

Mixed compounds in code-switching contexts

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Abstract

This pilot work analyses the acceptability of mixed compound words in code-switching contexts. In particular, we will discuss mixed Italian-German and Italian-English compounds, i.e. cases of mixing among languages where the process of compounding follows different rules for what concerns the position of the head, as well as inflection issues.

An Acceptability Judgment Task featuring different types of mixed compounds has been administered to two groups of participants, who are either bilingual or highly fluent in the two languages involved (Italian-German or Italian-English). Our conclusion is that it is overall possible to have mixed compounds. However, the two groups provide different judgments. For the Italian-German language pair, the possibility of mixed compounds is severely constrained, especially because of the different head-modifier parameters exhibited by the two languages and the interference of gender inflection. Though the English language patterns with German with regard to the head-modifier parameter, Italian-English participants accept a much higher number of combinations; indeed the fact that both Italian and English exhibit exocentric compounds, and that gender features do not interfere with judgments, might favour acceptability.

Keywords: morphology; morpho-syntactic interface; code-switching; mixed compounds; integration

1. Introduction¹

According to many definitions (e.g. Trach 2022), a compound word is obtained when two (or more) words are linked together to form a new word with a different meaning. Hence, morphology analyses compounds as complex words, since no free morpheme can be inserted between the two members, even when there is a space in-between (cf. **a language famous school*). At the same time, syntax interferes with the compounding process, since the linear order exhibited by the two members of the compound reflects the head-modifier parameter which is dominant in the language involved. With these premises, the acceptability of mixed

¹ This work is the result of the collaboration of the two authors in all respects. Nevertheless, Cristina Pierantozzi takes responsibility for sections 3, 5, 6 and 8 and Gloria Cocchi takes responsibility for sections 1, 2, 4, and 7.

compounds in code-switching (CS) contexts would represent a peculiar case of CS below word level, which is generally disallowed.

After a discussion of the taxonomy of compounds in the three languages under investigation, as well as a review of the literature on the emergence of mixed compounds in different language pairs, the main aim of this work is to investigate the acceptability rates of mixed compounds in Italian-German and Italian-English code-switching contexts. In particular, we aim to see how different factors (i.e. the head-modifier parameter, or gender features) interfere with the acceptability rates and discuss the theoretical implications raised by them.

2. English, German and Italian compounds: a comparison

According to Adams (1987), English compounds should be classified according to three parameters:

- a) the categories of the combined words, as well as the category of the compound itself;
- b) how they are written, a fact which correlates to the stronger or weaker degree of union of the two words: closed compounds, written in one word (*ashtray*), hyphenated compounds (*oil-free*), and open compounds, with a space in-between (*language school*);
- c) the presence and position of the semantic head, namely the most important of the two words, from both a syntactic and a semantic point of view (Plag 2003): endocentric compounds, where one of the two words represents the head (*swordfish*, which is a fish and not a sword); exocentric compounds, where none of the words is to be identified as the head (*outlaw*), and copulative compounds, where both words can be deemed as heads (*sofa bed*).

This classification has been proposed for English, but can be easily adapted to other languages, though with some relevant differences that we will underline in what follows.

As concerns category combinations, in this work we will focus primarily on compound nouns (which is by far the most frequent outcome), and in particular on those obtained by N+N combination, though different possibilities will be explored (e.g. compound adjectives or nouns formed by V+A combinations).

Relating to how compounds are written, in German almost all compounds are written in one word, without spaces or hyphens in-between (*Staatspolizei* ‘state police’).² Conversely, in Italian we witness a high number of open compounds, written in two words, especially compounds of more recent formation or less frequently used (*pesce palla* ‘puffer fish’ [lit. ‘fish ball’])³. Hyphenated compounds, which are frequently found in English, are relatively rare in Italian or German.

² Indeed, in German we often find (closed) compounds formed out of more than two words. However, this type of compounds will not be tackled in the present work.

See <https://www.dartmouth.edu/~deutsch/Grammatik/Wortbildung/Komposita.html>.

³ See e.g. Scalise (1994), Grossman and Rainer (eds.) (2004).

The most important parameter to discuss proves to be head position, as it is in this environment that we observe the most relevant differences among the languages under analysis. Indeed, in German, virtually all compounds are endocentric, with very few exceptions (Gast 2008). This means that one of the two words which form the compound is to be regarded as the most important one, which gives the compound a category specification and determines all its semantic and syntactic features, like gender (Plag 2003). Furthermore, the head is always on the right, with no exception: *Freundeskreis* ‘circle of friends’ is a *Kreis* ‘circle’. Therefore German compounds pattern with English endocentric compounds, as the latter are all head-final too.

