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## (In)felicitous use of subjects in Greek and Spanish in monolingual and contact settings

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This paper focuses on subject distribution in Greek and Chilean Spanish, both null subject languages, as evidenced in the oral production of monolingual and bilingual speakers. Narratives elicited from 40 monolinguals and 76 bilinguals of different types, namely, first-generation immigrants, heritage speakers, and L2 speakers, were analysed both quantitatively and qualitatively to explore potential differences in expressing subject reference between the groups in monolingual and contact settings. The qualitative analysis of contexts of topic continuity and topic shift showed no overextension of the scope of the overt subject pronoun expected to be found in the bilingual performance according to the Interface Hypothesis (Sorace 2011; 2012) and previous research. The findings also show that the redundancy of lexical subjects observed in topic continuity contexts mostly involved felicitous (pragmatically appropriate) constructions. Moreover, while null subjects in topic shift were found to be mostly felicitous in both monolinguals and bilinguals, cases of ambiguity were observed in the bilingual performance in this discourse context.

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## 1. Introduction

The present study investigates the understudied combination of Greek and Spanish, two null subject languages, in bilingualism in the context of migration. The use of null subjects (NS), overt subject pronouns (OSP), and lexical subjects (LS) in oral production is examined with a focus on the interaction between syntax and discourse/pragmatics in these prototypical NS languages. The aim is to address a gap in linguistic research since the majority of previous studies involves pairs of NS and non-NS languages. More specifically, it seeks to discover whether and to what extent the contact between Greek and Spanish gives rise to overextension of OSP in the oral performance of different types of bilinguals with immigrant background, as predicted by the Interface Hypothesis (Sorace 2011; 2012).

Variability in subject expression has received significant attention in linguistic and psycholinguistic research, in both monolingual and bilingual varieties. A common observation in several situations of bilingualism studied with a focus on subject expression (heritage language acquisition, L1 attrition, and L2 acquisition) is the overextension of OSP to contexts where NS are pragmatically more appropriate (felicitous). However, according to the Interface Hypothesis, in NS languages OSP expression in contexts where NS are felicitous is not triggered by transfer from the non-NS language in bilinguals. It is rather a processing or computational problem at the interface between syntax and discourse-pragmatics as well as cognitive factors related to bilingualism. The present study examines a linguistic situation where the two languages of the bilingual participants, Greek and Spanish, are NS languages, a language combination which so far has received little research attention (see also Georgopoulos 2017; Lozano 2016; 2018; Margaza & Gavarró 2020). It thus involves a language contact situation in which the languages are typologically very similar in the syntactic and pragmatic mechanisms that regulate null/overt subject expression. In addition to the understudied language pair, the present research is innovative because it comparatively examines three different types of bilinguals, namely first-generation immigrants (potential L1 attriters), heritage speakers and L2 speakers, in the same context, which involves migration.

## 2. Background

Greek and Spanish pronoun properties are more complex than their counterparts in non-NS languages. For instance, pronoun distribution in English is not conditioned by discourse factors, with OSP being obligatory in all contexts. Greek and Spanish, as NS languages, have more options for expressing subjects. Although both NS and OSP are syntactically allowed, their alternation is constrained by discursive factors. Typically, the use of a NS is the unmarked option and implies reference to an antecedent that is clearly identified by the context (given), while the OSP marks a change of topic and/or conveys focus (contrast or emphasis) for disambiguation purposes (see e.g. Tsimpli, Sorace, Heycock & Filiaci 2004; Sorace, Serratrice, Filiaci & Baldo 2009; Tsimpli

2011; Kaltsa, Tsimpli & Rothman 2015; Papadopoulou, Peristeri, Plemenou, Marinis & Tsimpli 2015; Lozano 2016; 2018; Torregrossa, Andreou & Bongartz 2020).

In example (1) in Greek from Tsimpli et al. (2004: 260), the NS is coreferential with the matrix subject implying a non-shifted interpretation for the embedded subject (topic continuity). In contrast, the antecedent of the OSP *aftos*, in this context, is the matrix object (topic shift). The same holds for Spanish, in which the sentence in (1) can be given as (2). The existence of the same index on the pronoun and the subject of the matrix clause indicates coreference.

(1) *Greek*

O Janis<sub>i</sub> prosvale ton Petro<sub>k</sub> otan Ø<sub>i</sub>/aftos<sub>k</sub> ton plisiase.  
 the.NOM Janis.NOM offended the.ACC Petros.ACC when Ø<sub>i</sub>/he<sub>k</sub> him approached  
 ‘Janis<sub>i</sub> insulted Petro<sub>k</sub> when he<sub>i/k</sub> approached him.’

(2) *Spanish*

Juan<sub>i</sub> insultó a Pedro<sub>k</sub> cuando Ø<sub>i</sub>/él<sub>k</sub> se le acercó.  
 Juan offended Pedro when Ø<sub>i</sub>/he<sub>k</sub> him approached  
 ‘Janis<sub>i</sub> insulted Petro<sub>k</sub> when he<sub>i/k</sub> approached him.’

Crucially, the distinction between null/overt subject pronouns, as illustrated above, is not categorical since it depends on discourse-pragmatic factors. As a result, pronoun use in NS languages may cause ambiguity in discourse with regards to subject reference. Moreover, since the alternation of overt and NS lies at the syntax-discourse/pragmatics interface, it involves a vulnerable domain in bilingualism (Sorace & Filiaci 2006; Sorace 2011).

It has been found that even bilinguals of two NS languages tend to overgeneralise the use of OSP to contexts of subject maintenance, i.e. topic continuity (Bini 1993; Margaza & Bel 2006; Lozano 2006; 2018; Sorace, Serratrice, Filiaci & Baldo 2009; Tammer 2016; Georgopoulos 2017; see also Tsimpli et al. 2004). This finding has been explained by the Interface Hypothesis (IH), which postulates that bilinguals are less efficient than monolinguals at processing the necessary resources to integrate multiple sources of information due to computational constraints in real-time language use (Sorace & Filiaci 2006; Sorace 2011; 2012). Overproduction of overt forms surfaces especially with third-person singular animate pronouns rather than with first/second person pronouns (e.g. Lozano 2009).

As regards the OSP, the Greek third-person pronoun *aftos* has a special status in being identical in form with the demonstrative (example 1) (e.g. Tsimpli et al. 2004), which is not the case for its Spanish counterpart; this is why in Spanish the OSP is more extensively used than in Greek (for details see Giannakou & Sitaridou 2020). In addition, instead of use of redundant OSP, overuse of full DPs has been attested in the oral performance of bilingual children (see Andreou, Knopp, Bongartz & Tsimpli 2015; Torregrossa & Bongartz 2018; Torregrossa, Andreou, Bongartz

& Tsimpli 2021). Infelicitous use of full DPs in the discourse is also seen as an instantiation of overspecification similar to the use of redundant OSP. Overuse of LS in contexts where less informative referential forms would be the felicitous option has been interpreted as a strategy to improve accuracy in the discourse.

The main distinction established here is between two basic types of contexts in which distribution of NS and OSP is regulated for reference to given entities: topic continuity (TC) and topic shift (TS) (see e.g. Dimitriadis 1996; Argyri & Sorace 2007; Sorace et al. 2009; Bel & García-Alcaraz 2015; Kaltsa et al. 2015; Montrul & Sánchez-Walker 2015; Papadopoulou et al. 2015; Montrul 2016a; Clements & Domínguez 2017; Giannakou & Sitaridou 2020, a.o.).

### 3. The study

The present study investigates subject distribution as attested in oral production of narratives elicited from monolingual speakers of Greek and Chilean Spanish (henceforth Spanish), as well as from bilinguals involving these two NS languages and focusing on Greek as a heritage/minority language (see Montrul 2016b; Polinsky 2018). This language pair has been underexplored in the context of Latin American Spanish varieties (but see Zombolou 2011). The aim is to analyse subject distribution in Greek and Spanish oral production and to discover potential discrepancies between bilingual and monolingual Greek in the light of the theoretical account of the IH and previous research, which predict overuse of OSP in the bilingual performance in a NS language regardless of language combination. The microparametric variation in the Spanish and Greek pronominal subject distribution (Giannakou & Sitaridou 2020) could also explain the overextension of the scope of OSP in the Greek performance of Greek-Spanish bilinguals due to transfer from Spanish, which is the dominant language in all bilingual cases examined here.

