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FEATURE VALUATION AND CODE-SWITCHING BETWEEN HEADS AND THEIR COMPLEMENTS

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***ABSTRACT**: Assuming the Minimalist Program as theoretical framework, the present study is an attempt to demonstrate that code-switching between different heads and respective complements is subject to the successful valuation of unvalued uninterpretable features through the operation Agree instead of being constrained by Government Constraint [1] or Functional Head Constraint [2]. In order to establish this point, it employs a naturalistic corpus of Urdu/English code-switching involving different Urdu/English bilinguals in natural on-campus setting. An examination of the data reveals that CS between C and TP, v and VP and D and NP is allowed whereas CS between T and vP, v and DP and P/Post and DP is disallowed. It is argued that CS between C and TP, v and VP and D and NP is permissible because feature specifications of the syntactic objects involved in these switches correspond to each other and hence, no 'crash'. On the other hand, CS between T and vP, v and DP and P/Post and DP is disallowed because it involves mismatch in feature specifications of the syntactic objects involved in these switches leading to a 'crash'. Thus, instead of any specific constraint to restrict CS between different heads and their complements, it is restricted by the same mechanisms which are employed to restrict a particular head from selecting a complement whose feature specifications do not correspond to its own features. Thus, a mixed and unmixed sentence is derived following the same computational procedure and hence, no essential difference between monolingual bilingual linguistic 'competence' as opposed to 'performance' is admissible.*

Keywords: Functional Head Constraint, Government Constraint, Heads, complements, feature specifications, feature valuation

PURPOSE OF THE STUDY

Assuming the researcher's [(3, 4, 5)] Minimalist Program (MP) as theoretical framework, the present study attempts to establish that code-switching (CS) between different syntactic categories serving as heads and their respective complements depends upon mutual correspondence of feature specifications of syntactic objects involved in a particular switch. Instead of invoking Government Constraint [1] or Functional Head Constraint [2], it ascribes CS between different heads and their complements to the process of feature valuation referred to as the operation Agree as proposed by the researcher [4]. A naturalistic corpus of Urdu/English CS is employed to demonstrate that CS is permissible wherever feature specifications of syntactic objects involved in a switch correspond to each other whereas it is categorically disallowed in case no such correspondence is available. Thus, CS between C and TP, *v* and VP and D and NP is permissible because feature specifications of the syntactic objects involved in these switches correspond to each other and hence, no 'crash'. On the other hand, CS between T and *v*P, *v* and DP and P/Post and DP is disallowed because it involves mismatch in feature specifications of the syntactic objects involved in these switches, leading to a 'crash'. Thus, instead of any specific constraint to restrict CS between different heads and their complements, it is restricted by the same mechanisms which are employed to restrict a particular head from selecting a complement whose feature specifications do not correspond to its own features.

BACKGROUND AND LITERATURE REVIEW

Mixing of two distinct languages in a discourse, generally referred to as CS, offers many interesting insights into social and psychological aspects of human language. For example, the choice of a particular 'code' (a language) in a particular functional domain by a particular bilingual may be studied to understand sociolinguistic and cultural factors which determine the choice of one instead of the other code in that particular domain. In the same way, CS can be studied to see how two grammars contribute in the generation of one mixed sentence. CS between two languages at clause boundaries, generally referred to as inter-sentential CS, has been studied to explore sociolinguistic, socio-political and socio-economic factors which affect speakers' linguistic choices (cf. [6] and [7] among others). Unlike CS at clause-boundaries, CS within the boundary of a sentence, generally referred to as intra-sentential, CS has been studied to understand the grammatical operations and mechanism which regulate mixing of two distinct languages within the boundary of a single sentence (cf. [1,2,8,9,10]). Although the scholars are generally unanimous in considering a mixed sentence as systematic and grammatical as any unmixed one is, there is no general agreement among scholars regarding the nature of grammatical mechanisms which regulate mixing of two distinct languages within a single sentence.

