Epistemic stance without epistemic modals: the case of the presumptive future*

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Abstract This paper deals with the non-temporal use of the future in Italian known as 'epistemic' or 'presumptive' (PF) in declaratives and interrogatives. We first distinguish PF from epistemic necessity and possibility, as well as from weak necessity modals, providing in the process the main empirical challenges PF raises. We then propose and justify a semantic account that treats PF as a special normality modal that involves a subjective likelihood component. Since in our account the prejacent (the proposition in the scope of the modal) is at issue, the use of PF triggers the implicature that the speaker is not in a position to appeal to what she knows in order to support her commitment to the prejacent. This, we claim, is the source of the intuition that PF is often used to offer a "guess" relative to the question under discussion (QUD).

Keywords: epistemic future, presumptive future, normality modal, epistemic modality

1 Introduction

Languages use a variety of means to signal modulated epistemic commitment to a proposition, such as epistemic modals (*Gianni may/must be home*), normality modals (*Gianni ought to be home*), and likelihood expressions (*Gianni is likely to be home*). In this paper, we provide an analysis of the non-temporal uses of the future tense in Italian which have been argued to involve such modulated epistemic commitment.

The future tense in Italian has an ordinary temporal use, exemplified in (1).

(1)   Gianni sarà   a casa domani.
       Gianni will-be at home tomorrow

       Gianni will be at home tomorrow.

This morphological form also has a non-temporal use, called here *the presumptive future* (PF), which allows co-occurrence with non-future temporal adverbs, exemplified in (2) and (3). In such cases, the future acquires a "presumptive" or "epistemic" reading.[1]

(2)   Gianni sarà   a casa adesso.
        Gianni will-be at home now

        Gianni is presumably home now.

(3)   Gianni sarà   stato a casa ieri.
        Gianni will-have been at home yesterday

        Gianni was presumably at home yesterday.

Because of the non-future adverbs, examples (2) and (3) can only receive a presumptive interpretation, according to which the speaker expresses her best guess with respect to Gianni's whereabouts.

As illustrated in (4) - (6), PF occurs in both polar and interrogative sentences as well:

(4)   *Where is Gianni?*

        Sono le 6. Sarà   a casa.
        It-is   the 6. Will-be at home

        It's 6 o'clock. He is presumably home.

(5)   *It's 3am. Someone knocks at the door.*

        Chi   sarà?
        Who will-be

        Who might it be?

(6)   *Gianni left this morning.*

        Sarà   arrivato?
        Will-be arrived

        Might he have arrived?

Below we first differentiate PF from epistemic and weak necessity modals (Sections 2 and 3). We then give our proposal in Section 4, and discuss PF in interrogatives in Section 5; Section 6 concludes.

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1 Other languages that have similar but not identical non-temporal uses of the future are French, Spanish, Romanian, Dutch, Greek, and English. For earlier work see Falaus (2014), Falaus & Laca (2014), Frana & Menèndez-Benito (2019), Frana & Menèndez-Benito (2015), Giannakidou & Mari (2013), Irimia (2010), Mari (2010), Mihoc (2014), Mihoc, Bhadra & Falaus (2019), Winans (2016), among others. We concentrate here on Italian, leaving a cross-linguistic comparison for another occasion.

2   PF is not an epistemic modal

In this section we show that PF must be distinguished from both epistemic necessity and epistemic possibility.

PF is different from epistemic necessity   It has been claimed in the literature (e.g. Giannakidou & Mari (2013)) that PF has the semantics of a necessity epistemic modal, like *must* in English and *dovere* in Italian. In this section we show that PF and *must/dovere* differ in distribution and therefore must be distinguished analytically.

Note first that in (7), while a doctor could felicitously report her inference about the patient's health on the basis of the available evidence by using the epistemic necessity modal *must/dovere*, an utterance with PF would sound odd.

(7)   DOCTOR
Maria is at the doctor, who has reviewed her test results. She asks her doctor what is wrong with her. The doctor replies:

a. Deve essere narcolessia.
Must be   narcolepsy

It must be narcolpesy.

b. #Sarà   narcolessia.
Will-be narcolepsy
It would be narcolepsy.

The intuition is that PF is inappropriate because it suggests that the doctor is making a guess rather than an inference based on information she has.

The second case we consider is (8), modified from Mandelkern (2018). It shows that when the speaker knows that the inference to been drawn is true, *must/dovere* is acceptable, but PF is not.

