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Code-Switching, a comparative case study of Hebrew-Spanish bilingual families

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Abstract

Code-switching research has largely been characterized by the efforts to propose constraints which define it syntactically, investigate its sociological and psycholinguistic causes, and compose an over-arching linguistic framework under which the entire phenomenon could be placed. Many such attempts are continuously met with various counter-examples and arguments which have led to a persistent process of adjustments and modifications of previously held assumptions and suggested theoretical models.

This case study looks at code-switching in the context of two typologically different languages, namely Hebrew and Spanish, and consider any observed instances in which earlier models may be challenged. Two Hebrew-Spanish bilingual families who code-switch regularly were invited to participate in this study, and a variety of spontaneous instances of code-switching were recorded and analyzed.

Findings, although limited due to the data sample, contradict several statements by earlier CS researchers, and suggest that code-switching as a linguistic phenomenon, would require a much larger systematic investigation of many different linguistic contexts in order to be fitted into one all-inclusive theoretical model.

(Keywords: code-switching, bilingualism, Hebrew, Spanish)

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1. Introduction

1.1 – Review of previous code-switching research

Often, although one might argue rather simplistically, code-switching has been defined by the seemingly random changes from one language to the other in the context of a single discourse, or, “the use of more than one language by two people engaged in a speech act” (Poplack, 1980; Lipski, 1985; Gonzales-Velásquez, 1995; Myusken, 2000). However, bilingual behavior, especially in the context of CS, seems to be more intricate than merely combining two languages.

Academic interest in the phenomenon of Code-Switching has been increasing since the 1960s, gaining momentum with works such as Blom and Gumperz (1972), who studied Norwegian dialect interactions, and have identified the numerous indexical functions code-switching may serve in bilingual conversation, for discursive or social motives, among others.

The increasing amount of data gathered by the newer research in the field of CS, also supports the notion that code-switching should not be considered as just a random interference from one language to the other, nor should it be seen as a result of the lack of competence/fluency by the speaker, a point of view which was held by many before serious research was finally done on the phenomenon.

The establishment of code-switching as a legitimate linguistic tool bilinguals may utilize, rather than a form of interference brought about by a low level of fluency, sparked the interest in formulating grammatical frameworks under which CS operates. As Lipski (1985) pointed out, the linguistic behavior of bilinguals should be described to the fullest extent possible in terms of already existing monolingual grammars.

Nevertheless, there are undoubtedly many elements of a language which can transfer to another during bilingual speech (Berthold et al, 1997), be they phonological (i.e. accent, intonation, and sounds from one language influencing the other), grammatical (i.e. word order, tenses, determiners, etc. from one language influencing the other), lexical (i.e. borrowing of words), or orthographical (i.e. altered spelling due to language differences). These elements, however, do not necessarily provide evidence for lack of fluency. For example, bilinguals may engage in code switching as a tool providing a continuity of speech where expression is limited within a certain linguistic framework, and thus utilize code switching as an extension to language (Skiba 1997), rather than experiencing it as an interference in their otherwise fluent stream of speech. Furthermore, bilinguals will often be able to produce longer utterances by drawing elements from

both languages (Arias & Lakshmanan, 2005). Code-switching, therefore, can be seen as a resource, rather than a momentary confusion in a speech act.

This acknowledgment has led many researchers to investigate the various functions, constraints, and over-arching frameworks within which code switching may or may not be “available” to the bilingual speaker, as well as the possible limitations such utterances should conform to. In order to be considered “acceptable” (e.g. Belazi et al., 1994; Bentahila & Davies, 1983; Dussias, 2003). Research focused on these components has largely been concerned with finding predictive grammatical rules for CS, which would be universally applicable. This has arguably had limited success, as it would seem that code switching may incur different grammatical results when produced in different contexts (Gardner-Chloros & Edwards, 2003), which implies that sociolinguistic factors may override grammatical ones. Moreover, results from studies concentrated on sentence processing in the context of CS bilinguals, such as Dussias et al. (2017), suggest the formulation of processing strategies that allow code switchers to “maneuver” through various patterns of language being used in a CS conversation. Thus, psycholinguistic factors also influence the language behavior of bilinguals who regularly engage in CS.

However, every CS “constraint” proposed by researchers, both descriptively and theoretically, has been met with many counter-examples and various objections. This further supports the idea that any principle which aims to describe the constraints under which CS operates, should not be concerned with the description of the phenomenon itself, but rather appeal to higher principles of linguistic theory (Macswan, 2012). Even though data suggests the phenomenon of code switching does indeed seem to be constrained, or rule-governed, this fact does not provide enough consistent evidence to describe an underlying rule system, unique to CS. Any such principles should therefore be explained under a framework common to the broadest possible domain.

As it seems that any such framework would have to account for the largest possible data set, and due to the significant amount of inconsistencies and variations between different linguistic contexts, this case study would not presume to produce any meaningful conclusion which could apply to such a wide phenomenon such as CS. This present work does, however, aim at contributing additional data from a less common linguistic environment, namely Hebrew-Spanish bilingual families. It is reasoned that contact between languages with such conflicting typologies has a higher likelihood of producing irregularities in previously held convictions, as such convictions were largely a result of research done on the most commonly studied language pair – Spanish and English. Expanding the body of data seems to be crucial in CS research, as the more language pairs, linguistic environments, and bilingual communities are studied, the more

evidence which could either support or impede any previous proposals could be gathered. A larger corpus of code-switching which would include as wide a range of scenarios and linguistic contexts as possible, would therefore be crucial in providing data for future research focused on the phenomenon.

1.2 – Objectives and motivation for the study

As bilingual research expands and gains importance in the academic world, there has been a growing urge to describe and contain its every possible phenomenon under an existing overarching linguistic framework, or otherwise to propose models for the phenomenon which could ideally fit into such framework. Code-switching has been gaining interest and is now effectively seen as a linguistic tool which is at the disposal of bilinguals, rather than a manifestation of a lack of fluency. However, much of the effort to universally describe the phenomenon has been unsuccessful, largely due to what seems to be repeated instances of confirmation bias by various researches, who have a clear interest in finding evidence which supports their proposals, or one which contradicts those of their colleagues.