Different studies have attempted to account for these grammatical mechanisms by adopting different theoretical frameworks and employing different types of datasets and methodologies to account for how two distinct languages can be involved in generating a mixed sentence which is a joint-product of two distinct grammatical systems. Some of the studies (cf. [9,10, 11], among others) attempt to account for the process of CS in terms of certain constraints which restrict random mixing of two distinct grammatical systems within a sentence. However, the problem with these constraints is that they become redundant when one comes to deal with unmixed ('pure') data. Positing such CS-specific constraints pose theoretical problem of implying a 'third' grammar i.e., a grammar which is the by-product of mixing of two grammars. For example, if such CS-specific constraints are admitted to be at work in mixed data, one also has to admit that there are some essential differences in the

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design of monolingual and bilingual linguistic 'competence' i.e., the potential as opposed to actual 'performance'. This must be precisely because of such essential differences between monolingual and bilingual linguistic competence that mixed and unmixed data cannot be accounted for uniformly by employing grammatical apparatus. Arguing against the proposals implying a third grammar, some other studies (cf. [1,12, 13, 14], [among others) attempt to account for CS by employing the existing set of grammatical tools, thereby implying no essential differences monolingual and bilingual linguistic competence.

One of the two mainstream approaches to account for the contribution of two languages within the boundary of a single sentence is to discover some grammatical constraint at work which restricts certain categories from selecting as their complements the projections whose heads are contributed by the other language involved in CS. The researchers' [1] GC and the researchers' [2] FHC are two of such constraints which attempt to account for CS in terms of structural relation between heads and their complements. However, both the GC and the FHC differ from other constraints such as the researcher's [9] Equivalence Constraint (EC) and Free Morpheme Constraint (FMC) or the researcher's [11] Closed Class Items Constraint (CCIC) etc., in that they do not invoke a 'third' grammar by making appeal to the CS-specific grammatical mechanisms. Both of them explicitly reject any constraints on CS which are not independently motivated in monolingual data and, as an alternative, they attempt to deduce such a constraint on CS from the already existing set of grammatical tools which are already part of monolingual grammar.

It was the researcher [12] who attempted for the first time to propose a model of bilingual linguistic competence in terms of an existing model of monolingual linguistic competence. Although her *Aspect* era based-approach to CS could not succeed in making correct empirical predictions across different language-pairs, her approach remains successful in excluding any CS-specific constraints from an account of intra-sentential CS. This approach to CS has genteelly been referred to as Null theory of intra-sentential CS. Following this tradition of explaining CS without positing CS-specific grammatical constraints, the researchers [1] aim to explain the intricacies of CS data by employing Government and Binding (GB) theory as their theoretical framework. They argue that instead of making appeal to any CS-specific grammatical constraint, the general syntagmatic coherence Principle of traditional grammar and of generative tradition should be enough to explain as to why CS is allowed at certain points and disallowed at certain other points.

Instead of focusing on code-switched items themselves, they focus on explaining CS through a structural relation of Government among the governor and its governed category. Government holds between a lexical category (X) and a phrasal category (Y) if the first node dominating X also dominates Y, where X is a major category N, V, A, P and no maximal boundary intervenes between X and Y. Di Sciullo et al., posit that the governor possesses the potential of

In the context of CS, thus, functional head and (at least) head of its complement projection must come from the same language so that they possess matching language-feature. For the checking of language-feature, it is mandatory for the f-selected complements to match language-feature of the functional head which selects it. Failure in checking of language-feature due to mismatch leads to ungrammaticality. However, the complements selected by lexical heads do not necessarily need to match the language-feature of their heads. Thus, the FHC restricts CS between functional heads and their f-selected complements but allows it between lexical heads and their complements. The FHC is claimed to be operative in all speech and a part of monolingual linguistic competence though the effects of the checking of language-feature becomes more visible between functional heads and their complements in CS.

Along with the theoretical inconsistencies mentioned above, the FHC has also been found making incorrect empirical predictions. The CS data involving different language-pairs provide numerous instances which violates the FHC. Consider the data (3) and (4) below which involve CS between D and its f-selected complement NP which is disallowed by the FHC.

(3) *Farsi*/English
hala ye defect *haem dar-e un faers-e*
now a also have-3sg that carpet-def
Now that carpet also has a defect.

(4) *Farsi*/English
I'll take some *namaek*
Salt ([13]: 120, 121)

Both the data (3) and (4) are predicted by the FHC to be ill-formed because of CS between English D and Farsi NP. However, both the data are grammatical and are actually produced by competent Farsi/English bilinguals. Like (3) and (4), the naturalistic corpus of Urdu/English which we shall introduce in Section 4 also provides numerous instances which run contrary to what the FHC stipulates.