(8)   MATH
If the set of validities were decidable, then the halting problem would be decidable. The halting problem is not decidable. So:

L'insieme delle   formule   logicamente valide deve essere /# sarà
The-set   of-the formulae logically   valid   must be   /# will-be
indecidibile.
undecidable

The set of validities must be undecidable.

Example (9) shows that unlike *must/dovere*, PF is acceptable in contexts where the speaker has asserted complete ignorance concerning the question under discussion.

(9) IGNORANCE
    Where is Maria?

    a. Non ne ho la più pallida idea. #Deve essere a casa.
       Not of-it have the most faint idea. #must be at home

       I don't have the faintest idea. #She must be at home.

    b. Non ne ho la più pallida idea. Sarà a casa.
       Not of-it have the most faint idea. will-be at home

       I don't have the faintest idea. She would be at home.

In (10) we see that *must/dovere* differs from PF in interrogatives as well.

(10) *Someone knocks at the door in the middle of the night.*

    a. Chi sarà?
       Who will-be

       Who might it be?

    b. ?Chi dev'essere?
       Who must-be

       Who must it be?

While the use of PF here is perfectly natural, the epistemic necessity modal is odd.

We have illustrated above both cases where epistemic necessity modals are acceptable but PF is not, and the reverse. We turn now to a comparison with possibility modals.

PF differs from epistemic possibility We show below that PF must be distinguished from the epistemic possibility modal *might/potere*. Example (11) shows that when the speaker entertains multiple epistemic possibilities, she can report this by using an epistemic possibility modal but not PF.

(11) MULTIPLE POSSIBILITIES
    Where is Maria?

    a. Sono le 5. Potrebbe essere a casa e potrebbe essere al lavoro.
      It's the 5. Might be at home and might be at work

      It's 5 o'clock. She might be at home and she might be at work.

    b. Sono le 5. #Sarà a casa e sarà al lavoro.
      It's the 5. Will-be at home and will-be at work

      It's 5 o'clock. She will be at home and she will be at work

Example (12) illustrates that when the speaker expresses high credence in the prejacent, PF is appropriate, but the possibility modal is odd.

(12)   BEST ALTERNATIVE
        Where is Gianni?

    a. Dove   vuoi che sia! Sarà   a casa.
       Where want that be! Will-be at home

       Where could he be! He would be home.

    b. Dove   vuoi che sia! #Potrebbe essere a casa.
       Where want that be! Might   be   at home

       Where could he be! #He might be home.

Based on the data discussed in this section, we conclude that PF is not an epistemic necessity modal of the *must/dovere* kind, nor an epistemic possibility modal of the *might/potere* type. Note also that these data challenge an analysis of PF as a variable-force modal, proposed by Mari (2010), as well as an analysis of PF as a mere likelihood modal. As for the former, if PF were a variable-force modal of the kind described by Rullmann, Matthewson & Davis (2008) and Matthewson (2013), one would expect it to be felicitous in contexts that allow epistemic possibility modals as well as epistemic necessity modals. This, as we have seen, is not the case.

    An analysis that treats PF as a likelihood modal can capture the fact that its force is somewhat stronger than epistemic possibility (as in the BEST ALTERNATIVE and MULTIPLE POSSIBILITIES scenarios), as well as the unacceptability of PF in the MATH case. Crucially, however, a likelihood analysis cannot explain (i) why PF is not appropriate in the DOCTOR scenario, a context in which, as (13) shows, a likelihood modal is appropriate, and (ii) why PF is appropriate in the IGNORANCE case, a context in which a likelihood modal is not felicitous, as shown in (14).

(13)   DOCTOR
        Maria is at the doctor, who has reviewed her test results. She asks her doctor what is wrong with her. The doctor replies:

        È probabile che sia narcolessia.
        Is probable that be narcolepsy

        It's probably narcolpesy.

(14)   IGNORANCE
        Where is Maria?

        Non ne   ho   la più   pallida idea. #È probabile che sia a casa.
        Not of-it have the most faint   idea. #Is probable that be at home

I don't have the faintest idea. #She is probably at home.

We conclude that PF is not an epistemic modal, nor is it a variable-force or a likelihood modal.

3   Similarities and differences between PF and weak necessity

The distribution of PF overlaps significantly with that of weak necessity modals, namely *should/ought to* in English and *dovrebbe* in Italian. Thus, *dovrebbe*, just like PF, sounds odd because unprofessional, in the DOCTOR example:

(15)   *Maria is at the doctor, who has reviewed her test results. She asks her doctor what is wrong with her. The doctor replies*:

   #Dovrebbe essere narcolessia.
   Should   be   narcolepsy

   It should be narcolpesy.

