On code-switching inside NP

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ABSTRACT
In this article it is argued that, contrary to the assertions of Pfaff (1979), adjective/noun code-switches inside NP are possible. While not strictly following the placement rules of the language of the adjective as claimed by Aguirre (1976) and others, these switches do appear to be limited by conditions on placement internal to the languages involved. So long as significant contrasts in the placement of particular categories of lexical items are maintained, code-switching inside NP is possible and can result in "creations" such as NPs with postnominal English color adjectives.

Intrasentential code-switching is the alternation of different codes, or languages, within single sentences, as in sentence (1):

(1)   No van a bring it up in the meeting.
      "They're not going to . . ." (Pfaff, 1979, p. 296)

Much code-switching literature deals with Spanish/English code-switching as in (1), its motivation, and the limitations on it. Early investigators of this and related phenomena (e.g., Espinosa, 1917/1975, p. 193; Lance, 1975, p. 143) suggested that code-switching occurs without syntactic limitation. More recent studies have suggested strong structural limitations. Although the idea of structural limitations on code-switching is no longer very controversial, the nature and extent of the limitations are.

In this paper, discussion will be limited to one controversial type of switching, namely, Adj/N switching, i.e., the switching of Adj or N inside an NP containing both. Examples (2) and (3) show NPs with such structure, and (4) shows what a switch inside this structure might look like:

(2)   un pájaro verde
(3)   a green bird
(4)   un pájaro green

Pfaff (1979) has argued that the switch of Adj or N inside an NP, as in (4), is generally prohibited by a surface constraint, given here as (5):

(5)   "Adjective/noun mixes must match the surface word order of both the language of the adjective and the language of the head noun." (p. 306)

Following Pfaff, (5) would largely if not entirely prohibit within NP Adj/N switches between Spanish and English since Spanish generally has postnominal Adjs, and English, prenominal Adjs, making it impossible to construct an Adj/N sequence that matches the word order of both languages as the condition demands.

Apparent counterexamples to this constraint are observed, as in (6):

(6)   I want a motorcycle verde.
      ". . . green." (McClure, 1977, p. 98)

Other researchers, such as Aguirre (1976) and McClure (1977), have argued that such switches are possible and are restricted by the placement rules of the language of the Adj. Under this theory, (6) would be a possible switch, but not (4), since in (6) both the Adj and its syntactic position are Spanish.

Pfaff (1979, p. 307) responds to example (6) by citing evidence that because the Spanish *motocicleta* is phonologically converging toward English *motorcycle* in some varieties of Spanish, *motorcycle* in (6) may be considered Spanish, thus removing (6) as an example of Adj/N switching.

In addition to the question of whether true Adj/N switches are possible, the theoretical status of code-switching and constraints such as (5) also needs resolution. Pfaff calls (5) a "surface constraint." If (5) is intended as a formal, individuated device, a type of surface filter, then it opens a number of questions concerning the descriptive power of and limitations on such filters. Positing such a device expands the theoretically possible set of surface filters, since it makes explicit reference to same and different language, which no other filters do (e.g., see Chomsky & Lasnik, 1977). Such a filter would have no motivation except where more than one language is involved, and would thus constitute a special "bilingual" device. The same is not true of such analyses as those of Aguirre, McClure and others that attempt to describe bilingual behavior with independently motivated language-internal devices. Thus, proposing a constraint such as (5) must be approached with caution. The present study was undertaken to help resolve some of these questions about the acceptability of Adj/N switches on the basis of acceptability judgments.

METHOD

Subjects

The informants consisted of two separate groups of university students (numbering 26 and 20). All of these students were bilingual, the large majority of them were originally from the Rio Grande·Valley of Texas and had code-switched since childhood, and all of them lived in the community and attended a university with an approximate 80% bilingual student enrollment, where code-switching is a common mode of communication.

Materials

As Pfaff and others have correctly noted, one must exclude lexical borrowings when assembling a body of data for the purpose of studying code-switching.