The mission of accurately describing CS would therefore have to include a large-scale analysis which could only be done after a large enough corpus of data was collected, allowing future researchers to find examples of a wide variety of contexts, linguistic environments, language contact situations, and variations in bilingual communities, in which code-switching could be observed. Furthermore, much of the models, constraints, and definitions which were previously proposed in the context of code-switching research, have been argued against with counter-examples provided by data collected from a different linguistic, or social context.

All this implies that code-switching might be a much broader phenomenon than what is usually accepted, and is influenced by a large number of elements, ranging from social factors to psychological ones. Therefore, in order to advance this field of research there is a need of a large-scale, systemic, and qualitative data collection from a broad range of resources and contexts.

Accordingly, the objectives of the present work are as follows:

- Review certain models proposed and assumptions made on the phenomenon of code-switching.
- Discuss possible limitations in earlier models and present arguments made against previously held convictions with regards to code-switching research.
- Investigate data from a less commonly studied context for code-switching, namely the contact between Hebrew and Spanish, two languages which are very typologically distinct from each other, and observe whether it provides evidence which could either support or otherwise contradict any suggested framework.

For these measures, CS data was gathered from two Hebrew-Spanish bilingual families living in Barcelona, and analyzed in order to observe irregularities which may arise, and if any assumed violations of proposed constraints can be witnessed, while taking into account the following research questions:

- What differences may be noticed between Hebrew-Spanish code-switching utterances and the most commonly researched code-switching combination, English-Spanish?
- Would code-switching data from two typologically distinct languages such as Hebrew and Spanish help support, or otherwise contradict previously proposed models for code-switching?

2. Grammatical Models for CS

Early code-switching research by the likes of Timm (1975), Pfaff (1979), Poplack (1980), Lipski (1985), and others, was largely focused on simple transitions, such as between pronominal subjects and verbs, and on the overall constituent order. Among others, Bentahila and Davies (1983), Toribio (1994), DiSciullo et al. (1986), and Dussias (2003), concentrated at refining and amending proposed grammatical frameworks for CS, and directed their attention primarily on syntactic relations and their hierarchy in CS.

2.1 - Proposed constraints on CS

Many early studies of code-switching had been concentrated on describing the grammatical properties of the phenomenon, and were often focused on specific languages and their boundaries in CS speech.

Timm (1975) proposed several constraints on CS between English and Spanish, arguing for several instances in which CS does not occur:

- Within NPs containing nouns and modifying adjectives
- Between negation and the verb
- Between a verb and its auxiliary
- Between finite verbs and their infinitival complements
- Between pronominal subjects and their verbs

Although these constraints were indeed found to be rather simplistic, and had since been refined and adjusted due to data emerging from newer research (e.g. Pfaff, 1979), the findings from these early studies had brought to the attention of linguists the fact that code-switching, much like other linguistic phenomena, is rule-governed and is not random, and therefore should not be considered a linguistic anomaly.

This search for an underlying rule system governing code-switching has shifted its study to take a more theoretical approach rather than a descriptive one. In her important works in the early 1980s, Poplack was one of the first linguists to take this approach with her proposed Equivalence Constraint, the Size-Of-Constituent Constraint, and the Free Morpheme Constraint:

The equivalence constraint states that code switching would not be allowed within constituents if the word-order requirements of both languages are not met. Codes will tend to be switched where the surface structures of the languages map onto each other. *The free morpheme constraint* states that code-switching between a bound morpheme and a lexical item are not allowed, unless the lexical item has been integrated phonologically into the language of its bound morpheme, which precludes code-switching within the word. *The size-of-constituent constraint* states that larger constituents, such as clauses and full sentences, would tend to be switched more regularly than smaller ones such as single-word nouns, verbs, adjectives, etc.

Even though these constraints are often met with extensive data presented as counter-evidence (e.g. Berk-Seligson, 1986), Poplack continues to defend them by arguing that instances in which it seems as if these constraints are being violated, should not in fact be considered as true code-switches, but rather as instances of “nonce borrowing”. However, as noted by Gardner-Chloros and Edwards (2004), the assumption that the overwhelmingly chaotic data offered by bilingual research could all be neatly fitted in one or the other of two categories – CS or borrowing – should be considered as an “idealization” and perhaps an instance of confirmation bias.

Poplack, together with Sankoff (1981) have also introduced the superscripting mechanism of “bilingual tagging”, which restricts lexical insertion rules so that the grammar responsible for phrase structure rules would be the grammar responsible for lexical insertion rules as well. Bilinguals engaged in code-switching “select” language-specific phrase structure rules, which in turn trigger the correlating lexical insertion rules. However, this bilingual tagging mechanism, along with the equivalence constraint, the size-of-constituent constraint, and the free morpheme constraint, all seem to be models which are specific to the phenomenon of code-switching. This is largely a disadvantage.

Moreover, the differences between inter-sentential code-switching (alternation between sentences) and intra-sentential code-switching (alternation within a sentence), have led Poplack to claim that there is a higher likelihood that an intra-sentential CS utterance would result in ungrammaticality, and it is thus “riskier” to produce. This “risk” is in fact one of the main motivations for CS researchers to focus almost exclusively on intra-sentential CS, as they require a high degree of awareness for the grammars of both languages (Miccio et al., 2009).

Much of the earlier research (Lipski, 1978; Pfaff, 1979; Woolford, 1983) has tried to propose similar constraints on CS, stating that switches could not occur within a points in a sentence where the surface structures of the two different languages differ. However, the more data was collected from various different contexts, with various different language variations, the clearer it became that these proposed constraints could not be generalized to other data-sets.

It is important to note that while presenting examples that may contradict these constraints, researchers have often paid too little attention to the phonological and typological characteristics of their examples. This has made it difficult to confirm whether they are in fact in violation of the constraint or rather just instances of nonce borrowing, as suggested by Poplack. For example, borrowing can be seen as the emergence of a new meaning to an existing sign, which have been ascribed in order to articulate notions, cultural practices, or unfamiliar objects (Otheguy, 1995), but this lexical creativity is not systemic, and do not give rise to novel categories or structures.