Crucially, Italian compounds diverge from both German and English compounds in two important aspects. Firstly, Italian endocentric compounds are generally head-initial, i.e. the head is the member on the left (*pescecane* ‘shark’ is a *pesce* ‘fish’, rather than a *cane* ‘dog’); there are a few head-final compounds (like *ferrovia* ‘railway’ [lit. ‘iron.way’])⁴, but this combination is hardly productive. Secondly, Italian exhibits a very high number of exocentric compounds, which are almost unattested in German and not so numerous in English. In particular, in Italian we find a high number of compound nouns formed out of V-stem+N combinations (*cavatappi* ‘corkscrew’ [lit. ‘take-out.corks’]⁵, but not only (see e.g. the adverb+N combination *fuorilegge* ‘outlaw’).

Finally, copulative compounds represent a minority in the three languages; see German *süßsauer* or Italian *agrodolce* (both meaning ‘sweet-and-sour’).

3. Theoretical background

In Poplack’s (1980), Sankoff and Poplack’s (1981) seminal works on code-switching, two important constraints on mixed combinations are formulated: the Free Morpheme constraint, which assumes that the switch may not occur below word level, and the Equivalence constraint, which states that the order of sentence constituents on both sides of the switch point must be grammatical with respect to both languages involved.

Crucially, both constraints are somehow challenged by the mixed compounds tackled in the present work. As for the first, as stated in the Introduction, compounds are treated by morphology as complex words, hence mixed compounds would represent a peculiar case of CS below word level, a possibility which is generally disallowed by the theory. Actually, Sankoff and Poplack’s (1981) Free Morpheme Constraint mainly rules out the switching between two bound morphemes, or between a free root and a bound inflectional morpheme. Compounds, thus, would represent a different case of switching below word level, as they are generally formed out of the combination of two free roots. However, this is not always the

⁴ In literal translations, a dot is placed to separate the two members of closed compounds.

⁵ Compounds of this type are considered exocentric since the V-stem cannot be regarded as the head, as it is a verbal element while the compound is a noun. Indeed, compounds made of agent noun + theme noun, or vice versa (as in the English example *dishwasher*) are not attested in Italian.

case. Indeed, in Italian V+N exocentric compounds, the first member cannot be regarded as a free morpheme, but rather as a verbal stem, hence a bound morpheme.⁶

As for the second, the head-modifier parameter is crucially different in languages like English and German on the one side, and Italian on the other, since endocentric compounds (which represent the majority of compounds) are head-final in the former languages and (mostly) head-initial in the latter.

MacSwan (1999), who rephrases the Borrowing Hypothesis (Poplack 1980 and following work) in Minimalist terms, assumes that the mentioned constraints hold as far as no rules of the two mixing languages are violated. Hence, CS below word level and even between bound morphemes may in principle be allowed when morpho-phonological constraints are not disobeyed, as stated in the PF Disjunction Theorem (see also Alexiadou and Lohndal 2018). This is indeed what happens in examples like *a-me-repeat* ‘he has repeated/failed’, reported by Myers-Scotton (1993), where the inflectional bound morphemes of an agglutinating language like Swahili may easily combine with an English root without giving rise to PF violations.⁷

As for mixed compounds, according to Muysken (2000), it is generally possible to have them in languages which exhibit the same parametric choices, hence where the Equivalence constraint is not violated; see in this regard the German-English mixed compounds reported by Alexiadou (2020), like *beachhäuser* (‘beach houses’) or *kettenstore* (chain store). However, Treffers-Daller (2005) reports the occurrence of mixed compounds also in languages which do not exhibit the same parametric choices, like Dutch-French, e.g. *velo-winkel* (‘bicycle shop’).

4. Problems raised by mixed compounds. Research questions

Turning to our case study, German and English endocentric compounds are all head-final, with no exceptions. This fact mirrors the rigid parametric order exhibited by nouns and their adjectival modifiers in these languages. In Italian, on the other hand, the great majority of endocentric compounds are head-initial, a fact which also mirrors the relative order of nouns and adjectives; see the contrast below:

- | | | |
|-----|--------------------|----------------------------|
| (1) | G: ein roter Fisch | ein Schwertfisch |
| | E: a red fish | a swordfish |
| | I: un pesce rosso | un pescespada ⁸ |

However, in Italian the N-A parametric order is not as rigid as in the other mentioned languages: indeed in this language we also find some adjectives which may precede the noun

⁶ Italian verbs are always morphologically complex and free roots cannot be employed in compounding.