Pfaff summarizes four criteria with which lexical items should comply in order to be considered as involved in switching rather than borrowing, as follows:

(a) Does an L_1 equivalent exist? (b) If so, is it also in use in the community? (c) Is the equivalent L_1 term known to the individual speaker? (d) Does the individual regard the word as belonging to L_1 or L_2? (Pfaff, 1979, p. 297)

The switching items chosen for this study were *bird/pájaro, green/verde, book/libro,* and *yellow/amarillo.* Each term is common in the language community where the study was carried out. Further, all the terms were known to all the informants, and were considered as belonging to the language of origin. [McClure has noted that color terms were commonly code-switched in her study, and provided good examples of *code-mixing*—(lexical-level switching)—since the color terms in both languages "have identical referential and affective meanings" (1977, p. 98).]

Using these terms, two questionnaires were constructed for the purpose of obtaining grammaticality judgments on Adj/N switches inside NP (see Appendices A and B). The first (A) part of each questionnaire contains some code-switches attested in other research to be acceptable (e.g., items A1 and A3) and other code-switches that have been demonstrated elsewhere to be unacceptable (e.g., items A4–7; see Timm, 1975).

The second (B) part of each questionnaire was constructed by taking each possible switch combination of a given Adj/N pair, placing it inside an NP with an article from each language, and then placing each of these NPs as objects in sentences of each language, resulting in two complete object NP switching paradigms. The resulting sentences of each paradigm were randomized differently in each questionnaire.

Procedure

The questionnaire was distributed, and each group was told that this was an investigation of how language mixing works, that there are no right or wrong answers, that responses may vary, and that they should simply judge which mixes seem to them natural (i.e., like ones they might say or expect to hear) and which seem unnatural (i.e., like ones they would not say or expect to hear). Following the written questionnaire, each item was read aloud by the investigator with a natural but neutral intonation and without sentence-internal pauses, breaks, or other prosodic indicators of contrast. Informants were given time and encouragement to repeat the item to themselves and consider it before making a judgment. No following item was taken up until each informant had completed his or her judgment of the one in question.

Such a study has certain limitations. The questionnaire context is not a natural one for code-switching (or much other spoken language behavior). Also, it is not very common to see code-switches written, though this is changing. In this study, these factors are ameliorated by the fact that while the informants were not studying code-switching per se, they were studying linguistics and therefore were accustomed to linguistic discussion of, and written representation of, spoken registers.

RESULTS AND DISCUSSION

Of 1,058 possible grammaticality judgments, there was only one nonresponse (to Item A3 of Questionnaire 1; see Appendix A), and there were 18 undecided responses (with no more than two per item).

First, consider the Items from Part A of the questionnaires (see Appendices A and B). As noted earlier, the first three of these items contain switches generally considered to be possible. The last four items contain switches attested to in the literature as impossible. Both groups in this study reflect these intuitions, as shown in Table 1. The unusually high acceptability of Item A6 of Questionnaire 1 may possibly be due to written correspondence of the Spanish pronoun *ella* to an English proper name. The corresponding sentence of Questionnaire 2 with *el* elicited the expected low level of acceptance. In summary, the data show the expected basic distinction between the first three items and the last four, all of the latter showing least acceptance by both groups.

The results of the NP-switching items are presented in Table 2. Pfaff's constraint (5) predicts uniform unacceptability for all the B items. Since this is clearly not the result here, these data do not support Pfaff's constraint.

Although the sentences in each questionnaire were worded differently and randomized differently, both groups of informants independently identified the same structural set as least acceptable (Table 2). These least accepted items are the ones appearing below the dotted line. For the purpose of this and later statistical tests, since the differently worded questionnaires were given to different groups, I will ignore different wording and treat the informants as a single group, $N = 46$. Assuming a level of significance of $p < .05$, a chi-square test comparing levels of acceptability for the least accepted of the "acceptable" group, Sentence 6/7, and the most accepted of the "unacceptable" group, Sentence 7/6, shows a significant difference: $\chi^2 (1, N = 46) = 5.580, .01 < p < .025$. (For these and all following statistics, any judgment other than *grammatical* is treated as *ungrammatical*.) Having established significance here, one may presume a significant difference in acceptability between any sentence of the "unacceptable" group and any sentence of the "acceptable" group.

Since the data here are not consistent with Pfaff's constraint, we might ask how well they fit the alternative theory of Aguirre and others noted earlier.