It is clear that CS will often involve creativity and innovation from the part of the speaker, whose knowledge of the two codes may allow for the exploitation of the similarities between the languages, and thus facilitate the creation of new verbs, compounded from both languages, e.g., a lexical item from one language attached to an “operator” verb from the other. Myusken (2000), has claimed that “homophonous diamorphs”, i.e., instances of similarly sounding words from two related languages, can serve as a “bridge” transitioning from one language to the other. Treffers-

Daller (1994) studied French-Dutch bilinguals and found that many phonemes and lexical items are shared between the two languages, and facilitate the transition from one to the other. This had led her to conclude that a clear distinction between code-switching and borrowing might not be established.

2.2 - The functional head constraint

Another significant theoretical model for CS was developed by Belazi et al. (1994), namely, the functional head constraint. This constraint states that code-switching should not occur between a functional head and its complement. i.e., a complement should match the features of its functional head, and switches between lexical heads and their complements are allowed. Chan (1999) further explored this constraint by arguing that functional categories such as Tense, Determiners, Complementizers, etc., select the different types of phrase that are to be switched. Analyses of this type can be argued to be limited however, as they only relate to a particular set of categories, in this case - functional categories. Moreover, larger data sets from wider range of sources suggest that some of these functional categories (e.g. agreement) may still be affected in code-switching. Chan's assumption was that one language provides a grammatical template for each case of CS, which would allow for the formulation of various syntactically based constraints on CS. Nevertheless, different mixed forms, processing strategies, and the existence of extensive counter-evidence proves that the phenomenon of code-switching might have more complexity than what could be accounted for by models and frameworks which assume some sort of a "base" language (Edwards & Gardner-Chloros, 2004).

2.3 – The Matrix Language Frame Model

One of the more influential theoretical models proposed in order to predict CS forms is the Matrix Language Frame (MLF) model, developed by Myers-Scotton (1993). This model have been described in a manner which aims to explain the structures of intra-sentential code-switching by stating that mixed sentences would have their morphosyntactic properties established by a grammatically dominant Matrix Language (ML), which would work as a framework for the entire utterance, while the Embedded Language (EL) acts as the code to which the sentence switches. The matrix language, as described by Myers-Scotton, defines the surface structure positions for both content words and functional elements. The ML therefore, could be seen as an abstract grammatical framework rather than a proper language. Under this theoretical framework,

instances in which an entire utterance will be either in the ML, or entirely in the EL, would be referred to as “language islands”.

Myers-Scotton developed principles to define the requirements of the MLF model as the *morpheme order* and the *system order* principles. The morpheme order principle requires any morpheme within a CS constituent to follow the order set by the matrix language. The system order principle requires that all morphemes which have a grammatical relation with other constituents be also derived from the matrix language. Nevertheless, as it seems from the data (and even as admitted by Myers-Scotton herself) that the matrix language may change even within a single discourse, the differences between the ML and EL seem rather ambiguous. This had to be addressed by later works as these definitions are crucial for the MLF model. For example, Jake et al. (2002) proposed the *uniform structure principle*, stating that in the context of a bilingual discourse, the matrix language may change within successive complementizer phrases, and within a multi-clausal sentence, but not within a single complementizer phrase, this clarification helps define the MLF with the system morpheme principle predicting that below the CP, all grammatical morphemes would be derived from a single language, while the morpheme order principle stating that these grammatical morphemes must be in the surface order required by the ML.

The MLF can also be viewed from both a psycholinguistic and sociolinguistic perspective. From a psycholinguistic approach, the matrix language is said to be more activated in the brain, however, it is still unclear as to how this activation would be translated into grammatical terms. From a sociolinguistic point of view, the ML represents the choice the speaker makes with regards to the language used with a specific community, yet this “unmarked choice” cannot establish clearly what are the rules governing the utterances of a particular bilingual at various social contexts. Although grammatical details of the model have continuously been reformulated in order to maintain the model’s viability, the fact that the definition of the ML has been largely based on non-grammatical criteria such as socio- and psycholinguistic factors, raises doubts with regards to the validity of the grammatical claims embodied in the model.

Importantly, it is not implied definitively that the contrast between the matrix and embedded languages is indicative of the manner in which the linguistic system of bilinguals operates, as it is not clear from the data that all system morphemes should come from one language only, nor that a single bilingual “language frame” activates only one language. Even though there is plenty of evidence from speech error research (Garrett, 1988) that such a language frame does seem to

be involved in monolingual speech, such evidence might not be enough to justify the MLF model in its entirety within the context of CS (Jake et al., 2002). This raises the question of how, if at all, could two different systems of morphemes be processed as a single “language frame” (if such possibility be at all helpful in describing CS occurrences), and whether or not is it still useful trying to describe code-switching from the point of view of two distinct language frames.

Moyer (1998), which also makes a distinction between a “base language”, which determines the grammar of the sentence, and the “main language” which sets a framework for the whole discourse, suggests that this is not a unitary phenomenon. The dominant language can be viewed differently, depending among other things, on the amount of data examined.

It can be argued then, considering the limitations of the above mentioned models for code-switching such as the Matrix Language Frame Model or Poplak’s constraints, that such frameworks proposed specifically with regards to code switching can be too limiting, and thus artificially restricting CS itself. Instances of CS can be found in every possible grammatical position (e.g. Nortier, 1990), which could all serve as counter examples for any proposed grammatical constraint on CS so far. This argument is gaining popularity, given the increasing evidence suggesting that such restrictive models can and do operate quite differently across languages and sociolinguistic contexts.

2.4 - Code-Mixing

Another proposal was made for fitting CS into a clear grammatical framework by Muysken (2000, 2002), who explored “bilingual optimization strategies”. His suggestion was that the term “code-switching” itself is only one part of a larger phenomenon he refers to as “Code-Mixing”. He divides CS patterns into three elements, which he associates with different syntactic, sociolinguistic, and psychological factors:

- *Alternation* is defined as a switch occurring at a point in which two grammars are compatible. Muysken notes that this type of switch is estimated to be more common in stable bilingual communities, where the languages are traditionally separated, and where each language can be activated in the brain of the bilingual, and can be optimized by taking advantage of the structures of both languages.
- *Insertion* is explained similarly to Poplack’s “nonce borrowing”, with the added possibility of placing larger elements than a single lexical item within the phrase. This element is

more likely to be found in bilinguals with a considerably different level of proficiency in both languages, and is seen more frequently in colonial and recent migrant communities. As noted by Toribio (2004), when one language is activated in a bilingual's brain, such insertions of either single words or larger constituents can be seen, from a psycholinguistic point of view, as an optimization of structural coherence.

