Explaining the Subjunctive in factive contexts

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Abstract

The occurrence of the Subjunctive mood in sentences describing facts is commonly seen as problematic, given the relation between Subjunctive and non-veridicality. One line that is explored in the literature to account for the Subjunctive in complement clauses of factive verbs is to link the occurrence of this mood in such contexts to gradability of the main clause's predicate. However, such an account faces empirical problems, and is not extendable to other contexts where the Subjunctive occurs even if the sentence describes a fact of reality. This paper proposes an account for the occurrence of Subjunctive in different kinds of factive contexts, showing that in all such cases the reason for this mood to occur follows from the general condition that leads to the use of Subjunctive, though for different reasons. Gradability of the main predicate is, in fact, one of the factors that leads to the consideration of non-p worlds, and the Subjunctive, but not the only one. For other predicates, other semantic features lead to counterfactual reasoning. Concessive clauses are another factive context where Subjunctive occurs and allow a better understanding of what triggers the Subjunctive mood and what this formal sign indicates.

Keywords: mood, Subjunctive, non-veridicality, causality, factivity.

1. Introduction

In Romance languages, the Subjunctive mood occurs in several kinds of clauses that describe facts (or what is taken to be a fact according to the speaker), as shown by the following examples, from European Portuguese (EP).[1]

(1)   a. lamento que {*estás / estejas} doente
         regret   that {*are.IND / are.SUBJ} ill
         'I regret that you're ill'
      b. é normal que {*estão / estejam} tristes
         is normal that {*are.IND / are.SUBJ} sad
         'It's normal that they are sad'
      c. surpreende-me que {*está / esteja} a chover
         surprises-me   that {*is.IND / is.SUBJ}to rain
         'I'm surprised that it's raining'

(2)   a. foi   preciso que se {*chegou   / chegasse} a janeiro para
         was   needed that one {*arrive.IND / arrive.SUBJ} at January so
         que {*nevou   / nevasse}
         that {*snow.IND / snow.SUBJ}
         'It didn't snow until January'
      b. bastou que {*choveu   / chovesse} dois dias para que
         enough that {*rained.IND/ rained.SUBJ} two days so   that
         {*houve / houvesse}   inundações
         {*was.IND / was.SUBJ}   floods
         'It only took two days for there to be floods.'

(3)   temos um carro, embora {*tem   / tenha} pouca gasolina
          have a car,   although {*has.IND/ has.SUBJ}   few gas
          'We have a car, although it is low on gas.'

      Sentences in (1) illustrate the obligatoriness of the Subjunctive in argument clauses of factive-emotive[2] predicates. In (2a-b), the Subjunctive is also obligatory in

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[1]   There is mood variation between EP and other varieties (such as Brazilian Portuguese). In this paper, I will focus only on EP. As far as I know, in all the cases considered in the paper, the same mood that occurs in EP is also acceptable in Brazilian Portuguese (and, presumably, in the, less described, African varieties of the language). As for other Romance languages, to a great extent the distribution of the Indicative and Subjunctive moods is identical to the one of EP, though in some constructions some differences are observable (for instance, in French, as in Catalan, according to Quer 1998, both the Subjunctive and the Indicative are acceptable in the complement clause of predicates as the equivalents of *to regret*, while in EP Subjunctive is obligatory; in French, *espérer* – 'to hope' – accepts both the Subjunctive and the Indicative, while in EP it takes the Subjunctive). In this paper, I will not pursue a systematic comparison between different languages, instead focusing on EP.

2   The term "factive predicate" was introduced by Kiparsky & Kiparsky (1970). Karttunen (1971) defines factive verbs as those which allow the inference that their complement

argument clauses of predicates that express a necessary or a sufficient condition. When the verb inflects in the Pretérito Perfeito ('Past tense'), as in the given examples, the argument clauses are given to be true. Sentence (3) illustrates the obligatoriness of the Subjunctive in concessive clauses, also a factive context.

The occurrence of Subjunctive in these constructions is challenging given the traditional idea that Subjunctive is the mood of *irrealis*, the Indicative being the mood that occurs in sentences describing reality. However, contradicting this canonical idea, in sentences (1)-(3) the Subjunctive is obligatory in EP, the Indicative being ruled out. Hence, an account of mood has to explain why the Subjunctive is obligatory in some sentences that (are taken to) describe facts, as those in (1)-(3), since the Indicative is the expected mood in sentences taken to be true, as shown by the following examples:

(4)   a. sabes que {está   / *esteja} a   chover
              know that {is.IND   / *is.SUBJ} to   rain
              'You know that it is raining'
    b. (de acordo com o   jornal,)   ele {foi   / *fosse}   para o
              Brasil
              (in accord with the newspaper)he {went.IND/ *went.SUBJ} to   the
              Brazil
              '(according to the newspaper,) he went to Brazil'

Of all the syntactic contexts illustrated in (1)-(3), the occurrence of the Subjunctive in argument clauses of factive-emotive verbs – as in examples (1a-c) – is the most well studied case in the literature on formal semantics. However, as will be shown below, explanations available in the literature for the occurrence of the Subjunctive in this context face different problems and are not extendable to the syntactic contexts illustrated in (2)-(3).

Departing from existing analysis of mood in formal semantics, this paper attempts to provide a semantic account for the distribution of the Subjunctive and Indicative moods in EP, including the cases illustrated in (1)-(3) alongside the cases where, in EP and cross-linguistically, only one of the Indicative and Subjunctive moods may occur, as well as cases where in EP any of the two moods is allowed.

The paper is organized as follows. Section 2 summarizes the accounts of mood that I will take as a point of departure, the explanation offered by Giannakidou & Mari (2016, 2021) for the Subjunctive in complement clauses of factive-emotive predicates, and problems with the adoption of that explanation for all these constructions. In section 3 an account of the Subjunctive in complement clauses that are taken to be true in the real world is presented, considering both factive predicates, in 3.1, as Implicative and Negative Implicative verbs, in 3.2. In section 4, concessive clauses, another context where Subjunctive occurs in sentences describing facts, are taken into consideration. The last section contains the conclusions and final remarks.

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clause is true regardless of the truth value of the main clause. There is a lot of literature devoted to issues as to whether this inference is a presupposition or another kind of inference, in which contexts is that inference allowed, and so on (see, e.g., Beaver (2010), Karttunen (2016)). Here, I use the term "factive" to designate those sentences which the speaker takes to be true in the real world and that (s)he assumes are part of the common ground or can be accommodated in the common ground or added to it.

According to the proposal made in this paper, mood choice in complement clauses follows from the semantics of the embedding predicate, but, as shown by concessive clauses, Pragmatics also plays a role in mood choice. Overall, the observation emerges that Subjunctive is a mark signaling the consideration of non-p worlds.

2. On Non-veridicality and Diversity Condition

The traditional observation that Indicative is the mood used in sentences that describe reality, whereas Subjunctive occurs in sentences that are false or may not be true faces two major problems: (i) there are some contexts where the Subjunctive occurs but the sentence describes reality, as in examples (1)-(3); (ii) the Indicative occurs in sentences that are taken to be, or might be, false in reality, as is the case, among others, of complement clauses of fiction verbs (a term borrowed from Farkas (1992)), as in (5), and of doxastic attitude predicates, as in (6).