Table 1. *Percentage of acceptance of various known pretest items (Part A of questionnaires)*

Switched portion	Questionnaire 1 item	Percentage of acceptance	Questionnaire 2 item	Percentage of acceptance	Mean of averages
Object Comp + S_S	1	84.6	1	60	72.3
Object Comp + S_E	2	46.2	—	—	—
Object S (or VP)$_E$	—	—	2	55	—
Embedded Obj NP$_S$	3	88.0	3	80	84.0
Subject Pro$_E$	4	19.2	4	15	17.1
Subject Pro$_E$	5	3.8	5	15	9.4
Subject Pro$_S$	6	42.3	6	5	23.7
Subject Pro$_S$	7	3.8	7	10	6.9

Table 2. *Percentage acceptance of various switching patterns (Part B of questionnaires)*[a]

NP pattern	Questionnaire 1 item	Percentage of acceptance	Questionnaire 2 item	Percentage of acceptance	Mean of averages
$D_S N_E A_S$	14	92.3	2	100	96.15
$D_E A_E N_S$	9	88.5	8	95	91.75
$D_S N_S A_E c^b$	16	100.00	12	80	90.00
$D_S N_E A_S$	3	84.6	13	70	77.30
$D_S A_E N_S$	12	76.9	14	75	75.95
$D_S A_E N_S$	15	61.5	15	90	75.75
$D_S N_S A_E c^b$	8	69.2	16	60	64.60
$D_E A_E N_S$	5	46.2	3	65	55.60
$D_E N_E A_S$	6	53.8	7	45	49.40
$D_S A_S N_E c^b$	7	11.5	6	45	28.25
$D_E N_E A_S$	4	11.5	9	35	23.25
$D_E A_S N_E c^b$	2	30.8	10	15	22.90
$D_E N_S A_E c^b$	1	19.2	4	20	19.60
$D_E N_S A_E c^b$	11	11.5	11	20	15.75
$D_E A_S N_E c^b$	13	11.5	5	10	10.75
$D_S A_S N_E c^b$	10	7.7	1	10	8.85

[a]Broken line separates "acceptable" patterns (above) from "unacceptable" patterns (below).
[b]c denotes a conflict in language of the Adj and language of Adj ordering w.r.t. N.

Recall that this theory of switching inside NP claims that the Adj/N switches are possible and are restricted only by the Adj placement rules of the language of the Adj. That is, the Adj/N switches here would be allowed except where there is a prenominal Spanish Adj or a postnominal English Adj. With the exception of one item (4/9 of Table 2) this conflict between the language of the Adj and its syntactic positioning is present in each of the least accepted items (this is noted by a c to the right of these items in Table 2). Thus, the data here come much closer to fitting this theory.

There are, however, still problems. Items 16/12 and 8/16 also show this conflict but were judged acceptable by the majority of informants, Item 16/12 at an average level of 90%. A chi-square test comparing 8/16 (the less acceptable of these two) with 7/6 (the most acceptable of the unacceptable group) shows a very significant difference in the patterning of acceptability judgments for the two: $\chi^2 (1, N = 46) = 14.194, p < .001$.

A summary of the results, indicating the patterns to be accounted for is presented in Table 3. Relative to this study, Pattern (i) (corresponding to Items 2/10 and 13/5 of Table 2) is of consistently low acceptability. Pattern (ii) hovers near 50% acceptance when the English article is preceded by an English verb (6/7 of Table 2) and drops drastically in acceptance when preceded by a Spanish verb (Item 4/9). More will be said about this below. Since this pattern is also independently attested (e.g., McClure, 1977), it is treated here as acceptable. Pattern (iii) (Sentences 7/6 and 10/1) seems by and large of low acceptability.

Table 3. *Summary of acceptable and un-acceptable NP switching patterns*

	Det	Adj	N	Adj
(i)a	E	Sp	E	
(ii)	E		E	Sp
(iii)a	Sp	Sp	E	
(iv)	Sp		E	Sp
(v)	E	E	Sp	
(vi)a	E		Sp	E
(vii)	Sp	E	Sp	
(viii)	Sp		Sp	E

aPatterns to be blocked.