The research question which guides the present study is whether and to what extent different types of Greek-Spanish bilinguals, dominant in Spanish, differ from Greek monolinguals in expressing subject reference in oral narratives production. A question of particular interest is whether bilinguals overuse the OSP or use it infelicitously in their Greek performance. In addition, redundancy of overt subject forms as well as ambiguity concerning the use of NS are also examined and discussed.

The predictions guiding the present study are the following: (a) in the Greek oral performance of Greek-Spanish bilinguals, dominant in Spanish, overuse of the OSP or infelicitous use thereof is expected; (b) LS may be also overused since they are easier to produce from a processing perspective; and (c) no major differences are expected in the use of NS in monolinguals and bilinguals.

### 4. Methodology

Data from Greek and Chilean Spanish monolinguals as well as from different types of Greek-Spanish bilinguals dominant in Spanish, in their Greek performance, were elicited through oral

narratives, analysed, and compared. The bilingual groups included first-generation immigrants, heritage speakers, and L2 speakers who live in Chile and are dominant in Spanish. The linguistic constructions examined involve the discourse contexts of third-person subject/topic continuity (TC) or same reference, generally expressed with NS, and subject discontinuity or topic shift (TS), which favour use of overt subject forms (OSP, LS) (see Ariel 1990; Carminati 2002).

Data collection was carried out in Chile and in Greece conducting one-to-one oral interviews. The data were obtained from elicited semi-spontaneous oral narratives, i.e. free production of contextualised structures chosen by the participants following storylines of picture sequences. This method instigates usage of grammar in a natural way targeting the implicit, unmonitored linguistic knowledge.

#### **4.1. Task**

The narrative task elicited semi-spontaneous use of third-person referential subjects in an ordered discourse structure (story generation) with constructions contextualised in series of temporally-connected events. Such data tend to be representative of authentic language use. The method has been extensively employed in related research on subject expression and reference (e.g. Silva-Corvalán 1994; Hendriks 2003; Montrul 2004; 2016a; Tsimpli & Sorace 2006; Belletti, Bennati & Sorace 2007; Arnold, Bennetto & Diehl 2009; Leclercq & Lenart 2013; Pinto 2013; 2014; Tsimpli, Andreou, Agathopoulou & Masoura 2014; Hendriks, Koster & Hoeks 2014; Montrul & Sánchez Walker 2015; Torregrossa et al. 2020; Contemori & Di Domenico 2021).

The methodological tool used for eliciting narratives was the Horse Story and the Cat Story by Hickmann (2003), which consist of drawings which form stories. In line with Hickmann (2003), the participants were presented with the picture-sequences and were instructed to narrate a story with each sequence as accurately as possible. Before starting the narration, the bilingual participants could ask any unknown words that they would need in Greek, thus pressure to retrieve vocabulary, which could affect oral performance, was minimised. The participants were crucially instructed to pretend to tell the stories to an imaginary listener who had no access to the pictures (see also Hendriks et al. 2014). Therefore, there was no situation of shared knowledge between the interlocutors, as this would affect the subject reference choices of the speakers (Sorace 2004). Eliciting production with pictorial stimuli has the advantage of helping to avoid memory difficulties because the to-be-narrated content remains constantly visible to the narrators. In this way, the participants do not rely on their short-term memory capacity and thus coherent speech production is facilitated.

#### **4.2. Participants**

Five groups of participants took part in the study, namely (a) two monolingual groups consisting of Greek and Spanish speakers; and (b) three bilingual groups consisting of immigrants (IMM),

heritage speakers (HS), and L2 speakers (L2ers) of Greek (see **Table 1**). Sociolinguistic information was collected through qualitative interviews. The monolingual participants were monolingually raised and had minor/no knowledge of other languages. In addition to capturing the participants' sociolinguistic profiles as fully as possible, part of the qualitative interviews was also used to evaluate HS and L2ers' proficiency in Greek.

<b>Number (N) of participants per group</b>	
	<b>N</b>
Monolingual Spanish	20
Monolingual Greek	20
First-generation immigrants	35
Heritage speakers	21
L2 speakers	20
<b>Total</b>	<b>116</b>

**Table 1:** N of monolingual and bilingual participants.

The overall age range was 16–87, involving adult individuals with no (or not obvious or known) pathological problems related to language. Crucially, the older participants did not suffer from any significant age-related cognitive decline according to their reports and to the best of our knowledge. The age range is broad because the role of age in expressing referential subjects is also examined in subsequent work.

#### 4.2.1. Monolingual speakers

Greek (N = 20) and Spanish (N = 20) monolingual speakers were recruited in Greece and Chile. All Spanish-speaking monolinguals were speakers of the Chilean variety only. All monolinguals had attended at least twelve years of education. Tertiary-level education was completed by 14 of the Greek monolinguals and by 13 of the Spanish monolinguals. **Table 2** gives information on the age of the monolingual participants.

<b>Age of monolingual speakers in years</b>					
<b>Language</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>Min</b>	<b>Max</b>
Spanish	20	45.20	13.72	28	77
Greek	20	45.45	12.65	29	70

**Table 2:** Age of monolingual speakers.

A Wilcoxon-Mann-Whitney test was performed and showed no significant difference in the variable Age between the two monolingual groups ( $z = -0.217$ ,  $p = 0.828$ ).

#### 4.2.2. Bilingual speakers

A total of 76 bilingual speakers participated in the study. The selection criteria for recruiting bilingual participants were set as follows: The participants should (a) be bilinguals (in the broad sense of the term) of Greek and Spanish, i.e. they should have (at least some) fluency in Greek and in Spanish; (b) be adults of any age; and (c) live permanently in Chile. The following speakers were a priori excluded from the study: (i) speakers of Cypriot Greek; (ii) those who had very low proficiency in Greek or Spanish; (iii) those who had lived in several countries and/or were (raised as) multilinguals; (iv) first-generation of Greek immigrants who had been living in Chile for few years reporting no actual immersion in Spanish and regular use of English; (v) those who were not residing permanently in Chile; and (vi) linguists or language-related professionals. The large majority of bilinguals resided in Santiago. The bilinguals were divided into three groups according to differences in their biographical and bilingual traits. As for their educational background, all participants had completed at least upper secondary education.

#### First-generation immigrants (IMM)

The group consisted of 35 first-generation of Greek immigrants, born and schooled in Greece, monolingually raised and residing in the host country for periods of varying length. The group was composed by late sequential bilinguals since they arrived at a linguistically mature age in Chile and learned L2 Spanish in early adulthood. They all reported having advanced or near-native proficiency in Spanish. **Table 3** gives information on the age of the immigrant participants.

Immigrants: Age in years					
	N	Mean	SD	Min	Max
Narratives	35	51.11	22.29	22	86

**Table 3:** Age of the first-generation immigrant speakers.

The minimum length of residence (LoR) in Chile was one year and the maximum was 66 years (**Table 4**). Although speakers with few years in Chile are less likely to present differences from their monolingual counterparts (L1 attrition signs) than those with many years of residence in the host country, there is no clarity as to when L1 attrition may appear as this depends on many factors (see Seliger 1991; Montrul 2008; Schmid & Köpke 2017; Tsimpli 2017). The immigrant speakers with few years of LoR crucially reported being fully immersed in Spanish.

Immigrants: LoR in Chile (N of years)					
	N	Mean	SD	Min	Max
Narratives	35	24.62	25.23	1	66

**Table 4:** Length of residence in Chile of first-generation immigrants.

### Heritage Speakers (HS)

The HS group comprised 21 unbalanced simultaneous bilinguals, dominant in Spanish, who were children of first (N = 18) and second (N = 3) generation of immigrants. They acquired Greek naturalistically at home through early exposure to primarily aural input in conversational every-day contexts. In terms of quantity and quality, the input they received was different from that received by monolinguals. **Table 5** gives information on the age of the HS.

Heritage Speakers: Age in years					
	N	Mean	SD	Min	Max
Narratives	21	52.00	13.71	16	67

**Table 5:** Age of the heritage speakers.

Oral proficiency in Greek ranged from basic to near-native, with most of the HS being assessed as having an intermediate level. In most cases, however, literacy skills were hardly or not fully mastered. Only one HS had attained advanced reading and writing skills in Greek. As for education and literacy, all HS were schooled in Spanish in Chile.