(5)   sonhei   que   {estava / *estivesse}   a   nevar[3]
       dreamed   that   {was.IND / *was.SUBJ}   to   snow
       'I dreamed that it was snowing'

(6)   o   Pedro está convencido que a   Terra {é   / *seja}   plana
       the Pedro is   convinced   that the Earth {is.IND / *is.SUBJ} flat
       'Pedro is convinced that the Earth is flat'

The latter of these problems is circumvented by Giannakidou's concept of veridicality (see Giannakidou (1994) and several publications thereafter), which is different from the concept of factivity (or actuality, a term that is sometimes used in the literature with the same meaning as the term "factivity"). In simple terms, a factive clause is one that describes a fact from reality (i.e., a proposition that is true in the real world), whereas a veridical clause is one that is taken by someone to be true, regardless of whether it is, in fact, true or false in reality. For instance, the complement clauses in (5) and (6) are veridical, since the complement clause in (5) is taken to be true in the speaker's dream, and in (6) it is taken to be true by the entity identified by the subject of the main clause, though none of these clauses occurs in a factive context, i.e., none of the complement clauses in (5) or (6) is a description of a fact from the real world. Obviously, factive clauses are also veridical clauses, but not all veridical clauses are factive.
      More precisely, a proposition p is veridical if it occurs in a veridical context, a veridical context being a set of possible worlds that contains only worlds where p is true (p-worlds). Consider (5) and (6). The complement clauses are interpreted against the model introduced by the main predicate. In (5), this model corresponds to a set of possible worlds that represents the speaker's dream. Such a model contains only worlds where what the speaker dreamed is true; thus, all the worlds of the model against which the complement proposition is interpreted are worlds where it was

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[3]   An anonymous reviewer points that the verb *to dream* can also have the sense of *to hope/wish*, in which case, in French, it takes the Subjunctive mood. In that reading of the verb, *to dream* is a bouletic verb. That is not the sense of *to dream* in example (5).

snowing. Likewise, in (6) the complement clause is interpreted against a model that represents Pedro's beliefs, a model that contains only worlds where the Earth is flat. In Hintikkian terms, the meaning of (6) will be this:

(7) $\forall w \; [w \in Dox_{(Pedro)} \rightarrow w \in \{w' \mid p(w')\}]$
       (every world doxastically accessible for Pedro is a world where p is true)

Departing from the notion of veridicality, in several publications Giannakidou defends the idea that the Subjunctive occurs in non-veridical contexts, being a mark that signals non-veridicality. Later, Giannakidou & Mari (2021, a.o.) made the precise statement that the Subjunctive occurs in those contexts that lead to the consideration of both p and non-p worlds:

«Subjunctive mood expresses nonveridical stance: The subjunctive signals the presence of a nonveridical information state. (…) An information state M(i) is nonveridical about p iff M(i) contains both p and $\neg p$ worlds. A nonveridical M(i) does not entail p (…) nonveridical states have p and $\neg p$ as open possibilities and do not allow entailment to p.»
(Giannakidou & Mari 2021, p. 45)

Likewise, Godard 2012 states that:

«the subjunctive mood is appropriate when the interpretation requires taking into account the possibility of *non-p* along with that of *p*.»
(Godard 2012, 136)

It follows from this that the mentioned authors assume that the Subjunctive mood is subject to the same condition as modalized sentences, whose assertion is dependent on the observation of the Diversity Condition (see Condoravdi 2002; Thomas 2014; Mari 2016; a.o.): it makes sense to utter (8), a modalized proposition, only if the weather state is unsettled.

(8)   it {must / might} be raining

In a context where the speaker sees the rain, or knows, from some other source, sensorial or not, that it is raining, it would be appropriate to utter (9), but not (8):

(9)   It is raining.

In other words, if the epistemic state of the speaker includes only worlds where it is raining, (s)he can utter (9), whereas the assertion of (8) is only felicitous if his epistemic state includes both worlds where it is raining as well as worlds where it isn't (i.e., the utterance of a modalized sentence requires that the epistemic state of the speaker includes both p and non-p worlds). Terminological variation apart, Godard 2012 and Giannakidou & Mari 2021 (a.o.) claim that the Indicative and Subjunctive moods are subject to the same conditions as the assertion of (un)modalized sentences. The assertion of a non-modalized sentence p is natural when the epistemic state of the speaker contains only p-worlds (worlds where p is true), and the Indicative occurs

when the context against which the sentence is asserted contains only *p*-worlds. The assertion of a modalized sentence *p* is natural when the epistemic state of the speaker contains both *p*-worlds and non-*p* worlds; in the same way, the Subjunctive will occur in those cases that lead one to consider *p* and non-*p* worlds.

To clarify the reasonability of this analysis of the Indicative and Subjunctive moods, consider the following sentences.

(10) {acho / sei   / prevejo / é claro}   que {está / *esteja}   a   chover.
     {think / know / foresee / is clear}   that {is.IND / *is.SUBJ}   to   rain
     '{I think / I know / I foresee / it is clear} that it is raining'

(11) {sonhei   / faz de conta / imaginemos} que {é   / *seja}   domingo
     {dreamed / pretend   / imagine}   that {is.IND / *is.SUBJ} Sunday
     '{I dreamed / let us pretend / let us imagine} that today is Sunday

(12) é {preciso / provável / possível}   que {*chove   / chova}
     is {needed / likely   / possible}   that {*rain.IND / rain.SUBJ}
     It must rain / {it is likely / it is possible} that it rains

(13) ele {quer / pediu / sugeriu   / duvida} que ela {*vem   / venha }
     he {wants / asked / suggested / doubts} that she {*come.IND / come.SUBJ}
     'He {wants / asked / suggested} she to come / He doubts that she will come'

As shown by (10) and (11), the Subjunctive is ruled out from argument clauses of epistemic or doxastic predicates that express a full commitment of the attitude holder towards the complement proposition[4], as well as from complement clauses of

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[4]   Two anonymous reviewers question the assumption that some of these predicates express a full commitment given contrasts as the following:

(a) #I know that it is raining, but {I might be wrong / I'm not sure}.
(b) I think that it is raining, but {I might be wrong / I'm not sure}.

Before giving a straight answer to that question, I will bring into consideration the following observations:
i. It is a fact that not all the main predicates in (10) express the same degree of commitment by the attitude holder. Concerning this issue, epistemic/doxastic predicates can be divided in three classes: STRONG, a class that includes at least verbs of knowledge, as *to know* or *to find out*, declaratives, as *to confess* or *to ensure*, predicates as *to be clear/obvious/evident*; MEDIUM, a class that includes predicates as *to seem clear/obvious/evident*, as well as verbs as *to think*; WEAK, a class that includes verbs as *to admit*, *to suppose, to presume*, as well as verbs as *to doubt* and predicates as *to be possible / probable*.
ii. The weaker the commitment expressed by the predicate, the easier it is for it to accept Subjunctive in the complement clause. In fact, in EP, Subjunctive is ruled out from the complement clause of the predicates of the first class (unless it is licensed by an operator exterior to the predicate, such as sentential negation, in which case a strong commitment is not expressed); it's occurrence is restricted in complement clauses of MEDIUM predicates; in the case of WEAK predicates, both the Subjunctive and the Indicative are equally accepted, with a difference in meaning: with Indicative the meaning of these predicates is similar to the MEDIUM ones, with Subjunctive they express a low degree of confidence, their meaning being closer to

fiction predicates. In these cases, the meaning of the main predicate leads to consider only *p*-worlds; hence the Subjunctive is ruled out since the Diversity Condition is not observed. On the contrary, the Indicative is ruled out from argument clauses of different kinds of predicates that do not express full commitment with the truth of the embedded proposition, as shown by (12) and (13). The meaning of these predicates leads to the consideration of both *p* and non-*p* worlds; therefore, the Subjunctive is the selected mood.

Also in adverbial and in main clauses it seems that the Subjunctive occurs in those sentences whose meaning leads to the consideration of *p* and non-*p* worlds, such as final clauses (see (14)) or imperative clauses (see (15)), and the Indicative occurs in those sentences that express a full commitment of the speaker towards the truth of the asserted proposition, as shown by temporal clauses as (16) or main assertions, as (17):

(14)   ele demitiu-se   para que a   situação não {*piorou   /
        he   resigned-self so   that the situation not {*escalate.IND /
        piorasse}
        escalate.SUBJ}
        'he resigned so the situation wouldn't get worse'

(15)   {*fecham / fechem}   a   porta, por favor!
        {*close.IND / close.SUBJ} the door   by   favor
        'Close the door, please!'

