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# Gradience and optionality in the syntactic realization of focus

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## Abstract

The goal of this paper is to analyse the optionality and gradience observed in the syntactic distribution of information focus in three Romance languages: Catalan, Spanish and Italian. While the postverbal position is preferred in the three languages, the preverbal position is also acceptable to some extent, depending on the combination of language and grammatical function of the focus. It is more acceptable in Spanish and less so in Italian, Catalan being in the middle. In addition, while Catalan is insensitive to the grammatical function of the focus, in both Spanish and Italian preverbal subjects are rated higher than preverbal objects. These asymmetries are reminiscent of Leonetti's dichotomy between restrictive and permissive languages, the former imposing a straightforward mapping between syntax and information structure and the later not doing so. We propose an OT model that is able to provide a deeper characterization of this dichotomy, as well as account for the gradient acceptability judgements, based on internal grammar and interface principles. Casted as weighted soft constraints, they do not cause ungrammaticality when violated, but the greater their weight, the more unacceptable their violation becomes, which can explain the observed patterns.

**Keywords:** information structure, information focus, word order, alternative spellout, soft constraints.

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## 1. Introduction

The information structure of a sentence is commonly defined as the formal expression of a proposition according to the relevant pragmatic and discourse properties in the communicative context (see, e.g., Lambrecht 1994). However, it is well known that there is often no one-to-one correspondence between sentential form and discourse function. Focus projection, for example, is a well-studied phenomenon in the characterization of the relation between prosody and information structure. The sentence in (1), when it is pronounced with a nuclear pitch accent on *bats*, is an appropriate answer to the set of wh-questions listed in (2), each eliciting a different extension of the focus in the answer (from Selkirk 1995: 554):

- (1) Mary bought a book about [BATS]<sub>F</sub>
- (2) a. What did Mary buy a book about? – Mary bought a book about [BATS]<sub>F</sub>.  
 b. What kind of book did Mary buy? – Mary bought a book [about BATS]<sub>F</sub>.  
 c. What did Mary buy? – Mary bought [a book about BATS]<sub>F</sub>.  
 d. What did Mary do? – Mary [bought a book about BATS]<sub>F</sub>.  
 e. What's Mary happening? – [Mary bought a book about BATS]<sub>F</sub>.

A similar concern regarding potential ambiguity applies to the relation between syntax and discourse function, as there is often no one-to-one correspondence between a specific order of the constituents and the information-structure partition of the sentence, even in the case of non-canonical sentence patterns. Let us consider the case of subject inversion in null-subject Romance languages, illustrated here in (3) with an Italian example:

- (3) È entrato un cliente.  
 is entered a client  
 'A client came in.'
- (4) a. Che cosa è successo? – [È entrato un cliente]<sub>F</sub>.  
 'What happened? – A client came in.'  
 b. Chi è entrato? – È entrato [un cliente]<sub>F</sub>.  
 'Who came in? – A client came in.'

Since the verb *entrare* 'enter' belongs to the unaccusative class, the postverbal position of the subject corresponds to the unmarked order in a neutral context, that is, with broad focus (cf. 4a) (see Perlmutter 1978, Burzio 1986, Saccon 1993, Pinto 1997, Bentley & Cruschina 2018). Subject inversion, however, is also characteristically related to the realization of the subject as narrow focus, as shown in (4b), and this holds across all verb classes, including transitive and unergative verbs (Belletti 2001, 2004; see also Cardinaletti 2004, 2018).

The possibility of multiple form–function correspondences is not restricted to the association of different interpretations with the same sentential form, as illustrated in (2) and (4), but it also concerns the opposite situation in which the same information-structure interpretation can be realized by two or more sentential forms. This is exemplified in (5) for narrow focus:

- (5) a. È entrato [un cliente]<sub>F</sub>.  
 b. [Un cliente]<sub>F</sub> è entrato.

Some studies have tried to identify the interpretative conditions that allow for the optionality in (5), investigating, in particular, the pragmatic values associated with fronted foci (5b). It is a distributional fact that in Italian a corrective or a mirative interpretation permits focus fronting (FF) (see Cruschina 2012, 2021, 2022a and references therein), as shown in (6) and in (7), respectively.

- (6) a. [Un cliente]<sub>F</sub> è entrato, non un ladro.  
 b. È entrato [un cliente]<sub>F</sub>, non un ladro.  
 ‘A client came in, not a thief.’
- (7) a. [Un cliente]<sub>F</sub> è entrato! Non me l’aspettavo!  
 b. È entrato [un cliente]<sub>F</sub>! Non me l’aspettavo!  
 ‘A client came in! I was not expecting it!’

In the absence of such interpretations, however, FF is deemed as unacceptable. This is the case of information focus in (neutral) answers to questions (see Benincà 1988, Belletti & Shlonsky 1995, Belletti 2001, 2004):

- (8) a. Chi è entrato? – È entrato [un cliente]<sub>F</sub>.  
 b. Chi è entrato? – #[Un cliente]<sub>F</sub> è entrato.  
 ‘Who came in? – A client came in.’

These distributional restrictions do not only concern Italian, but also other null-subject Romance languages such as Catalan (Vallduví 2001, 2002, López 2009) and Spanish (Zubizarreta 1998, Ordóñez 2000, Büring & Gutiérrez-Bravo 2001, Gutiérrez-Bravo 2006, 2008):

- (9) Catalan  
 a. Qui ha entrat? – Ha entrat [un client]<sub>F</sub>.  
 b. Qui ha entrat? – #[Un client]<sub>F</sub> ha entrat.  
 ‘Who came in? – A client came in.’
- (10) Spanish  
 a. ¿Quién ha entrado? – Ha entrado [un cliente]<sub>F</sub>.  
 b. ¿Quién ha entrado? – #[Un cliente]<sub>F</sub> ha entrado.  
 ‘Who came in? – A client came in.’

The goal of this paper is to investigate the grammatical and acceptability status of the pragmatically marked member of the sentential pairs like those in (8)–(10). According to some studies, which challenge the more traditional view on the position of the focus, sentences (8b), (9b) and (10b) featuring a preverbal focal subject are possible and acceptable answers to the relevant questions. More specifically, we want to understand what it means to be ‘possible answers’ and to what extent they are acceptable. We will concentrate on the distribution of information focus in Catalan,

Spanish and Italian, addressing the question of the gradience in the acceptability of the preverbal foci and shedding light on the mapping between syntax and information structure. We will show that the acceptability of preverbal foci depends not only on the methodology adopted to investigate the distribution of focus, but also on the fine-grained language-specific differences related to the ‘need’ for a transparent mapping between syntax and information structure.

In the next section, we will present the background of our research questions and goals, introducing the notions of information structure violation and gradience. In Section 3, we will summarize the results of the production and rating experiments reported in Cruschina & Mayol (2024), which will constitute the empirical basis for our theoretical proposal. These results point to some differences among Catalan, Spanish and Italian, especially with regard to the acceptability of information focus in preverbal position. In Section 4, we link these cross-linguistic differences to the hypothesis formulated in Leonetti (2017), according to which Catalan and especially Italian are more restrictive than Spanish with respect to the mapping between syntax and information structure. This discussion will open up to a less rigid and more flexible view on the interplay between syntax and information structure, which allows for a good deal of optionality. Following Bobaljik & Wurmbrand (2012) and Bianchi (2019), in Section 5 we will ultimately attempt to analyse the different degrees of acceptability as the outcome of the varying application of a set of interface constraints and the resulting selection of the optimal spellout option. Section 6 closes the paper with some final remarks and suggestions for future research.

## 2. Information structure: Violations and acceptability

Intuitively, we know that violations of information structure are not as strong as other types of violations, such as syntactic or semantic ones. Indeed, information structure violations tend not to disrupt our language comprehension and production, in that they do not affect the syntactic relationships among the constituents of a sentence, nor do they prevent us from understanding the core propositional content of a sentence. This is why they are typically marked as pragmatic infelicitous (as indicated by the symbol #) rather than ungrammatical or semantically anomalous. However, while systematic pragmatic infelicity can lead to ungrammaticality (see, e.g., Abrusán 2019), information structure violations resemble more innocent pragmatic violations such as presupposition failure, undermining the very use of the term ‘violation’ to describe these cases.