Along with being empirically inadequate like the GC, the FHC has been found to be problematic on theoretical grounds. According to [7], the FHC is a further refinement and does no better than the GC in predicting the CS-data from different language-pairs. According to [16], although the FHC does make appeal to an independently motivated principle of grammar, its reliance on language-specific identifiers i.e., f-features makes it a CS-specific constraint as the reliance of the f-feature has not been found to be independently motivated in monolingual grammar. In the same way, the reliance of the GC on q-feature also makes it CS-specific constraint. The researcher [18], however, tries to defend the FHC on theoretical grounds and argues that the FHC is in line with the MP "that a functional head share the language index of the projection with which it merges" (p. 215). However, it must be noted that in the MP no such language-identifiers can be conceived of as the C_{HL} operates like a bat and does not identify labels such as Spanish, Urdu etc. Thus, both the GC and the FHC are simply incompatible with the design of the Faculty of Language (FoL) as conceived of in the MP.

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As an alternative to the GC and the FHC, the present study attempts to account for CS between different syntactic categories serving as heads and their respective complements by arguing that CS between different heads and their complements is determined by the universal computational procedure of valuing the sets of features (*lexical items (*LIs)) introduced into derivation by the operation *Select* in order to derive a 'uniform grammatical structure of a language i.e., an expression (sentence) of a language; hence, no 'mixed' grammars, no third grammars (Malik, forthcoming).

MATERIALS AND METHODS

A naturalistic corpus of Urdu/English CS has been employed to obtain empirical evidence of CS between different heads and their respective complements. The corpus consists of 29 different interactions among balanced Urdu/English bilinguals who demonstrate an almost equal command on both Urdu and English. Each interaction involves 4-7 participants who have been students of University of Management and Technology, Lahore (UMT). Each interaction takes place in an on-campus setting with the participants involved in informal discussion on variety of topics. One of the participants serving as the researcher's associate recorded the conversation along with active participation in the interaction. With total recording time of approximately 4.5 hours, the 29 interactions are transcribed. The corpus consists of 1767 sentences. The whole of the corpus of naturalistic Urdu/English is at the disposal of the study. However, only a small number of actual data have been documented within the study to demonstrate different switching patterns involving different heads and their complements.

HEADS AND THEIR COMPLEMENS IN URDU/ENGLISH CS

An examination of the naturalistic Urdu/English CS data reveals that CS between all heads and their complements is permissible except CS between T and *v*P, *v* and DP and P/Post and its complement DP. Let us first consider the case of CS between C and its complement TP- a CS pattern which is restricted by the FHC as TP is f-selected by C being functional head. Consider the naturalistic data (5) and (6) below

(5) *Sub ye keh-tay heyn ke* this is not possible
Everyone this^{D} say^{V+v} be^{T} that^{C}
3/PL SG Asp/PL Pre/PL Fin/Dec
'Everyone says that this is not possible.'

(6) I just want to say *ke* be confident ……..
that^{C}
Fin/Dec
'I just want to say that be confident' ……...

The naturalistic data (5) presents an interesting case. Whereas the matrix happens to be an unmixed Urdu CP, the embedded CP consists of pure English TP selected by an Urdu C. Thus, CS between C and its complement TP is demonstrated by the data (5). Likewise, the naturalistic data (6) also offers an interesting instance of CS between C and TP with an Urdu C occurring in an otherwise 'pure' English sentence. In fact, the data examined for the study offers multiple instances of CS between C and TP.

From CS between C and TP, let us now turn to CS between D and NP-yet another CS pattern which is disallowed by the FHC. Consider the naturalistic CS data (7) and elicited data (8) below:

(7) *Hamari* society English-*ko* *aik* status symbol
our^{D} - Acc a^{D}
PL /GEN/Fem SG
samajti hey.
consider^{V} be^{T}
Asp/SG/Fem Pre/SG
'Our society considers English a status symbol'.

(8) *Inn* issues-ko discuss hona chahiye.
these^{D} -Acc be^{v} should^{T}
PL INF/SG/Mas Pre/SG
'These issues should be discussed'.

The naturalistic data (7) offers positive evidence of CS between Urdu D *aik* and English NP *status symbol*. Thus, the evidence documented in (7) and (8) allow CS between D and its complement NP even though NP is f-selected by D.