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maybe; i.e., verbs like (the equivalents of) *to admit*, *to suppose* or *to presume* + Indicative in the complement clause are similar to *think*, being members of the class MEDIUM, while (the equivalents of) *to admit*, *to suppose* or *to presume* + Subjunctive in the complement clause are members of the class WEAK.
iii. Continuations like "but I might be wrong" or "but I'm not sure" are perfectly acceptable in the case of MEDIUM predicates, but they are not natural in the case of WEAK predicates (to say, e.g., *suponho que ele tenha_SUBJ perdido, mas posso estar enganado* – 'I suppose that he lost, but I might be wrong' – would be as odd as to say *maybe he lost, but I might be wrong*).
iv. If one speaker says {*acho / suponho*} *que perdeu_IND* (*mas posso estar enganado*) ('I {think / suppose} he loosed (but I might be wrong))' and another speaker says {*acho / suponho*} *que ganhou_IND* (*mas posso estar enganado*) ('I {think / suppose} he won (but I might be wrong))', one might say that the two speakers have opposite opinions. By contrast, if one speaker says *suponho que tenha_SUBJ perdido* ('I suppose he lost') and another speaker says *suponho que tenha_SUBJ vencido* ('I suppose he won'), one cannot say that the two speakers have opposite opinions.

All these observations are coherent with the following claim: MEDIUM predicates express a full commitment of the attitude holder at the relevant time (t_0 if the verbs inflect in the Present tense), but this commitment might be revised later, if, e.g., the attitude holder becomes aware of new information that implies a revision of his/her beliefs, if (s)he gets convinced by someone else that (s)he was wrong, and so on. In other words, the complement clause of these predicates describes an opinion, and one might change his/her opinions. As for the STRONG predicates, they also express a full commitment of the attitude holder, but a more steady one (hence the oddity of continuing the sentence with *but I might be wrong*). That is, MEDIUM predicates express full commitment which is possibly temporary, while STRONG predicates express full commitment that is likely to be permanent.

(16)   ele demitiu-se   quando {adoeceu   / *adoecesse}
        he resigned-self when   {got-sick.IND / *got-sick.SUBJ}
        'He resigned when he got sick'

(17)   o   Chile {fica   / *fique} no   hemisfério Sul
        the Chile {is.IND / *is.SUBJ}   at-the   hemisphere South
        'Chile is located in the Southern Hemisphere'

However, the idea that Subjunctive is triggered by the Diversity Condition is challenged when attention is turned to negative clauses. Consider the following sentences:

(18)   não {está   / *esteja} a chover
        not is.IND /   is.SUBJ to rain
        'It is not raining'

(19)   ele saiu sem   que a Maria {*percebeu / percebesse}
        he left without that the Maria {*notice.IND / notice.SUBJ}
        'He left without Maria noticing'

(20)   o   mau tempo   impediu que {*saímos   / saíssemos}
        the bad weather prevented that {*leave.IND / leave.SUBJ}
        'Bad weather prevented us from leaving'

In negative assertions, like (18), the Indicative occurs, but in *without*-clauses, like (19), and in complement clauses of negative verbs, as shown in (20), Subjunctive is selected, the Indicative being ruled out.

Giannakidou & Mari 2021 consider sentences such as (18), claiming that Indicative is the chosen mood in negative assertions because the Diversity Condition (non-homogeneity, in their terminology) is not observed. By asserting (18), the speaker expresses the information that his epistemic state contains only worlds where it is not raining (i.e., not-raining worlds), since it is not a logical space with both non-raining and raining worlds. Thus, they propose that the Indicative occurs when a Homogeneous Modal Base is considered, and the Subjunctive occurs when non-homogeneous Modal Bases are at stake. Homogeneous Modal Bases contain only p-worlds or only $\neg p$ worlds, whereas non-homogeneous Modal Bases contain both p and non-p worlds. Hence, in simple assertions the Indicative occurs because, by making an assertion, the speaker expresses the information that their epistemic state contains only p-worlds, in the case of affirmative sentences, or only $\neg p$ worlds, in the case of negative sentences.

However, as far as I can see, this does not explain the obligatoriness of the Subjunctive in sentences as (19) or (20). Just like in (18), the assertion of these sentences expresses the information that the epistemic state of the speaker contains only worlds where the subordinated clause is false. That is, the speaker's epistemic state contains only $\neg p$ worlds; it is, therefore, a homogeneous logical space; hence, according to the proposals at stake (Giannakidou & Mari 2021; Godard 2012), Subjunctive should be ruled out, Indicative being chosen, against what is verified. One possibility to justify the Subjunctive in sentences like (19) or (20) is to consider that their assertion

involves some kind of denial of expectation that the subordinated proposition is true, hence leading to the consideration of *p*-worlds (at the level of expectations) and $\neg p$ worlds (at the level of assertion). I will not pursue such a hypothesis. Instead, I propose that the Subjunctive occurs if $\neg p$ worlds are considered (regardless of whether the Modal Base contains only $\neg p$ worlds or both *p* and $\neg p$ worlds), the Indicative occurring if only *p*-worlds are taken into account. In other words, the Subjunctive signals the consideration of possible worlds where the proposition is false, the Indicative signaling that only worlds where the proposition is true are taken into account. This explains the obligatoriness of the Subjunctive in all the cases where both *p* and non-*p* worlds are considered, and also explains the Subjunctive in sentences under the scope of a negative operator, such as (19) and (20). As for negative sentences like (18), the (negative) sentence is presented by the speaker as being true; hence the Indicative. That is, by asserting (18), the speaker expresses his commitment to the truth of the asserted proposition, indicating that his epistemic state contains only worlds where the asserted proposition – that it is not raining – is true. Unlike what is the case in (19) and (20), in (18) the negative operator – *não* ('not') – is internal to the proposition[5], while in (19) and (20) the subordinated sentence is under the scope of a negative operator, but the sentence itself is not negative, since no negative operator participates in its construction.

Given this, I propose that the distribution of the Subjunctive and Indicative moods in EP is ruled by the following conditions (which will be revised later):

> **Conditions for Subjunctive or Indicative (to be revised later)**: If the Modal Base contains at least one world where φ is false, the verb of φ inflects in the Subjunctive; if the Modal Base contains only worlds where φ is true, the verb of φ inflects in the Indicative.

One obvious problem for this proposal, due to the hypothesis that Subjunctive obeys the Diversity Condition, is the fact that, in some constructions, the Subjunctive occurs in sentences that describe reality; i.e., sentences that are taken to be true. These are the cases illustrated in (1)-(3), above, to which I will now return.

2.1. Factive Predicates – State of the Art

The most well-studied case of Subjunctive in clauses describing facts are argument clauses of factive-emotive predicates such as (the equivalents of) *regret, surprise*, and many others. In EP the Indicative is ruled out of the argument clause of these predicates, Subjunctive being obligatory[6]. In other Romance languages (including Brazilian Portuguese), according to the literature on mood, Indicative might occur in the

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[5]   This is best seen when the subject is phonetically realized, in which case the negative operator occurs after the subject, in pre-verbal position, as in *a Ana não está em casa* ('Ana is not at home'). By contrast, in (19) and (20), the negative operator is external to the proposition being denied, which is introduced by a conjunction – *que* ('that') –, following the negative operator.

[6]   The complement clause can also be an infinitival clause, in which case there is no complementizer (see, e.g., *lamento estar atrasado* 'I regret to be late'). In this paper, I will consider only finite clauses.

complement clauses of these predicates, but it is not obligatory, Subjunctive also being allowed. The only exception is Romanian, where Indicative seems to be obligatory.