- *Congruent Lexicalization* is the process in which convergence in grammatical structures allows for the vocabulary to be mixed, due to a substantial similarity between the languages, and different lexical items share a grammatical structure. This process would be more commonly seen between closely related languages, which are assumed to partly share their processing system in the bilingual brain.

It has been argued (Lipski, 2014; Treffers-Daller, 2009) that both processes of insertion and alternation are usually voluntary and within the speaker's control. These code-switching types also seem to be more commonly favored by speakers of typologically distinct languages. Congruent lexicalization, on the other hand, seems to be especially frequent between closely related languages, and occurs unconsciously, "below the threshold of awareness".

Interestingly, Muysken investigated the manner in which bilingual verbs are incorporated between typologically distinct languages, namely Malay and Dutch, and the differences exhibited in the switches by bilinguals in communities in Indonesia, and the ones produced in bilingual communities in the Netherlands. He suggests the differences are likely to be a result of separate processes of norm-formation in the two groups which had no contact between them, and compares the process to the development of differences between British and American English. This observation has led Muysken to suggest that similar grammatical potentialities can be exploited in various different manners, depending on the conditions and environment of the bilingual community, and importantly, that "typological factors provide a set of possibilities rather than dictating certain forms of code-switching".

3. Sociolinguistic and psycholinguistic factors

Beyond the grammatical aspects and constraints offered to syntactically describe code-switching instances, sociolinguistic factors have often been used as an explanation to *why* bilinguals code-switch, and indeed, code-switching is still largely seen as a social phenomenon. Many studies have shown that bilingual speakers may engage in code-switching depending on a variety of social factors such as their linguistic background, age, their role in the conversation (Cheng &

Butler, 1989), and even to assert dominance or express empathy (Wardhaugh, 2006). Rodolfo Jacobson has researched the social implications of code-switching extensively (1976, 1996, 2004), and claimed that some situations may be handled by a bilingual better when two languages are used in alternation in a specific manner. Furthermore, the bilingual must possess a strong awareness of the environment and linguistic context, to correlate the interlocutors' speech. Code-switching, viewed in this light, might need to be treated as any other regional or social language variation.

As to the question of *how* code-switching is processed in the bilingual brain, social factors might prove of little relevance, and psycholinguistic factors need to be inspected.

In her comparison of code-switching between early and late bilinguals, Kelly Ann Hill Zirkern (2007) suggested that determining the effects the age of acquisition has over code-switching may provide helpful information on the manner in which bilinguals process language. She found no significant influence of the age of acquisition on the degree of acceptability in intra-sentential code-switching, which contradicted Lipski's findings (1985) that late bilinguals would rarely engage in this type of CS. Heredia & Altarriba (2001) suggested that CS may sometimes be a problem of retrieval from one language, and were of the assumption that a bilingual speaker would often have better access to a certain phrase or lexical item in a different language than the one he is engaged in. Their proposal was based on the assumption that both languages cannot be "activated" at the same time, and therefore the processing of code-switching must be slowed down. However, they also identified certain factors such as phonetics, semantic context, etc., which might speed up the process of CS in bilinguals.

Research on bilingual language processing has been largely centered on two opposing views:

- *The language-selective hypothesis*, or the *modular view*, suggests that the languages of the bilingual are stored separately and are processed independently from one another (Kroll & Stewart, 1994). This hypothesis is also supported by the Matrix Language Frame model, which relies on this assumption.
- *The non-selective hypothesis*, or the *interactive view*, claims that the interaction between lexical items and functional elements from both vocabularies cause a combined processing of the two languages (Van Heuven et al., 1998).

Zirken tends to favor the modular view, as it seems that in various instances, intra-sentential code-switching incurs longer processing times, and thus supports the notion that languages are stored separately. Her opinion is in direct contradiction with Dussias' (2003), who claimed that the cognitive pressure and processing costs associated with holding two different linguistic systems can only constrain the bilingual code-switcher. This incentivizes the parser to use various cognitive operations and strategies to help the sentence-processing mechanism, which could account for longer processing times.

On the other hand, findings such as Huang and Fon's (2007), which researched the effects of acquisition order and world-relatedness in the context of CS, may support the interactive view. Their claim was that bilinguals that acquire both languages simultaneously, should be expected to show lower processing costs during code-switching, which is further supported by the results of their study, indicating that a cognate status of a word does not only activate its lexical representations in one language, but also "spreads" some activation to other corresponding regions, a process which would support the notion that there might not be such a clear distinction between the manner in which one languages is activated in the bilingual brain, as opposed to the other.

4. Typological differences in CS

Since evidence suggests that typological similarity between languages may result in a different structural approach to code switching, as opposed to languages with conflicting typologies, the question of language-relatedness needs to be addressed in the context of code switching in order to investigate what might be the different tactics, approaches, and processing mechanisms utilized by bilinguals engaged in a wide variety of code-switching instances, and what, if any, would be the differences in the linguistic outcomes.

Perhaps do to the prevalent combination of Spanish and English among bilinguals, as two of the world's most spoken languages, much of the influential work carried out in the field of code-switching research provides us with data from the contact between these languages.

Interestingly, the task of fitting a single overarching frameworks and models over the chaotic data produced by code-switching research from various other languages has been often met with difficulties. For example, in data reported by Macswan (1999, 2000), exploring the language faculties of bilingual speakers of Spanish and Nahuatl, two very typologically distinct languages,

many violations of the system morpheme principal were found, and the acceptability of the constructions were not seem to be associated with the underlying structure. Macswan claims this strongly disfavors the Matrix Language Frame model. Even though the two languages have similar word-order limitations, especially when it comes to negation, Macswan found that while Spanish negation does not seem to permit a Nahuatl verb in its complement position, a Spanish verb following a Nahuatl negation was found in various instances in the data which were considered to be well-formed. The contrast in Macswan's code-switching data showed the inadequacy of evidence which is based exclusively on analysis of lexical categories, rather than identifying the properties which distinguish the two languages and can be identified as the cause of ungrammatical switches in one case but not the other.

