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# Syntactic Constraints and Social Uses of Greek-English Intrasentential Codeswitching

By

Despina Malliaroudakis

A master's thesis submitted to the Graduate Faculty in Linguistics in partial fulfillment of the requirements for the degree of Master of Arts, The City University of New York

2015

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**This manuscript has been read and accepted for the  
Graduate Faculty in Linguistics in satisfaction of the  
dissertation requirement for the degree of Master of Arts.**

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## Abstract

### Syntactic Constraints and Social Uses of Greek-English Intrasentential Codeswitching

By

Despina Malliaroudakis

Advisor: Professor Andrew Rosenberg

There are many multilingual speakers who codeswitch in daily conversation. By learning the specific points where this codeswitching occurs, the reasons why the speaker codeswitches are revealed. In obtaining both, one can see how a speaker utilizes two or more languages to convey their point in a conversation. The list of features may also hold useful linguistic information regarding codeswitching boundaries that can be further applied to other areas within linguistics.

This study will use the recorded speech of six bilingual speakers who codeswitch between Greek and English to determine specific codeswitching boundaries. Once obtained, the reason behind the codeswitch will be determined: is the reason a focus on topic of conversation? Persuasion? A show of closeness? The expected outcome is a list of features that determine the boundary of an intrasentential codeswitch from Greek to English (and vice versa), as well as data which gives the frequency rate of each feature in conversation.

## **Acknowledgements**

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## **Introduction**

The term “codeswitching” holds several definitions. The first definition is the change from one language to another language in a conversation. The second definition is a change from one dialect (for instance, New England English) to another (Southern English). The third is a change from one language register (formal speech) to another (casual speech). For this study, the first definition of codeswitching is used.

Among all linguists, the baseline for codeswitching is bilingual competency; where opinions differ is the degree of language competency needed for a speaker to codeswitch. One linguist claims a speaker must be a balanced bilingual to codeswitch, since any non-balanced bilingual who has only a slight competency in a language codeswitches to make up for linguistic deficiency (Bloomfield 1933 quoted in Balamotis 2010). Thus, linguists believe a speaker must possess the highest degree of language competency to codeswitch. However, whether the speaker is a balanced bilingual or not is difficult to determine since each linguist has a different interpretation of what makes a bilingual balanced. Another linguist states as long as a speaker possesses some familiarity between two languages, and are able to “make meaningful utterances” they are able to codeswitch (Haugen 1953 quoted in Balamotis 2010). In this case, the linguist includes early second language learners as speakers who are capable of codeswitching. This paper also takes the view that any speaker who uses two or more languages in speech is a bilingual who can codeswitch.

This study investigates the specific language pair of Greek and English by using previous codeswitching studies as a basis to formulate several hypotheses addressing syntactic constraints and social uses that may arise in codeswitched speech. The data used is recorded casual speech from participants switching between Greek and English.

## **Aims**

The aim of the study is to pinpoint specific codeswitching boundaries that occur within conversation and see the reasons behind the codeswitches. Additionally, the study will reveal the most frequent codeswitching features. There are several hypotheses that will be studied:

H1) Speakers are most likely to codeswitch when highlighting an important thought in conversation.

H2) Participants start out with minimal codeswitching, then increase over time until they plateau with minimal fluctuations.

H3) Native Greek participants codeswitch mostly intersententially and Greek American participants codeswitch mostly intrasententially

H4) Codeswitching along prepositional phrases will be very frequent.

H5) Participants codeswitch frequently when referring to particular cities and countries.

H6) Cultural markers such as cultural foods and media also lead the speaker to codeswitch at the boundary where the marker takes place.

## **Overview**

This paper proceeds to discuss past research in Greek-English codeswitching under the second section's heading "Related Work." In the third section the methodology of this study is explained. The fourth section describes the findings from the recorded conversations. Finally, the fifth section concludes the study, with ideas for future work.