One explanation for the Subjunctive in argument clauses of factive-emotive predicates comes from Giannakidou 2016, who, following Baker 1970, proposes that the meaning of these predicates conveys unexpectedness, this being the reason why their meaning leads to consider p (they are factive predicates; the acceptance of the truth of the argument clause follows from their meaning) as well as non-p worlds and, therefore, to take the Subjunctive. According to her proposal, to say that, e.g., «*Nicholas is surprised that Ariadne talked to him* can only be felicitous in a context where, prior to the utterance, Nicholas believed that *Ariadne would not talk to him*» (Giannakidou 2016, p. 205).

However, this explanation seems untenable, as Giannakidou & Mari (2016, 2021) recognize. One counter-argument that they present to this proposal is that the continuation "and (s)he always knew that" is felicitous, as shown by the following example, presented in Giannakidou & Mari 2021:

(21)   Arianna is happy/glad/sad/irritated that Nicholas participated in the marathon, and she always knew that he would do it.

In the same vein, consider the following example, which, obviously, is also felicitous without the assumption that, at some period in the past, the speaker believed humans to be immortal:

(22)   lamento   que   {*somos /   sejamos} mortais
        regret   that {*are.IND / are.SUBJ} mortal
        'I regret that we are mortal.'

In addition, one can observe that other factive predicates also indicate change of a mental state, but they trigger the Indicative:

(23)   acabei   de {me aperceber / descobrir / ver} que {está / *esteja}
        finished of {self realize   / find out / see} that {is.IND / *is.SUBJ}
        a chover, contrariamente ao   que   pensava.
        to rain,   contrary   to-the what   thought
        'I just {realized / discovered / saw} that it is raining, contrary to what I thought.'

A more promising explanation for the Subjunctive in argument clauses of factive-emotive predicates is that the meaning of these predicates involves a comparative dimension, like the one of bouletic predicates, thus triggering the consideration of non-p worlds. For instance, to say that *John regrets that it is raining* means that John would prefer if it were not raining. As Godard 2012 puts it, the evaluation itself supposes a comparison between p and non-p. One cannot regret or be happy that some situation is the case, or judge that a situation is normal, without thinking that things could have been different.[7]

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[7]   See Baunaz & Puskás 2022 for an implementation of this idea in a syntactic analysis (thanks to an anonymous reviewer for pointing me this).

This idea is explored in detail by Giannakidou & Mari (2016, 2021), who claim that gradability is the key to understanding why factive-emotive predicates take the Subjunctive. Gradability of the predicate as the trigger for Subjunctive had been proposed before, by Villalta 2008. Giannakidou & Mari (2016, 2021) deepen this idea and, building on common analyses of degree constructions, present an analysis arguing that gradability of emotive predicates triggers an emotion space E and partitions it into a positive and a negative space, hence leading to the consideration of p and $\neg p$ worlds, and, thus, to the occurrence of Subjunctive. Consider, for instance, the factive-emotive predicate *to irritate*. This is a gradable predicate, as can be seen by observing that it can participate in degree constructions such as *this irritates me more than that*. The meaning of the predicate involves a projection of individuals in a scale, formed of different degrees of irritation. If the degree of irritation that, in some situation, an individual is projected in is below the standard point, we will say that that individual is not irritated, whereas if he is projected in a degree above the standard, we will say that he is irritated. Likewise, «if I say John is tall, I am saying that John exceeds the degree d that is the threshold or standard of what counts as tall in the context» (Giannakidou & Mari 2021, p. 286). Given this, Giannakidou & Mari assume a homomorphism from degrees to possible worlds, thus explaining why the meaning of factive-emotive predicates leads to the consideration of p and non-p worlds and, therefore, to the Subjunctive in their argument clause.

2.2. Problems for the (exclusively) gradability explanation

The proposal that gradability, or the imposition of some ordering relation, is the key factor that triggers the Subjunctive by all factive-emotive predicates can be challenged on the basis of evidence from EP:

(i) It is questionable that all factive predicates that select the Subjunctive are gradable. For instance, the adjectival predicate *igual* ('equal') selects the Subjunctive (see (24a)), but it is not a gradable predicate (hence the irony in Orwell's sentence *all animals are equal, but some are more equal than* others). Likewise, concerning the predicate *ser indiferente* ('to be indifferent'), also a Subjunctive trigger (see (24b)), there are restrictions on its occurrence in degree constructions, as shown by (25), which would be perfectly acceptable with other factive predicates, also Subjunctive rulers, as, e.g., the equivalents of *to be nice / normal / surprising*:

(24) a. «A   mimdá-me   igual   que você queira   ou não participar
     to   me   gives-me equal   that you   want.SUBJ or not participate

     no   negócio, porque,   mesmo sem   você, o   negócio
     at-the business   because   even   without you   the   business

     continuará.» (CETEMPÚBLICO, par=ext829202-nd-95a-2)
     continue.FUT

     'I don't care if you want to participate in the business or not, because even without you, the business will continue.'

     b.   Eu   vou   sair. É-me   indiferente que {*está /   esteja}   a   chover!
          I   go   leave.Is-me   indifferent that {*is.IND /   is.SUBJ} to   rain

'I will go out. I don't care {that / whether} it is raining!'

(25) a. é-me {completamente / *muito} indiferente que   esteja   a   chover
         is-me {completely   / *much} indifferent that   is.SUBJ to rain
         'It is {totally / *much} indifferent to me that it is raining'

    b. *É-me   mais indiferente que esteja a chover do   que o é
        is-me more indifferent that is.SUBJ to rain   of-the what it is
       que   seja   abril.
       that be.SUBJ April
       '*It's more indifferent to me that it is raining than that we are in April'

    c. ?É   tão indiferente que esteja a chover como seria   se
         is as indifferent that is.SUBJ to rain   as   be.COND   if
        não estivesse.[8]
        not be.SUBJ
        '*It is as indifferent that it is raining as it would be if it were not'

One might question whether the predicates *ser igual* ('be equal') and *ser in-diferente* ('to be indifferent') are really factive predicates, since (24a), for instance, might be felicitously uttered both in a context where the speaker knows that it is raining or in a context where he doesn't know what the weather is like. The same observation is valid for other predicates, to be considered below, as, e.g., the equivalents of *be natural* or *be normal*. However, this question is irrelevant for mood selection. First, even if the predicate can be used in a context where the speaker doesn't know whether the subordinated proposition is true or false, it may also be used in a context where the speaker is aware that such a proposition describes a fact. Second, regardless of whether the argument clause is taken to describe a fact or a possibility, the predicates *ser igual* ('be equal') and *ser indiferente* ('be indiferent') have the same meaning and are not indisputably gradable predicates. Hence, the reason for them to be Subjunctive triggers may not follow from gradability.

(ii) It is unclear where to draw the line between predicates that impose some ordering relation and, therefore, are gradable and, hence (according to Villalta 2008, Godard 2012, Giannakidou & Mari 2016, 2021), trigger the Subjunctive, and those that do not and thus trigger the Indicative. For instance, if one accepts that the reason for *abor-recer* ('to upset') or *embirrar* ('to pick on') to be Subjunctive triggers is that these predicates impose some ordering relation, stating preference for not-*p*, why does

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8 Telmo Móia (p.c.) observes that (i) is acceptable:
(i) *É tão indiferente que esteja a chover como que não esteja.*
   ('It doesn't matter whether it's raining or whether it isn't')
I suppose this sentence is only acceptable in a context where the speaker does not know whether it is raining or not, unlike (25c), where the argument clause describes a fact. Moreover, (i) is less natural than (ii):
(ii) *É indiferente que esteja a chover ou que não esteja.*
    ('It doesn't matter whether it's raining or not')

confessar ('to confess'), which indicates, or at least might indicate, preference for not saying *p*, select the Indicative (see 26))?