⁷ In the literature we find other counter-examples to Poplack’s Free Morpheme Constraints and MacSwan’s PF Disjunction Theorem involving several language pairs: e.g. Adangme/English (Nartey 1982), Irish/English (Stenson 1990), Breton/French (Timm 1994), Farsi/English (Mahootian 1993), Finnish/English (Halmari 1997) among others.

⁸ Literally ‘a fish red’ and ‘a fish.sword’.

they modify.⁹ Analogously, in Italian we find some head-final endocentric compounds, though this option is generally unproductive:

- (2) I: una gran donna una nobildonna
 ‘a great woman’ ‘a noblewoman’

This being the situation, we can address our first research question:

- RQ1: In code-switching contexts, will bilingual speakers accept mixed compounds which combine an Italian word and a German or English word?
 If so, is this option limited to compounds which are uniformly head-final?

Another problem is raised by the gender features of mixed compounds. In both German and Italian endocentric compounds, the gender of the compound coincides with the gender of its head. However, the nouns which form a mixed Italian–German compound may have a different gender in the two languages. Hence a mixed Italian–German compound might receive the selected gender of the head noun or the analogical gender, namely the gender of the equivalent noun in the other language.

Conversely, since English inanimate nouns are not marked for gender, a mixed Italian-English compound can receive not only the selected gender of its head or the analogical gender, but also a default gender (masculine in Italian), especially in case of compounds with an English head.

Taking all these issues into consideration, we open our second research question:

- RQ2: Will gender issues interfere with the acceptance rate of mixed Italian-German and Italian-English compounds?

5. Test and participants

Seven adult bilingual speakers living in Italy participated in this pilot study. Four of them are Italian/German speakers while three are Italian/English speakers. All participants have filled out a sociolinguistic survey and an Acceptability Judgment Task (AJT) scored on a 6-points Likert scale.

The four Italian/German participants differ among themselves according to both language dominance and the age of acquisition of the two languages; specifically, two of them are 2L1 bilinguals, who have acquired the two languages since birth, while the others are L2 learners, one Italian L2 learner and one German L2 learner. In contrast to the Italian/German group, the Italian/English group consists only of L2 learners, one English L2 learner and two Italian L2 learners. All the Italian L2 participants have lived in Italy for more than 30 years and they are highly fluent in Italian. The German L2 speaker and the English L2 speaker are university students who, according to the Language University Placement Test, have a C level of the QCER in the second language. All of the participants maintain that they use the two languages frequently on a daily basis.

⁹ The Italian language speculates on this freer word order: the different position of the adjective with respect to the noun correlates to a semantic difference (see Cocchi and Pierantozzi 2022).

Each of the two groups of participants was given an AJT consisting of around 100 test sentences with mixed compounds obtained from the manipulation of the corresponding monolingual compounds, as will be described in Sections 6.1 and 7.1 below. In particular, the Italian/German AJT consists of 52 mixed compounds inserted in a German context and 49 inserted in an Italian context, while the Italian/English AJT consists of 64 mixed compounds inserted in an Italian context and 55 mixed compounds inserted in an English context.

The test sentences were also randomized with code-switched and monolingual fillers. Test sentences and fillers were spread over three separate sessions, which have been carried out online using Limes Survey. In particular, in each session, 33% were sentences with mixed compounds (test sentences), 18% were sentences with mixed DPs, 32% were code-switched ergative clauses and, finally, 16% were grammatical and ungrammatical monolingual sentences.