(The higher-than-expected acceptance rate of Item 6 of Questionnaire 2 may well be a reaction to the preceding Item 5, which is identical to 6 except for its English article. Some informants may have seen 6 as a resolution to the Spanish verb-English article problem of Item 5 that I mentioned in connection with pattern (ii) and will discuss further. Item 5/3 mentioned below also shows this conflict.) Pattern (iv) (Items 14/2 and 3/13) and Pattern (v) (9/8 and 5/3) show acceptability. Pattern (vi) (Items 1/4 and 11/11) is clearly unacceptable. Pattern (vii) (Items 12/14 and 15/15) and Pattern (viii) (16/12 and 8/16) are of higher acceptability.

As the data of this study indicate, code-switching inside NP is possible beyond what is predicted by Pfaff's constraint. Another theoretically possible limitation on code-switching is that the head of a phrase limits the possible order of elements within the phrase so that an NP headed by a Spanish N would primarily allow postnominal Adjs, whereas an NP headed by an English N would primarily allow prenominal Adjs, regardless of the language of the Adj, etc. This, however, is not what happens. In the data here, the language of the N mismatches the language of the order of elements in Patterns (ii), (iv), (v), and (vii); nonetheless, *all* of these are acceptable mixing patterns. The patterns in which Adj/N mixes are unacceptable all fall within the cases where the language of the N *mismatches* the language of the order of the elements of the phrase. Thus, the head N itself seems not to have the effect of limiting the possible ordering of elements within the phrase.

While a mismatch of the head of the phrase and the order of elements does not result in unacceptable switching, there are other factors to consider. When the order of elements is from one language, but the balance of nonhead elements (here Det and Adj) is from the other language, the switch is of low acceptability. This is the case in Patterns (iii) and (vi). Pattern (iii) shows English syntactic order but Spanish Det and Adj, in contrast to the acceptable pattern (iv), which does not show this ordering. A chi-square test comparing the level of acceptance for the least accepted sentence, 3/13, of the acceptable Pattern (iv) with the most accepted sentence, 7/6, of the unacceptable Pattern (iii) shows a significant

contrast in acceptance: χ^2 (1, N = 46) = 25.091, p < .001. Likewise, pattern (vi) shows Spanish order with English Det and Adj; however, Pattern (v), which shows an order matching the language of the nonhead items, is acceptable. Here too, comparing the less accepted sentence, 5/3, of the acceptable Pattern (v) with more accepted sentence, 1/4, of the unacceptable Pattern (vi), a chi-square test reveals a significant difference in levels of acceptance of the two: χ^2 (1, N = 46) = 11.943, p < .001.

Interestingly, it is a majority of *nonhead* elements, and not a majority of all elements, that coincides with the unacceptable switching just discussed. In cases where the head and another element are from one language but the syntactic order is from the other language, switching is acceptable. Thus in contrast to Patterns (iii) and (vi), Patterns (ii) and (vii) are both acceptable switching patterns. This finding further confirms the earlier observation that in the cases studied here, the head element alone has little to do with imposing ordering restrictions on the other elements of the phrase. [While the head element of NPs seems not to play a strong part in restricting order in this domain, the same may not be true of the head elements of other phrase types. Of the traditional syntactic categories, Ns have been found to be by far the most transmittable, constituting 70%+ of all lexical borrowings in Haugen's (1950) studies, and also constituting the largest single type of code-switching items (see Poplack, 1982)]

The observations so far have not touched on the unacceptability of Pattern (i). Patterns (i) and (iii) have in common the appearance of normally postnominal Adjs in prenominal position. The distribution of Adjs in the Spanish NP is more complicated than has been indicated so far. As many have noted, the rules of Spanish syntax will generate both pre- and postnominal Adjs. These positions frequently have different significance, however. Following Stockwell, Bowen, and Martin (1965, p. 87 ff.), prenominal Adjs are restrictive. Further, "some descriptive adjectives are usually considered to have a distinguishing function, and therefore follow the noun. These include adjectives of nationality, affiliation in society, and color" (p. 90). The code-switching in Patterns (i) and (iii) has a noteworthy effect: it results in the "misplacement" of the Spanish Adj relative to the N, not in a non-Spanish syntactic position, but into a Spanish syntactic position from which this type of Adj is normally excluded. Thus, (i) and (iii) may well show a Spanish-internal violation of normal placement of color Adjs in Spanish, at least relative to the sentences in this study. These data suggest the existence of the following condition on code-switching:

(7) Language-Internal Contrast Preservation Constraint
     Significant language-internal contrasts in the positioning of lexical items of a
     given syntactic category X must be preserved.