(26)   em   tribunal, confessou, contrariado, que foi   ele   que
        in   court,   confessed,   annoyed,   that was him   that
        {cometeu   /   *cometesse}   o   crime
        {committed.IND /   *committed.SUBJ} the crime
        'In Court, he confessed, annoyed, that it was him who committed the crime'

(iii) The predicates in (27) impose an ordering relation of *normalcy* and they are Subjunctive triggers, but the assertion of (28) is grounded in the same kind of reasoning, based on normalcy conditions, though the Indicative is obligatory:

(27)   é {normal / provável} que {*vai   /   vá}   haver greve
        is {normal / probable} that {*go.IND /   go.SUBJ} exist   strike
        'it's likely that there will be a strike'

(28)   é {óbvio   / claro / evidente} que {vai   / *vá}   haver greve
        is {obvious / clear / evident} that {*go.IND / go.SUBJ}exist strike
        'it's {obvious /clear / evident} that there will be a strike'

(iv) In EP (unlike in Spanish, according to Villalta 2008), the predicates *estar seguro / confiante* ('to be sure / confident') accept the Indicative, though they are gradable predicates, as shown in (29):

(29)   estou mais {seguro / confiante} de que ele {ganha   / *ganhe}
        am   more {sure   / confident} of that he {wins.IND/ *wins.SUBJ}
        que   de   que perde.IND
        than of   that loses
        'I'm more sure / confident that he will win than that he won't'

The Subjunctive is also acceptable in the argument clause of these predicates:

(30)   já   estive mais {seguro / confiante} de que ele
        already   was   more {sure   / confident} of that he
        {??ganha   / ganhe}   do   que   estou   agora
        {??wins.IND / wins.SUBJ} of-the   what   am   now
        'I've been more confident that he will win than I am now'

        The contrast between (29) and (30) shows that gradability is not the key factor for the predicates *estar seguro / confiante* ('to be sure / confident') to accept the Subjunctive. In the case of (29), where Indicative is clearly preferred, the sentences convey a high degree of confidence on the part of the speaker that the situation described by the complement clause will become true, whereas in the case of (30) the reverse situation is observed, and Subjunctive is preferred over the Indicative. This shows that the issue at stake concerning mood selection by these predicates is degree of confidence in the truth of the proposition, not the fact that these predicates are gradable.

(v) In EP, apart from *estar seguro / confiante* ('to be sure / confident'), other belief predicates, as *acreditar* ('to believe'), which is gradable, accept both the Indicative and the Subjunctive:

(31)   a   Maria acredita   que   ele   {está   /   esteja}   doente
        the Maria believes   that   he   {is.IND   /   is.SUBJ}   ill
        'Mary believes that he is / might be ill'

        With Indicative in the complement clause, the sentence conveys a high degree of belief, whereas the Subjunctive signals a low degree of belief. Hence, the strangeness of each of these moods in the presence of other devices that reinforce or attenuate, respectively, the degree of belief being expressed:

(32) a.   acredito   {muito/ sinceramente/ piamente}   que   ele
           believe   {much / sincerely   / piously}   that   he
           {vem   / ??venha}
           {comes.IND / ?? comes.SUBJ}
           'I really believe that he will come'

     b.   acredito   pouco que   ele   {??vem   /   venha}
           believe   few   that   he   {??comes.IND /   comes.SUBJ}
           'I doubt that he comes'

        This data shows that, if the epistemic state of the attitude holder contains only *p*-worlds, worlds where the embedded proposition is true, the Indicative occurs, while if the attitude holder accepts the possibility that the embedded clause is false, his epistemic state containing also non-*p* worlds, the Subjunctive is used. The fact that the same verb can be used to express a high or a low degree of belief is evidence that this is a gradable predicate (as confirmed by the possibility of it to enter in degree constructions, as *acredito mais que não vai chover do que acredito que chova* 'I believe more that it will not rain than I believe that it will rain'). The proposal that gradability of a predicate makes it a Subjunctive trigger leads to the prediction that *acreditar* ('to believe') will be a Subjunctive trigger. However, in EP it accepts both the Subjunctive and the Indicative (and in other Romance languages, with the exception of Italian, its complement clause preferably occurs in the Indicative).

To summarize, thus far it has been shown that:
• Subjunctive signals the consideration of non-*p* worlds; Indicative is selected if only *p*-worlds are taken into consideration.
• In EP, factive-emotive predicates select the Subjunctive, though the complement describes a fact.
• Gradability, or the introduction of an ordering relation, as the trigger for Subjunctive by factive predicates does not explain all the data.

Hence, the reason for Subjunctive to occur in the argument clause of factive-emotive predicates is still to be understood.

3. Subjunctive in complement clauses that describe a fact in EP

Factive predicates are defined, after Karttunen (1971), as those triggering the presupposition that their complement clause is true. As observed above, some predicates, such as (the equivalents of) *be indifferent* or *be normal*, are questionably factive, since they can be felicitously uttered in a context where the speaker doesn't know whether the complement proposition is true or false.

(33) A: Está a chover?
          'Is it raining?'
     B: Não sei… É normal que esteja.
          not know is normal that is
          'I don't know… It's normal if it is'

I assume that in these cases there is a hidden conditional, where the presupposition triggered by the factive predicate is accommodated. That is, in (33), B's answer is interpreted as *I don't know… If it is, it's normal [that it is]*.

3.1. Factive predicates

Concerning mood selection, a division among the class of factive predicates is relevant between those that express an epistemic attitude, such as *know* or *find out*, and those that express an attitude of another kind, such as *regret* or *be glad*, which are commonly referred to by the term "factive-emotive predicates", "emotive predicates" or "evaluative predicates". In EP, epistemic factive verbs are Indicative triggers, while factive-emotive predicates trigger the Subjunctive. In addition, there are syntactic differences among the factive-emotive predicates class. Focusing on the argument structure of factive predicates in EP, a division in three sub-classes is to be observed:

I. Predicates with the argument structure [*x V que p*] ('[x V *that* p']')
   A. epistemic predicates; e.g., *saber* ('know'), *descobrir* ('find out')
   B. bouletic predicates; e.g., *lamentar* ('regret'), *gostar* ('like')

Examples:
(34) a.   ele sabe   que {está   / *esteja} a chover
          he   knows   that {is.IND / *is.SUBJ} to rain
          'He knows it is raining'
     b.   lamento que {*está / esteja} a chover
          regret   that {*is.IND / is.SUBJ} to rain
          'I regret that it is raining'

II. Predicates with the argument structure [*que p V ADJ*] ('[*that* p V ADJ']'); e.g., {*ser / achar /…*} *estranho / justo / aceitável /…* ('{*be / find /…*} *strange / fair / acceptable /…*')

Examples:

(35) a.   que   {*está / esteja}   a   chover é muito estranho
           that   {*is.IND / is.SUBJ} to   rain   is very   strange
           'It's quite strange that it is raining'

     b.   é justo que ele {*recusou   / tenha   recusado} a   oferta
           is fair   that he   {*refused.IND / has.SUBJ refused}   the offer
           'It's fair that he refused the offer'

III. Predicates with the argument structure [*que p V x*] ('[*that* p V x']); e.g., *irritar* ('irritate'), *surpreender* ('surprise'), *alegrar* ('enjoy').

Examples:

(36) a.   que ninguém {*abriu   / abrisse}   a   porta irritou-o
           that nobody   {*opened.IND / opened.SUBJ} the door   irritated-him
           'It irritated him that nobody would open the door'
     b.   surpreende-me que {*está / esteja} a   chover
           surprises-me   that {*is.IND / is.SUBJ} to   rain
           'It surprises me that it is raining'

I believe that these differences concerning the argument structure mirror different semantic functions of the predicate, whose meaning, with the exception of epistemic factive predicates, leads to the consideration of non-*p* worlds, but for different reasons. Thus, the fact that all of the non-epistemic factive predicates are Subjunctive triggers will follow from the fact that their meaning leads to the consideration of non-*p* worlds, but the reason for this is not the same for the three classes of factive predicates.