The first studies on the syntactic distribution of information focus in non-null subject Romance languages were based on the intuitions and grammaticality judgements of the authors. According to these authors, information focus must occur in a postverbal position, irrespective of its syntactic function, leading to subject inversion when the focus corresponds to the subject of the sentence, as shown in (11) and (12) —where prosodic focus is marked in boldface (see, e.g., Zubizarreta 1998, Ordóñez 2000, Büring & Gutiérrez-Bravo 2001, Gutiérrez-Bravo 2006, 2008, Feldhausen & Vanrell 2014, 2015 on Spanish; Vallduví 2001, 2002, López 2009 on Catalan; Benincà 1988, Belletti & Shlonsky 1995, Belletti 2004, 2009 on Italian).

- (11) Spanish, Zubizarreta (1998: 125–126)  
 Q: ¿Quién te regaló la botella de vino?  
     who to-you=gave the bottle of wine  
     ‘Who gave you the bottle of wine (as a present)?’  
 A1: Me regaló la botella de vino **María**.  
     to-me=gave the bottle of wine Maria  
     ‘Maria gave me the bottle of wine (as a present).’  
 A2: #**María** me regaló la botella de vino.  
     Maria to-me=gave the bottle of wine
- (12) Italian, Belletti (2004: 21)  
 Q: Chi ha parlato?  
     who has spoken  
     ‘Who spoke?’  
 A1: Ha parlato **Gianni**.  
     has spoken Gianni  
     ‘Gianni spoke.’  
 A2: #**Gianni** ha parlato.  
     Gianni has spoken

These judgements are clear and generally shared, but what is the pragmatic felicity status of the answers in (11A2) and (12A2) that feature a word order that does not directly match the elicited information structure of the sentence? While admitting a clear preference for the version of the sentence with a postverbal focal subject (i.e. 11A1, 12A1), to some extent native speakers also accept a preverbal subject in the same context (i.e. 11A2, 12A2), proving that a certain degree of gradience and optionality is involved in the syntactic realization of focus. This amounts to saying that the associations between certain sentential forms and information-structure partitions are not binary but rather gradient, insofar as they come in varying degrees of acceptability.

In the specific case of the position of information focus, the partial or marginal acceptability of a preverbal focus depends on several factors, including the syntactic category of the focus constituent (subjects are more acceptable than objects) but also, as we will see in Section 3, on the specific language. It is also important to note that this gradient acceptability mainly—but not exclusively—emerges with rating tasks rather than with introspection or in production, where only one option is typically judged or produced (see Sections 3). It is therefore quantitative and experimental studies that have challenged the traditional view on the distribution of information focus, reporting the acceptability preverbal foci and, especially, of preverbal focal subjects (see Gabriel 2010, Hoot 2012, 2016, Vanrell & Fernández-Soriano 2013, 2018, Jiménez-Fernández 2015a, 2015b, Leal et al. 2018; see Heidinger 2021, 2022 for a detailed overview on Spanish, and Frascarelli and Stortini 2019 on Italian).<sup>1</sup>

This challenge has been particularly prominent in Spanish, but less so in Catalan and in Italian (see however Vanrell & Fernández-Soriano 2013, Feldhausen

<sup>1</sup> For a discussion of the methodological tension between introspection vs quantitative analysis, see Uth & García García (2018), Hoot & Leal (2020), Hoot et al. (2020), Cruschina (2021), Heidinger (2022), Cruschina & Mayol (2022, 2024).

& Vanrell 2014 for Catalan, and Frascarelli & Stortini 2019, Frascarelli et al. 2022, Ylinärä et al. 2023 for Italian), most probably reflecting a significant difference across the three languages. Indeed, Leonetti (2017) points out that Spanish is more ‘permissive’ than Italian and Catalan when it comes to the mapping between syntax and information structure. While in Spanish, the same word order is compatible with different information-structure interpretations, the correspondence between syntax and information structure is more straightforward and univocal in Italian and Catalan.

This difference clearly emerges in the contrastive experiments reported in Cruschina & Mayol (2024), especially in the acceptability-judgement experiments. Leonetti (2017) does not discuss the realization of information focus; however, these experimental data nicely fit the described distinction between permissive and restrictive Romance languages. Both in production and in the rating task, all three languages show a preference for the word order with a more transparent information-structure partition for focal subjects (i.e. VS), but in the rating task it turns out that Spanish is more permissive than Catalan and Italian in also allowing a narrow-focus interpretation of the preverbal subject in an SV order.

To account for the gradience in the syntactic distribution of focus and for the differences in acceptability across the three languages under examination, we propose a model that is able to provide a deeper characterization of restrictive and permissive languages, based on internal grammar and interface principles. In this model, the properties attributed to the permissive/restrictive partition emerge from more specific constraints and their weights. Since our proposal is based on the experimental data described and discussed in Cruschina & Mayol (2024), in the next sections we will summarize and review these experimental results.

### 3. Experiments on the production and acceptability of information focus

In Cruschina & Mayol (2024), we report two experiments about the placement of information focus in Catalan, Spanish and Italian: a production study and an acceptability-judgement study.

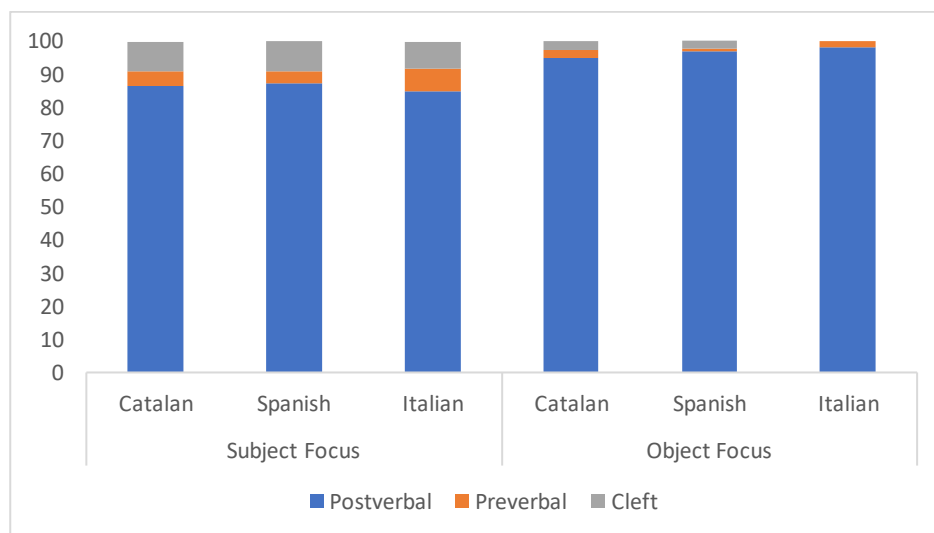
The goal of the production experiment was to elicit full sentences with information focus, so that we could study whether the focus was produced preverbally or postverbally. In this study, participants engaged in a role-playing situation with the experimenter. They were asked to imagine a scenario in which they were talking to someone they knew and in which they would be asked a question. Their task was to answer the question orally, as they wished. Examples (13)–(14) show two of the experimental items of the production study, with the contexts translated into English.