6. Italian-German compounds

6.1. Mixed combinations

For the Italian-German language pair we have selected the following 13 compound pairs, which are more or less equivalent in the two languages from both a morphological and a semantic point of view:¹⁰

(3)	Italian	German	English equivalent
a)	ferrovia	Eisenbahn	<i>railway</i>
b)	carta moneta	Papiergeld	<i>paper money</i>
c)	pescepalla	Kugelfisch	<i>pufferfish</i>
d)	pescespada	Schwertfisch	<i>swordfish</i>
e)	lavoro nero	Schwarzarbeit	<i>undeclared work</i> ¹¹
f)	grigio topo	mausgrau	<i>mouse gray</i> ¹²
g)	portachiavi	Schlüsselanhänger	<i>keychain</i> ¹³
h)	tagliacarte	Brieföffner	<i>paper knife</i> ¹⁴
i)	sottopassaggio	Unterführung	<i>subway</i>
j)	sottoscala	Raum unter der Treppe	<i>(approx.) basement</i> ¹⁵
k)	torta di mele	Apfeltorte	<i>apple pie</i> ¹⁶
l)	camera da letto	Schlafzimmer	<i>bedroom</i> ¹⁷
m)	gamba del tavolo	Tischbein	<i>table leg</i> ¹⁸

¹⁰ We will provide literal translation for those compounds which are not exactly equivalent to their English counterpart, and which have not been mentioned until now.

¹¹ Lit. ‘work black’ (It.) and ‘black.work’ (Germ.).

¹² Lit. ‘grey mouse’ (It.).

¹³ Lit. ‘bring(V-stem).keys’ (It.) and ‘key.holder’ (Germ.).

¹⁴ Lit. ‘cut(V-stem).papers’ (It.) and ‘letter.opener’ (Germ.).

¹⁵ Lit. ‘under.stairs’ (It.) und ‘space under the stairs’ (Germ.).

¹⁶ Lit. ‘cake of apples’ (It.) and ‘apple.cake’ (Germ.).

¹⁷ Lit. ‘room for bed’ (It.) and ‘sleep.room’ (Germ.).

¹⁸ Lit. ‘leg of-the table’ (It.).

We have manipulated them in order to obtain mixed compounds, which have later on been inserted into German or Italian sentences.

These compounds have been specifically selected in order to have a variety of combinations:¹⁹

(4)	a)	N+N (head-final)	N+N (head-final)	
		ferrovia	Eisenbahn	<i>railway</i>
		carta moneta	Papiergeld	<i>paper money</i>
		• Mixed Compounds:		
		Eisenvia	Ferrobahn	
		Papiermoneta	Cartageld	
	b)	P+N (head-final)	P+N (head-final)	
		sottopassaggio	Unterführung	<i>subway</i>
		• Mixed Compounds:		
		unterpassaggio	sottoführung	
	c)	N+N (head-initial)	N+N (head-final)	(singular)
		pesce palla	Kugelfisch	<i>pufferfish</i>
		pescespada	Schwertfisch	<i>swordfish</i>
		• Mixed Compounds:		
		pesce kugel	pallafisch	
		fischpalla	kugel pesce	
		pesceschwert	spadafisch	
		fischspada	schwertpesce	
	d)	N+N (head-initial)	N+N (head-final)	(plural)
		pesci palla	Kugelfische	<i>pufferfish</i>
		pescispada	Schwertfische	<i>swordfish</i>
		• Mixed Compounds:		
		pescikugel	pallafische	
		fischepalla	kugel pesci	
		Pescekugeln	Kugelpesci	
		Fischpalle	Pallafische	
	e)	V+N (exocentric)	N+N (head-final)	
		portachiavi	Schlüsselanhänger	<i>key holder</i>
		tagliacarte	Brieföffner	<i>paper knife</i>
		• Mixed Compounds:		
		portaschlüssel	chiavianhänger	
		tagliapapiere	carteöffner	
		tagliabriefe	lettereöffner	
	f)	N+A (head-initial)	A+N (head-final)	
		lavoro nero	Schwarzarbeit	

¹⁹ For all examples we show in the first column the Italian compound and in the second the German equivalent, with the English translation aside.

- Mixed Compounds:

arbeit nero	Schwarzlavoro	
lavoro schwarz	Neroarbeit	

- g) A+A (head-initial) A+A (head-final)

grigio topo	mausgrau	
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- Mixed Compounds:

grigio maus	mausgrigio	
grau topo	topograu	

- h) Prepositional Phrase N+N (head-final)

torta di mele	Apfeltorte	<i>apple pie</i>
camera da letto	Schlafzimmer	<i>bedroom</i>
gamba del tavolo	Tischbein	<i>tableleg</i>

- Mixed Compounds:

apfeltorta	melatorte	
dormizimmer	schlafcamera	
tavolobein	tischgamba	

- i) P+N (exocentric) PrepositionalPhrase

sottoscala	Raum unter der Treppe	<i>basement</i>
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- Mixed Compound:

sottotreppe	
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6.2. Results and discussion

6.2.1. RQ1: In code-switching contexts, will bilingual speakers accept mixed compounds which combine an Italian word and a German word?