### L2 Speakers (L2ers)

The group of L2ers included 20 late sequential bilinguals with L1 Spanish and L2 Greek learned in adulthood. Their difference from typical L2 learners in the present study is their cultural or family connection with Greek. These speakers could fall into the category of ‘broadly defined heritage speakers’, for whom ‘the heritage language is equivalent to a second language in terms of linguistic competence, and as a second language, it typically begins in the classroom, in adulthood’ (Polinsky & Kagan 2007: 369). Although some speakers had attended L2 courses in other languages (e.g. English) before learning Greek, they reported no habitual use of the other language and more opportunities for exposure to Greek (or pursuit thereof). **Table 6** gives information on the age of the L2ers.

L2 Speakers: Age in years					
	N	Mean	SD	Min	Max
Narratives	20	44.40	17.32	24	79

**Table 6:** Age of the L2 speakers.



## Proficiency

The HS and the L2ers (N = 41) were assessed on their oral performance in Greek. The proficiency levels were four: basic, intermediate, advanced, and near-native. The assessment was based on three pieces of information: self-reports, oral production assessment, and a grammaticality index. The latter involved counting the ungrammatical sentences in a piece of 50 sentences of their oral production taken from a random part of their sociolinguistic interview. The numbers of speakers per proficiency level are shown in **Table 7**.

N of speakers per proficiency level			
	HS	L2ers	Total
Basic	1	4	5
Intermediate	8	5	13
Advanced	7	5	12
Near-native	5	6	11
<b>Total</b>	21	20	41

**Table 7:** Proficiency in Greek.

The degree of oral proficiency of HS and L2ers ranged from basic ability to fully fluent and native-like, with most speakers being at the intermediate level and above. All L2ers had attended L2-Greek formal classes; thus, literacy skills were mastered to a certain extent, implying a greater metalinguistic awareness compared to naturalistic heritage language acquisition.

### 4.2.3. Procedure for data analysis

The recordings for both stories had an average duration of 3–4 minutes. The narratives from 116 speakers were transcribed following standard orthographic transcription including pauses. The database consisted of 4,839 clauses from 232 (= 116\*2) narratives. The contexts considered for analyses included third-person TC and TS. Infinitives in Spanish (adjuncts or complements) were regarded as clauses. The following subject structures were excluded from the analysis: non-referential subjects or impersonal verbs (e.g. *prepi* ‘must’), direct speech, fixed expressions or fillers (e.g. *pos na pume* ‘how to say’), first person (e.g. *vlepume* ‘we see’), nominalization of clauses (e.g. *to na traviksi tin ura tis gatas* ‘the pulling of the cat’s tail’), proverbs (e.g. *mana ine mono mia* ‘there is only one mother’), formulaic phrases (e.g. *ke zisane afti kala ki emis kalitera* ‘they lived happily ever after’), codeswitching, verb phrase ellipsis,

false starts, incomplete sentences, and any unclear utterances. A quantitative and a qualitative analysis of the linguistic data was conducted in each context (TC, TS) for each category of subject (LS, OSP, NS).

## 5. Results

An analysis based on the data on the pragmatically (in)appropriate or (in)felicitous uses of subjects was conducted in the two contexts of interest: TC (coreference with the subject of the previous clause) and TS (non-coreference with the subject of the previous clause in topic reintroduction). The monolingual data are those of the study by Giannakou and Sitaridou (2020). Subject expression in TC was scrutinised on the three categories of subjects used in this context, i.e. NS, LS, and OSP, the latter two being potentially redundant or overexplicit, hence potentially infelicitous. The context of TS was also scrutinised on subjects' expression, with LS, OSP, and unambiguous NS being the pragmatically most appropriate options and ambiguous NS considered to be infelicitous.

### 5.1. Overview

#### 5.1.1 Topic continuity and Topic shift

##### Topic continuity

There were 2,635 contexts of TC in the production data on the whole. More NS were used than other categories of subjects in TC contexts, as expected. All groups also produced LS and OSP in contexts of TC to a very small extent, which are considered to be infelicitous unless focused. **Table 8** shows these results (percentages in slanted numbers).

	<b>Spanish</b>	<b>Greek</b>	<b>IMM</b>	<b>HS</b>	<b>L2</b>	<b>Total</b>
Null Pronoun	444	546	829	320	323	2,462
	<i>93.67</i>	<i>95.79</i>	<i>95.29</i>	<i>92.22</i>	<i>86.36</i>	<i>93.43</i>
Lexical Subject	28	23	39	26	46	162
	<i>5.91</i>	<i>4.04</i>	<i>4.48</i>	<i>7.49*</i>	<i>12.3*</i>	<i>6.15</i>
Overt Pronoun	2	1	2	1	5	11
	<i>0.42</i>	<i>0.18</i>	<i>0.23</i>	<i>0.29</i>	<i>1.34</i>	<i>0.42</i>
Total	474	570	870	347	374	2,635
	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

**Table 8:** Use of subjects in TC contexts.

### Topic shift

There were 1,276 contexts of TS in the production data on the whole. TS is typically expressed by using LS or OSP. All groups of speakers produced more LS than other categories of subjects in TS contexts. Moreover, all groups of speakers also produced NS in TS, which are considered to be felicitous unless ambiguous. **Table 9** shows these results (percentages in slanted numbers).

	Spanish	Greek	IMM	HS	L2	Total
Null Pronoun	59	60	115	67	42	343
	<i>25.32</i>	<i>23.35</i>	<i>29.04</i>	<b><i>34.9*</i></b>	<i>21.21</i>	<i>26.88</i>
Lexical Subject	155	192	277	122	152	898
	<i>66.52</i>	<i>74.71</i>	<i>69.95</i>	<i>63.54</i>	<i>76.77</i>	<i>70.38</i>
Overt Pronoun	19	5	4	3	4	35
	<i>8.15</i>	<i>1.95</i>	<i>1.01</i>	<i>1.56</i>	<i>2.02</i>	<i>2.74</i>
Total	233	257	396	192	198	1,276
	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

**Table 9:** Use of subjects in TS contexts.

### 5.1.2. Generalised estimating equations

Generalised estimating equation (GEE) analysis was applied in the production data in order to examine the statistical significance of the findings as well as to explore potential associations between linguistic and sociolinguistic variables. This analysis involves a generalised linear model regression parameter that characterises systematic variation across covariate levels and thus accounts for individual variation. The analysis included the variable Type of speakers with a focus on the Greek-speaking groups (Greek monolinguals, IMM, HS, L2) as the independent sociolinguistic variable. The association of this variable with Category of subjects (NS, OSP, LS) as the dependent variable was examined in two contexts: TC and TS. The analyses examined TC and TS separately corresponding to the models as follows: Analysis of Type of speakers in association with Category of subjects in the Greek-speaking groups (Greek monolinguals, IMM, HS, L2) with Greek monolinguals being the baseline group. The data on the OSP were considered to be insignificant due to very low frequency (more details later). For this reason, they were excluded from the present analysis and were analysed only qualitatively.

As regards the TC continuity context, a statistical model was developed with the Category of NS used as the baseline against which the other category of subjects was compared. The

results showed that the L2ers used significantly more LS than NS in TC compared to the Greek monolinguals ( $p < 0.001$ ) (Table 10). As for the HS there was also a trend towards using more LS than NS in TC, although in this analysis it was not significant ( $p = 0.051$ ).

Category of Subject	OR	RSE	z	P-value	95% Confidence Interval	
Type of speakers					Lower bound	Upper bound
IMM	1.070	0.318	0.23	0.818	0.597	1.919
HS	1.848	0.594	1.91	0.051	0.985	3.470
L2ers	3.285	1.036	3.77	< 0.001	1.770	6.095
_cons	0.044	0.011	-12.78	< 0.001	0.027	0.071

**Table 10:** Use of subjects in TC in the Greek-speaking groups.

OR: Odds ratio; RSE: Robust standard error.

