T. (2002). Foreign language knowledge can influence native language performance in exclusively native contexts. *Psychonomic Bullettin & Review*, 9 (4), 780–789. https://doi.org/10.3758/BF03196335

Weinreich, U. (1953) *Languages in Contact.* The Hague: Mouton.

White, L. (2003). *Second language acquisition and universal grammar*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511815065

Yilmaz, G., & Schmid, M. (2018). First language attrition and bilingualism. In D. Miller, F. Rothman, & L. Serratrice (eds.), *Bilingual cognition and language: The state of the science across its subfields* (pp. 225–250). Amsterdam: John Benjamins Publishing Company. https://doi.org/10.1075/sibil.54.11yil

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