Like CS between C and TP and D and NP, CS between *v* and VP also appears to be permissible under all circumstances. The corpus of the study provides numerous instances of *v* being supplied by Urdu with V from English. In fact, CS between *v* and VP appears to be practically unconstrained. Consider the naturalistic Urdu/English CS data (9) and (10) below:

(9) *Pakistan mein khaas-toar-per ye* social
PN^{N} in^{Ad} specially^{Adv} these^{D}
3/SG PL
factors count *kertay heyn.*
do^{v} be^{T}
Asp/Mas/PL Pre/PL
'Especially in Pakistan, these social factors.'
matter.

(10) *Mera* interest *naheen* develop *ho - raha tha.*
my^{D} not^{NEG} be^{v} -ing be^{T}
1/SG/Mas Asp/SG/Mas Pst/SG/Mas
'My interest was not developing.

In (9), Urdu supplies *v* [*ker* (do)] whereas English supplies *count* as V. In the same way, the positive data (10) provides an instance of CS between Urdu *v ho* (be) and English V *develop*. In fact, CS between *v* and VP is one of the most frequently occurring CS patterns found in the corpus of Urdu/English CS.

Unlike the occurrences of CS between C and TP, *v* and VP and D and NP, the corpus do not provide even a single instance of CS between T and *v*P, *v* and DP and P/Post and its complement DP. Although the corpus of the study offer numerous instances of CS practically between all heads and their complements no matter they are *f*-selected or are governed by their respective heads, one does not come across a single instance of CS between T and *v*P, *v* and DP and P/Post and DP. An examination of the data indicates a categorical ban on CS between T, *v* and P. Thus, it is quite logical to assume that CS between these heads and their complements in categorically disallowed.

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The positive evidence obtained from the examination of the naturalistic Urdu/English CS data suggest that CS between C and TP, *v* and VP and D and NP is allowed whereas CS between T and *v*P, *v* and object DP and P/Post and complement DP is disallowed. However, the CS patterns involving different heads and complements pose multiple challenges to both the existing accounts of CS i.e., the GC and the FHC. For example, CS between D and its complement NP is restricted both by the GC. The GC restricts CS between D and NP because D, being the governor, serves as the L_q carrier which determines the language index of its complement (governed category). The GC fails in predicting the multiple positive instances of CS between D and its complement NP found in the naturalistic corpus. In the same way, the GC also fails in predicting CS between C and its complement TP which is one of the most frequently switching patterns in Urdu/English CS data. Furthermore, the GC cannot help us `explain as to why CS is disallowed between *v* and object DP as relation of government cannot be said to exist between *v* and object DP. Like the GC, the FHC also fails in predicting CS between different functional heads and their *f*-selected complements. For example, the FHC restricts CS D and its complement NP as NP is *f*-selected by D and, therefore, they must share language-feature. However, contrary to what the FHC stipulates, Urdu/English CS data provide multiple instances of CS between D and NP. Thus, both the existing models fail in predicting the recurring switching patterns involving different heads and complements observed in the data under consideration. In the following section, we attempt to account for these problematic switching patterns in terms of the MP without invoking any constraint -CS-specific or otherwise.

FEATURE VALUATION AND CODE-SWITCHING BETWEEN HEADS AND COMPLEMENTS

If no essential difference between monolingual and bilingual linguistic competence is admitted as proposed by the researcher [19], we should be able to account for each and every aspect of mixing of two or more than two languages without invoking any grammatical postulate which makes explicit reference to CS. Why CS between C and TP, D and NP and *v* and VP is allowed while CS between T and *v*P, *v* and DP and P/Post and its complement DP is disallowed must be due to the same universal grammatical requirement which varies neither from language to language nor from speaker to speaker. Thus, instead of proposing any formal restriction, we propose that CS between different heads and their respective complements is determined by the grammatical requirement which lets a particular head select a particular complement projection but restricts it from selecting yet another projection as its complement. In simpler terms, thus, the grammatical requirement which does not let a plural D such as *these* select a singular NP such as *book* is exactly what permits CS between certain heads and their complements but restricts CS between certain other heads and their complements.