As regards the TS context, a GEE analysis compared the use of NS or LS in the four Greek-speaking groups (Table 11). While the model did not present statistical significance, the HS group revealed statistical significance on the use of NS vs LS relative to Greek monolinguals. The HS used significantly more NS than LS compared to Greek monolinguals ( $p = 0.040$ ) in the TS context. The odds ratio shows that being a HS increases by 70% the chance of using a NS instead of a LS in TS by comparison. The other types of speakers did not show statistical differences in the use of NS or LS relative to the baseline group.

Category of Subject	OR	RSE	z	P-value	95% Confidence Interval	
Type of speakers					Lower bound	Upper bound
IMM	1.323	0.306	1.210	0.226	0.841	2.083
HS	1.700	0.440	2.050	0.040	1.023	2.823
L2ers	0.887	1.247	-0.430	0.667	0.513	1.532
Intercept	0.317	0.055	-6.590	< 0.001	0.225	0.446
Wald chi2(3) = 6.73; P-value = 0.081						

**Table 11:** Use of subjects in TS in the Greek-speaking groups (NS vs LS).

OR: Odds ratio; RSE: Robust standard error.

Summarising the results of the two GEE analyses, it is shown that in TC contexts the L2ers produced significantly more LS than NS compared to the Greek monolinguals and in TS contexts the HS produced more NS than LS compared to the same baseline group. These results as well as the use of OSP will be scrutinised qualitatively in the following sections.

## 5.2. Qualitative analysis

### 5.2.1 Use of NS in TC

In total there were 2,462 TC contexts expressed with NS. All groups of speakers predominantly used NS in TC in a range of 86.36% to 95.79% (see **Table 8**).

### 5.2.3 (Over)use of overt subject pronouns (OSP) in TC

The use of OSP is regarded as infelicitous in TC contexts unless the pronouns are emphasised or contrasted. All groups of speakers used very few OSP in TC (**Table 8**). Namely, 11 cases of OSP (personal and demonstrative) were found in TC contexts on the whole (0.42% of the TC contexts). There were two such cases in Spanish, one in Greek monolinguals, one in IMM, one in HS, and five in L2ers, all produced by different speakers apart from the case of the L2 group. In all OSP occurrences, apart from those of the L2ers, the contexts involved contrastiveness/emphasis, which was expressed with personal pronouns used anaphorically or deictically or with demonstrative pronouns in anaphoric position. Omission of the OSP would not affect the intended meaning of the utterances as these were used for contrasting or emphasising purposes. Out of the five cases of OSP in TC in the L2ers' production data, four were produced by one low-proficiency speaker, who is thus regarded as an outlier. In his oral performance, the pronoun *aftos* used in all contexts was considered infelicitous (pleonastic). In conclusion, data involving OSP in TC contexts showed no overgeneralization of the scope of the OSP in bilinguals in oral production of narratives.

### 5.2.4. (Over)use of LS in TC

All groups of speakers used LS in TC to some extent, which can be considered infelicitous (overly informative) since TC involves subject maintenance. There were 162 cases of LS in TC contexts on the whole (6.15% of the subjects in TC) (**Table 8**).

Greek and Spanish monolingual speakers performed similarly in the use of non-focused LS in TC, i.e. 4.04% and 5.91% respectively (for details on the monolingual data see Giannakou & Sitaridou 2020). In the case of the immigrants, 23 out of 35 of them produced a total of 39 cases of LS in TC contexts (4.48%). Specifically, 65.7% of them produced at least 1 LS in TC with each speaker producing no more than 5 LS in this context. The HS produced significantly more LS in TC contexts than Greek monolinguals [Pearson  $\chi^2$  (1, N = 917) = 5.098, p = 0.024] and the IMM [Pearson  $\chi^2$  (1, N = 1,217) = 4.44, p = 0.035]. In particular, 13 out of 21 HS produced 26 cases of LS in TC contexts (7.49%), with 61.9% of the speakers producing at least 1 LS in TC and each speaker producing no more than 4 such LS. The L2ers also used significantly more LS in TC contexts than the Greek monolinguals [Pearson  $\chi^2$  (1, N = 944) = 22.76, p < 0.001] and the IMM [Pearson  $\chi^2$  (1, N = 1,244) = 25.10, p < 0.001]. They also produced significantly more LS in TC contexts than the HS [Pearson  $\chi^2$  (1, N = 721) = 4.62, p = 0.031]. Specifically, 17 out of 20 L2ers produced a total of 46 LS in TC contexts (12.3%). 85% of the L2ers produced at least 1 LS in TC with each speaker producing a maximum of 5 LS in this context.

The qualitative analysis shows that not all cases of LS in TC were infelicitous as will be expounded below. As regards the contexts of LS in TC, two main categories can be distinguished: those that are (potentially) redundant and those that are not. The following sections focus on (a) non-redundant and (b) redundant LS in TC.

### (a) Non-redundant

**Table 12** summarises the numbers of non-redundant LS in TC contexts in all groups of speakers.

Non-redundant lexical subjects in TC (N)						
Type	Spanish	Greek	IMM	HS	L2	Total
Following presentational focus	17	9	24	12	25	87
Preceded by corefering NS	3	1	2	8	5	19
LS forming equivalents	2	3	1	1	2	9
Rephrasing	0	1	2	0	3	6
Emphasis	0	4	0	0	0	4
<b>Total</b>	22	18	29	21	35	125

**Table 12:** Raw frequencies of non-redundant lexical subjects in TC.

Non-redundant LS in TC (N = 125) were further divided into the following types: (i) LS following presentational focus, (ii) LS preceded by NS, (iii) LS forming equivalents, (iv) LS in emphasis, and (v) LS in rephrasing. In these contexts, LS cannot be considered overexplicit, thus infelicitous, as will be shown below.

#### (i) LS following presentational focus:

This type encompasses more than half the cases of LS in TC contexts (87 out of 162) in all groups of speakers. LS appear in a TC clause following a clause with a subject in presentational focus, i.e. a clause containing a subject-character introduced for the first time in the narrative, usually with an indefinite LS, mostly found in the beginning of narratives or episodes. The subject of the preceding clause is repeated in order to carry on developing the narrative. An example of this type of context is (3).

#### (3) *Heritage Greek*

Pije o pulakis na pai na pari fajito ja ta pulakia tu ke itane **ena**  $\gamma$ ataki. **To**  $\gamma$ ataki kitakse ti folia me ta pulakia mikrutsika [...].

‘The little bird went to bring food for his little birds and there was **a kitten**. **The kitten** looked at the nest with the little small birds [...]’.

(S153, HS, age: 57, intermediate)

## (ii) LS preceded by NS:

This type involves cases of LS in TC contexts which were preceded by a clause with a corefering NS. All groups of speakers produced these TC contexts (19 cases out of 162). An example is shown in (4).

(4) *Heritage Greek*

Mia fora ki enan kero ena aloγataki etrexe na ði to filo tu- ti filenaða tu ajelaða. Ala ixane vali enan ftaxti, tote ðen mporuse na pa na tin ði. Ala **to aloγataki** pije na piðiksi to fraxti.

‘Once upon a time a little horse ran to see his friend the cow. But they had put a fence, so [he] could not go to see her. But **the little horse** tried to jump over the fence.’

(S26, HS, age: 16, near-native)

In (4) the previous explicit mention of the referent was far from the LS in question in the narrative. The speaker uses a LS because s/he may be sensitive to the possibility of misunderstanding by the listener (Hendriks et al. 2014). The frequency of this type of LS in TC was relatively low (Table 13).

## (iii) LS forming equivalents:

This type of LS in TC contexts comprises cases in which the subject in the TC clause is an equivalent phrase embodying the meaning of the subject of the previous clause (9 cases out of 162). The explicit LS in the TC context consists in a lexical unit which is different (but equivalent) to that used to express the previous corefering subject. Since this was made for stylistic purposes, the LS cannot be considered infelicitous. In example (5) in Spanish, the subject *sus nuevos amigos* (‘his new friends’) are in fact *el pájaro y el toro* (‘the bird and the bull’). The frequency of this type of LS in TC in the production corpus was fairly low (Table 13).

(5) *Spanish*

Entonces, eh, **sus nuevos amigos** lo vieron en- en problemas. **El pájaro y el toro** tomaron su set de primeros auxilios y asistieron al pobre caballito, eh, con su pata herida.

‘Then, eh, his new friends saw him in- in trouble. The bird and the bull took their first-aid kit and helped the poor little horse, eh, with his wounded leg.’