## Related Work

While the topic of this study is specifically on Greek-English codeswitching, there is not a great deal of literature focusing on this particular pair. However, there are many codeswitching patterns and details that are learned in Greek-English codeswitching when examining other language pairs in codeswitching. Therefore, literature discussing various codeswitching language pairs is mentioned in this section, in which patterns from that language pair are taken and examined utilizing this study's data. There are several macro factors of code-switching proposed by linguists which will be discussed. These include language proficiency, language dominance, social uses, and where codeswitching occurs.

One of the earliest studies concerning bilinguals and codeswitching is Bloomfield's 1927 study of English and Menomoni bilinguals. In this study, Bloomfield compares a bilingual to what he deems "the normal case." He defines the normal case as 'a monolingual speaker in a homogeneous speech community.' Since this study was one of the first in the field, linguists took Bloomfield's definition of "the normal case" and evaluated bilingual speakers on a monolingual speaker rubric. By doing this, many linguists deemed bilingual speakers as speakers who simply mix languages, without knowing either adequately. These linguists also have the assumption that in order to be a true bilingual, the speaker must be fully competent in both languages. Bloomfield assumes both of these in his study and ultimately classifies the English/ Menomoni bilinguals as bilingually incompetent and holding "limited language proficiency." By looking at more recent literature as well as the data from this study, it is not the case that bilinguals are incompetent or have limited proficiency at all; rather, they utilize both languages' faculties in conveying their point during a conversation.

Contrary to early 1900s research in psycholinguistics, codeswitching is not seen as "limited language proficiency," but a phenomenon that occurs naturally in spoken speech and is influenced by a number of different factors (Heredia & Brown). There are several linguists who also address the presupposed assumptions of a monolingual and non-variationist focus and state that bilingual speakers should not be compared to neither a monolingual nor a balanced bilingual as incompetent or limited but seen as speakers fully capable of utilizing both languages in a

conversation (especially since defining what makes a ‘balanced bilingual’ is so controversial amongst linguists still). Of course, there are factors which may influence which language occurs where in a dialogue. An external factor is language dominance. Depending on the language used in a region, a speaker might use the dominant language often and codeswitch into the second language occasionally. This phenomenon seems to support the Myers-Scott markedness model of an existing, dominant matrix language set as the foundation and a weaker embedded language occasionally cropping up in spoken speech. However, it is not likely a speaker chooses one language as the base language; rather, additional studies done state there is no matrix language or embedded language within the speaker’s mind.

There have been criticisms for Myers-Scotton’s markedness model that presupposes a matrix language as the foundation. Peter Auer states that when switching, speakers do not reference any matrix model but actively seek out and create social meaning as the conversation moves along. Likewise, Blommaert and Meeuwis conducted a study in Belgium on Zairians and state the markedness model assumes monolingualism to be the normal foundation in communication, since there is a matrix language that is used, when in reality there is no specific language that is used as a foundation in codeswitched speech; the speakers move fluidly between the two languages without using one as the foundation. Pfaff 1975 addresses this question of language dominance and whether speakers who codeswitch have one grammar containing both English and Spanish or two separate grammars with rules for switching between them. By looking at the codeswitching examples in her study, Pfaff determines since the speaker repeated the determiner and changed syntax of Spanish to conform to English, this shows that the speaker has control over both grammatical systems, each system is in separate compartments, and there is no particular language which is dominant over the other.

Aside from language dominance, another factor of codeswitching is social uses. For instance, in Tsokalidou’s study of Greek-English codeswitching in Australia, she finds young women codeswitch more often in conversation than young men do (ratio of 62% to 38%). The reasons why young women codeswitch more often is they “accommodate to interlocutors” while males “assert their language choice” (Tsokalidou). When the young men codeswitched, it was mostly for slang and swearwords or to comment, while young women codeswitched to quote and imitate

past events. Additionally Tsokalidou notes that in her participant observations, overall youth were more likely to codeswitch among close friends in the Greek community rather than just acquaintances. In Balamoti’s thesis, she discusses social uses of codeswitching as well. One of her findings reveals that when Greek speakers congregate among themselves and among non-Greek speakers, they codeswitch in order to “quote, self-repair, and reference culturally linked items with one or the other culture” (Balamoti 2010). However, in the situation with non-Greek speakers, Greek speakers codeswitch for the purpose of solidarity as well (Balamoti 2010).