- (13) You go to your parents’ place. You show your mum a watercolour portrait of yourself. She asks: “**Who drew it?**”. At that point you get a phone call. Somebody got the wrong number. You hang up and, to answer your mum, you say:
- (14) You are watching an adventure film with your roommate. Since she wakes up really early every day, she falls asleep and misses the ending. When you switch off the TV, she wakes up and asks you: “**What did they find?** I don’t think I’ll watch this movie again. I’m sure I would fall asleep again.” To reply you say:

This task follows the methodology of Discourse Completion studies (see Vanrell et al. 2018) but with a twist. Note that the participant is not allowed to answer right after the question is posed, but rather the answer is delayed. This methodology, which we called ‘Questions with a Delayed Answer’, favoured the elicitation of full answers, instead of fragments. Avoiding fragments was a major challenge in previous studies: fragments are, of course, not useful to study the position of focus, but they are the most natural answer to reply to a question. This manipulation significantly decreased the felicity of fragment answers and we were thus able to elicit full sentences with information focus in a natural way.<sup>2</sup>

Seventy-two participants took part in the experiment: 20 for Catalan, 20 for Spanish and 32 for Italian.<sup>3</sup> The critical items consisted of 16 contexts, 8 with subject questions, like (13), and 8 with object questions, like (14). The results, shown in Figure 1, are very similar for the three languages: they show that the participants overwhelmingly produced foci in postverbal positions. This is the case for the three languages and both for objects (85.8%) and subjects (95.6%). Additionally, a small number of preverbal foci (3.5%) and clefts (4.8%) were produced. The production of preverbal foci was somewhat larger for subject foci (5.5%) than for object foci (1.7%), but this difference is not statistically significant: the production of preverbal foci was very low across all conditions.

**Figure 1.** Results of the production experiments: % of elicited foci



Source: Cruschina & Mayol (2024: 15)

<sup>2</sup> We refer the reader to the original paper (Cruschina & Mayol 2024) for extensive discussion of the methodology and of the statistical analysis of the results.

<sup>3</sup> The Spanish participants were from monolingual regions of Spain. As for Italian, we additionally included 6 speakers from Sardinia and 6 from Sicily to control for potential transfer effects from Sardinian and Sicilian to the regional varieties of Italian spoken in the two islands—we only tested regional Italian, Sardinian or Sicilian were not. Indeed, previous studies have reported that both Sardinian and Sicilian permit FF with information focus (see Cruschina 2012, 2021 and references therein). The data produced by the Sardinian and Sicilian speakers were analysed separately; however, no evidence of transfer emerged from the results (see Cruschina & Mayol 2024 for more details).

The production experiment showed that, when faced with the decision to place the information focus, speakers of Catalan, Spanish and Italian prefer the postverbal position most of the time. However, this strong preference does not rule out the possibility that information focus is also acceptable in the preverbal position. While the preverbal position may not be the preferred choice, it could still be entirely acceptable to speakers. Exploring this possibility was the goal of the acceptability-judgement experiment.

The acceptability-judgement experiment used the same materials as the production experiment (16 contexts, half with a subject question and the other half with an object question). In addition, an answer was inserted either with a preverbal or a postverbal focus, as shown in (15)–(16), which are possible answers to contexts (13) and (14), respectively.

- (15) Catalan  
 a. Ho ha dibuixat una amiga.  
 b. Una amiga ho ha dibuixat.  
 ‘A friend drew it.’

- (16) Spanish  
 a. Han encontrado un tesoro.  
 b. Un tesoro han encontrado.  
 ‘They found a treasure.’

Apart from the critical items, the experiment also included 16 fillers, which contained other types of questions, such as polar or alternative questions. Eleven of the fillers consisted of a natural answer to the question posed in the context, but four included infelicitous answers, as in (17B), and one had an ungrammatical answer, as in (18B) (the grammatical version of the answer is (*A mí*) *me parece interesante*):

- (17) A: It’s Saturday morning. You are on the sofa, looking at your mobile phone. Your mother comes and tells you: “I am going to buy some clothes. Do you want to come along?”. To reply you say:

Italian

- B: Non mi piace il tennis.  
 not me=please.3SG the tennis  
 ‘I don’t like tennis.’

- (18) A: ‘You are walking in the city centre with your father. You walk past a bookshop and you stop in front of the shop window. You stare at a book. Your father asks you: “Do you know this book?”. To reply you say:

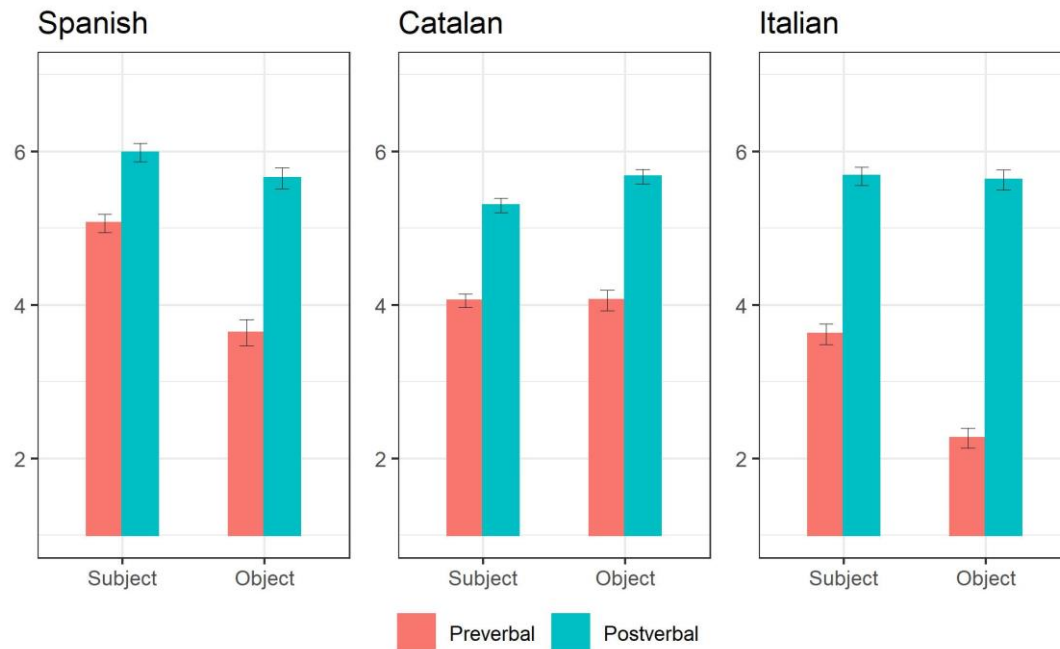
Spanish

- B: A mí interesante parece.  
 to me interesting looks

Both the context and the question within all experimental stimuli were presented in written form and participants were asked to rate the acceptability of the answer in the given context with a 7-point Likert scale. A total of 787 participants took

part in the experiment (390 for Catalan, 197 for Spanish and 200 for Italian). The results can be seen in Figure 2.

**Figure 2.** Results of the acceptability-judgement experiments: Average ratings of raw scores as a function of focus position and grammatical category across languages



**Source:** Cruschina & Mayol (2024: 24)

Postverbal foci received high ratings in the three languages (Catalan = 5.48; Spanish = 5.81; Italian = 5.65); those ratings are higher than those with preverbal foci and are not sensitive to whether the focus is subject or object (subject = 5.56; object = 5.65). In contrast, the ratings for the preverbal foci do vary across grammatical functions, depending on the language. In Catalan, preverbal foci are rated as marginally acceptable regardless of whether they are subjects or objects (both ratings were 4.06). By contrast, in Spanish and Italian, preverbal subjects are rated higher (5.06 and 3.62, respectively) than preverbal objects (3.64 and 2.26, respectively). On top of this difference, both types of preverbal foci in Spanish are rated higher (5.06 for subjects and 3.64 for objects) than their counterparts in Italian (3.62 and 2.26).

It is informative to compare the ratings of preverbal foci to the ratings obtained by the fillers, shown in Table 1.

**Table 1.** Mean ratings of fillers by language and acceptability

	Catalan	Spanish	Italian
Acceptable	6.00	6.32	5.97
Infelicitous	2.12	1.73	1.78
Ungrammatical	1.10	1.37	1.14

The ratings for both ungrammatical and infelicitous fillers are very low, the latter being slightly higher than the former. In contrast, the ratings for preverbal foci

are clearly not as low, but rather are placed towards the middle of the scale, indicating that they are at least marginally acceptable to some extent. Thus, although preverbal foci are not rated as highly as postverbal foci, they are not completely unacceptable. This is the case for most of the combinations of language and grammatical functions that were tested with two exceptions: while preverbal subject foci are fully acceptable in Spanish (5.96), preverbal object foci are unacceptable in Italian (2.26). In addition, the three languages tested seem to form a continuum regarding how acceptable preverbal focus is: more acceptable in Spanish, less so in Italian, with Catalan being in the middle.