Just like PF, *dovrebbe* is not acceptable in the MATH case, where *p* is taken to be true:

(16)   *If the set of validities were decidable, then the halting problem would be decidable. The halting problem is not decidable. So*:

   L'insieme delle   formule   logicamente valide #dovrebbe essere
   the-set   of-the formulae logically   valid #should   be
   indecidibile.
   undecidable.

   The set of validities should be undecidable.

Finally, *dovrebbe*, just like PF, is appropriate in the IGNORANCE case but not in the MULTIPLE POSSIBILITIES case:

(17)   *Where is Maria?*

   Non ne   ho   la più   pallida idea. Dovrebbe essere a casa.
   Not of-it have the most faint   idea. Should   be   at home

   I don't have the faintest idea. She should be at home.

(18)   *Where is Maria?*

   Sono le   5. #Dovrebbe essere a casa e   dovrebbe essere al lavoro.
   It's   the 5. Should   be   at home and should   be   at work

It's 5 o'clock. She should be at home and she should be at work.

The weak necessity modal contrasts with PF, however, in the BEST ALTERNATIVE case, where PF is fine but *dovrebbe* is not:

(19)   *Where is Gianni?*

Dove   vuoi che sia! Sarà   a casa.
Where want that be! Will-be at home

Where could he be! He would be home.

Thus, PF but not *dovrebbe*, can be used to express the speaker's 'best guess' concerning the answer to the question under discussion (QUD).

Finally, PF differs from weak necessity in that it is incompatible with a counterfactual prejacent:

(20)   a. Dovrei essere morta (ma non lo sono).
        Should be   dead (but not it am)

        I should be dead but I am not.

       b. #Sarò   morta (ma non lo sono).
        Will-be dead   (but not it am)

        I will be dead (but I am not).

Given the data presented in the preceding two sections, the account of PF has to capture its epistemic flavor without treating it as an epistemic modal. Furthermore, it has to account for the similarities between PF and weak necessity modals while also explaining their differences. We turn to this task in the next section.

4   Proposed analysis

Because of the similarity between PF and weak necessity modals our starting point is Yalcin's account of the latter. Yalcin (2016) proposes to treat the weak necessity modals *should/ought to* as normality modals: α *should F* means that it would be normal, all relevant things considered, for α to F. In this treatment, weak necessity modals are not epistemic; their epistemic flavor is the result of a default inference from what is normally the case to what is presumably the case (cf. Veltman (1996)). In the account to be developed below, PF has a normality component which gives rise to its epistemic flavor in the same way as in Yalcin's proposal. The differences between normality modals and PF are captured by imposing further requirements on the latter.

Informally, our proposal is that a sentence of the form *PF(p)/PF(p)?* asserts/questions whether *p* is subjectively more likely than any of its contextually

supplied alternatives, where likelihood is assessed based on what is normally the case at the world and the time of evaluation for the speaker in declaratives, and the addressee in interrogatives. This semantics is given formally in (21) for declaratives:

(21) $[\![PF\ p_F]\!]^{g,w,t,c}$ is defined iff there is a unique q $\in$ C s.t. $\forall$r: r $\in$ C and r $\neq$ q [DOX$_i$(w)$\cap$q $>_{N(i)(w)(t)}$ DOX$_i$(w)$\cap$r]; if defined, p = the unique q [$\forall$r: $r \in$ C and $r \neq$ q [DOX$_i$(w)$\cap q >_{N(i)(w)(t)}$ DOX$_i$(w)$\cap r$]; where: (i) C $\subseteq [\![p]\!]^f$, and $[\![p]\!]^f$ is the focus semantic value of the prejacent; (ii) i is a variable contextually bound by the speaker in declaratives and the addressee in interrogatives (iii) N(i)(w)(t) = $\{p \in \mathscr{P}$(W): i believes that p is normally the case in w at t$\}$; (iv) for any propositions $p, q \in \mathscr{P}$(W): $p >_{N(i)(w)(t)} q$ iff p is more likely than q w.r.t. what i believes is normally the case in w at t.

From these truth conditions it follows that in declaratives, the speaker's commitment to the prejacent is not based on knowledge but rather on her subjective assessment of what is most likely, given what is normally the case. This explains the infelicity of PF in the DOCTOR context: the patient expects the doctor to make a knowledge-based claim. A PF utterance, however, is not such a claim, and therefore it will be understood as communicating that the speaker is not in a position to make any knowledge-based claims.