If so, is this option limited to compounds which are uniformly head-final?

Abstracting away from the grammatical contest (the main language of the clause), as well as from external factors, like language dominance, we may conclude that 12 mixed compounds out of 43 combinations have been judged as (more or less) acceptable. On average, only few mixed compounds have been accepted by 2L1 bilinguals, while L2 learners have proved to be more open to the possibility of mixing.

We have recorded a general positive consensus on the following sentences (both 2L1 and L2 speakers):

- (5) Costruiranno una eisenvia
'they will build a (f.sg) railway'
- (6) a) Einige Demonstranten überqueren den Unterpassaggio
'Some demonstrators cross the (m.sg) subway'
- b) Alcuni manifestanti attraversano la sottoführung
'Some demonstrators cross the (f.sg) subway'

As said above, L2 learners proved to be more flexible. In particular, the combination in (7) has been also accepted:

- (7) Ich zahle nur mit Papiermoneta (Italian L2)
 ‘I only pay with paper money’

Crucially, all the compounds which originate the mixed forms in (5) to (7) above are head-final in both languages. Indeed for this pattern we have recorded the highest acceptance rate (4 out of 6 mixed compounds of this type).

Only in very few cases L2 learners accept also combinations which mix N+N compounds having a different head position in the two languages (2 out of 16):

- (8) a) Ho visto due fische palla (Italian L2)
 ‘I saw two pufferfish’
 b) Mangio solo spadafisch (Italian L2)
 ‘I only eat swordfish’

Similar negative judgments have been provided for mixed adjectival compounds, which also have a different head position (A+N vs. N+A): only 1 positive score out of 8 combinations:

- (9) Questo maglione è topo grau. (German L2)

Expectedly, also mixed compounds which combine an Italian exocentric V+N compound and a German endocentric N+N head-final compound have been almost always rejected: only 1 combination out of 16 has been accepted:

- (10) Ich kaufe ein Lettereöffner (German L2)
 ‘I buy a paper knife’

Finally, other combinations which have obtained rather good scores among L2 learners are those mixing a compound in one language and the corresponding PP in the other (4 out of 6):

- (11) a) Mangio una apfeltorta (Italian L2)
 b) Ich esse eine Melatorte (Italian L2)
 ‘I eat an applepie’
 (12) I cassetti sono nel sottotreppe (German L2)
 ‘the drawers are in the space under the stairs’
 (13) Ich reserviere ein Schlafcamera (Italian L2)
 ‘I book a bedroom’

Hence we may conclude that mixed compounds which combine an Italian word and a German word are in principle acceptable, but there are several limitations and interesting inter-individual variations.

We may draw a preliminary generalization and assume that the acceptance rate of a mixed Italian–German compound increases if the two languages have two equivalent compounds with the same head position (i.e. head-final), or when a compound in one

language corresponds to a N+PP in the other language. Conversely, the acceptance rate of a mixed Italian–German compound decreases dramatically if the two languages have two equivalent compounds with different head positions.²⁰

These conclusions support Muysken’s (2000) assumption, that it is easier to have mixed compounds in languages with the same head-modifier parameter, also in line with Poplack’s (1980) Equivalence Constraint. German and Italian do not generally exhibit the same parametric choices but, as seen above, word order in Italian is not excessively rigid and this language features also some head-final compounds. Hence, the higher acceptability of mixed compounds involving Italian head-final ones is expected.

6.2.2. RQ2: Will gender issues interfere with the acceptance rate of mixed Italian-German compounds?

As concerns gender, in compound pairs having a different gender in Italian and German it is generally the selected head that assigns gender to the mixed compound, irrespectively of the language in which the clause is expressed. See in particular (6a) vs. (6b): *Unterpassaggio* is preceded by a masculine article, coherently with the Italian head noun *passaggio*, while *sottoführung* is feminine like German *Führung*.

However, also the mixed compounds showing analogical gender, as in (14) below, have not been deemed as completely unacceptable, even by early bilinguals, though they obtained a lower score with respect to (6):

- (14) a) ?Alcuni manifestanti attraversano il sottoführung
 b) ??Einige Demonstranten überqueren die Unterpassaggio
 c) ??Alcuni manifestanti attraversano l’unterpassaggio
 ‘some protesters cross the subway’

The combinations in (11)-(13), which combine a compound in one language with a PP in the other, exhibit a different behaviour: in (11a-b) the compounds show the feminine gender, in line with the feminine gender of the two semantic heads (It. *torta* and Germ. *Torte*); those in (12)-(13) seem to prefer instead a default gender, which is masculine in Italian, as in (12), and neuter in German, as in (13), though, in the latter case, the head noun, *camera*, would be feminine in Italian.