Sankoff and Mainville (1986) have tried to model bilingual behavior by investigating the contact of languages with distinctly different word-orders, such as Tamil (SOV) and Welsh (VSO). Their prediction, based on such typological considerations, was that there are no possible switch sites between such pairs of languages, as their word orders are two radically different. However, in data collected by Chesire and Gardner-Chloros (1997) of immigrant communities in England, code-switching instances were actually found to be more grammatically dense in switches between languages that were linguistically farther apart from each other, namely English (SVO) and Punjabi (SOV), as compared with English (SVO) and Greek (SVO/SOV). These contradictory findings can be used as an argument that code-switching research should prioritize systemic comparisons between a variety of settings, and take into account not only sociolinguistic and psychological factors, but considering typological elements which may affect code-switching as well.

Considering the evidence that typological similarity may lead to code-switching strategies based on equivalent structures, whereas code-switching between languages with a significantly different typology may lead to different conversational and linguistic tactics utilized by the speaker, Edwards and Gardner-Chloros (2003) have also claimed that assuming that in CS, two distinct systems interact while at the same time remain separately distinct, might prove to be an oversimplification. This is further supported by evidence from same language pairs in different contexts, showing that sociolinguistic factors often override grammatical constraints.

Gardner-Chloros also argues that during bilingual speech, pauses, interruptions, reformulations, and other similar linguistic devices, can be far more functional than during monolingual speech. In CS therefore, such strategies allow the full resources of both languages to be exploited by the

bilingual, while simultaneously avoiding any grammatical irregularities which would otherwise not be permitted in the context of only one language, and legitimizing combinations from typologically different languages.

As stated previously, much of the recent research on code switching which is focused on establishing the universality of some of the proposed linguistic constraints on CS, often centers around the three most prevalent ones, Poplack's *equivalence constraint*, *the size-of-constituent constraint*, and *the free morpheme constraint*. However, arguments can and have been made on the degree to which some of these constraints may be considered universal. Considering the aforementioned constraints from the point of view of typological variations, Berk-Seligson (1986) has claimed that much of the conclusions made by Poplack and others could only have been made due to the coincidental similarity in syntax and typology between Spanish and English, the two most studied languages in the field. Berk-Seligson has produced some very interesting data (and the most relevant to the language combination examined in the present work), investigating contact between two very syntactically different languages - Hebrew and Ladino, otherwise known as Judeo-Spanish. Her findings challenged both the equivalence constraint and the size-of-constituent constraint, supporting their usefulness only in contact between languages with similar syntactic structure. Contrarily, the data generated from her study, while still including some counter examples, seemed to support the free morpheme constraint by arguing that most bilinguals in her study have been hesitant to violate it.

In previous research done by the likes of Gumperz (1976) and Poplack (1980), findings showed that the sentence is the most highly switched constituent. Berk-Seligson's findings, however, contradict these earlier claims by providing evidence from Hebrew-Ladino code switching, in which the constituent being switched most often was found to be the noun. Her evidence contradicts Poplack's findings even further, by showing that unlike Poplack's data in which long constituents made up the majority of the data, short constituents made up 98% of the gathered Hebrew-Ladino intra-sentential code switches. Berk-Seligson explains these discrepancies by arguing that Poplack used her results to support her equivalence constraint, whereas the Hebrew-Ladino CS data was aimed at undermining it. Furthermore, Poplack argued that non-fluent bilinguals will tend to code-switch primarily inter-sententially, and will rarely use intra-sentential code-switching, whereas Berk-Seligson's results strongly contradict this claim.

Berk-Seligson also used her data to contradict the equivalence constraint, which was supported by the rarity of code-switching errors (Poplack, 1981), by presenting her data which was full of syntactic violations. The most frequent error was found to be the omission of the Spanish/Ladino

determiner before a noun phrase, i.e. *un, una, el, la*, which is understandable, considering the syntactic structure of Hebrew, which does not have an indefinite article as a grammatical category. The Hebrew determiner is a bound morpheme prefixed to its noun, whereas the Spanish determiner is a free morpheme.

As the data collected on code-switching has expanded to include more typologically distinct languages, many researchers such as Lipski (2014), Chan (2009), and Muysken (2000) have concluded that the types of constituents that are “available” to the code-switching bilingual depend on the basic syntactic patterns and structures of each language. Between languages with similar typology, code-switching was found to be most likely to occur within the constituent, while languages which significantly differ in their syntactic structures, intra-sentential code-switching would usually be confined to full constituents and individual lexical items.

The variations found in code-switching data across languages and the influence of socio- and psycholinguistic factors seems to exert over bilingual speech raise some important questions about the underlying mechanisms responsible for the phenomenon itself. As code-switching is mainly a process of spontaneous discourse, and there seem to be such a large number of possible combinations, contexts, and contacts between languages and bilingual communities, developing an overarching grammatical framework which could coherently describe code-switching would have to rely on as many such contact scenarios as possible, attesting for all proposed restrictions and constraints in as many conflicting typologies as possible.

In this present case study, code-switching data was gathered from two bilingual families speaking Hebrew and Spanish, and was reviewed in order to attest for the various grammatical constraints proposed in earlier work, and perhaps provide some additional evidence which might be useful in supporting a certain suggested framework, or may otherwise be used as an argument against existing models.

5. Methodology

For the purpose of natural data being collected, a qualitative approach was taken for the present work, which was aimed at observing, recording, and analyzing various instances of code-switching in the context of Hebrew-Spanish contact.

As mentioned, in order to seriously attest some of the assumptions made with regards to the constraints and limitations bilinguals who engage in code-switching are supposedly meant to adhere to, a large body of data needs to be collected from a wide variety of contexts and linguistic circumstances, which may then be compared with other data sets for comparison. Due to the nature of CS as a mostly spontaneous bilingual phenomenon, systematically acquiring consistent data from a broad range of environments proves to be quite a challenge, and quite beyond the scope of this present work.