In Colin Baker’s book “Foundations of Bilingual Education and Bilingualism,” Baker mentions 13 overlapping purposes of codeswitching which fall under two broad categories.

Figure 1. Baker’s Purposes of Codeswitching

Social Uses of Codeswitching	
1. interjecting a conversation	5. reinforcing a request
2. injecting humor in a conversation	6. copying another’s speech patterns
3. excluding someone from a conversation	7. portraying a certain identity to shorten/lengthen social distance and bonding
4. relating a previous conversation	8. changing one’s attitude or relationship

Lexical Uses	
9. emphasizing a point in dialogue	12. repetition to clarify a point
10. expressing a concept with no equivalent in another language	13. introduce certain topics in conversation
11. substituting a forgotten word	

In this study, points 9 and 13 will be looked at and discussed, particularly regarding cultural markers.

There are several studies which also reveal several points of Baker's purposes of codeswitching in real life. For instance, in Lin 1996, Lin perceived patterns of codeswitching occurring in Hong Kong classrooms are ordered and patterned. The teacher always spoke in Cantonese to explain English key terms in class, utilizing points 7, 9 and 12. Lin states while the children did understand English, the teacher used Cantonese since that is the language used at home in the family and the language that decreases distance between the teacher and the student. Also, in explaining the terms in another language this shows an increase in communication of meaning from the teacher to the students to highlight an important point and repeat it in the second language for emphasis.

Regardless of the determining macro factor being language dominance or a particular social use, codeswitching does not crop up haphazardly in speech. There have also been linguists who have recorded syntactic constraints in codeswitching. Although the speaker is not consciously aware of it, codeswitching occurs in specific grammatical slots, following grammatical rules in both languages. Karousou's study reveals that codeswitching occurs "[typically] before adjuncts and before head words in constituents, especially nouns" (Karousou 2001) and that closed class words are involved in codeswitching. The reason closed class words are involved is due to codeswitching occurring at boundaries encompassing an entire clause or phrase. For instance, in the sentence "she saw the bird" a codeswitch is unlikely to occur in between "the" and "bird" since they belong in the same noun phrase. If a codeswitch were to occur, the meaning of the sentence would be understood but the sentence would come across as awkward sounding.

Solorio and Liu also attempt to predict potential codeswitching points in Spanish-English discourse through machine learning algorithms. They trained different learning algorithms such as Naïve Bayes (NB) and Value Feature Interval (VFI) on a transcription of codeswitched discourse. In order to evaluate the performance of the different learning algorithms, two criteria were used as the foundation. The first is measuring the precision, recall, and F-measure of the predictions against the transcription reference and the second is rating the naturalness of the artificially generated codeswitched sentences through human evaluation. Solorio and Liu chose

not to implement the socio-pragmatic functions of codeswitching such as Baker's<sup>1</sup> since this information is often unavailable in discourse and also complicates the task; instead they focused only on the lexical and syntactic features by POS-tagging the entire transcription and setting features to be analyzed. The features analyzed include a one word and two word context, which look at the preceding word or two preceding words before the codeswitch boundary. After training, codeswitched predictions were generated for a series of test sentences. This was done using the NB classifier, the VFI classifier, and the random generator based on word probability gathered from the NB. One of the findings after the generated sentences' evaluation is the average scores for the codeswitched sentences generated by the NB and VFI classifiers were close to the scores generated by humans. The second finding is out of all the algorithms utilized, the Naïve Bayes method generates far more natural sentences while the random generator method produced the least natural sounding sentences. This is due to the additional features that the NB classifier implements, while the random generator accounts for only the probability of a certain word being a codeswitch boundary. Solorio and Liu's study shows that there are lexical and syntactic features that reoccur during codeswitching and, while there may be multiple possible boundaries within a sentence for codeswitching to occur, it is possible for a classifier to predict codeswitching accurately. This study also seeks to find the specific syntactic constraints in Greek-English speech so the findings may be used in future machine learning algorithms.