This account predicts that while the "misplaced" Spanish Adjs will result in unacceptability, "misplaced" English Adjs will not since English does not have the same internal contrast in prenominal/postnominal Adj positioning. This prediction appears to be correct. Although both switching patterns with prenominal Spanish color Adjs are unacceptable, at least one of the two switching patterns with postnominal English Adjs is acceptable, namely, Pattern (viii). Again following the strategy of comparing the less accepted of the acceptable pattern, here

8/16 of Pattern (viii), with the more (most) accepted of the unacceptable pattern(s), here, 7/6 of Patterns (i) and (iii), a chi-square test (already noted for these sentences in the context of an earlier discussion but repeated here for convenience) shows significantly different levels of acceptance: χ^2 (1, $N = 46$) $= 14.194$, $p < .001$. Thus, Condition (7) appears to help explain the asymmetrical judgments of ''misplaced'' Spanish and English Adjs in these data; code-switching may result in ''creations'' such as NPs with postnominal English Adjs that do not violate Condition (7). Also, (7) is consistent with other switches noted by Pfaff (1979, p. 306) that do take place inside NP, such as with the possessive *my/mi*, whose normal positioning is prenominal in both languages. This condition is further confirmation of the idea that code-switching requires a deep and sophisticated knowledge of the syntactic complexities of both languages involved (see Poplack, 1982).

One feature of the data already mentioned is a drop in acceptability when the test sentence contains a Spanish verb followed by an English article. In the questionnaire data, sentences with a Spanish verb followed by the English article *a* or *an* were judged less acceptable than the same sentences with the Spanish article *un* by an average of 46.20%. Thus, in these cases the Spanish verb seems an unfavorable context for a following English article. A phonological explanation is unlikely. The resulting sound combinations are not alien to the sound sequencing possibilities of either Spanish or English. The switch at issue here is one at the object NP boundary from Spanish to English. A further complication here is the fact that while a sentence with a Spanish verb/Spanish article combination is always favored in these data over a Spanish verb/English article combination, the degree to which the former combination is favored over the latter varies radically. For example, Items 5/3 and 15/15 vary by 20.15% in acceptance (χ^2 (1, $N = 46$) $= 3.827$, $.05 < p < .10$). On the other hand, Items 14/2 and 4/9 vary by 72.90% in acceptance rate (χ^2 (1, $N = 46$) $= 51.828$, $p < .001$). Thus, though the trend appears consistent, one needs to seek an explanation for the variance within it. It may well be that a combination of NP-external factors is involved. I will not pursue this topic further here except to note that the direction of the switch at the object NP boundary may be crucial (see Table 4). Regardless of other factors, maintaining or switching to Spanish is favored over maintaining, or worse, switching to, English. (See Gumperz, 1976, for discussion on the direction of code-switching.) I leave the problem here as one for further research since, though switching inside NP is affected, it also most likely involves factors well beyond the scope of the present investigation.

In sum, the data here indicate something less than the extensive prohibition against code-switching inside NP suggested by Pfaff. Also, as noted, the claim by Aguirre that acceptable Adj/N switches conform to the placement rules of the language of the Adj is too strong. Basically, no single element seems to dictate the acceptability/unacceptability of a switch inside NP. This statement extends even to the heads of NPs. One limitation on Adj/N code-switching has to do not so much with the switching of a particular element as with the preservation of a language-internal contrast in how the particular element is positioned. This limitation is formulated as the Language-Internal Contrast Preservation Constraint (7). (7) is probably a manifestation of a more general condition preserving

Table 4. *Language of elements at object NP boundary and average percentages of acceptance*

Direction of switch at NP boundary	Average percentage of acceptance
V_{Sp} Det_{Sp}	72.54%
V_E Det_{Sp}	56.68%
V_E Det_E	45.91%
V_{Sp} Det_E	26.34%

language-internal consistency in the use of syntactic rules and conventions. Around such constraints, code-switching can result in "creations" such as an NP with a postnominal English Adj, a construction not normal in English whose occurrence is not predicted by either of the previous two proposals.