#### 4. Leonetti's dichotomy between permissive and restrictive languages

The fact that, in Spanish, preverbal foci are rated higher than in Catalan and Italian is reminiscent of Leonetti's (2017) division between permissive and restrictive languages within the Romance family. According to Leonetti, Romance languages can be divided into two groups depending on how they map syntactic structure to information structure. On the one hand, restrictive languages, which include Italian and Catalan, impose a straightforward mapping between syntax and information structure: marked syntactic structure are only allowed if there is an informational partition, while informational partitions tend to be expressed by means of marked orders, such as dislocations, inversions, etc. In contrast, in permissive languages, which include Spanish, the mapping between syntax and information structure is less strict and there is more flexibility regarding how informational partitions are expressed and when marked orders can be used.

Leonetti (2017) discusses the following empirical phenomena where this dichotomy surfaces:<sup>4</sup>

1. *Availability of VS orders*: Subject inversion with unergative verbs in restrictive languages typically encode narrow focus on the subject. In contrast, permissive languages also allow the possibility of wide focus more freely in VS structures such as (19).

- (19) Spanish, Leonetti (2017: 896)  
 Ha llamado el abogado.  
 has called the lawyer  
 'The lawyer has called.'

2. *Constraints on VOS orders*: Permissive languages freely allow VOS orders if there is narrow focus on the subject. That is, a sentence like (20) is usually interpreted as an answer to the question 'Who won the cup?'. However, similarly to what happens with VS, wide focus is also possible with VOS orders in those languages if certain factors (definiteness, thematic roles, etc.) favour it, as in (21).

<sup>4</sup> Studies on the position of the subject in why-questions provide additional support for the distinction between restrictive and permissive Romance languages (see Bianchi et al. 2017, Kaiser et al. 2019, Schmid et al. 2021, Krieger & Kaiser 2023).

- (20) Spanish, Leonetti (2017: 898)  
 Ganó la Copa el Barça.  
 won the Cup the Barça  
 ‘It was Barça that won the Cup.’
- (21) Spanish, Leonetti (2017: 901)  
 Ha comprado el edificio una empresa china.  
 have bought the building a company Chinese  
 ‘A Chinese company bought the building.’

Restrictive languages behave quite differently in that, while VOS orders are possible, there is a strong preference for a structure with a more transparent partition, in which the subject remains at the end of the main clause, while the object is dislocated to the left or to the right, as in (22).

- (22) Catalan  
 (La Copa,) l’ha guanyat el Barça (, la Copa).  
 ‘The Cup, it was Barça that won it.’

3. *Grammaticality of VSO orders*: VSO orders are grammatical in permissive languages, while they are not in restrictive languages, as shown by the contrasts in (23). In Spanish, this order is compatible with a wide focus interpretation; it is thus an example of a marked order which does not encode an informational partition. This is something not allowed by restrictive languages, and VSO sentences are ungrammatical in those languages since no clear informational partition can be imposed onto a VSO order.

- (23) Leonetti (2017: 902)
- Spanish  
 a. Ha comprado María el periódico.  
 has bought María the newspaper
- Catalan  
 b. \*Ha comprat la Maria el diari.  
 has bought the Maria the newspaper
- Italian  
 c. \*Ha comprato Maria il giornale.  
 has bought Maria the newspaper  
 ‘Maria bought the newspaper.’

4. *Non-focal fronting*: While fronting usually involves the displacement of the constituent in focus, Romance languages also allow for structures in which a non-focal constituent is fronted, usually containing an anaphoric, quantificational or comparative element, as illustrated in (24). Non-focal fronting is fully productive in permissive languages. In contrast, while it is also possible in restrictive languages, it is much more limited and less productive. For example, the counterparts of (24c) in Italian and Catalan are not acceptable.

- (24) Spanish, Leonetti (2017: 908, 910, 912)
- a. Eso creo yo.  
that think I  
'That's what I think.'
  - b. Bastante trabajo tengo ya.  
enough work have.1SG already  
'I have enough work already.'
  - c. Peor me pareció su anterior trabajo.  
worse to-me=seemed his previous work  
'His previous work seemed worse to me.'

Leonetti does not address how information focus is realized in permissive versus restrictive languages. Nonetheless, the patterns described in Section 3 are consistent with his insights. While the three languages prefer a marked word order with a transparent information-structure partition when the subject is focal, Spanish is more permissive and also allows a marked interpretation of the otherwise unmarked SV order. However, note that the data presented in Section 3 are not purely dichotomous and it is not the case that we can group the three languages into two clear categories; rather, there seems to be a continuum from more permissive languages to more restrictive languages, Catalan being in the middle between a more permissive language, like Spanish, and a more restrictive language, like Italian. In the next section, we propose a model that is able to provide a deeper characterization of restrictive and permissive languages, based on internal grammar and interface principles. In this model, the properties attributed to the permissive/restrictive partition emerge from more specific constraints and their weights.

## 5. Optionality, degree of acceptability, and optimal spellout

We have so far seen that all three Romance languages under investigation show a very strong preference for postverbal foci in production, almost reaching ceiling effects. The results of the acceptability-judgement experiment, however, point towards a certain degree of optionality, in that, the versions of the target sentences with preverbal foci are not judged as totally ungrammatical by native speakers. If the production data support the hypothesis of a homogenous behaviour of the three Romance languages with respect to the distribution of information focus, a close scrutiny of the acceptability-judgement results reveal some clear differences.

In the previous section, we connected these results with the independently made observation that Spanish is more permissive than Catalan and Italian in mapping syntax to information structure. In this section, we propose a model to frame these results and observations into current theoretical approaches. In particular, we need a model that is able to account for: (i) the optionality of movement, (ii) the difference between production and rating, (iii) the gradient of the judgements, (iv) the distinction between restrictive and permissive languages, and (v) subject/object asymmetry that is observed in Spanish and Italian. Our starting point will be the model of the relationship between LF and PF put forward in Bobaljik & Wurmbrand (2012) and, in particular, Bianchi's (2019) adaptation of this approach to explain the optionality of focus fronting (FF) in Italian.

### 5.1. *The optionality of movement*

It has long been observed that, in Romance, even when FF is possible, this movement operation is never obligatory: postverbal focus (or focus in situ) would yield the same interpretation. In the literature on FF, this issue is either neglected or relegated to a matter of PF, by assuming that movement always take place and that postverbal focus is the covert equivalent of overt movement (see, e.g., Chomsky 1976: 343–345, Rizzi 1997). This hypothesis, however, leaves the question open of what determines the alternation between overt and covert movement.

To address this question, Bianchi & Bocci (2012) propose the alternative spellout approach, according to which FF always takes place, and that what is optional is where the moved constituent is pronounced: either in its base position, yielding in situ focus, or in its landing site, giving rise to FF.<sup>5</sup> This approach is based on the copy theory of traces (Chomsky 1993, Nunes 1995) which treats a movement chain as a sequence of copies of the moved element; PF-mapping principles then determine which copy in the chain is spelled out. Under this theory, the alternation between overt and covert movement is reduced to the selection of the copy to be spelled out: the highest copy in the case of overt movement or the lowest copy in the case of covert movement. This proposal is further refined in Bianchi (2019) who, following Bobaljik & Wurmbrand (2012), suggests that the alternative spellout of either copy is regulated by soft constraints operating at the interface between LF and PF. In this model, the LF structure is built first, and then a set of interface principles apply in order to arrive at the PF selection of the optimal spellout option for that LF structure, determining the surface word order. Some of these principles are assumed to be universal and inviolable, such as the general principles in (25) and (26) (from Bianchi 2019: 150), which are needed to guarantee that only one link of the chain is spelled out:

(25) **RECOVERABILITY**

Spell out at least one copy in a movement chain (if the moved element has phonological content).

(26) **ECONOMY OF SPELLOUT**

Spell out at most one copy in a movement chain.