Predicates of class I describe a mental state of the entity identified by the external argument of the predicate. Predicates of subclass A, such as (the equivalents of) *to know*, *to be aware* or *to find out*, describe an epistemic state (i.e., they are epistemic predicates) and their meaning can be captured in Hintikkian Semantics (see also, e.g., Giannakidou & Mari 2021):

(37)   [[x *knows that* p]] is defined iff the real world *w* is a *p*-world (factivity)
          If defined, [[x knows that p]] = 1 in *w* with respect to M(x) iff
                $\forall w[w \in M(x) \rightarrow w \in \{w \mid p(w)\}]$
          (the proposition *x knows that p* is true iff every possible world doxastically
          accessible to *x* is a *p*-world)

Given that the meaning of these predicates leads to consider only *p*-worlds, they are Indicative triggers.

The other predicates of class I, those of subclass B, such as *lamentar* ('to regret') or *gostar* (lit. 'to like'), describe a bouletic attitude. They express a comparison between *p* and not-*p*, as initially observed by Heim 1992, who proposes the following semantics for the predicate *be glad*:

(38)   C(ontext) Change Potential for *be glad*:
                c + α *is glad that* φ =
                $\{w \in c$: for every w' $\in Dox_α(w)$:

$$w' <_{\alpha,w} \text{Sim}_{w'}(\text{rev}\varphi(\text{Dox}_\alpha(w)) + not\ \varphi)\}\qquad\text{(Heim 1992, 206)}$$
$$(\varphi\ \text{is better, for}\ \alpha,\ \text{than not-}\varphi)$$

For instance, to say that John is glad that it is raining means that, for John, it is better that it is raining than if it weren't, while *John regrets that it is raining* expresses the reversal ordering, meaning that John would prefer if it were not raining. Thus, the meaning of these predicates leads to the consideration of non-*p* worlds and the selection of Subjunctive.

As for predicates of class II, their function is to classify the situation identified by their external argument. For instance, the sentence *it's strange that it is raining* classifies the raining situation as being strange. The meaning of these predicates involves the consideration of an ordering, introduced by the adjective. For instance, the adjectives *strange* and *natural* introduce a stereotypical ordering, classifying situations according to their proximity to what is normal; (*un*)*fair* introduce a deontic ordering relation, and so on. For example, *it's natural that it is raining* means that, given the normal course of events, raining situations are better ranked than non-raining ones. Thus, the meaning of these predicates also leads to the consideration of *non-p* worlds, and, therefore, to their selection of Subjunctive.

Finally, concerning the factive predicates of class III, I propose that they express a causal relation between the situation and the entity identified by their arguments. For example, *surpreende-me que esteja a chover* ('it surprises me that it is raining') means that the fact that it is raining causes a state of surprise in the speaker. Likewise, *irritar* ('to irritate') means to cause a state of irritation, *alegrar* ('to rejoice') and *entristecer* ('to sadden') means to cause a state of joy or sadness, respectively, and so on. Given that, assuming a counterfactual theory of causality, as proposed by, e.g., Lewis 1973, Salmon 1998, a.o., the reason for these predicates to take the Subjunctive follows straightforwardly. According to a counterfactual theory of causality, to say that *A causes B* means that *if A were not the case, all the rest being the same, B would not be the case*. Thus, causality leads to the consideration of non-*p* worlds; therefore, causal predicates are Subjunctive triggers. For instance, *irrita-me que o cão esteja a ladrar* ('it irritates me that the dog is barking') means that the fact that the dog is barking causes on the speaker a state of irritation, and, if the dog were not barking, all the rest being the same, the speaker would not be irritated[9].

The predicate *ser indiferente* ('be indifferent'), whose argument structure is the one of predicates of class III, appears to be an exception among the predicates of this class, all of which express a causal relation, but it is not. This one is a negative predicate, one that indicates the inexistence of a causal relation between the denotation of its arguments. For instance, by asserting (39), the speaker indicates that the fact that it is raining does not cause a change in his decision to go out:

(39)   Eu   vou   sair.   É-me   indiferente   que   esteja   a   chover!
        I   go   leave. Is-me   indifferent   that is.SUBJ to rain
        'I will go out. I don't care that it is raining!'

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[9]   To my knowledge, Quer 1998 was the first author who proposed causality as the trigger of Subjunctive by factive-emotive predicates. However, he does not show how the causality component of the main predicate leads to Subjunctive selection, neither does he state that causality will be the trigger for Subjunctive only in the case of some, not all, factive predicates.

Since the meaning of *ser indiferente* ('be indifferent') also involves the consideration of a causal relation (which is denied), its meaning also involves counterfactual reasoning and, therefore, the consideration of worlds where the argument proposition does not hold. Hence, it also triggers the Subjunctive.

3.2. Implicative and Negative Implicative Predicates

There are other predicates that, when inflected in some tenses, such as the *Pretérito Perfeito* ('Past tense'), allow the inference that their complement clause describes a fact (see, e.g., Hacquard 2014; Mari 2015). These predicates are coined *Implicative Predicates* by Karttunen 1971, who also introduces the term *Negative Implicative Predicates* to refer to those that allow the inference that their complement clause is false. Predicates like *bastar* ('to be enough'), *fazer com que* ('to make'), or *levar a que* ('lead to') are examples of the first class. Predicates like *impedir* ('prevent') or *evitar* ('avoid') are examples of Negative Implicative verbs. Predicates of both these classes are also Subjunctive triggers in EP:

(40) a. **foi preciso** que se {*chegou / chegasse} a maio para que
was needed that one {*arrive.IND / arrive.SUBJ} at May for that
{*choveu / chovesse}
{*rain.IND / rain.SUBJ}
'it did't rain until May'

b. o mau tempo **impediu** que o avião {*aterrou /
the bad weather prevented that the plane {*landed.IND /
aterrasse}
landed.SUBJ}
'Bad weather prevented the plane from landing'

While factive verbs trigger the inference that their complement proposition is true regardless whether the main clause is affirmative or negative, in the case of Implicative and Negative Implicative predicates, the inference concerning the truth value of the complement proposition is reversed when the main clause is under the scope of negation. Thus, while (40a) allows the inference that it rained in May, but not before, the negation of the main predicate will allow the inference that it rained before May. Likewise, (40b) allows the inference that the plane didn't land, while the negation of (40b) allows the inference that the plane landed. In other words, in the case of Implicative predicates, in affirmative clauses their complement clause is taken to describe a fact (see (40a)), and the same is observed with Negative Implicative predicates when they occur in negative sentences.

Concerning Negative Implicative predicates, the fact that they are Subjunctive triggers might simply follow from the fact that they are non-veridical predicates. Since they convey the information that their complement proposition is false (i.e., their meaning leads to consider possible worlds where the complement proposition is false), they must be Subjunctive rulers. However, the same explanation is not extendable to Implicative predicates, which are also Subjunctive triggers.

A more comprehensive explanation for why these predicates are Subjunctive triggers is that their meaning involves a causal chain of events. This is in the spirit of what is proposed for these predicates by Godard (2012), Giannakidou & Mari (2021), a.o. According to this explanation, the reason for these predicates to be Subjunctive triggers is similar to the one proposed in the former sub-section for factive predicates of class III, as *surpreender* ('to surprise'). The relevant difference between them is that, while factive predicates like *to surprise* indicate that the denotation of their external argument causes a state of mind (of surprise, joy, sadness, etc., depending on the predicate) in the entity identified by the internal argument, predicates such as *levar a que* ('lead to') express a causal relation between the events identified by their arguments. For instance, (41) indicates that the denotation of its external argument (the rebellion) caused the event identified by the internal argument (the President's resignation).