Finally, it is worthwhile noticing that the acceptability rate of a compound seems to increase when the head of the compound is expressed either in the dominant language of the clause, or in the dominant language of the participant (in the case of L2 learners). For instance, in (11a) vs. (11b) we observe a matching between the language of the clause and the language of the compound head; the same holds in the sole accepted combination involving an Italian exocentric V-stem+N compound (*tagliacarte*) and the corresponding German N+N head-final one (*Briefeöffner*). Therefore, these facts suggest a full integration of the mixed compound, in line with Myers-Scotton (1993, 2002).

²⁰ For more detail see also the discussion in Cocchi and Pierantozzi (2022).

7. Italian-English compounds

7.1. Mixed combinations

In line with 6.1. above, for Italian-English CS context we have selected the following 15 compound pairs, which are more or less (both semantically and morphologically) equivalent; some of them reflect the same choices operated for the Italian-German case:

(15)	Italian	English
a)	ferrovia	railway
b)	carta moneta	paper money
c)	pescepalla	pufferfish
d)	pescespada	swordfish
e)	cassaforte	strongbox
f)	grigioverde	grey-green
g)	grigio topo	mouse gray
h)	dolceamaro ²¹	bittersweet
i)	apribottiglie ²²	bottle-opener
j)	schiacciatate ²³	potato masher
k)	tagliacarte	paper cutter
l)	sottopassaggio	subway
m)	torta di mele	applecake
n)	serpente a sonagli ²⁴	rattlesnake
o)	cane da guardia ²⁵	watchdog

Again, we have manipulated them in order to obtain different types of mixed compounds:

(16)	a)	N+N (head-final)	N+N (head-final)
		ferrovia	railway
		carta moneta	paper money
		• Mixed Compounds:	
		railvia	rotaieway
		ironvia	ferroway
		papermoneta	cartamoney
	b)	P+N (head-final)	P+N (head-final)
		sottopassaggio	subway
		• Mixed Compounds:	
		subpassaggio	sottoway
	c)	N+N (head-initial)	N+N (head-final)
		pesce palla	pufferfish
		pescespada	swordfish

²¹ Lit. 'sweet.bitter'.

²² Lit. 'open(stem)-bottles'.

²³ Lit. 'squash(stem).potatoes'.

²⁴ Lit. 'snake with rattles'.

²⁵ Lit. 'dog for guard'.

	• Mixed Compounds:	
	pesce ball	sbuffafisch
		pallafish
	fisch palla	puffer pesce
	pesce sword	swordpesce
	fischspada	spadafisch
d)	N+A (head-initial)	A+N (head-final)
	cassaforte	strongbox
	• Mixed Compounds:	
	cassastrong	fortebox
e)	V+N (exocentric)	N+N (head-final)
	apribottiglie	bottle-opener
	schiaccia patate	potato masher
	tagliacarte	paper cutter
	• Mixed Compounds:	
	apribottles	bottiglia-opener
	schiaccia potatoes	patata masher
	tagliapapers	carta cutter
f)	Prepositional Phrase	N+N (head-final)
	torta di mele	applecake
	serpente a sonagli	rattlesnake
	cane da guardia	watchdog
	• Mixed Compounds:	
	appletorta	melacake
	rattlesserpente	sonaglisnake
	guardiadiog	watchcane
g)	A+A	A+A
	grigioverde	grey-green
	grigio topo	mouse gray
	dolceamaro	bittersweet
	• Mixed Compounds:	
	grey verde	grigiogreen
	grigio mouse	mouse grigio
	dolcebitter	sweetamaro
	bitterdolce	amarosweet

7.2. Results and discussion

7.2.1. RQ1: In code-switching contexts, will bilingual speakers accept mixed compounds which combine an Italian word and an English word?

If so, is this option limited to compounds which are uniformly head-final?