Other principles are more specific and can be viewed as “soft constraints” (Bobaljik and Wurmbrand 2012), that is, constraints that are not expected to be universally active and binding at PF; they should generally be respected in accordance with the language’s resources and on the basis of the interaction with other similar constraints, but they can be violated as a last resort. In her account of focus movement in Italian, Bianchi (2019: 151–152) introduces the following specific soft constraints:<sup>6</sup>

<sup>5</sup> Some studies have pointed out that the optional availability and acceptability of FF seems to be sensitive to the interpretation of the focus (see Cruschina 2021). In this sense, it is important to point out that Bianchi & Bocci (2012) and Bianchi (2019) deal with corrective focus, while the analysis that we develop below is centred on information focus. For a different approach to the optionality problem, also couched within Optimality Theory (i.e. Stochastic OT), see Gabriel (2010).

<sup>6</sup> It is important to keep in mind that [focus]-marked element in (28) and [focus]-marked position in (29) refer to two distinct concepts. A [focus]-marked element is the (spelled-out) constituent bearing the focus feature, and there is generally only one focus constituent in the

- (27) **SCOPE TRANSPARENCY (SCOT)**  
Spell out a scope-bearing element in its scope position.
- (28) **FOCUS PROMINENCE (FOCPROM)**  
Assign the nuclear pitch accent (NPA) to a [focus]-marked element (if any).
- (29) **RIGHTMOSTNESS (RIGHTMOST)**<sup>7</sup>  
Assign the NPA to the rightmost [focus]-marked position, if there is one; otherwise, assign it to the rightmost position.

SCOT in (27) is an adaptation of a similar principle described in Bobaljik and Wurmbrand (2012). This is a faithfulness principle that requires the order of elements in PF to mirror their scope relation of the LF structure, thus favouring a correspondence between word order and scope interpretation. The principle in (28) follows from common assumptions about the alignment between the focus phrase and prosodic prominence (Jackendoff 1972, Selkirk 1984, Truckenbrodt 1995, Szendrői 2001, Samek-Lodovici 2005, Féry & Samek-Lodovici 2006, Reinhart 2006). In Romance languages like Catalan, Spanish and Italian, in addition, most descriptions converge in showing that focus constituents must appear at the right edge of the sentences, where the nuclear stress falls (see Vallduví 1992, Zubizarreta 1998, a.o.); this requirement is expressed by the principle in (29). Bianchi (2019) proposes the following ranking of these principles for Italian focus, where » « indicates equal ranking, while » indicates higher ranking:

- (30) Ranking (Italian)  
RECOVERABILITY » « ECONOMY » FOC PROM » SCOT » « RIGHTMOST

For a sentence like (31), we have three different spellout options of the movement chain, as illustrated in (32): the lowest link [1] corresponds to the base position of the focus constituent, while the highest link [3] is located in the landing

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sentence. Within the copy theory of movement, all copies of the focus constituent signpost [focus]-marked positions, so that in the derivation of the movement chain there are as many [focus]-marked positions as the copies of the focus constituent (cf. (33) below). This means that all preverbal foci, including subjects that originate from within the vP, satisfy (28) but violate (29).

<sup>7</sup> In its current formulation in (29), RIGHTMOSTNESS appears more akin to a faithful constraint rather than a markedness constraint in OT terms, insofar as it refers specifically to “the rightmost [focus]-marked position.” We adopt this formulation directly from Bianchi (2019), but we recognize that alternative formulations are both possible and, depending on one’s theoretical assumptions about input representation, potentially preferable. In models such as that proposed by Bobaljik & Wurmbrand (2012), where input forms are defined in terms of hierarchical relations like c-command and scope, prior to linearization, RIGHTMOSTNESS should be reformulated to avoid referring to surface structure. One possibility, for instance, is to define this constraint such that it is satisfied when the tail of the focus is pronounced. Following Bianchi & Bocci (2012), we are more inclined to interpret RIGHTMOSTNESS as a PF-markedness constraint, that is, a constraint that applies solely to the phonological form of the candidate. We thank an anonymous reviewer for pointing out this issue and for suggesting ways to clarify it.

site for FF within the left periphery of the sentence (i.e., in the specifier of FocP, following Rizzi 1997); the middle chain link [2] at the edge of vP is in the intermediate position as assumed under the hypothesis of a successive cyclic derivation of the movement chain through every phase edge intervening between the first-merge position and highest chain link.<sup>8</sup>

- (31) Hanno invitato **Giulia**.  
 have.3PL invited Giulia  
 ‘They invited Giulia.’

- (32) [[⟨Giulia<sub>F</sub>⟩<sup>3</sup> F [TP *pro* hanno [vP ⟨Giulia<sub>F</sub>⟩<sup>2</sup> [invitato ⟨Giulia<sub>F</sub>⟩<sup>1</sup>]]]]]

The application of the spellout principles in (30) is illustrated in the tableau in (33) (Bianchi 2019: 152):

(33)

PF	FOCPROM	SCOT	RIGHTMOST
Highest link [3]	✓	✓	*
Intermediate link [2]	✓	*	*
Lowest link [1]	✓	*	✓

All three links satisfy FOC<sub>PROM</sub>, in that, they can guarantee the alignment between the focus phrase and the prosodic prominence. The intermediate link [2], however, is less optimal than [1] and [3] because it violates both SCOT and RIGHTMOST: indeed, the position of [2] at the edge of vP does not qualify as a scope position for focus and, at the same time, it does not coincide with the rightmost position in the clause. By contrast, options [1] and [3] are equally optimal because they only violate one constraint, that is, RIGHTMOST and SCOT, respectively. In the light of the assumption in (30) that these two principles are equally ranked, the two-chain links—the highest and the lowest link—are selected for spellout, giving rise to optionality.

Bianchi’s analysis provides a principled explanation for the optionality of movement based on interface conditions. Optionality occurs precisely because neither spellout option [1] nor [3] qualifies as a unique optimal realization of the interface constraints. This account, however, is not able to predict the gradience of the judgements about FF and, in particular, the strong preference for spelling out the lowest link. The experimental data in Cruschina & Mayol (2024) show variation in size effects both between the two spellout options [1] and [3], and across languages (cf. §3). Looking at the variation in size effects, we observe that option [1] is better than [3]: it is always selected in production and it receives significantly higher scores in the rating experiment, even though [3] can still be considered to be above the threshold of acceptability, that is, it is not fully ungrammatical. The variation across

<sup>8</sup> In the case of the Spanish VOS order with a focal subject, we have to assume that the object does not sit in its vP-internal base position, but it is somehow realized together with the verb, either under T (see Gabriel 2010) or in the Top projection within the vP periphery (Belletti 2004). Indeed, in these sentences “the VO sequence must be given in the immediate context” (Belletti 2004: 34).

languages, instead, shows that the effects of the constraints that limit the selection of option [3] are stronger in Italian than in Catalan and Spanish.

In the next section, we propose a revision of Bianchi's model, inspired by Linear Optimality Theory (Keller 2000). Language-specific weights will be associated with each constraint in order to capture not only the two types of variation mentioned above, but also the intuition that information-structure violations are both 'softer' than other syntactic and pragmatic constraints (cf. Table 1, §3) and more gradient, because they do not lead to clear-cut binary judgements.

### 5.2. *Gradience of linguistic data and weighted constraints*

Several studies have argued against the idea that grammaticality can be modelled based on binary discrete categories such as grammatical and ungrammatical (see Fanselow & Frisch 2006, Sampson 2007, Sprouce 2018, among others). The evidence for a wide range of syntactic phenomena suggests that grammaticality judgements are more subtle and require a gradient model (see, e.g., Keller 2000, Keller and Alexopoulou 2001, Sorace & Keller 2005, Villata et al. 2016, Sprouce et al. 2018). Linear Optimality Theory (LOT), initially proposed by Keller (2000), is a variant of Optimality Theory that models gradience in grammar and gradient linguistic data. Keller distinguishes between hard and soft constraints. The violation of hard constraints is generally and robustly judged as unacceptable by native speakers, lending themselves to a binary and categorial conception of grammaticality. Soft constraints, by contrast, do not lead to clear-cut ungrammaticality, but are subject to cumulative effects: the larger the number of soft constraints that a sentence violates, the higher the level of unacceptability. In this model, weights are associated with each constraint to represent the effects of a constraint violation. The weights associated with the constraints are expressed in the form of numbers (numeric weights) and are defined according to the reduction in acceptability determined by a violation of the relevant constraint. Since the numeric weights are cumulative, the overall grammaticality of a structure is proportional to the sum of the weights associated with the violated constraints (Keller 2000: 252).