(S85, Spanish, age: 37)

## (iv) LS in rephrasing:

In the groups of Greek monolinguals, immigrants, and L2ers, there were cases of LS in TC in which the same LS was repeated for rephrasing purposes (6 cases out of 162). An example is shown in (6). The frequency of LS in TS to rephrase the utterance was low and did not emerge in the Spanish and the HS groups (Table 13).

(6) *Immigrant Greek*

Se mia stigma efije **i peristera**, petakse **i peristera** na vri fai ja ta pulakia tis.  
 ‘At some point the dove left, the dove flew to find food for her little birds.’  
 (S32, IMM, age: 84, LoR: 29)

## (v) LS in emphasis:

Finally, only in the Greek monolingual group there were 4 cases (Table 13) in which the clause containing the LS, or part of the clause (though not the subject itself), was repeated because it was emphasised for rephrasing purposes.

## (b) Redundant

The frequency of infelicitous (redundant) LS in TC contexts is shown in Table 13.

	Redundant lexical subjects in TC					
	Spanish	Greek	IMM	HS	L2	Total
N	6	5	10	5	11	37
%	21.4	21.7	25.6	19.2	23.9	22.8

**Table 13:** Raw frequencies and percentage of redundant lexical subjects in TC.

In all groups of speakers there were cases of LS in TC contexts which may be considered redundant, hence infelicitous, because their omission would not affect the interpretation or style of the utterance but would in fact be the most appropriate option. Examples of such cases are shown in (7)–(9).

(7) *Immigrant Greek*

Itan ena aloyaki ke **to aloyaki** etrexe anemelo ston kampo. Ke **to aloyaki** sinantise ðio filus tu.  
 ‘There was a little horse and the little horse run careless in the field. And the little horse met two friends of his.’  
 (S143, IMM, age: 22, LoR: 3)

(8) *Heritage Greek*

Ke irthe **ena yati** pu ithele na pai na skotosi ta pulakia ke- jati perimene **o yati** na fiji i mitera tu  
 ‘And a cat came, who wanted to go to kill the little birds and- because the cat waited for their mother to leave.’  
 (S155, HS, age: 67, advanced)



(9) *L2 Greek*

to γατο efije ke otan to γατο efije ksanaerthi to meγalo puli me fajito ja ta pulakia.

‘The cat left and when the cat left the bird bird came back with food for the little birds.’

(S47, L2, age: 30, intermediate)

**Observations**

It is argued that only redundant LS in TC involve infelicitous uses of subjects. In the present study most of the cases of LS in TC are not infelicitous. If the total number of cases of LS in TC in each group is taken into account, only a low percentage of those subjects can be considered redundant. **Table 14** resumes the number and percentage of redundant LS relative to the total number of cases of LS in TC. No statistical differences were found between the groups when considering only the cases of redundancy. Therefore, although the overall performance of the HS and L2 speakers regarding LS in TC showed a statistically significant difference with respect to the other groups, a qualitative approach to the data revealed that all groups were similar with respect to LS redundancy.

Group of speakers	Redundant LS in TC		Speakers using LS in TC	
	N	%	N	%
Spanish	6/28	21.4	15/20	75
Greek	5/23	21.7	13/20	65
IMM	10/39	25.6	23/35	65.7
HS	5/26	19.2	13/21	61.9
L2	11/46	23.9	17/20	85
Total	37/162	22.4	81/116	70.5

**Table 14:** Use of redundant LS in TC contexts in all groups.

**5.2.5. Interim summary and discussion on TC**

In the contexts of TC, it was observed that the monolingual and bilingual groups of speakers expressed same reference in narratives by using predominantly NS. LS were also used in TC contexts by all groups of speakers but were found to be more frequent in the case of the HS and especially in the case of the L2 speakers when compared to Greek monolinguals and the other groups. The L2 group presented the highest percentage of speakers using at least 1 LS in TC (85%). Scrutinising qualitatively the particular contexts of TC in which LS were produced, it was observed that most occurrences did not involve infelicitous (pleonastic) LS. It was thus noted that redundancy is context-dependent and that LS in TC do not a priori imply infelicity. The frequency of redundant LS in TC was low and emerged in all groups of speakers. In addition,

OSP in TC were used to a very small extent by all groups of speakers in order to encode emphasis or contrastiveness. The proportion of infelicitous OSP use in TC contexts was insignificant; therefore, there was no overuse of OSP in TC contexts in the performance of the bilingual groups. The individual results of only one L2 speaker who produced pragmatically inappropriate OSP in this context cannot be generalised. In conclusion, the qualitative analysis of TC contexts with respect to subject expression on the whole revealed no major differences between the groups.

In sum, although there were some significant differences in the quantity or relative frequency of subjects used in TC in the different groups, qualitatively all groups of speakers behaved similarly. Both Greek and Spanish monolinguals as well as the three bilingual groups in their Greek performance revealed a generally homogeneous behaviour on subjects' production in TC. Their performance could be seen as generally conforming to the postulation of accessibility theory (Ariel 1990), according to which null referential subjects display a bias towards establishing coreference with highly salient antecedents, such as subjects (see also Carminati 2002). This is underpinned by the percentages of TC contexts expressed with NS, which were of a range of 93.37% and 95.79% in the Spanish and Greek monolinguals respectively and 86.36% (L2), 92.22% (HS) and 95.29% (IMM) in the bilingual groups.

#### **5.2.6. Use of LS in TS**

All groups of speakers predominantly used LS in contexts of TS in a range of 63.54% to 76.77%. There were 898 TS clauses expressed with LS in total, which was 70.38% of the TS contexts.

#### **5.2.7. Use of OSP in TS**

TS can be encoded with OSP in cases of referent reintroduction. There were 35 cases of OSP in TS in the production data on the whole, which was 2.74% of the TS contexts. More than half of these cases ( $N = 19$ ) were produced by the Spanish monolingual group and the remaining ( $N = 16$ ) were produced by the four Greek-speaking groups (monolinguals, immigrants, HS, L2ers). The OSP rates in all groups but especially in the Greek-speaking groups show that all together the speakers used relatively few OSP in their narratives. In addition, the Greek-speaking groups were different in terms of overall quantity of OSP produced in TS from the Spanish monolinguals due to the microparametric variation found between the two languages (Giannakou & Sitaridou 2020).

In the Spanish group, there was a total of 19 cases of OSP in TS (8.15%) given by 11 speakers. In most cases (13 out of 19, i.e. 68.4%), the OSP in Spanish was not essential for reference disambiguation due to the presence of contextual or grammatical cues. In the Greek monolingual group, 4 speakers used a total of 5 OSP in TS (1.95%), each speaker producing a maximum of 2 OSP in this context. It was also noticed that all the cases of OSP in Greek were required to disambiguate subject reference or to convey focus (for details see Giannakou & Sitaridou 2020).

In the immigrant group, 3 speakers used a total of 4 OSP in TS (1.01%) with each of them producing no more than 2 OSP. One such case is shown in (10).

(10) *Immigrant Greek*

Itane mia kotula, Ø ixē tria avγulakia, Ø ta zestane ke vyikan tria pulakia. Tora **afti** prepi na pai na feri fai na taisi ta peðia tis.

‘There was a hen, [she] had three little eggs, [she] warmed them and three little birds came out. Now **she** needs to go to bring food to feed her offspring.’

(S09, IMM, age: 80, LoR: 54)

In the HS group, 3 out of 21 speakers used a total of 3 OSP in TS (1.56%). One such case is shown in (11).

(11) *Heritage Greek*

I mama pulaki den iðe afto pu ekane o skilos ala **afti** jirise me fajito ja ta tria pulakia tis.

‘The mother bird didn’t see what the dog did but she came back with food for her little birds.’

(S23, HS, age: 29, intermediate)

In the L2 group, 2 basic-proficiency speakers used a total of 4 OSP in TS (1.56%), each speaker producing 2 OSP in this context. An example is shown in (12).

(12) *L2 Greek*

Ke traviksa tin ura apo ton γata ke- ke- ja kato ki **aftos** den mporusa na pari ta pulakia.

‘And (he – the dog) pulled the tail of the cat and- and- down and **he** (the cat) could not take the little birds.’