Pfaff's 1975 quantitative study of Spanish-English bilinguals also focuses on syntactic constraints within codeswitching. In the study, Pfaff has identified three types of codeswitching varieties, each with varying syntactic constraints. Type 1 encompasses casual conversation around everyday topics between speakers who are familiar with one another (close friends or peers); here Pfaff states "deep S" switches occur, meaning switches at the surface sentence breaks or at independent or dependent clause breaks. There are switches of only the conjunction at the clausal level, as well as switches in adverbial phrases and prepositional phrases indicating time and manner. One or two word lexical switches- mostly nouns- occur rarely. Type 2 deals with semi-casual to formal interactions (conversations within a bilingual family or meeting of a student group). This type has a high frequency of loan words consisting mainly of nouns and

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<sup>1</sup> The chart listing various social and lexical uses of codeswitching can be found on page 5

compound nouns. The “deep S” switches that occur here are on the intra-sentential level; whole sentence switches occur frequently while switching at clauses or conjunctions did not occur. Type 3 is the street talk and “jargon of the bato loco.” Pfaff states conversations under this category are mostly Spanish, with English codeswitches occurring on the word level for single nouns, verbs, and adjectives. Pfaff also describes three significant factors in identifying the conditioning environment of codeswitching; they are the syntactic structure of the switch point, whether the switched sequence is an idiom or phrase, and whether the switch involves a syntactic difference between the two languages where the word order, restrictions, etc differ.

Pfaff also references Timm’s 1975 study, in which Timm suggests five specific claims on codeswitching constraints. Pfaff utilizes three of these constraints in her Spanish-English study. The first claim<sup>2</sup> is switching cannot occur between pronominal subjects and objects and finite verbs. The second claim<sup>3</sup> is switching is prohibited between finite verbs and their infinitive complements. The third claim<sup>4</sup> is switching between auxiliary and verb is a deviation from the norm, unless the verbal element is a phonologically adapted English loan. Utilizing three of Timm’s claims, Pfaff finds several examples that challenge Timm’s constraint on verb-phrase switching. For instance, in one of Pfaff’s recorded samples, a speaker said “y fui a *cash* su cheque,” which was understood by the listener, showing that the Spanish finite verb can occur with the English infinitive. Also, another example between the auxiliary and main verb is found where the speaker says “you creo que apenas se habia *washed out*.”

Based on her findings, Pfaff concludes overall frequency of switching to English at noun phrases is high and intra-sentential switches occur frequently in casual conversation. Pfaff also proposes that instead of Timm’s constrictive approaches, two theoretical approaches should be used-contrastive analysis and functionalism. Contrastive analysis is the method of identifying potential interference points, and functionalism suggests that nonsyntactic factors such as sentence perception, constrain syntax. In verb switching, contrastive analysis shows the main difference between English and Spanish syntax is verb conjugation, where Spanish verbs must agree with

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<sup>2</sup> For instance \*yo went, \*mira him, \*she sees lo

<sup>3</sup> For instance \*[they] want a venir

<sup>4</sup> For instance \*I must esperar

the subject noun phrase. Also, while the subject must be present in English utterances, Spanish tends to omit the subject since that is reflected in the verb ending. In accordance with both languages' syntax, the optimal switch would be to English verbs, if the preceding word is a conjugated auxiliary in Spanish, since the agreement and tense markers occur on the preceding word. If the sentence uses an inflected main verb, apart from complete switching at the verb phrase level, the other choice is to use an English verb stem with Spanish inflectional endings (los que *sign-iaron* = 'those who signed').

This study will utilize Pfaff's and Karousou's findings of high frequency switching at noun phrase boundaries and Pfaff's functional approach in order to locate and reaffirm if syntactic constraints on Greek-English codeswitching also mirror Spanish-English codeswitching. Additionally, two of Baker's 13 purposes of codeswitching will be studied regarding lexical use when codeswitching.