The account given in this paper of which Adj/N switches are possible and which are impossible is neither complete nor unified. It does, however, point in an interesting direction. Pfaff's constraint is a type of very powerful descriptive device, and it is ad hoc. It is aimed at a single body of switching data and has no independent support. There is also counterevidence to it, both here and elsewhere. At least a part of the account of restrictions on Adj/N switching proposed here does not encounter these objections. It has been proposed here that the device that prevents switched prenominal Spanish Adjs is the same one that prevents the same class(es) of Adj from normally appearing in prenominal position in Spanish. (It is worth noting here that Pfaff's constraint also makes crucial use of this device to block the items it seems to block since for any Adj, one must know its "normal" surface order.) Therefore, the device has independent motivation. The application of this device is guaranteed by Condition (7), which embodies the general claim that code-switching cannot result in the use of elements of a language in violation of significant contrasts in the positioning of those elements in that language. The adequacy and generality of (7) is an empirical question whose answer must be based on further research into restrictions on code-switching. A central claim here is that such restrictions (at least inside phrases) may have to do more with preserving significant language-internal conventions and contrasts than with external matching of the structures of the two languages, allowing for some code-switching creations (e.g., NPs with postnominal English color Adjs). This research suggests new experiments that go beyond dealing only with object NPs of a fairly simple structure. NPs in other positions and of more complex structure may work differently. This work deals with color Adjs. Different classes of Adj may (and probably do) work differently. Finally, there is nothing magic about the broken line in Table 2. It simply demarks code-switches of greater and lesser relative acceptability. However, the results here do support a more general theory that restrictions on code-switching may be more strongly related to language-internal structure than some have claimed.

ACKNOWLEDGMENTS

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APPENDIX A

Questionnaire 1 with percentages of acceptance
A. 1. She believes que Miguel llenó el vaso. (84.6)
    2. Ella cree that Miguel filled the glass. (46.2)
    3. She believes that Maria has un libro amarillo. (88.0)
    4. She llenó el vaso. (19.2)
    5. I anduve a casa. (3.8)
    6. Ella filled the glass. (42.3)
    7. Yo walked home. (3.8)
B. 1. He has a yellow libro. (19.2)
    2. He has an amarillo book. (30.8)
    3. He has un book amarillo. (84.6)

4. El tiene a book amarillo. (11.5)
5. El tiene a yellow libro. (46.2)
6. He has a book amarillo. (53.8)
7. El tiene un amarillo book. (11.5)
8. He has un libro yellow. (69.2)
9. He has a yellow libro. (88.5)
10. He has un amarillo book. (7.7)
11. El tiene a libro yellow. (11.5)
12. He has un yellow libro. (76.9)
13. El tiene an amarillo book. (11.5)
14. El tiene un book amarillo. (92.3)
15. El tiene un yellow libro (61.5)
16. El tiene un libro yellow. (100)

APPENDIX B

Questionnaire 2 with percentages of acceptance

A. 1. She believes que Miguel llenó el vaso. (60)
    2. Ella cree que Miguei filled the glass. (55)
    3. She believes that Miguel saw un pájaro verde. (80)
    4. She llenó el vaso. (15)
    5. I anduve a casa. (15)
    6. El filled the glass. (5)
    7. Yo walked home. (10)
B. 1. Miguel saw un verde bird. (10)
    2. Miguel vió un bird verde. (100)
    3. Miguel vió a green pájaro. (65)
    4. Miguel saw a pájaro green. (20)
    5. Miguel vió a verde bird. (10)
    6. Miguel vió un verde bird. (45)
    7. Miguel saw a bird verde. (45)
    8. Miguel saw a green pájaro. (95)
    9. Miguel vió a bird verde. (35)
    10. Miguel saw a verde bird. (15)
    11. Miguel vió a pájaro green. (20)
    12. Miguel vió un pájaro green. (80)
    13. Miguel saw un bird verde. (70)
    14. Miguel saw un green pájaro. (75)
    15. Miguel vió un green pájaro. (90)
    16. Miguel saw un pájaro green. (60)