(S28, L2, age: 50, basic)

### 5.2.8 (Over)use of NS in TS

As shown in **Table 9**, all groups of speakers used NS in TS. A total of 343 NS in this context were found in the production corpus, which was 26.88% of the TS contexts. Greek and Spanish monolinguals performed similarly, with 23.35% and 25.32% of TS expressed with NS respectively (see Giannakou & Sitaridou 2020). The percentage was 29.04% in the immigrant and 21.21% in the L2 group, while the HS showed the highest percentage of all, i.e. 34.9%. The HS were significantly different from the Greek monolinguals [Pearson  $\chi^2$  (1, N = 449) = 7.22, p = 0.007] and the L2ers [Pearson  $\chi^2$  (1, N = 390) = 9.06, p = 0.003] with respect to the rates of NS use in TS. As already stated, NS in TS are felicitous if the subject referent can be identified through morphological and/or contextual cues in the discourse. However, if the context contains a NS in TS but not sufficient cues to identify the subject referent due to presence of other potential referent(s), then the NS is ambiguous (infelicitous) leading to miscommunication. The majority of NS in TS were found to be non-ambiguous (N = 299, 87.17%), whereas a small number of

NS were marked as ambiguous (N = 44, 12.83%). The ambiguity of NS was not always due to the lack of an overt subject itself, as will be explained below. **Table 15** displays information on numbers and percentages of non-ambiguous and ambiguous NS in TS.

	Spanish	Greek	IMM	HS	L2	Total
<b>Non-ambiguous</b>	58	58	98	52	33	299
	<i>98.31</i>	<i>96.67</i>	<i>85.22</i>	<i>77.61</i>	<i>78.57</i>	<i>87.17</i>
<b>Ambiguous</b>	1	2	17	15	9	44
	<i>1.69</i>	<i>3.33</i>	<i>14.78</i>	<i>22.39</i>	<i>21.43</i>	<i>12.83</i>
<b>Total</b>	59	60	115	67	42	343
	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

**Table 15:** Ambiguity of NS in TS.

**(a) Non-ambiguous NS**

All groups of speakers used non-ambiguous (felicitous) NS in contexts of TS. More specifically, taking into account all NS in TS in all groups, the range of non-ambiguous NS was 77.61% to 98.31%. There were 299 TS contexts expressed with felicitous NS in total, i.e. 87.17% of the cases of NS in TS. The non-ambiguity is due to morphological, semantic or contextual cues, which remove uncertainty regarding the subject referent. The Spanish group produced 58 cases of unambiguous NS in TS (98.31%), given by 19 out of 20 speakers with each of the speakers producing no more than 6 such cases. In the monolingual Greek group, there were 58 cases of unambiguous NS in TS (96.67%), given by 19 out of 20 speakers with each speaker producing a maximum of 8 such cases. In the immigrant group, there were 98 cases of unambiguous NS in TS (85.22%), given by 34 out of 35 speakers with each speaker producing no more than 9 such cases. In the HS group, there were 52 cases of unambiguous NS in TS (77.61%), given by 16 out of 21 speakers with each speaker producing no more than 7 such cases. In the L2ers' group, there were 33 cases of unambiguous NS in TS (78.57%), given by 17 out of 20 speakers with each speaker producing a maximum of 6 of such cases. An example is presented in (13).

(13) *Heritage Greek*

[...] ena aloyataki etrexe na ði to filo tu- ti filenaða tu ajelada. Ala Ø ixane vali enan fraxti, tote Ø ðen mporuse na pa na tin ði.

[...] a little horse was running to see his friend- his female friend, the cow. But (they) had put a fence, so (he) could not go to see her.

(S26, HS, age: 16, near-native)

### (b) Ambiguous NS

All groups of speakers produced ambiguous NS in TS contexts. There were 44 TS contexts expressed with ambiguous NS in total, which was 12.83% of NS in TS. Such cases produced by the monolingual groups are insignificant. The bilingual groups produced significantly more ambiguous NS in TS contexts than the monolinguals. There were 17 cases (14.78%) of ambiguous NS in TS in the immigrant group, produced by 9 out of 35 speakers, with a maximum of 3 such cases per speaker. There were 9 cases (21.43%) in the L2 group, produced by 7 out of 20 speakers with each of them producing no more than 2 such cases. In the HS group, there were 15 cases (22.39%) produced by 10 out of 21 speakers with each speaker producing a maximum of 3 such cases. The greatest percentage of ambiguous NS in TS was given by the HS, which is also the group with the greatest number of speakers producing at least on such case of ambiguity.

The ambiguous NS in TS found in the production data involved (almost always) cases of referent reintroduction in subject position. In some cases, such reintroduction would require an overt subject (lexical or pronominal) taking into account the listener's perspective (see Gundel, Hedberg & Zacharski 1993; Hendriks et al. 2014). In other cases, however, an overt subject was not obligatory to prevent ambiguity, since ambiguity was triggered by other problems in expressing the utterance. If the TS is not perceived due to the NS and the absence (or incorrect use) of other cues, the referent may be misunderstood as erroneously referring to the subject of the previous clause or to some other referent. In other words, the resolution may result in a TC interpretation or ambiguity, hence miscommunication and/or processing cost. In the cases shown next, NS interpretation was temporarily or permanently biased towards a TC interpretation or involved ambiguity perceived by the listener of the narratives. Such infelicitous constructions were unintentionally produced by the speakers, who did have a specific meaning in their minds, yet it could not be conveyed effectively. In this sense, the ambiguous clauses may be regarded as vague rather than ambiguous (see e.g. Wasow 2015). Nonetheless, since vagueness (lack of preciseness) entails ambiguity, i.e. the quality of being open to more than one interpretation, the term ambiguity is employed in the present study.

Ambiguity was classified into two main types: (i) temporary and (ii) full ambiguity.

(i) Temporary or local ambiguity is generally resolved through the continuation of the utterance once the listener has mentally processed it. Disambiguation takes place at a certain point in the communication process by means of morphological or semantic cues that may appear later in the discourse. Temporary ambiguity may be also resolved based on the context, world knowledge, and human inferential abilities, assuming cooperation by the listener (Wasow 2015; Winter-Froemel & Zirker 2015).

(ii) Full ambiguity causes more than one possible interpretation of the referent in the utterance. Since neither of the possible interpretations can be ruled out, it may thus confuse the listener. Full ambiguity often remains unresolved (Wasow 2015). In the present study, full ambiguity is related to either morphological misconstructions or to genuine ambiguity caused by the lack of explicit subject.

**Table 16** displays the number and percentage of ambiguity cases on NS in TS per group of speakers according to type of ambiguity.

Ambiguity	N						
	Spanish	Greek	IMM	HS	L2	Total	%
Temporary ambiguity	1	1	7	7	0	16	36.4%
<b>Full ambiguity</b>							
Morphological ambiguity	0	0	2	6	2	10	22.7%
Genuine ambiguity	0	1	8	2	7	18	40.9%
<b>Total</b>	1	2	17	15	9	44	100%

**Table 16:** N of ambiguous NS in TS per type of ambiguity and group of speakers.

The following sections present some of the specific contexts of ambiguous NS as expressed by the speakers. In line with Licerias, de la Fuente, and Martínez Sanz (2010), it was determined whether or not an OSP would disambiguate the reference of ambiguous NS. It should be stressed that in Greek speakers tend to use OSP sparingly and this was also found to be the case for the bilinguals in their Greek performance.

(i) Temporary ambiguity

Cases of temporary ambiguity, i.e. ambiguity which is most likely to be properly resolved, were triggered by a NS and eventually resolved through morphology, repairs, contextual or pragmatic cues. Such cases mostly emerged in the production of the immigrants and the HS (see **Table 15**). No ambiguous constructions were found in the L2 group. An example is shown in (14).

(14) *Immigrant Greek*

Parusiazete enas skilos ki o γatos, molis iðe ton skilo, anevne sto ðentro. Ala opos o skilos me ton γato ðen teriazune, Ø<sup>?</sup> fovithike ke pije n' anevi na piasi ti folia.

‘A dog appears and the cat, when (he) saw the dog, climbed up the tree. But since the dog and the cat do not get along, (he<sup>?</sup>) was scared and went to climb to catch the nest.’