## Methodology

The following section describes the method in which this study was conducted. It includes information about the participants, their background, and the type of data collected.

Six participants were used in the study. All are female ranging from early to late 20s and all are university level students. Two participants are native Greek speakers who were born and raised in Greece but migrated to New York City to continue their graduate studies. They were taught English from middle school while in Greece but did not live in an English-speaking community and had no immersion experience until moving to New York City. Three participants are Greek-Americans who were born and raised in New York City to parent(s) of Greek heritage. They were raised speaking Greek from a young age and either spoke English among family or at school/work. The final participant is a native Greek but shortly after being born in Greece her family immigrated to New York City and she was raised as a Greek-American. All of the participants shared a close level of familiarity with the interviewer, which is an important and intentional factor since speakers are more likely to codeswitch among others whom they are comfortable with. However, this level of familiarity also brings about challenges to the study. For instance, given the closeness between the participant and interviewer, the participant may bring prior knowledge and behaviors into the study, opting to mirror the interviewer's speech patterns over speaking naturally.

Each of the participants were recorded in a conversation which lasted half an hour each. The format was not a formal interview questionnaire since speakers tend to codeswitch more often in casual conversations rather than formal circumstances such as an interview. There were several specific questions used, some as a guideline to encourage the participant to speak more and feel comfortable and others to 'lead' a person to codeswitch, which are listed in Appendix I at the end of this paper. The majority of the prompt questions leading the Greek-American participants to codeswitch centered around experiences of Greek culture such as attending the Orthodox church or recounting a memory of Greece, or opinions of Greek media or food. The opposite would occur for native Greek participants- they were asked about new experiences coming to the United States and any shock upon experiencing American culture, to see if they would possibly

codeswitch into English at the question prompt. Another method of leading participants to codeswitch was also the interviewer's speech. The interviewer freely codeswitched while asking questions and responding to participants, in order to create a comfortable setting so the participant is encouraged to codeswitch as well. For instance, if a participant continuously spoke in English, the interviewer would reply in Greek, occasionally with English codeswitches and vice versa.

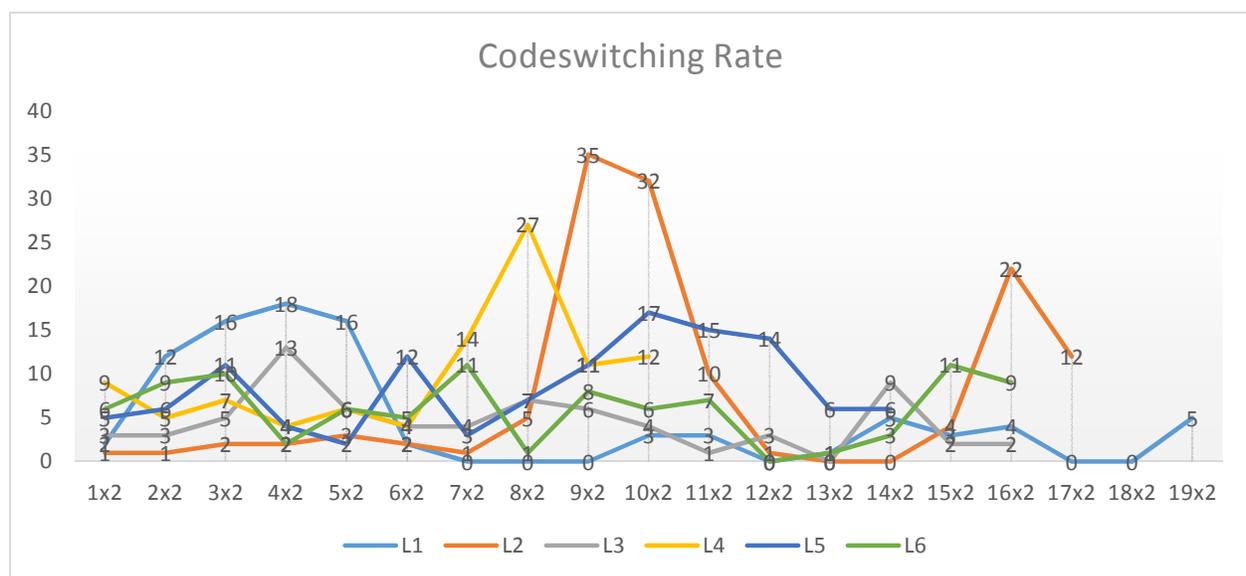
Some of the questions asked in the recorded conversations related to specific items in either Greek or American culture, such as food or place names. The task here was to see if participants would codeswitch from one language to another if the topic at hand was specific to one language's culture. Other questions such as asking for any memorable anecdotes were also asked, not only to make the participant more comfortable and encourage them to start talking, but also to see if codeswitching patterns differed when the participants were recalling anecdotes and past events.