(41)   a   rebelião   levou a que   o   Presidente se
         the   rebellion   lead   to that   the President   himself
         {*demitiu   / demitisse}
         {*resigned.IND / resigned.SUBJ}
         'The uprising led to the president's resignation'

Sub-types within the class of predicates whose meaning involves the consideration of a chain of events can be proposed. Causative predicates like *levar a que* ('lead to') or *fazer com que* ('cause') indicate that the external argument triggers, or does not stop, the chain of events that ends in the one referred to by the internal argument, while the external argument of negative verbs such as *evitar* ('to avoid') or *impedir* ('to prevent) identifies an event (or an entity of a different kind[10]) that impedes (the continuation of) a chain of events leading to the one identified by the internal argument. For other predicates, it can be claimed that they are not causative, *stricto sensu*, since they do not identify a cause, but rather a sufficient condition, as will be the case of predicates like *bastar* or *ser suficiente* ('be enough'), or a necessary condition, as will be the case of predicates like *ser necessário* ('be necessary') or *ser preciso* ('be needed´). The meaning of predicates expressing a sufficient or a necessary condition could be something like (42) and (43), respectively:

(42) $[[$*p was sufficient for q*$]] = 1$ iff
         $\exists \langle t,w \rangle\ \exists \langle t',w \rangle\ [\ [t < t']\ \wedge\ \langle t,w \rangle \in [[p]]\ \wedge\ \langle t',w \rangle \in [[q]]\ ]\ \wedge\ \exists w'\ [w' = w/p\ \wedge\ w' \notin [[q]]]$

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[10]   See the following examples.

    (i)   The fire prevented us from entering.
    (ii)   The Police prevented us from entering.

In (i) the external argument clearly identifies an event, while in (ii) it is questionable whether it identifies an entity of a different kind – the Police – or also a situation (e.g., the Police being there; the actions of the Police).

(*p* and *q* occurred in a world *w*, *p* temporally precedes *q*, and at least one ¬*p* world otherwise similar to *w* is a ¬*q* world)

(43)   [[*p was necessary for q*]] = 1 iff
          ∃ <t,w>, ∃ <t',w> [[t < t'] ∧ <t,w> ∈ [[*p*]] ∧ <t'w> ∈ [[*q*]]] ∧ ∀w' [w' = w/*p* → w' ∉ [[*q*]]]

(*p* and *q* occurred in a world *w*, *p* temporally precedes *q*, and every ¬*p* world otherwise similar to *w* is a ¬*q* world; i.e., *p* and *q* occurred in *w* and, if *p* had not occurred, *q* would not have occurred either)

Informally, the suggestion is that predicates of sufficient condition indicate that if *p* had not occurred, *q* could have not occurred either, and predicates of necessary condition indicate that if *p* had not occurred, *q* would have not occurred either. In both cases, the meaning of the predicate leads to the consideration of non-*p* and non-*q* worlds, hence the Subjunctive in both arguments of the predicate.

(44) a.   bastou   que   alguém   {*abriu   / abrisse}   a janela
          was-enough   that   someone   {*open.PST.IND / open.PST.SUBJ}   the window
          para que o copo se   {*partiu   / partisse}
          for that the glass it   {*broke.PST.IND / broke.PST.SUBJ}
          'it was enough for someone to open the window for the glass to break'

     b.   foi preciso que o   povo se {*revoltou   / revoltasse}
          was needed   that the people it {*revolted.PST.IND / revolted.PST.SUBJ}
          para que o   Presidente se   {*demitiu   / demitisse}
          for that the President   him {*resigned.PST.IND / resigned.PST.SUBJ}
          'it took the people to revolt for the president to resign'

Sentence (44a) can be paraphrased as *if the door had not been opened, maybe the glass would not have broken*. Sentence (44b) can be paraphrased as *if the people had not revolted, the President would not have resigned*.

Godard 2012 considers predicates as the equivalent of *be necessary*, proposing that it selects the Subjunctive for pragmatic reasons:

«(25) Il est nécessaire que la somme des angles d'un triangle fasse 180°.
'It is necessary that the sum of the angles of a triangle amounts to 180°'
(…) We must ask what brings a speaker to say *il est nécessaire que p* rather than simply say *p*. That is, the speaker could have said (26) instead of (25) :
(26) La somme des angles d'un triangle fait 180°.
'The sum of the angles of a triangle amounts to 180°'
(…) Sentences in (25) and (26) refer to exactly the same situations. Thus, the difference does not concern reference: it is a matter of interaction. Behind the assertion in (25) there is a deduction: (25) can be used as a step

towards a conclusion, for instance to show to a child where his demonstration fails (…)

(27) **Condition on the motivation of the subjunctive mood**
The subjunctive is motivated when the speaker takes into account the fact that there may exist an agent who believes that *non-p* is possible.»

(Godard 2012: 137-138)

I don't think that such explanation is tenable. If the Subjunctive follows from the assumption that someone might believe that *non*-p is possible, then Subjunctive would be used in adversative clauses, which express a denial of expectation. However, the Indicative is obligatory in such clauses:

(45)   o   aquecimento está   ligado,   mas a   sala {está   / *esteja}
        the   heating   is   turned-on, but the room {be.IND / *is.SUBJ}
        fria
        cold
        'The heating is turned on, but the room is cold'

Sentence (45) expresses the denial of expectation that the room is warm, an expectation that follows, or might follow, from the assertion that the heating is turned on. Thus, if, as proposed by Godard (2012), the expectation that someone might believe that a proposition is false leads to the Subjunctive, this mood would be the expected one in (45), a sentence that conveys the expectation that the room is not cold.

The same meaning can be expressed by using a concessive clause, where the Subjunctive is obligatory:

(46)   a   sala está fria, embora o   aquecimento {esteja / *está}
        the room is   cold, although the heating   {is.SUBJ / *is.IND}
        ligado
        turned-on
        'The room is cold, although the heating is turned on'

Given this, the following question arises: why is the Indicative obligatory in adversative clauses and the Subjunctive in concessive clauses, given that the two constructions have the same meaning?

4. Mood in adversative and concessive clauses

To understand why the Subjunctive occurs in concessive clauses, while the Indicative is obligatory in adversative clauses, it might be useful to recall Ducrot's distinction between direct and indirect opposition (see Ducrot 1978). Ducrot observes the existence of two types of opposition in adversative clauses: direct and indirect opposition, illustrated, respectively, by (47a) and (47b):

(47)   a. The heating is turned on, but the room is cold.
        b. We have a car, but it is out of gas.

In (47a), the clause introduced by the adversative conjunction – *the room is cold* – is the contradiction of the expectation that follows from the other clause – *the heating is turned on*. This is a case of direct opposition. The assertion of *p* triggers (or might trigger) the expectation that *non-q* holds, continuing the discourse by saying *but q*, cancels such an expectation. In (47b), a case of indirect opposition, the assertion of *we have a car* triggers (or might trigger) the expectation that we can use the car, and the assertion of *the car is out of gas* cancels such an expectation. Schematically, this can be represented as follows:

Direct opposition:
      p, but *q*
      Expectation: $[p \rightarrow \neg q]$
      Assertion: $p \wedge q$

Indirect opposition:
      p, but *q*
      Expectations: $[p \rightarrow r]$
                       $[q \rightarrow \neg r]$
      Assertion: $p \wedge q$

The same concepts of direct and indirect opposition might be observed in concessive constructions. In fact, (48a) and (48b) have the meaning as, respectively, (47a) and (47b).

(48)   a. Although the heating is turned on, the room is cold.
          b. We have a car, although it is out of gas.