(S09, IMM, age: 79, LoR: 54)

In (14), the context is clearly TS and the NS in *fovithike* ('was scared') is ambiguous since the referent could be the dog or the cat. This is resolved pragmatically through world knowledge, i.e. cats are more likely to be frightened by dogs than vice versa. Although the dog is also a possible antecedent of the NS in *fovithike* ('was scared'), the continuation of the utterance also disambiguates the subject referent since cats and not dogs can more easily 'climb'. The ambiguity therefore can be considered only temporary. The use of an OSP would not resolve the ambiguity since the two referents are masculine. A full LS would be necessary for the sake of immediate disambiguation.

(ii) Full ambiguity

If the unfolding spoken language does not appositely resolve NS anaphora, then the ambiguity may be regarded as full, with more than one possible interpretation of the subject referent, which is often left unresolved. Two types of full ambiguity were found in the production data: (a) morphological ambiguity, which was due to ambiguous morphology, morphological errors (e.g. agreement violations in verbs, clitics, and case assignment) or omissions (e.g. omitting a clitic); and (b) genuine ambiguity, which is triggered by the NS itself.

#### (a) Morphological ambiguity

An example of morphological ambiguity in the heritage data is shown in (15).

(15) *Heritage Greek*

[...] ke o skilos pu zuse ki aftos se afto to oreo to kipo iðe pu i kaki- i kakia γata ithele na fai ta pulakia, Ø<sup>?</sup> **piðikse** apano **tu, ton** pire ap' tin ura, **ton** petakse kato.

'[...] and the dog who also lived in this nice garden saw that the bad- the bad cat wanted to eat the little birds, (he?) jumped on him, (he) took him from the tail, (he) threw him down.'

(S31, HS, age: 44, near-native)

In the HS production, in (15) the context in *piðikse* ('jumped') involves a TS context but the NS biases a TC interpretation. More specifically, the intended subject referent is the dog but it appears to be the cat. However, the trigger of this ambiguity is not the NS itself but the wrong gender agreement in the clitic(s). The chosen nouns referring to the dog (*o skilos*) and the bad cat (*i kakia γata*) are masculine and feminine respectively. Although initially the listener is inclined to assign the dog (*o skilos*) to the subject of *piðikse* (jumped), the speaker made morphological errors in clitics using masculine instead of feminine gender. Thus, apparently the cat is the subject referent which jumped on the dog. An OSP would not effectively lead to correct identification of subject referent as it would rather cause more perplexity due to the (erroneous) gender cues in clitics. This case of ambiguity is not resolved for a listener who is ignorant of the plot.

It could be reasonably inferred that proficiency plays a role in handling morphology accurately, although this is not neatly evidenced in the eight cases of morphological ambiguity

produced by the HS and the L2ers of this study. There was at least one case of such ambiguity in each of the four proficiency levels. Three out of four occurrences of this type of ambiguity found in the basic level of proficiency were produced by one speaker (S30). There were also two cases detected in the intermediate level, one case in the advanced, and one case in the near-native levels. From the present data proficiency is not clearly associated with morphological ambiguity, given the low number of tokens and speakers.

### (b) Genuine ambiguity

In cases of genuine ambiguity, the referent of the NS in contexts of TS was not resolved because of the presence of more than one possible antecedent and the concurrent absence of relevant morphological, semantic or contextual cues. Contrary to ambiguity caused by morphological issues, genuine ambiguity involves cases of NS in TS which are not properly disambiguated due to the lack of subject. In this type of ambiguity, it is impossible or difficult to establish the correct referent for the NS. There were 18 such cases of unresolved NS in TS, with 8 cases found in the immigrant group, 2 cases in the HS, and 7 cases in the L2 production. In the monolingual groups, there was only one case found in the Greek data. Examples are shown in (16)–(18).

#### (16) *Immigrant Greek*

Espase to poði tu, ala i ajelaða lipon ixē ena filo, itane ena peristeri, itane nosokoma. Ki efere lipon to asthenoforo. Irthe ena asthenoforo ki Ø<sup>?</sup> **efere** lipon ta tiafta, to lefkoplasti, ke tu Ø<sup>?</sup> **eðese** to poði lipon.

‘(He) broke his leg, but the cow then had a friend, (she) was a dove, (she) was a nurse. And so (she) brought the ambulance. An ambulance came and (it?) brought the stuff, the bandage, and (it?) tied his leg then.’

(S51, IMM, age: 76, LoR: 63)

In (16), the two ambiguous NS in the verbs *efere* (‘brought’) and *eðese* (‘bound’) appear as having the ‘ambulance’ (*asthenoforo*) as their subject antecedent following a TC interpretation. However, according to the storyline the antecedent in *efere* is the ‘dove’ (*peristeri*) and the antecedent in *eðese* is the ‘cow’ (*ajelaða*). LS would be required for listeners to interpret correctly the subject antecedents in both cases.

#### (17) *Heritage Greek*

Ine mia omorfi ajelaða pu fenete ixē ke mia omorfi kuventa me to pulaki afto ‘sí’ pu kelaiðuse. Mia xara ta pernusane. Ke Ø<sup>?</sup> **irthe** konta ke to aloyataki apofasi na- pire tin apofasi na piðiksi apano ap’ ti fraxti ja na ine konta stin ajelaða ke na kanune ena pexnidi. ‘There is a beautiful cow who seems to have a nice talk with that bird *sí* that sang. They were having a good time. And (s/he?) came closer and the little horse decided to jump over the fence to be close to the cow and play a game.’

(S42, HS, age: 57, advanced)



In (17) the NS of the verb *irthe* ('came') is ambiguous since it can refer to the three possible referents (cow, horse, bird). According to the storyline, the horse is the one that comes closer, but this is not clear from the context given by the speaker. The LS *to aloyataki* ('the little horse'), which follows, should appear as the overt subject of the verb *irthe*.

(18) *L2 Greek*

[...] ke arxizi o γατο- o γατα na kitai ta tria pulakia pano sto ðentro ke arxizi na- na aneveni ke ton kitai enas skilos. Ki oso aneveni o- i γατα, ti travai tin ura. Ki erxete o- to pulaki to- i mitera to pulaki [...] me ena skuliki ja fajito ke Ø<sup>3</sup> tin **travai** ke i γατα fevji jati o piso tin kiniγai ti γατα ke afta.

'[...] and the cat- the cat starts looking at the three birds on the tree and (he) starts to climb and a dog sees him. And while the- the cat climbs, he pulls the tail. And the bird- the mother bird arrives [...] with a worm for food and (he<sup>3</sup>) pulls her and the cat leaves because the one behind chases her and that's all.'

(S16, L2, age: 35, advanced)

In (18) the context in *travai* ('pulls') appears to be TC and not TS. Due to the NS, the referent is apparently the 'little bird' (*pulaki*). However, the picture-story shows that the dog pulls the cat. An OSP or a LS would disambiguate the reference.

### 5.2.9. Interim summary and discussion on TS

In the contexts of TS, it was observed that the monolingual and bilingual groups of speakers expressed change of subject referent in narratives by using mostly LS. The HS group used significantly less LS in TS than the Greek monolinguals and the L2ers. OSP were also used in TS contexts by all groups of speakers but were found to be significantly more frequent in the Spanish monolinguals than in the Greek-speaking groups (see Giannakou & Sitaridou 2020). No overproduction of OSP was manifested in the bilingual groups. NS were likewise used in TS contexts by all groups of speakers. The HS used significantly more NS in TS than the Greek monolinguals and the L2.

All cases of NS in TS were scrutinised in order to establish whether or not the subjects were ambiguous with respect to the subject referent. Most cases of NS in TS were not ambiguous (N = 299). There were 44 cases of ambiguous NS found in TS contexts, i.e. it was not clear whether the intended meaning was TS or TC or which was the subject referent of the clause. The cases of ambiguous NS in TS were further examined as to their temporary or permanent effect in the discourse. From the 44 cases of NS in TS, 16 subjects involved temporary ambiguity and were mainly produced by the immigrants and the HS. The remaining 28 cases involved NS in TS, whose ambiguity was triggered by the actual NS or by mishandling of other morphological phenomena. Morphological ambiguity was found in 10 cases only in the bilingual groups and mostly in the group of HS (6 cases). Genuine ambiguity, triggered by the NS and not resolved,

was found in 18 cases, 17 of which were produced by the bilingual groups and especially by the immigrants and the L2ers. Proficiency was not clearly associated with the production of ambiguous NS in TS concerning the groups of HS and L2 but it could be arguably associated with the correct use of morphology.