## Findings/Discussion

Regarding H1, speakers are likely to codeswitch when highlighting an important, more data needs to be analyzed. In this study, an important thought is classified as any utterance with the participant saying “I believe” or “In my opinion.” Certain exclamations are also classified as important thoughts since they voice the participant’s opinion on a certain matter. It is unclear however if the speakers codeswitch when highlighting an important thought since other social uses of codeswitching often came into play simultaneously. Colin Baker also mentions that very often various social uses blend into one another and it is difficult to discern if the individual codeswitched because of one social use or another, or both. Therefore, to know whether codeswitching is solely for the purpose of voicing an important thought, additional data is needed in future studies with interview questions specifically prompting the participant to give their opinion on varying matters.

Contrary to H2, participants start out with minimal codeswitching, then increase over time until they plateau, the rate of codeswitching in all six interviews fluctuates a great deal through the entire duration of the conversation. Figure 2 illustrates this; the x-axis is the span of time in 2 minute increments and the y-axis is the number of codeswitches.

Figure 2. Participant’s Codeswitches in 2-Minute Increments



The native Greek speakers spoke mostly in Greek in the first few minutes of the conversation, while the native Greek-American speakers spoke mainly in English, since English is the dominant language of the society they were raised in. After the first two minutes however, the participants visibly relaxed and became more animated in their conversation, starting to codeswitch more often. This pattern is seen in most of the codeswitching rates calculated in Figure 2; after the first two minutes L1, 5, and 6 rates of codeswitching increased while L2 and L3 remained the same for a bit before increasing. L4 started with a high rate of codeswitching, decreased between 2-4 minutes but increased again. The rates were calculated in two minute increments because a one minute or less increment, when calculated since 30 second and 1 minute increments did not yield fluctuations and the codeswitching pattern was very equal at either 0 or 1 codeswitches.

The same holds true for the rate of codeswitches between participant and interviewer. Contrary to the idea that the rate of codeswitching between participants and interviewer would be about the same (as a result of assimilating speech style to bridge social distances, among other reasons), there are great gaps in the participant's number of codeswitches in relation to the interviewer's. There are times when the participant codeswitches a great deal over the course of 4-6 minutes while the interviewer does not codeswitch at all. This phenomenon coincides with the timing of a participant recounting a past memory or voicing a heated opinion on a certain topic; the interviewer, understandably, would keep silent and let the other share their thoughts.

H3 is not supported from the evidence gathered. Individually, there was slight variation in each participant regarding whether they codeswitched more often intersententially or intrasententially. Two participants codeswitched more often intersententially while the remaining four codeswitched frequently intrasententially (see Table 1). There was no clear inter-/intra- sentential codeswitching distinction between the native Greek participants and Greek American participants. Overall however, the rates of inter- and intrasentential codeswitching which were calculated over the total number of Greek words used in each conversation, were almost equal at 35% intersentential, 40% intrasentential. The remaining 25% are codeswitches occurring at the word base level.