Nevertheless, this case study offers some much needed additional data for instances in which CS is utilized with two languages which from a typological and syntactic point of view are very different – Spanish and Hebrew. Taking into account Berk-Seligson's findings with her study of CS among Hebrew and Ladino bilinguals (Ladino, or Judeo-Spanish, may well be considered to be a dialect of Spanish), it is assumed that such typological distances between the languages in question might prove to be more likely to produce instances which earlier research would have considered as "unacceptable", or as violations of a proposed grammatical constraint.

Obtaining examples of spontaneously-generated code-switching requires the collection of natural instances in which the languages come into contact. For this measure, two families of bilingual Spanish-Hebrew speakers were invited to participate in this study, and data was collected from all members of families, a total of 9, whose ages range from 4 to 45. Recordings were made of natural situations and familial scenarios in order to capture instances of code-switching during the discourse. CS occurrences were then transcribed and analyzed for the sake of comparison with examples and claims made in earlier works, and in order to review and take note of any inconsistencies with previous models which may arise.

5.1 Subjects*

- Family 1

The first family to participate in this case study were a family comprised of 4 members. The parents, ages 36 and 38, were both born in Argentina to Jewish families, and received some Hebrew instruction as a second language, as well as English, from early on in life. Both moved to Israel in early childhood (ages 6 and 10, respectively), where they mostly grew up and later on, after having met in Israel, got married. Both parents reported that while growing up, communication at home was done in mainly in Spanish, while socialization and contact with their peers was done almost exclusively in Hebrew. Both parents therefore should be considered as fairly balanced bilinguals.

The first-born child (9) was born in Israel and was exposed mainly to Hebrew, being the language of the surrounding society, but also to some Spanish spoken at home by the parents. By the time the first child was 4 years old, the family's second child (5) was born, shortly thereafter the family immigrated to Spain. The language environment of the children outside the home is almost exclusively in Spanish, however, Hebrew is still used regularly at home by the parents and visiting family and friends, as well as during travels to Israel, and all family members tend to code-switch regularly at home.

- Family 2

The second family consists of 5 family members. The parents, ages 40 and 45, were both born in Israel and speak Hebrew as their first language. Both also speak English as a second language with a self-reported high degree of proficiency. When the family relocated to Spain, Spanish was learned as a third foreign language and is today used by the parents in most social and professional interactions outside of the home. Between themselves, the parents speak almost entirely in Hebrew, while interaction with the children tends to be a bit more "mixed".

The first child, age 10, and the second child, age 7, were born in Israel and were immersed almost exclusively in Hebrew, until the time when the family moved to Spain, when the children were 4 and 1 years old, respectively. The third child, age 4, was born in Spain. All three children are now a part of the Spanish education system, and exhibit fluent control of both Spanish, the language of their social groups and in which they are educated, and Hebrew, the main language spoken at home with parents and among themselves.

* Names of participants were asked to be kept confidentially.

5.2 Procedure

Data was collected sporadically over a period of 3 months from both families, which were audio-recorded in their home environments during commonplace interactions and familial situations (family meals, playtimes, etc.). The spontaneously produced speech samples were then transcribed and searched for instances of code-switching, which were later analyzed according to the language being switched to/from, the type of switch (inter- vs. intra-sentential), and the syntactic category of the element switched.

6. Results and analyses

Tables 1 and 2 summarize the number of various instances of code-switching collected from the recordings, which were counted according to the language shifted, the syntactic category of the switched element and whether the switch was inter-sentential (between sentences) or intra-sentential (within sentences):

Table 1: Inter-Sentential Code-Switches

Syntactic category	Hebrew to Spanish	Spanish to Hebrew	Total code-switches
Tag, idiom	0	8	8
Negative or affirmative particle	8	10	18
Total inter-sentential code-switches	8	18	26

Table 2: Intra-Sentential Code-Switches

Syntactic category	Hebrew to Spanish	Spanish to Hebrew	Total code-switches
Noun	66	36	102
Noun phrase	4	10	14
Verb	16	8	24
Verb phrase	10	8	18
Adjective	12	4	16
Adverb	10	0	10
Conjunction	2	4	6
Prepositional phrase	2	0	2
Subordinate clause	4	0	4
Clause marker	0	6	6
Total intra-sentential code-switches	128	74	202

The first noteworthy observation is the large number of intra-sentential code-switches observed in the collected data. Out of a total of 228 code-switches, 202 (88.6%)* were intra-sentential code-switches, as compared with 26 (11.4%) instances of inter-sentential code-switching. This is in contrast with Poplack's findings (1980), who reported a similar number of inter-sentential and intra-sentential code-switches in her Spanish-English data. The current results are far more similar to Berk-Seligson's study (1986), who found that 60% of all switches in her Hebrew-Ladino/Spanish data were intra-sentential. Considering the languages in question, it is predicted that a larger sample size of Spanish-Hebrew bilinguals for the current study would have produced results which would have been even closer to Berk-Seligson's, instead of resulting in percentages closer to those found by Poplack.

On the other hand, another significant result which can be observed in the data, is that the most often switched element was the noun, constituting 66 (32.5%) instances out of the total 202 intra-sentential code-switches. This result supports Poplack, in whose results nouns were found to be the most often switched element in her data of intra-sentential code-switches. Unlike Poplack's Spanish-English data however, in the present study large constituents did not seem to be as prevalent, with the majority of code-switches occurring within a sentence. The Spanish-Hebrew CS data strongly contradicts Poplack, which found major constituents composed 60% of her CS data, a fact used in her argument for the equivalence constraint, which predicts the whole constituent would be more likely to be switched, than singular parts within it. Considering this significant variation, it would seem important to investigate further the linguistic properties of a combination such as Hebrew and Spanish, which would allow for the apparent ease with which Spanish-Hebrew bilinguals insert small constituents into their fluent stream of speech, with hardly any violations of the two grammars.