The bilinguals' performance in expressing TS in Greek was similar to that of the Greek monolinguals regarding the use of OSP and differed from that of Spanish monolinguals, who produced significantly more OSP in this context. As regards the NS, although those were used by all groups in TS contexts, the HS used significantly more NS in TS than the Greek monolinguals and the L2 speakers. In addition, ambiguous NS in TS crucially emerged in the production of the bilinguals. Instances of ambiguous NS in TS were also detected in monolinguals' production but their occurrence was insignificant. Therefore, the bilingual speakers differed from the monolinguals in the frequency of ambiguous clauses with respect to subject referent, which were found in contexts of TS with NS. These cases of ambiguity were neither always unresolved (see temporary ambiguity) nor always triggered by the NS (see some cases of morphological ambiguity). Full ambiguity can be reasonably considered to be more problematic than temporary ambiguity since it is generally not resolved. It cannot be easily established whether cases of full ambiguity, either morphological or genuine ambiguity, were always performance errors. **Table 17** resumes the number and percentage of ambiguous NS in TS in relation to the total number of NS in TS, as well as the number and percentage of speakers that produced such ambiguities.

Group of speakers	Ambiguous NS in TS		Speakers using ambiguous NS in TS	
	N	%	N	%
Spanish	1/59	1.7	1/20	5
Greek	2/60	3.3	2/20	10
IMM	17/115	14.8	9/35	25.7
HS	15/67	22.4	10/21	47.6
L2	9/42	21.4	7/20	35
<b>Total</b>	37/162	12.8	29/116	25

**Table 17:** Use of ambiguous NS in TS contexts in all groups.

It can be claimed that in TS contexts there were both quantitative and qualitative differences between the groups. Firstly, in Spanish TS is expressed with OSP more often than in Greek as produced by both monolinguals and bilinguals. Secondly, overt subjects and unambiguous NS were mostly used by all groups of speakers to encode TS, revealing a pattern which was generally homogeneous in the Greek and Spanish monolingual groups as well as in the three bilingual groups. However, the HS speakers were found to use significantly more NS in TS than the Greek

monolinguals and the L2ers. Crucially, it was further observed that the HS were the group producing the larger percentage of ambiguous NS in TS by the larger percentage of speakers as compared to the other groups. Ambiguous NS in TS were also produced by the immigrants and the L2 speakers. Such a finding reveals a qualitative difference between monolinguals and bilinguals, the latter being more prone to produce ambiguous constructions especially involving TS contexts, which appear to demand the implementation of higher cognitive resources in oral production.

Apart from heritage bilingualism, age also seems to influence the production of ambiguity. The role of age is an issue which requires further research attention and will be addressed in a follow up study using the same production data. It is worth noting, however, that cases involving ambiguity in TS contexts were barely found in the monolingual data even in the production of older participants. This suggests that by and large it is bilingualism combined with older age which may presumably affect production of ambiguous constructions involving NS in the less used/less dominant language.

In sum, there were some significant differences in the quantity or relative frequency of subjects used in TS in the different groups. Particularly, this was found in Spanish vs all Greek-speaking groups in OSP expression (see Giannakou & Sitaridou 2020) and in HS vs Greek monolinguals and L2ers in NS expression. In addition, there were qualitative differences between the monolingual and bilingual groups with respect to ambiguity. Without considering particular details, all groups' performance could be seen as generally conforming to the postulation of accessibility theory (Ariel 1990), according to which fuller referring expressions, such as LS and OSP, prefer to establish coreference to less salient/prominent antecedents. As found in the data, most LS and OSP instances were manifested in TS contexts. OSP occurrences were also in line with the Position of Antecedent Hypothesis (Carminati 2002). Bilinguals, however, tended to be more ambiguous as regards reference in their discourse when employing NS in TS. Although NS in TS cannot be a priori considered infelicitous, as previously seen, the relatively high frequency of ambiguous NS in TS in the bilingual performance, especially in HS and L2ers, is a finding which needs to be further explored.

## **6. Discussion and conclusion**

The present study examined subject distribution in Greek and Chilean Spanish analysing narratives produced orally by monolinguals of both languages and bilingual speakers in Greek. The first prediction of the study was the overuse of the OSP or infelicitous use thereof in the performance of Greek-Spanish bilinguals. In both discourse contexts examined here (TC and TS) no overuse of OSP was observed in the bilingual performance, which was similar to the Greek monolingual and significantly different from the Spanish monolingual performance. The Spanish monolinguals used significantly more OSP in TS than the bilingual Greek-speaking groups. In the latter, OSP were produced relatively sparsely (see Torregrossa et al. 2020 for similar findings in Greek) and no differences were observed between the groups. Therefore, no potential transfer from Spanish

was observed in the scope of OSP in bilingual Greek. In addition, since no overuse of OSP in bilinguals was attested, this finding disconfirms the IH. Against the prediction stemming from the IH, in the Greek performance of Greek-Spanish bilinguals, dominant in Spanish, no overuse of the OSP or infelicitous use thereof was found. This may be due to the nature of the Greek OSP and its deictic features, which make it less susceptible to language contact effects (see Tsimpli et al. 2004; Giannakou & Sitaridou 2020) and it is an issue worth exploring further. Daskalaki et al. (2019) report a similar finding and a similar explanation for a Greek-under-English situation of child bilingualism (see also Argyri & Sorace 2007).

In addition, LS and NS were generally used by monolinguals and bilinguals in a similar manner. The study showed that redundancy of overt LS found in the performance of both monolingual and bilingual speakers is mostly felicitous as it may involve stylistic choices made by the speakers in narratives. Other studies attest overuse of LS (full DPs) in contexts of character maintenance in narratives produced by bilingual children, as in Andreou et al. (2015), Torregrossa and Bongartz (2018), and Torregrossa et al. (2021). Similar to our findings on HS and L2ers, bilinguals overuse LS in TC contexts, as evidenced by the statistical significance of the findings, in order to avoid ambiguity. In the present study, apart from the statistical analysis of the data, there was a case-by-case qualitative examination of the instances of ‘redundancy’, which showed that most such cases did not in fact involve infelicity (see 3.4). The age factor (children vs adults), the stylistic conventions and norms of narrating related to the dominant language in each case, as well as methodological considerations may account for differences in the findings in the aforementioned studies.

Moreover, it was shown that NS in contexts of TS were also mostly felicitous, i.e. unambiguous, due to the presence of contextual, grammatical, and/or semantic cues in the discourse. Bilingual speakers used more ambiguous constructions involving NS in TS than monolinguals, which is a finding to revisit in future work. Overextension of NS in TS contexts is a pattern which has been attested in previous research with L2/bilinguals, especially in Spanish (e.g. Montrul 2004; Montrul & Rodríguez Louro 2006; Rothman 2009; Sorace et al. 2009; Montrul & Sánchez-Walker 2015; Montrul 2016a; Clements & Domínguez 2017).

The present study suggests that ambiguity may be more problematic than redundancy because it may lead to miscommunication. As Rothman (2009: 967) also states, redundancy ‘is not wrong per se. It is simply pragmatically odd. Worse, however, is the failure to use overt subjects when the discourse information does not provide an immediately identifiable/accessible subject.’ The findings of the present research contribute to linguistic theory on NS as well as to a better understanding of bilingualism. Future work will address the role of age in the performance of both monolingual and bilingual speakers regarding subject distribution, as well as interpretation of ambiguous subjects by different types of bilinguals of Greek and Spanish.

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## Abbreviations

DP = determiner phrase, HS = heritage speaker(s), IH = Interface hypothesis, IMM = first-generation immigrants, L1 = first language, L2 = second language, L2er(s) = second language speaker(s), LoR = length of residence in the host country, LS = lexical subject(s), N = number, NS = null subject(s), OR = odds ratios, OSP = overt subject pronoun(s), PAH = Position of antecedent hypothesis, SD = standard deviation, TC = topic continuity, TS = topic shift

## Competing Interests

The authors have no competing interests to declare.

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