From our investigation it emerges that our participants accept 19 Italian-English mixed compounds out of 37 mixed combinations, hence a much higher number with respect to Italian-German ones; specifically, the Italian/English speakers accept the 51% of all mixed compounds while the Italian/German speakers accept the 27%. This may be due to the fact that, on the one side, the Italian language contains a very high number of (more or less adapted) loanwords from English, a fact that renders English-sounding words more familiar in Italian or bilingual contexts; on the other, the English lexicon contains more words of Romance origin (akin to the equivalent Italian words) with respect to German.

The Italian L1 speaker marginally accepts only a few mixed combinations, while the two English L1 speakers accept a much higher number.²⁶

However, unlike what holds in Italian-German compounds, we do not observe a definite preference for N+N compounds which share the same head (final) position (only 2 out of 6 combinations):

- (17) a) il/la/the cartamoney
b) the ferroway

For the *ferrovia/railway* pair, the low acceptability of some mixed combinations is certainly due to the fact that there is no exact semantic correspondence between the two compounds (unlike in *ferrovia/Eisenbahn* seen above).²⁷

We also record a clear difference in judgment in the other types of endocentric compounds, specifically in mixing compounds having a different head position, i.e. compounds which are head-final in English and head-initial in Italian (5 out of 11). In particular, those in (18) are judged fully acceptable and natural:

- (18) a) the sbuffafish²⁸
b) the spadafish

In (18a-b), the language of D matches the language of the head *fish*. It is worth underlining that the mixed compound in (18a), as well as those in (19) below, are derived from a compound pair where the Italian word *palla* ('ball') and the English word *puffer* have a different meaning in the two languages. Furthermore, the English noun *puffer* has an Italian verbal equivalent (*sbuffare*, whose stem *sbuffa-* is observed in (18a)). Interestingly enough, the

²⁶ Indeed all of the examples reported are accepted by the English L1 speakers, while the Italian L1 speaker accepts those reported in (20) below.

²⁷ Indeed the exact word-to-word translation of *ferrovia* would be *ironway*.

²⁸ Lit. 'puff(stem).fish'.

mixed V+N pattern in (18a) is judged more natural than the N+N combinations in (19) below, which are judged acceptable but not fully natural independently of the language of D:

- (19) a) ?the pufferpesce
 b) ?il pufferpesce
 c) ?the pallafish
 d) ?il pallafish
 f) ?il fish palla

The observed preference for the V-N pattern in (18a) can be explained by the high productivity of this type of compounds in Italian. Crucially, this suggests that formal rules, as well as the degree of productivity of the compound patterns in the two languages, override the semantic aspect in the mixing process. Indeed, a high number of combinations involving Italian V+N exocentric compounds have been judged more or less acceptable (6 out of 8), even by the Italian L1 speaker who accepts very few combinations, unlike what observed for Italian-German mixed compounds of this type:

- (20) a) il/the carta cutter
 b) the/l'apribottles
 c) lo/the schiaccia potatoes
 d) the bottiglie-opener
 g) il tagliapers
 h) il/the patata masher

Our participants also accept combinations of compound (A+A or A+N) adjectives: 7 out of 8:

- (21) a) ha un sapore dolcebitter
 b) ha un sapore bitterdolce
 c) it tastes sweetamaro/ ha un sapore sweetamaro
 d) ha un sapore amarosweet
 'it tastes bittersweet'
- (22) a) questo maglione è topo-grey
 b) questo maglione è grigio mouse
 c) questo maglione è grey topo
 'this sweater is mouse grey'

Finally, in line with the Italian-German participants, the Italian-English speakers accept mixed compounds derived from mixing an English N+N (head-final) endocentric compound and an Italian equivalent PP (3 out of 6):

- (23) a) the appletorta
 b) il guardiadiog
 c) la melacake

To sum up, participants quite easily accept mixed combinations of Italian and English compounds. Interestingly, unlike the Italian-German case, this possibility is not restricted to compounds which are head-final in both languages (e.g. *cartamoney* or *ferroway*),²⁹ as well as to compounds which have a PP form in one of the two languages (e.g. *appletorta* or *melacake*). Many combinations of Italian head-initial and English head-final endocentric compounds have also been judged (more or less) acceptable as well (e.g. *spadafish*, *pallafish* or *pufferpesce*).

All in all, the main result that we have obtained is the high acceptance of combinations involving Italian V+N exocentric compounds (e.g. *apribottle*, *schiacciapotatoes*, *patata masher*, etc.), while in German this type of mixed compounds had always been rejected, with one single exception (cf. 6.2.1. above). This may be due to the fact that the English language, unlike German, features exocentric compounds (though not as many as Italian), among which also some V+N combinations (e.g. *pickpocket*). Hence mixing may be favoured for this reason.