Following these insights, we propose that the soft constraints that regulate the alternative spellout of the equally optimal chain links at the interface between LF and PF are weighted constraints.<sup>9</sup> These weights allow us to account for the differences in effect sizes between the production and the rating experiments, for the gradient judgements within the rating experiment, and for the variation across languages. Let us now see in more detail how this model works for focus chains in Catalan, Spanish and Italian.

First of all, for all three Romance languages investigated here we assume the same constraint ranking as Bianchi (2019) with the significant exception of the order between the last two constraints:

<sup>9</sup> Following Linear Optimality Theory (LOT), we use weights as a convenient means of representing constraint interaction. Building on this notion of weighted constraints, in this paper we propose a LOT-based revision of Bianchi's model, while remaining open to the possibility of implementing the same idea within other frameworks that incorporate soft (and weighted) constraints (e.g., Harmonic OT, Stochastic OT, Decathlon Model; see Francis 2022 for an overview). It is also important to note that in our model we only use weighted *interface* constraints to account for the variation in the degree of acceptability of grammatical options (i.e. we do not consider ungrammatical options such as the intermediate links, cf. footnote 13).

## (34) Ranking (Catalan, Spanish, Italian)

RECOVERABILITY » « ECONOMY » FOC PROM » RIGHTMOST » SCOT

Higher-ranking (strong/hard) constraints could be associated with higher weights, but since these weights would be the same for all three languages, we will simply omit these constraints in our analysis. As mentioned in the previous section, RECOVERABILITY and ECONOMY are needed to ensure that only one link of the chain is spelled out. These are strict requirements in all languages—in fact, they are assumed to be “universally inviolable” (Bianchi 2019: 150)—and need not be weighted. FOC PROM similarly operates in all three Romance languages; for the purposes of the proposed analysis, and departing from Bianchi’s account, we assume that this is also an inviolable constraint.<sup>10</sup> Moreover, our data show that postverbal foci are always preferred by native speakers, so in the constraint ranking in (34) we place RIGHTMOST higher than SCOT. It is important to bear in mind that in LOT constraint ranking has different meanings and implications than in Standard OT (see Keller 2000, 2006). In Standard OT, the constraint ranks are formulated as binary ordering statements and correspond to binary acceptability judgements. In LOT, by contrast, the ranking of the constraints is implemented as number weights and reflects the degree of unacceptability they cause. In this model, the ranking in (34) must be interpreted so that violations of RIGHTMOST produce a higher degree of unacceptability than violations of SCOT but do not correspond to ungrammaticality.<sup>11</sup>

Following the mechanisms of Standard OT, Bianchi (2019) proposes a constraint tie (i.e. the equal ranking) between RIGHTMOST and SCOT in order to account for optionality. Our data, however, show that the two candidates are not equally optional, in that postverbal foci are always preferred over preverbal foci.

<sup>10</sup> It can be argued that violations of the FOC PROM constraint are strong but do not necessarily lead to ungrammaticality. This is clear if we consider *wh*-phrases. Indeed, under the assumption that *wh*-phrases bear a focus feature, in many languages *wh*-questions constitute an exceptional syntactic context where the [focus]-marked element of the sentence is not associated with the main prosodic prominence, that is, the *wh*-phrase is not assigned the NPA (see Ladd 1996, Bocci et al. 2021). As for focus constituents, it could well be that a non-congruent answer, whose focus does not match the focus structure of the question, is judged as (marginally) acceptable under specific conditions, for example if the word order coincides with the canonical base order (see the discussion on the CCO constraint below; cf. Gabriel & Heidinger 2022 for experimental evidence). However, unlike Bianchi’s (2019) proposal, our analysis does not concern *wh*-phrases. Moreover, the reasons and conditions behind the possible (marginal) acceptability of non-congruent answers are still to be fully understood. Irrespectively of their validity as FOC PROM violations, we therefore believe that these two open cases do not jeopardize our proposed analysis and leave them to further research.

<sup>11</sup> In most studies employing syntactic experiments, grammaticality is treated as an abstract cognitive property, whereas acceptability is understood as a measurable perceptual judgement that is typically reported on a scale and that can provide insight into a sentence’s grammaticality (see Spruce 2018, Spruce et al. 2018). Our rating experiment was indeed based on these assumptions (cf. § 3). In this section, however, we sometimes depart slightly from this tradition by using the term *grammaticality* to refer to the binary distinction between grammatical and ungrammatical sentences, typically linked to the violation of strong(er) constraints, while acceptability continues to refer to the gradient judgements that often arise in relation to interface constraints.

Adopting the LOT assumptions on constraint ranking, we are able to capture not only the grammaticality of both options but also, and especially, the degree of acceptability that is associated with them and that is derived by the weighted sum of the violations. In our model, weight differences are especially needed for soft constraints in order to determine to which extent an option is preferred or dispreferred in each language. This is the case of SCOT and RIGHTMOST, which need to be associated with a different weight depending on the language. If we consider the mean scores for preverbal foci in the acceptability-judgement experiments (cf. §3), the weights can be assigned as shown in (35) and (36)<sup>12</sup> —we will later revise the weights associated with RIGHTMOST, once the grammatical function is incorporated in our model:

(35) RIGHTMOSTNESS (RIGHTMOST) [*preliminary version*]  
*weight*: 4 in Catalan, 3 in Spanish, 5 in Italian

(36) SCOPE TRANSPARENCY (SCOT)  
*weight*: 1 in Catalan, 1 in Spanish, 1 in Italian

Unlike the higher constraints, SCOT and RIGHTMOST are subject to crosslinguistic variation. The assumption is that the same set of constraints applies in all the three languages under examination here, and that crosslinguistic differences are modeled via the different weights. SCOT has little impact in all languages (36). This explains (and predicts) why postverbal foci are always preferred over preverbal foci, overwhelmingly so in production and with significantly higher scores in the acceptability-judgement task. Recall however that, according to the ranking in (34) and for the spellout algorithm, preverbal foci still count as an optimal spellout option (although less optimal than postverbal foci) and therefore sentences featuring preverbal foci are not judged as totally unacceptable by native speakers.

In contrast with SCOT, RIGHTMOST must be associated with a high weight (35). The effects of this constraint, however, appear to be different depending on the specific language. In particular, we have to assume that RIGHTMOST has a higher weight in Catalan and an even higher one in Italian. These weight differences correctly predict that Catalan native speakers judge the linear order [Foc]V as less acceptable than the native speakers of Spanish, and that the same order is even less acceptable for Italian

<sup>12</sup> The weight of each soft constraint was set *a posteriori* in order to reflect the results of the acceptability-judgement experiments. This is in line with other approaches that make use of soft constraints and that use judgement data as the primary source for establishing the impact of soft constraints in grammar, such as Linear OT (Keller 2000, 2006) and the Decathlon Model (Featherston 2008, 2019). Other approaches such as Stochastic OT derive soft constraints from frequency distribution (Boersma & Hayes 2001, Bresnan & Aissen 2002; see also Francis 2022 for a comparison). It is also important to emphasize that soft constraints are subject to context effects. Models such as LOT provide a quantitative notion of grammaticality, but they also admit that the value of grammaticality judgements can be influenced by a number of factors, including the type of instructions and fillers used in the experiment, and the modality in which the stimuli were presented to participants (spoken or written). Therefore, while the relative acceptability of the experimental stimuli can be expected to be constant and immune to the experimental variation, as reflected by the constraint ranking, the value of the grammaticality judgement for a given sentence is expected to vary from experiment to experiment (cf. Keller 2000: 269).

native speakers. Since RIGHTMOST implements the optimal configuration, these weight differences reflect the more restrictive nature of Catalan and especially Italian in terms of mapping between syntax and information structure (cf. §4).