Another notable observation is that intra-sentential code-switches from Hebrew to Spanish were almost twice more likely to occur than ones from Spanish to Hebrew. This might be accounted for partly by some similarities in phonology between the two languages, and partly due to the distinct structure of Hebrew, which is highly inflected language, and utilizes many one-syllable structure morphemes and affixes, prefixes, etc. This would mean that for the bilingual, shifting from Spanish into Hebrew would be more costly, as it would require much stricter adherences to Hebrew morpho-syntax, than a switch from Hebrew to Spanish. This would again corroborate Berk-Seligson's conclusion that switching to Hebrew from a Spanish sentence would be relatively easy,

* Percentages were rounded to the closest second decimal place.

whereas switching to Hebrew from Spanish is syntactically very difficult. An example for this difficulty can be found in an utterance made by one of the child participants (Hebrew utterances are capitalized and in italics, English translation illustrated below):

1) “ya juga-*TI* con la muñeca”

“already play + [1P.Singular.Past] with the doll”

“I already played with the doll”

Here we see a Spanish verb conjugated in the Hebrew configuration of a 3-consonant root constructed according to one of several derived stems. In this case the Hebrew form of the first person past tense is applied to the Spanish verb “*jugar*”, instead of using the more common “*he jugado*” or “*jugué*” forms. This could be indicative of an interference process from one grammar affecting the other.

In his study of code-switching among low-fluency bilinguals, Lipski (2014), reported several code-switching configurations between Spanish and English, that contradicted previously observed patterns of intra-sentential code-switching. These “erroneous” configurations are less commonly observed in code-switching research and should challenge many previously held assumptions with regard to intra-sentential code-switching. Interestingly, some of these configurations and patterns were also observed in the present work’s Hebrew-Spanish CS data, and are underlined in the examples 1-4:

2) Between pronominal subject and predicate:

“Pero tú AMART LI que lo quieres”

“but you(2P.Singular.Nominative) say(2P.Feminine.Singular.Past) to-me that it(DirectObject.Singular) want(2P.Present)”

“But you told me that you want it”

3) Between adverbs:

“*IMA, BOI aquí LEMATA!*”

“*Mom, COME(2P.Feminine.Imparitive) here(LocationAdverb) DOWN(LocationAdverb)*”

“Mom, come down here!”

4) Between complementizer and subordinate clause:

“*LO, KI YESH hierba, VEAT AMART SHE-comen hierba*

“*NO, BECAUSE THERE-IS(Present) grass, AND YOU(Singular.Feminine)
SAY(2P.Feminine.Singular.Past) THAT [Ø] eat(3P.Plural.Indicative) grass*”

“No, because there’s grass, and you said that they eat grass”

5) Between infinitive marker and infinitive:

“Bueno, vamos? Pienso que tengo que LASIM DELEK”

“*Good, go(1P.Plural.Indicative)? Think(1P.Singular.Indicative) that need(1P.Singular.Indicative)
to PUT(Infinitive) GAS*”

“Alright, shall we go? I think I need to put gas”

These code-switching patterns, although indeed less common in the data collected, nevertheless provide further examples for the types of CS configurations described by Lipski and should challenge some of the previously proposed constraints on intra-sentential code-switching. These examples of uncommon language-shifts display some of the more atypical aspects of Hebrew grammar, and its contact with Spanish grammar. In sentence 3, for example, the switch occurs between the subordinate conjunction SHE- (-ש, /ʃe-/) and its relative clause. Hebrew subordinate clauses usually require such particle which attaches itself as a prefix to its following word, however, as such prefixes do not exist in Spanish grammar, it is interesting to note the relatively high rate in which such configurations appeared in the data, and their almost trivial use among the Hebrew-Spanish bilinguals.

6) “Entonces tiene que desalojar. Tiene que buscar una *DIRA* nueva.”

“So [Ø] *need*(3P.Singular.Indicative) *to move-out*(Infinitive). [Ø]
need(3P.Singular.Indicative) *to look-for*(Infinitive) *a*(Singular.Feminine) *APPARTMENT*
new(feminine)”

“So he needs to move out. He needs to look for a new apartment”

Here we find another interesting incident of a conflicting grammar from an embedded language assimilates quite naturally into the base structure of the other. Like Spanish, Hebrew nouns are categorized with a grammatical gender. However, the noun classes in both languages do not always correlate with their grammatical gender, as can be seen in example 5. The noun *DIRA* (apartment, דירה, /דירא/) in Hebrew is feminine, while *apartamento*, or *piso*, the Spanish equivalents, are masculine. As Hebrew does not use indefinite articles, the speaker inserts the Spanish “*una*” before the switched noun, yet it is done so in its feminine form, which would correlate to its Hebrew grammatical gender, but not to its Spanish counterpart. This could be dismissed as an incident of borrowing or a “language island”, however, unlike what Poplack (1988) or Otheguy (1995) would have expected, this lexical “freedom” does indeed seem to be systemic, as evident from the natural use of the “wrong” determiner. It would therefore be more accurate describing this example in terms of *insertion*, as proposed by Muysken (2000), and discussed earlier.

7) a.

“*TNI LEIMA TA*-gafas de sol”

“*GIVE*(2P.Singular.Imparitive) *TO*(Prefix) *MOM THE*(Prefix.Indefinite+Accusative)
sunglasses”

“Give Mom the sunglasses”

b.

“ANI TZARICH encontrar ET HA-casco SHEL spiderman AVAL no lo encuentro”

“I MUST(Singular.Masculine,Present) find(Infinitive) [Accusative Marker] THE(Prefix)
helmet OF Spiderman BUT no it(DirectObject.Singular) find(1P.Singular)”

“I have to find Spideman’s helmet but I can’t find it”

c.

“Hemos jugado BA-toboganes”

“Play(1P.Plural.PresentPerfect) IN-THE(prefix) slides”

“We’ve played at the slides”

In examples 6a through 6c there are some clear violations of the system morpheme principle described earlier. Different system morphemes from the embedded language are mixed with system morpheme of the assumed matrix language. In 6a, the switch occurs directly after the indefinite marker *HA-* (-ה, /ha/), which in Modern Hebrew is undergoing a process of fusion with the accusative marker *ET* (-תא, /ʔet/), an important particle in Modern Hebrew which is most commonly used to introduce a definite object. In Modern Hebrew it is commonly accepted to use the particle *TA-* (-ת, /ta/), which is prefixed to the noun phrase which follows it, in this case, the Spanish *gafas de sol*.