7.2.2. RQ2: Will gender issues interfere with the acceptance rate of mixed Italian-English compounds?

In Italian-English combinations, gender feature does not interfere much with acceptability, as English inanimate nouns do not carry a gender feature. Hence the same mixed compounds may be accompanied either by the English genderless article, or by the Italian gendered one, which generally agrees with the head noun; cf. *the pallafish* or *il pallafish* in (19) above, which have received the same score.

Finally, most of the compounds under analysis are masculine in Italian, and this explains the predominance of (Italian) masculine articles accompanying the compounds. However, if the mixed compound has an Italian feminine head noun, the Italian determiner may be inflected either in the masculine, which is by the way the default gender in Italian, or in the feminine; cf. *questo appletorta* (masc./def.) alongside *questa appletorta* (fem.).

Crucially, in case of a mixed compound with an English genderless head noun, if the equivalent Italian word is feminine, the compound may exhibit the feminine analogical gender as well, as observed in *la melacake* (fem., like the Italian noun *torta*, equivalent to *cake*) in (23c), as well as in *la cartamoney* (fem.), which is accepted together with both *il cartamoney* (masc./def.) and *the cartamoney* in (17).

8. Conclusion

To sum up, though we are aware that more data would be necessary to draw more definitive conclusions, our research has shown that Italian-German and Italian-English speakers accept mixed compounds, and their grammatical judgments are not random but follow the grammatical restrictions at work in monolingual speech, in line with the Null Hypothesis of Code-Switching (Mahootian and Santorini 1996).

²⁹ Remember that both German and English endocentric compounds are all head-final, while the great majority of Italian ones (though not all) are head-initial.

Moreover, since compounds are treated by morphology as complex words, and mixed compounds have proved to be acceptable in code-switching contexts, our data somehow challenge the ban against switching below word level assumed by the Borrowing Hypothesis with its Free Morpheme Constraint (Poplack 1980, Poplack and Meechan 1995), as well as its rephrasing in terms of the Minimalist Program (Chomsky 1995), i.e. the PF Disjunction Theorem (MacSwan 1999 and subsequent work). Indeed, especially for the Italian-English language pair, participants accept not only mixed compounds formed out of free morphemes (e.g. N+N or A+N), but also combinations obtained by manipulating Italian V+N exocentric compounds, hence featuring an Italian verbal stem, i.e. a bound morpheme.

Crucially, the language pairs taken into consideration in this work differ both in the formal features involved in the compounding process (i.e. the head-modifier parameter, the position of inflectional features, grammatical gender) and in the degree of productivity of the different types of compounds. In particular, German and English endocentric compounds are systematically head-final while in Italian both orders are attested, albeit the highest number of productive endocentric compounds are head-initial.

Hence, given these structural properties of the languages in contact, we wondered, with our RQ1, whether the availability of the switching was to be limited to uniformly head-final mixed compounds. Surprisingly, our data showed that the head-modifier parameter seems to play an important role only for one of the two language pairs taken into consideration: indeed, in the Italian-German pair, the highest acceptance rate is found in the N+N (head-final) and N+N (head-initial) combination. In short, Italian-German bilinguals seem to prefer the mixed compounds derived from compound pairs sharing the same head position; this restriction mirrors a CS constraint which is at work at sentence level: the Equivalence Constraint advanced by Poplack (1980).

Conversely, head position plays a secondary role in the Italian-English language pair, where we recorded the strongest preference for mixed compounds derived from the combination of an Italian V+N (exocentric) and an English N+N (head-final) compounds. The recorded asymmetry may be traced back to external factors such as the higher degree of productivity of exocentric compounds in English and Italian compared to German. More data are needed in order to disentangle the role of external and internal factors in the recorded asymmetry.

As for the gender issue raised in RQ2, grammatical gender interferes with the acceptability of mixed compounds in the Italian-German pair but not in the Italian-English one, as expected, given the fact that English inanimate nouns are genderless. In contrast to the Italian-German data, the match between the language and gender of D and the language and gender of the head is not a strong condition for the availability of the Italian-English switching. More options are available.

Finally, given the low number of participants and, especially, the inter-individual differences within the two groups, the data collected so far in this pilot work are to be intended as purely qualitative, showing tendencies that need to be tested in future research with massive data collection.

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