The application of the spellout weighted constraints in (35)–(36) is illustrated in the tableaux in (37)–(39). We leave out the intermediate link [2] from our discussion because in no language does it qualify as an optimal spellout option (cf. §5.1).<sup>13</sup>

(37)	<b>Catalan</b>	RIGHTMOST	SCOT	
		$w_4$	$w_1$	
Highest link	[Foc]V	*	✓	-4
Lowest link	V[Foc]	✓	*	-1

(38)	<b>Spanish</b>	RIGHTMOST	SCOT	
		$w_3$	$w_1$	
Highest link	[Foc]V	*	✓	-3
Lowest link	V[Foc]	✓	*	-1

(39)	<b>Italian</b>	RIGHTMOST	SCOT	
		$w_5$	$w_1$	
Highest link	[Foc]V	*	✓	-5
Lowest link	V[Foc]	✓	*	-1

The cumulative penalties associated with the violations of the weighted constraints successfully accounts for the effect size of the interaction between the position of the focus constituent and the language. The degradation effects associated with the spellout of the highest link are inversely proportional to the degree of acceptability by native speakers (cf. §3): the lower penalty corresponds to higher scores in Spanish (penalty: -3, mean rating 4.35), while a higher penalty reflects the lower degree of acceptability in Catalan (penalty: -4, mean rating 4.06) and especially in Italian (penalty: -5, mean rating 2.94).

This is however not the full story. The results of the acceptability-judgement experiments show that the ratings for the preverbal foci vary across languages depending on whether the focus is a subject or an object (cf. Fig. 2, §3): it is therefore not enough to consider the mean scores for all preverbal foci, but we need to distinguish between preverbal subjects and preverbal objects. The grammatical category is irrelevant in Catalan, where there is no difference between the ratings of preverbal subjects and objects (both are 4.06), but it has significant effects in Spanish and Italian, where preverbal subjects are rated higher than objects (5.06 vs 3.64 for

<sup>13</sup> The total unacceptability of the intermediate links is not accounted for by the proposed weighted-constraint model, but rather must be attributed to the violation of core grammatical constraints such as the interpolation between auxiliary verb and past participle, which is rather strong in all Romance languages. In this sense, the intermediate links are ungrammatical from the beginning, before reaching the interface. We thank an anonymous reviewer for bringing this to our attention.

Spanish and 3.62 vs 2.26 for Italian). Further assumptions thus need to be incorporated into our model to account for the effects of the grammatical function.

The role of the grammatical function in the acceptability of competing word orders raise nontrivial questions about the interaction between grammatical and interface requirements. Our study clearly shows that, at least in Spanish and in Italian, focal preverbal subjects are more acceptable than focal preverbal objects. Intuitively, this result may simply be taken to reflect a preference for the options displaying the canonical order SVO, raising the question of whether (and to what extent) acceptability judgements can be contaminated by performance factors and hence do not necessarily and directly mirror properties of the native speaker's internal grammar. On the one hand, it could be that, in contrast with OV orders, SV is generally judged as acceptable by native speakers because it is constantly compared with the basic word order. On the other, the size differences between our three Romance languages with respect to the effects of the grammatical function speak against the hypothesis that this performance factor is the sole factor determining the subject/object asymmetry in the rating experiments in Spanish and in Italian.

Pending deeper understanding of these questions, in our analysis we simply stipulate that the observation of the higher acceptability of preverbal subject foci corresponds to a condition that “canonical complement order” (CCO) be respected. Following Bobaljik and Wurmbrand (2012: §3.3–3.4), we assume that CCO follows from an economy condition against unnecessary movement, according to which, for example, all else being equal, leaving the DP object in its base position is preferred over the movement of the same constituent.<sup>14</sup> Since Chomsky's (1995) version of Minimalism, movement has been seen as a “costly” last-resort operation: superfluous movement operations are prohibited in a derivation, and movement only takes place when there is a need and a reason for it. The traditional motivations for movement are related to syntactic structural requirements (see, a.o., Bošković 2007), but movement is also allowed under semantic motivations, when it provides interpretive effects that the sentence would not have without movement. The interface principles that guarantee the mapping between syntax and information structure provide interpretive motivation for movement, triggering those word order rearrangements that determine a better reflection of the focus structure of the sentence (e.g. RIGHTMOST). In the absence of information-structure requirements, the canonical order among arguments is privileged: subjects may undergo movement for structural reasons (Case —or the EPP in a framework that adopts the EPP— triggers A-movement),<sup>15</sup> while objects tend to stay in the base positions.

<sup>14</sup> Bobaljik & Wurmbrand (2012) introduce this constraint to account for word order preferences and optionality with respect to English Focus and Heavy NP Shift and scrambling in Dutch. It should also be noted that CCO closely resembles similar principles proposed within OT models, such as STAY in Grimshaw (1997) and in Samek-Lodovici (2005).

<sup>15</sup> The actual trigger of subject movement raises an important question about the landing position of the subject in the syntactic structure, as well as to whether this is or not a scope position. There are different proposals in the literature with respect to this question, suggesting that in the canonical order, preverbal subjects are located in Spec/TP or Spec/SubjP (see Cardinaletti 2004, Rizzi & Shlonsky 2006; see also Gutiérrez-Bravo 2006 for an OT-based analysis of preverbal subjects). Moreover, we assume that, when it is focal, the subject in SV orders is in Spec/FocP rather than in its canonical position. In this paper, we adopt a ‘linear’ view of CCO, whereby CCO is satisfied whenever the linear canonical order is realized —

Let us now go back to our model with weighted constraints. CCO could be introduced as a principle that counters RIGHTMOST both in terms of the motivation beyond movement, which is hence triggered by structural conditions, and with a different effect on subjects as opposed to objects: there are more reasons to move subjects (be they structural or related to information structure), while movement of objects is more costly. We therefore assume that only the spellout options that do not align with the canonical order violate CCO.<sup>16</sup> On the basis of the experimental results, we additionally stipulate that CCO has no effects in Catalan, where preverbal objects are as acceptable as preverbal subjects. Once CCO is incorporated into our model to account for the different scores related to grammatical function, it becomes evident that the difference between Catalan and Italian reduced to a difference with respect to CCO (42), rather than RIGHTMOST. We therefore revise the weights associated with RIGHTMOST, as shown in (40). The weights assigned to violation of SCOT stay the same (41):

- (40) RIGHTMOSTNESS (RIGHTMOST) [*final version*]  
*weight*: 4 in Catalan, 3 in Spanish, 4 in Italian
- (41) SCOPE TRANSPARENCY (SCOT)  
*weight*: 1 in Catalan, 1 in Spanish, 1 in Italian
- (42) CANONICAL COMPLEMENT ORDER (CCO)  
*weight*: 0 in Catalan, 1 in Spanish, 1 in Italian

The revised tableaux, including CCO and grammatical functions, are shown in (43)–(45):

(43)	Catalan	RIGHTMOST	SCOT	CCO	
		$w_4$	$w_1$	$w_0$	
Highest link	SV	*	✓	✓	-4
Lowest link	VS	✓	*	✓	-1
Highest link	OV	*	✓	*	-4
Lowest link	VO	✓	*	✓	-1

assumed to be SV(O) in all the three Romance languages under investigation. In other words, in their judgements native speakers are only sensitive to the linear order of the constituents, irrespective of the actual position of the subject in the syntactic structure.

<sup>16</sup> If CCO strictly referred to linear order, this constraint could in principle also affect clitic dislocation, for example by favouring right-dislocation over left-dislocation of the object. To avoid this consequence, it is necessary to restrict CCO's domain of applicability to all constituents up to focus (either to the left or to the right), that is, to the focus domain.