Table 1. Codeswitch Sentence Position

Participant ID	Time	Total codeswitches	Intersentential codeswitches	Intrasentential codeswitches	Word-level codeswitches	Cultural marker codeswitches
L1	38	147	79	55	13	16
L2	33	154	40	74	40	50
L3	32	154	57	51	46	42
L4	20	99	39	42	18	8
L5	27	151	34	55	62	62
L6	33	186	60	80	46	56
Total	30.5 avg	891 total	309 total (35%)	357 total (40%)	225 total (25%)	234 total (26%)

These findings support those of Poplack’s 1980 study as well in that intersentential codeswitching occur equally as frequently as intrasentential ones. However, these findings are countered by Seligson’s 1986 study in which she claims intrasentential switches from Spanish to Hebrew are 63% while intersentential codeswitches are a mere 37%. This difference in percentage, however, is possibly due to the difference in classifying codeswitching boundaries; while in this study there is a third category listing only word-level codeswitches, Seligson’s study involves only the two major groups of inter-/intra-sentential codeswitching, with more subgroups within.

At one point in her study, Seligson mentions large size intrasentential constituents make up only 2% while small-sized intrasentential constituents comprise 98%. These ‘small size’ constituents can very well be word-level constituents, which Seligson classified under the overall umbrella of ‘intrasentential codeswitching’. It is unwise, however, to take constituents of varying lengths and simply group them together since a part of the nature of the speaker’s codeswitching is lost. By creating separate categories for phrasal-level codeswitches (in this study, found under ‘intrasentential codeswitching’) and word-level codeswitches, one can gain more accurate data.

Additionally, H4 regarding prepositional phrase codeswitching is not supported, since the calculated codeswitches show that a switch at a preposition boundary was a mere 4%. Table 2

shows that a large chunk of codeswitching occurs at the noun boundary, followed by conjunctions, then verbs in a close third place. Also supporting this finding are the studies done by Pfaff and Seligson, in which they also list the most often switched constituent to be the noun.

Table 2. Codeswitch Part of Speech Boundary

Participant ID	Noun	Verb	Adjective	Conjunction	Pronoun	Question word	Preposition	Adverb
L1	15	32	8	25	40	7	3	17
L2	38	25	20	22	16	5	15	13
L3	56	25	16	24	12	3	5	13
L4	28	14	8	19	19	1	4	6
L5	96	17	7	12	10	3	2	4
L6	64	24	0	43	18	8	10	19
Total	297 total (33%)	137 total (15%)	59 total (7%)	145 total (16%)	115 total (13%)	27 total (3%)	39 total (4%)	72 total (8%)

Regarding H5, participants would codeswitch frequently referring to particular cities or countries, all six participants would codeswitch in the relevant language. For instance, when one participant changed her topic from the economy in America to that in Greece, she would codeswitch at every mention of a city or region in Greece: "...so in New York, it's like that, but stin Ellada, you know Attikh, Peloponnisos, ta nisia, everywhere, it's different." Table 3 shows the number of codeswitches made by each participant when referring to cities/ countries out of the total count of place markers in the conversation.

Table 3. Codeswitch City/Country Marker Count

Participant ID	Codeswitch at place marker	Total number of place markers	Frequency
L1	9	12	75%
L2	21	27	78%
L3	34	39	87%
L4	6	10	60%
L5	41	45	91%
L6	46	50	92%
Total	157	183	86%

The reason why is similar to Baker’s point 7 and 9 of codeswitching; the speaker is codeswitching to portray her identity as a bilingual and to emphasize that Greece is different from America on the subject of economy. Cities and regions in Greece are tied into the Greek culture, and so it comes more naturally to say them in Greek, rather than the anglicized pronunciation. The same holds true for American cities and places; all six participants would codeswitch and say the city names in English. This also supports Pfaff’s finding that both languages are separate in the speaker’s mind. An entry for the location word is stored in both lexica with the speaker codeswitching by selecting one preferred pronunciation over the other.