Why a plural D cannot select a singular NP as its complement is precisely because of difference in the Φ-features available on D and NP in monolingual context. Because of the difference in Φ-features of D and NP, the uninterpretable Φ-features on D are not valued and deleted. If the uninterpretable features are not valued and subsequently deleted from the narrow syntax before the *Spell-Out*, the interfaces will be unable to provide any independent sensorimotor interpretation to the material sent by the C_{HL} for interpretation. The presence of these unvalued uninterpretable features in the derivation, thus, violates the FI which stipulates that all unvalued uninterpretable features must be valued and consequently deleted from the derivation for a convergent derivation to take place. Thus, the valuation of uninterpretable features as stipulated by the principle of Full Interpretation (FI) serves as the grammaticality condition which must be satisfied for a derivation to converge. In case the FI is not satisfied, the derivation must 'crash'.

The mutual incompatibility of the sets of Φ-features on D and NP leads to ungrammaticality (crash) in monolingual and bilingual contexts alike. If mutually incompatibility of plural D and singular NP leads to ungrammaticality in monolingual context, mutually incompatible Φ-features on head and complements belonging to two different independent languages leads to a crash in the same way for the same reason. Thus, the universal computational procedure of deriving a convergent derivation and the grammaticality conditions which are applied at the interfaces remain the same no matter LIs are supplied by one L or two Ls. The C_{HL} computes the values of LIs uniformly through its universally-determined computational procedure; and the grammaticality conditions applied at the interfaces are satisfied through the same procedure of feature valuation to satisfy the FI in a uniform fashion in monolingual and bilingual linguistic context alike. Unlike [3], the features, in the later MP [3] are valued and deleted through an abstract operation called *Agree.* It is a process through which an item displays morphological features under the influence of another item. It hold between two syntactic objects in which one of them called Probe (P) searches in a given space for another projection called Goal (G) to get its unvalued uninterpretable features valued. For example, due to the uninterpretable Φ-features available on it, *v* becomes a P and starts searching for a G i.e., DP with matching Φ-features on it in its *c-command* domain. Upon successful valuation and subsequent deletion of uninterpretable features, the material is transferred in a successive cyclic fashion to the interfaces for a semantic and phonological representation. In case of mismatch between uninterpretable Φ-features on P and interpretable features on G, the derivation must 'crash' due to the FI. Thus, the mutual compatibility of the sets of features available on P and G is crucial for the valuation/deletion of uninterpretable features for a convergent derivation to take place.

As the C_{HL} operates like a bat and indistinctly computes the LIs coming from any of L in a uniform fashion, it is quite plausible to assume that the process of valuation and deletion of uninterpretable features remains the same in both monolingual and bilingual contexts. Thus, if there is mismatch between feature specifications of P and G, the unvalued uninterpretable features are not valued and subsequently deleted in both mixed and unmixed data; hence,

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the derivation crashes alike in both contexts. Thus, the process of feature valuation called *Agree* must operate without even recognizing that the items it is processing are contributed by two language-specific Ls. Thus, even if P is supplied by Lx while the head of the projection serving as G is supplied by Ly, the process of valuation of features remains the same. If there is match between feature specifications of P and G, the uninterpretable features are valued no matter P and G are supplied by one L or two Ls. Thus, all the switching patterns involving different heads and complements as observed in the positive and negative Urdu/English CS data examined in Section 4 are allowed and disallowed by *Agree*. The mutual compatibility of the sets of features which have to enter into *Agree* serves as a precondition derivation by different LIs is crucial for the valuation/deletion of uninterpretable features for a convergent derivation to take place.

CONCLUSION

The present study aimed to establish that CS between different heads and their complements is subject to the mutual compatibility of the feature specifications of the respective head and its complement. The empirical evidence obtained from the naturalistic corpus of Urdu/English CS suggest that except CS between T and *v*P, *v* and DP and P/Post and its complement DP, CS is allowed between all heads and their complements. Thus, CS between C and TP, D and NP and *v* and VP is allowed even though the FHC restricts CS between these heads and their complements. It has been argued that CS between these heads and their respective complements is permissible because either they do not enter into *Agree* and their features they bear may not lead to a 'crash'. On the other hand, CS between T and *v*P, *v* and DP and P/Post and its complement DP is categorically disallowed because either they enter *Agree* or the matching features of the head and complement is mandatory to meet the grammaticality conditions applied at the interfaces. Thus, CS between different heads and their complements is subject to the same grammaticality conditions which are applied at the interfaces which determine the grammaticality of a monolingual sentence. The successful valuation of unvalued uninterpretable features serves as the pre-condition for grammaticality as stipulated by the FI in mixed sentence as it does in the case of unmixed sentence. Hence, no essential difference monolingual and bilingual linguistic competence is admissible.

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