However, even if (47b) and (48b) have the same meaning, I claim they have different argumentative strength. In the case of (47b), an adversative construction, from the assertion of *we have a car* one could infer that we can use such car. But the assertion that the car is out of gas leads to the contradictory inference[11] that we cannot use the car, canceling the inference that follows from *we have a car*. That is, the assertion of *we have a car, but it is out of gas* has the inference that we cannot use the car. As for (48b), a concessive construction, the inference that follows from the assertion of *we have a car, although it is out of gas* is weaker, the sentence stating that the fact that the car is out of gas is an annoyance, but not impeditive of us using the car. In other words, the assertion of *but q* cancels the possibility that is suggested by the assertion of *p*; the assertion of *although q* presents *q* as contrary, but does not cancel the possibility suggested by the assertion of *p*.[12]

This observation can be made more precise. Both adversative and concessive constructions have the same kind of interpretation as independent declarative clauses. The assertion of them has the potential to update the context of utterance with the

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11   I use the term "inference" in a broad sense, to cover any kind of inference, including implicatures.
12   As Ana Maria Martins (p.c.) observes, a sentence as *the heating is on, but the room is cold* could naturally be continued by *that heater sucks*, while *although the heating is turned on, the room is cold* would more naturally be followed by, e.g., *we have to adjust the heater*.

information conveyed by the asserted sentence. More precisely, conceptualizing the context of assertion as a set of possible worlds – the set of possible worlds compatible with what the participants in the conversation assume to be true, the common ground –, the assertion of *p* against a context *c* removes (if the asserted sentence is accepted by the participants in the conversation) from *c* all but the worlds where *p* is true (see, e.g., Heim 1992, Portner 2009, Fintel & Gilles 2007, a.o):

$$c + p = c^* \ (c^* = [c/\neg p])$$

In addition, I propose, the assertion of *p, but q* has also the potential to remove from the context the worlds where the implicatures following from *p* hold. For instance, in example (47b) – *we have a car, but it is out of gas* –, the assertion of the sentence (if accepted as true by the participants in the conversation) removes from the context set all but the worlds where the participants have a car (assertion of *p, we have a car*, in the given example), the worlds where such car is out of gas (assertion of *q, the car is out of gas*), and the worlds where the implicature that we cannot use the car holds. Hence, the resulting context contains only worlds where the inference following from *q* – the implicature that we cannot use the car – holds. As for the assertion of *p, although q*, its assertion has the potential to remove from the context all but the *p*-worlds and the *q*-worlds, plus some, but not necessarily all, of the worlds where the inference following from *q* (the inference that the participants cannot use the car, in the given example) holds. Hence, assuming that a proposition *p* might lead to the expectation that *r*, and *q* might lead to the expectation that ¬*r*, the Context Change Potential for adversative and concessive constructions can be defined as follows:

(49) a. [c + (p but q)] = c', such that c' ∈ [[p]] & c' ∈ [[q]] & c' ∈ [[¬r]]
            (removes from the context set every *r*-world)
     b. [c + (p although q) = c', such that c' ∈ [[p]] & c' ∈ [[q]] & (c' ∩ [[¬r]]) ≠ ∅)
            (removes from the context some *r*-worlds)

        In other words, the assertion of *p although q* creates a context that contains at least one world where the implicature of *q* does not hold (i.e., it creates a context that contains *r*-worlds and non-*r* worlds), while the assertion of *p but q* creates a context that contains only worlds where the implicature of *q* holds. For example, the context created by the assertion of (48b) – *we have a car, although it is out of gas* – contains both worlds where we use the car and worlds where we do not, while the context created by the assertion of (47b) – *we have a car, but it is out of gas* – contains only worlds where we do not use the car.
        Given this, we now have a reasonable hypothesis for why the Subjunctive occurs in concessive clauses and the Indicative in adversative clauses. Concessive conjunctions take the Subjunctive because they lead to consider worlds where an implicature following from the proposition introduced by the conjunction does not hold, while adversative conjunctions take the Indicative because they lead to consider only worlds where such an implicature holds.
        Thus far, only the case of Indirect Opposition was considered. However, the same explanation accounts for the cases of Direct Opposition. In cases like (48a) – *although the heating is turned on, the room is cold* –, the expectation following from the concessive clauses is the contradictory proposition of the main clause. Hence, the

assertion of *although p, q* (if accepted as true by the participants in the conversation) creates a context that contains only worlds where the expectation following from *p* does not hold. In the given example, the proposition introduced by the concessive conjunction leads, or might lead to, the expectation that the room is warm, but this expectation is cancelled by the main clause, whose assertion removes from the context all but the worlds where the room is cold. Hence, the Subjunctive is selected because worlds are considered where an inference following from the proposition does not hold.[13]

To conclude, the considered data allows the following proposal concerning the conditions for the Subjunctive and Indicative moods in EP:

Conditions for Subjunctive or Indicative (final version):

(i)   The verb of a sentence φ inflects in the Subjunctive iff φ occurs in a context that leads to the consideration of worlds where φ is false or where an inference that follows from it does not hold.

(ii) The verb of a sentence φ inflects in the Indicative iff φ occurs in a context that leads to the consideration of only worlds where φ is true and the inferences following from φ hold.

5. Conclusion and final remarks

The traditional idea that the formal opposition between Indicative *vs* Subjunctive mirrors the distinction between *realis* vs *irrealis* has proven to be too simplistic and contradicted by many constructions where the observed mood is the opposite of the expected one according to such a view. However, there is some validity in the idea. The analyzed data from EP shows that, even in the cases where the Subjunctive clause describes a fact of the real world, the meaning of the construction leads to consider possible worlds where such proposition is false or where an expectation following from it does not hold. Therefore, the conclusion is reached that the distinction between Subjunctive and Indicative is semantically based: one or the other mood occurs depending on whether the meaning of the construction leads to consider only worlds where the proposition is true and inferences following from it hold, or else worlds where the proposition is false or where expectations following from it do not hold.

However, Patricia Amaral (p.c.) observed that she accepts the Indicative in concessive clauses introduced by *apesar de* ('in spite of'). This is unexpected, given the proposal sketched above for mood in concessive and adversative constructions,

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[13]   One might think that the proposed explanation leads to the prediction that the first clause of an adversative construction occurs in the Subjunctive, given that the expectation following from such clauses is cancelled by the adversative clause. However, this prediction is not confirmed: *o aquecimento {está.IND / *esteja.SUBJ} ligado, mas a sala está fria* ('the heating is turned on, but the room is cold'). This is not a problem. In fact, the assertion of the first clause, in a construction of the form *p, but q*, creates a context where the expectations following from *p* hold. It is only the continuation of discourse that cancels such expectations. On the contrary, in the case of concessive clauses, it is the conjunction itself that indicates the non-survival, in all worlds of the context set, of the expectation following from the proposition.

and I count myself among the speakers who tend to reject the Indicative in any concessive clause. Nevertheless, occurrences of the Indicative in concessive clauses introduced by *apesar de* can, in fact, be found, as shown by the following example, from an electronic *corpus* of EP:

(50)   «Fico a pensar, a especular, é importante uma noite em que não se acende a televisão, apesar de que **tenho**.IND muito o hábito de ter a televisão ligada, faz-me companhia.» (CETEMPÚBLICO, par=ext630053-clt-94b-1)
         'I keep thinking, speculating, it's important a night when the television is not turned on, although I'm in the habit of having the television on, it keeps me company.'

There are two suggestions toward an explanation of this mood variation in (some) concessive clauses that some speakers seem to accept. The first one is that maybe not all concessive conjunctions have the same argumentative function, *apesar de* ('in spite of') having an argumentative strength closer to adversative conjunctions (which are Indicative triggers) than to other concessive conjunctions, such as *embora* ('although'). The other one is that maybe the choice between the Indicative instead of the Subjunctive (or Infinitive) in concessive clauses is due to discourse or pragmatic reasons. Given that, as proposed, the Indicative signals that only worlds where the proposition is true and the expectations following from it hold, maybe the speaker can resort to this mood if (s)he wants to stress the consideration of the proposition introduced by the concessive conjunction. Further investigation is needed to confirm whether any of these suggestions is tenable or another explanation must be explored.

Acknowledgments

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