In example 6b another violation of the system morpheme principle can be seen, again with the indefinite marker *HA-* prefixed to the Spanish noun *casco*. Moreover, the omission of the Spanish preposition “*que*” before the verb “*encontrar*” provides some further evidence of the extent to which the two language’s morphosyntactic structures intermix. While the Spanish infinitive verb should take the article “*que*” in cases such as the equivalent translation “*tengo que encontrar el casco*”, the Hebrew infinitive does not. Hebrew verbs have quite a strict internal structure and are constructed with a trilateral root system, on the basis of which the conjugation is produced, as the inner vowels systematically change according to the appropriate derived stem. The Hebrew infinitive verb should take the prefix *L-* (-ל, /l/), along with the suitable vowel for the root and the

derived stem. It can be argued that the speaker is utilizing code-switching to “economize” his phrase construction by choosing the patterns from both languages which are easier to produce. In example 6c, there is another insertion of a Hebrew morpheme, *BA-* (-ב, /ba/), which is a locative case marker prefixed to a noun and could be translated as “*in the*”, or, “*at the*”.

7. Discussion and conclusions

The results of this case study, although limited in scope, offer some interesting instances of code-switching between two very typologically distinct languages. Much of the data gathered raises some interesting issues regarding the interplay between languages which are farther away syntactically from each other than the frequently studied combination of English and Spanish. Further research is needed in order to confidently attest for some of the previously proposed CS models and constraints, which should account for as many languages combinations and linguistic environments and contexts as possible. Nevertheless, proposals such as the Functional Head Constraint (Belazi et al., 1994), and the Matrix Language Frame model developed by Myers-Scotton (1993) prove to be quite limited, as the data provides several counter-examples, such as the introduction and insertion of different system morphemes, the high frequency of intra-sentential code-switching utterances observed, and the difficulty in marking a clear distinction between the base and the embedded languages in the collected CS data. Furthermore, some of the linguistic constraints on code-switching proposed by Poplack (1980, 1981, 1988), also seem to be fairly insufficient in describing the phenomenon in all of its various contexts. Given the fact that the vast majority of code-switching instances were observed to be intra-sentential, Poplack’s size-of-constituent constraint seems to be incorrect, as her claim was that the most often switched elements would occur between sentences. Furthermore, similarly to Berk-Seligson’s findings (1986), it can be argued that the data from the current study could also challenge Poplack’s equivalence constraint, as the participants seemed to freely insert elements intra-sententially, even at points where the two languages’ surface structures do not meet. On the other hand, while Berk-Seligson’s findings supported the free morpheme constraint, the bilinguals studied in the present work produced many instances in which Hebrew bound morphemes attached themselves to Spanish lexical items, as can be seen in examples 4 and 7a-c.

In addition, Muysken’s (2000) correlation of what he classified as the processes of alternation, insertion, and congruent lexicalization, with typological relatedness between languages, seems to be quite accurate in relation to the data collected in the present study. Alternation and insertion were the most commonly produced instances of code-switching by the participants, and were

much more frequently produced as compared with instances of congruent lexicalization. This is not surprising considering Muysken, as well as Lipski, who expanded on his ideas, correlated alternation and insertion with code-switching between typologically divergent languages, while congruent lexicalization standardly corresponds to languages with similar typologies and vocabularies.

In conclusion, taking into consideration the increasing amount of academic literature and research, it is obvious that code-switching as a linguistic phenomenon, is much more complex than simply speaking two languages interchangeably. There seem to be quite a few limitations in many of the theoretical frameworks which were proposed as a method to describe code-switching, along with its various restrictions, and the large number of counter-examples found in different bilingual communities and language contexts suggests that bilingual's processing and use of their two language systems differ greatly depending on numerous factors, be they social, psychological, or syntactic in nature. In order to achieve the massive goal of fitting CS into a single coherent theoretical framework, all such factors must be accounted for, a challenge much larger in scope than the typical case study, which would commonly look into a specific language contact. To this extent, code-switching data would have to be compiled and reviewed from as wide a variety of linguistic environments as possible, in order to attest all possible social and grammatical factors which influence bilinguals' use of their two languages. If indeed, future research that would look into the same language context of Hebrew and Spanish would continue to produce similar patterns of code-switching which violate previous convictions in the same manner, it would have to be concluded that the specific characteristics of this language combination are the reason for such configurations, rather than an over-arching framework which universally applies to all instances of code-switching. In such case, in order to develop syntactic models for code-switching, each language combination would have to be studied individually, in order to observe its features and construct an appropriate model.

The fact that results similar to those found in the contact between Hebrew and Spanish, were also reported in the linguistic context of Arabic and French (Bentahila & Davies, 1983), further support the notion that typological distinctions between languages might play a far larger role in CS than previously considered. Considering Hebrew and Arabic are both Semitic languages with similar syntactic structure and vocabulary, while at the same time French and Spanish are closely related as well, being both Romance languages, it is not surprising similar patterns should occur with such combinations of related languages. However, this raises the important issue of not only acknowledging that language relatedness influences code-switching, but also addressing *how* it

does so, by investigating typological contrasts between different language families in the context of code-switching, and comparing CS data collected from two typologically distinct languages A and B, with the combination of two other divergent languages C and D, which are still related respectively to languages A and B.

It was the main objective of this case study to observe whether the contact between languages such as Hebrew and Spanish would provide any code-switching instances which may contradict previously held assumptions regarding the phenomenon. Although such discrepancies have been found, any conclusive statement which might be made based on such a small sample size would only risk confirmation bias and idealization, the same traps many of the previous code-switching research seems to have fallen into. Future research aimed at formulating grammatical restrictions and constraints on code-switching, would have to do so based on specific language combinations which must be analyzed in order to conclude what are the syntactic properties of each language that lead to the manner with which code-switching patterns manifest themselves.

8. References

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