(44)	<b>Spanish</b>	RIGHTMOST	SCOT	CCO	
		$w_3$	$w_1$	$w_1$	
Highest link	SV	*	✓	✓	-3
Lowest link	VS	✓	*	✓	-1
Highest link	OV	*	✓	*	-4
Lowest link	VO	✓	*	✓	-1

(55)	<b>Italian</b>	RIGHTMOST	SCOT	CCO	
		$w_4$	$w_1$	$w_1$	
Highest link	SV	*	✓	✓	-4
Lowest link	VS	✓	*	✓	-1
Highest link	OV	*	✓	*	-5
Lowest link	VO	✓	*	✓	-1

This revised model more accurately captures the effects of grammatical function that emerged in our rating experiments. While in Catalan there is no difference between the ratings of preverbal subjects and objects (penalty: -4, mean score: 4.06; cf. 46), in Italian and Spanish preverbal subjects are rated higher than objects, as reported in (47) and (48):

- (46) Catalan:
- Subjects: penalty: -4, mean score 4.06
  - Objects: penalty: -4, mean score 4.06
- (47) Spanish:
- Subjects: penalty: -3, mean score 5.06
  - Objects: penalty: -4, mean score 3.64
- (48) Italian
- Subjects: penalty -4, mean score 3.62
  - Objects: penalty: -5, mean score 2.26

Note also that, as an effect of the higher weight of RIGHTMOST in Italian, the general scores of preverbal foci in Italian are much lower than in Spanish: while preverbal subjects are (marginally) acceptable, preverbal objects are rated as unacceptable. This means that in Italian, RIGHTMOST is able to counter the effects of CCO, hence providing the ‘stronger’ motivation for movement and shaping the more restrictive nature of this language in comparison with Catalan and, especially, Spanish.

Setting the weight of CCO to zero in Catalan is a move that is needed to arrive at the right predictions with respect to the relevant acceptability scores but, at the same time, it reflects long-standing and independent observations.<sup>17</sup> RIGHTMOST is the most

<sup>17</sup> According to Keller (2000), the constraint weights must be positive. We nevertheless assigned zero to the weight of CCO in Catalan to express that this constraint is not active or is totally irrelevant in Catalan. If we had to analyse Catalan on its own, we would simply omit this constraint, but since our analysis concerns three languages,  $w_0$  has been inserted in the

powerful constraint regulating word order in Catalan. SCOT also has an effect, which is however much smaller in size. At any rate, unlike CCO, both RIGHTMOST and SCOT refer to information-structure categories (i.e. focus) and cannot be sensitive to the grammatical function. Thus, these weighted constraints reflect well the general syntactic behaviour of the language, where information-structure conditions seem to be the most relevant factor in determining the surface word order (see Vallduví 1992, 1995, who defines Catalan as a ‘discourse configuration language’).

It is also important to consider the syntactic consequences of RIGHTMOST. This constraint introduces a set of movement operations that are dependent on the information-structural status of elements and are necessary to yield the optimal configuration with the focus constituent at the right edge of the sentence. The dislocation of given (or non-focal) constituents, in particular, contributes to the satisfaction of RIGHTMOST (see Vallduví 1992, Cruschina 2010, 2022b; see also Zubizarreta 1998, 2016, Samek-Lodovici 2006, 2015 for similar insights which are however framed in different approaches). The dislocation of given constituents is indeed a recognized and pervasive feature of Catalan syntax. This is also a common trait of Italian and Spanish but, as mentioned in Section 4, it is less incisive in Spanish, where exceptions are possible, in that, not all given or non-focal constituents need be dislocated. Although this needs to be investigated more carefully, and experimentally, we could assume that the more limited application of information-structure related syntactic operations is an effect of CCO.

As for Italian, by contrast, we could hypothesize that the effects of CCO are counter-balanced by the higher weight of RIGHTMOST, leading to a general syntactic behaviour that is more similar to Catalan than to Spanish. In this sense, referring to the distinction discussed in Section 4, Italian and Catalan are restrictive languages with a more straightforward mapping between syntax and information structure than Spanish, which is instead more permissive that is characterized by a less transparent mapping between syntax and information structure.

## 6. Conclusions

This paper has examined the distribution and acceptability of information focus in three Romance languages: Catalan, Spanish and Italian. In line with previous theoretical studies, we show that information foci are preferably realized postverbally in the three languages. This finding is particularly clear and prominent in production, but is also supported by acceptability judgements, in that postverbal foci are always rated higher than preverbal foci. However, preverbal foci are not completely ruled out, and their gradient acceptability varies from language to language: they are more acceptable in Spanish, less acceptable in Catalan and even less acceptable in Italian. In addition, while Catalan is insensitive to the grammatical function of the focus, both in Spanish and Italian preverbal subjects are rated higher than preverbal objects. We investigated the possible causes of the differences between production and rating tasks and the sources of gradient acceptability judgements, and proposed a model based on

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Catalan tableau for comparative purposes. An alternative (technical) solution would be to reduce this weight to a very small value (e.g. 0.0001).

optional spellout and weighted soft constraints to account for this variation of acceptability.

A set of soft constraints operating at the interface between LF and PF regulates the alternative spellout of the optimal chain links. These constraints are assigned weights, allowing the gradience of the judgements and the reduction in acceptability to be defined in terms of cumulative constraint violations. These weights enable us to account for the differences between the production and the rating experiments: native speakers tend to produce the option that violates fewer constraints, while gradient judgements arise in the rating experiment, where speakers evaluate competing options. Language variation can also be represented as constraint violation, both with respect to individual constraints —such as in the case of the subject/object asymmetry in Spanish and in Italian— and at the crosslinguistic level, distinguishing between languages that are more or less tolerant of constraint violations. This distinction defines the difference between permissive and restrictive languages.

The proposed LOT analysis could represent a point of agreement between difference theoretical approaches to the grammatical encoding of information structure categories (see Brunetti *forthcoming*), in that it incorporates interpretative and interface requirements into a fundamentally syntactic account based on designated positions, syntactic features and movement operations. These requirements include the need for a transparent mapping between syntax and information structure (see Wagner 2005, Neeleman & van de Koot 2008, Neeleman & Vermeulen 2012, Szendrői 2017), which however has to interact with other interface requirements.

Although we believe that our theoretical proposal is on the right track to explain both large and small-scale differences in acceptability across languages, we are aware that we have only begun to scratch the surface of the potentialities that experimental syntax offers to shed light on these questions. Our theoretical model can be applied to a larger selection of constructions and languages, opening new avenues for exploring further questions concerning interface principles and the architecture of the grammar.

The predictions of our theoretical model are easily testable, both in terms of dialectal variation and crosslinguistic differences. While we only tested Peninsular Spanish, based on findings reported in the literature (cf. Cruschina & Mayol 2024), we believe our conclusions can be extended to other Spanish varieties. Empirically, we acknowledge that the degree of permissiveness may vary across Spanish dialects; nevertheless, our model is flexible enough to account for such variation. We leave this exploration to future research.

From a crosslinguistic perspective, we wish to point out that, if in some language, SCOT were associated with a higher weight than in Catalan, Spanish and Italian, the highest chain link would be more commonly selected in production and would receive higher scores in rating tasks. According to several descriptions (see, e.g., Cruschina 2015, 2021 and references therein), this is the case of Sicilian and Sardinian. We could also predict the existence of languages where SCOT is entirely irrelevant (with zero weight) and only Rightmost determines the distribution of focus: in these languages, the lowest chain link would always be selected as the most optimal and focus would systematically appear postverbally, while the realization of preverbal foci would lead to unacceptability or even ungrammaticality. According to some descriptions, this is what happens in French (at least with information and corrective focus, see Authier & Haegeman 2019, Larrivé 2021) and in some northern Italian dialects (e.g. Paoli 2003). In this paper, finally, we only considered the distribution of

focus and the acceptability of FF, but the same set of constraints could be highly relevant for other types of movement, such as wh-movement. Different rankings and weights should be established in order to account for the different distribution of wh-phrases and acceptability of wh-movement. Indeed, unlike with FF, the movement of the wh-phrase is mandatory in the three languages under investigation in this paper, at least with information-seeking questions. It is therefore evident that ScoT plays a major role with wh-movement (see Bianchi 2019).

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