Finally, H6 stating that cultural markers (places, certain food, and media) would greatly influence a speaker’s codeswitching has not been completely confirmed. As shown in Table 1, codeswitching at these markers occurs only 26% of the time. The remaining 74% may be a conglomerate of a number of other different factors such as syntactic constraints or external environmental influences. In order to be certain, more study needs to be carried out.

## Conclusion

In order to determine some of the social uses and syntactic constraints when codeswitching, conversations between the interviewer and six participants in Greek and English was recorded and transcribed. All conversations took the form of casual dialogue more than a strict interview questionnaire to encourage codeswitching. With the large amount of data taken from the transcriptions of recorded conversations, several factors regarding codeswitching were supported while others still need further research to clarify.

H1 has not be confirmed due to insufficient data. It is unclear if speakers codeswitch due to highlighting important thought or for other social or lexical purposes. H2 is refuted; each participant's rate of codeswitching fluctuates a great deal throughout conversation, and does not plateau at all over the course of the conversation. H3 is not supported since there is no distinct difference between the two participant groups in terms of inter- or intra-sentential codeswitching. The study found that 2 participants codeswitch more frequently intersententially while the other 4 participants codeswitch intrasententially. This pattern did not depend on whether the participant was a native Greek or a Greek-American. Overall the rates between inter- and intrasentential codeswitching were almost the same at 35 and 40%, respectively. The other 25% is word-based codeswitching. H4 is also not supported since calculated codeswitches at prepositional phrase boundaries was at a mere 4%. Instead, like Pfaff, Seligson, and Karousou's studies, the highest codeswitching rate regarding part of speech is the noun. H5 is supported; whenever conversation shifted from American to Greek culture all six participants codeswitched at the noun boundary of particular cities and countries. H6 has not been confirmed; codeswitching along cultural markers occurs only 26% of the time overall. The remaining 74% is a conglomerate of different factors including syntactic constraints, lexical use, and social use.

It was somewhat difficult to find Greek-English bilingual participants for this study since most second-generation Greek-Americans within New York are raised speaking English and have assimilated into American culture. On the other hand, most native Greeks who come to the United States for academic or work purposes still hold the viewpoint that codeswitching is imperfect and should not be done. The first generation Greek-Americans who immigrated and

lived here for 30+ years also tend to believe codeswitching should not be done and choose to speak only in Greek. It is evident while some language communities are comfortable with codeswitching, other language communities still hold negative social views of codeswitching.

By utilizing methods from other codeswitching pairs and previously conducted studies, this paper hopes to contribute to what is known about codeswitching involving Greek and English. In the future, more studies involving lexical uses of codeswitching and syntactic constraints of codeswitching can be carried out utilizing these findings and analyses. Another idea for future study is marking where the interviewer codeswitches in each conversation and seeing how influenced each participant is by the interviewer's behavior; this would offer support to Baker's codeswitching use number 6 of copying another's speech style to bridge social distance. The information gathered from this study can also be used to further computational linguistic studies on determining syntactic constraints of codeswitching and predicting codeswitching behavior through machine learning, as well as take the first steps in speech recognition of codeswitched speech. Additionally, as mentioned by Solorio and Liu, with the increasing use of electronic interaction settings such as Facebook and Twitter, codeswitched is also increasingly used in its written form; findings from this study on codeswitched speech may be taken for comparison for future work regarding codeswitched writing and texts.

# Appendix 1.

## Interview questions

### Icebreaker Questions

Could you tell me a bit about yourself and your background?

What do you think about being a bilingual, has it impacted you in any way?

Do you think New York has helped shape your identity in some way?

(to native-Greek participants) Did you experience culture shock upon arriving in New York?

### Codeswitching prompt Questions

What are some of your favorite memories of Greece?

Do you remember any funny or special stories while you were in Greece?

Do you prefer Greek food like \_\_\_?

Does your family cook Greek food more often or American food?

Is your family religious and do you attend the liturgy weekly?

What do you think of Greek shows on channels like \_\_\_?

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