More generally, PF is predicted to be infelicitous in contexts in which the prejacent is at issue and the speaker is in a position to make a knowledge-based claim about it. This is so because a modalized statement relying on an epistemic base is informationally more reliable than one that is constructed from a normality base. Epistemic accessibility functions are reflexive and therefore w, the world of evaluation, must be an element of the epistemic base given by such a function. Normality accessibility functions are not reflexive, and therefore w is not necessarily an element of a normality modal base: w may well turn out not to be a normal world. This property makes normality bases informationally less reliable than epistemic bases. The strongest normality based claim, $\square_N p$, may be true in w without p being true in w. Thus, under the assumption grounded in the Gricean maxim of Quality that a cooperative speaker supports her statements on the most reliable information available, if the speaker can support a claim based on an epistemic base, she should do so, and if she does not, one concludes that such a base is not available to her. In the DOCTOR scenario, it is pragmatically odd for the speaker to make a normality based statement (with a weak necessity modal or PF) because, in that context, the doctor is supposed to attempt to give a diagnosis on the basis of the medical facts that she is aware of. There are, however, circumstances when guessing is appropriate, such as in the following modified DOCTOR scenario:

(22) *Our doctor is having a private informal conversation with another doctor, who asks her what is the matter with Maria. She replies*:

> Non mi raccapezzo.... Sarà narcolessia.
> Not me find-way.... Will-be narcolepsy
>
> I can't figure it out... It could be narcolepsy.

In this scenario, the doctor is free to express her subjective guess since she is not expected to provide an informed, professional opinion.

Note next that our account predicts that $PF(p)$ is consistent with the speaker having some evidence against p, as in (23):

(23)   *Where is Gianni?*

> Sarà   in ufficio, per quanto quando l'ho   sentito al   telefono
> Will-be in office, for much   when   him-have heard   at-the phone
>
> ieri   mi   è sembrato malato.
> yesterday to-me is seemed   sick
>
> He will be at the office, even though when I heard from him on the phone yesterday he sounded sick.

The infelicity of PF in the MATH scenario follows as well: conclusions in mathematical arguments have to be based on objectively true mathematical premises.

Note now that, according to (21), in order for the likelihood relation $>$ to be defined (avoiding trivially true or trivially false statements), both arguments of $>$ must be different from $\emptyset$. In order to ensure this, it must be the case that p and all its alternatives in C are compatible with $DOX_i(w)$. This explains the contrast between PF and the weak necessity modal in (20). The crucial difference is that the weak necessity modal has a simpler semantics that does not require its prejacent to be compatible with $DOX_{speaker}$ in declarative sentences. This point is confirmed by the fact that asserting $PF(p)$ does not rule out other doxastic alternatives, as shown in the following variant of the IGNORANCE case.

(24)   *Who invited Maria to the movies? Carlo, Ezio, or Franco?*

> Non lo so.   L'avrà   invitata Ezio.
> Not it know. Her-will-have invited Ezio
>
> I don't know. Ezio would have invited her.

Note, however, that it is odd to assert $PF(p)$ immediately after raising the possibility of a different alternative, as shown in (25).

(25)   *Who invited Maria to the movies? Carlo, Ezio, or Franco?*

#Potrebbe essere stato Carlo, ma sarà   stato Ezio.
It-might   have   been Carlo, but will-have been Ezio

It might have been Carlo, but it will have been Ezio.

We suggest that (25) is odd because it is an odd pragmatic move to bring up a possibility as a possible answer to a question only to then dismiss it immediately afterwards. In support of this claim, note that (26), where (a) and (b) are uttered by different discourse participants, shows that if the epistemic possibility is brought up by one speaker, another speaker may use PF raising a different possibility while agreeing that the first one is not excluded.

(26)   *Who invited Maria to the movies? Carlo, Ezio, or Franco?*

a. Potrebbe essere stato Carlo.
   It-might have   been Carlo

   It might have been Carlo.

b. Certo, potrebbe essere stato Carlo, ma vedrai   che sarà stato
   Sure, might   have   been Carlo, but you-will-see that will have-been
   Ezio.
   Ezio

   Sure, it might have been Carlo, but you'll see that it will have been Ezio.

Finally, note that our analysis accounts for the MULTIPLE POSSIBILITIES and BEST ALTERNATIVE cases. In the former, PF is incompatible with the conjunction of multiple possibilities because it requires the prejacent to be the likeliest alternative, which ensures uniqueness. In the latter, PF is acceptable because the speaker's claiming that the prejacent is the most subjectively likely true answer to the QUD (given what is normally the case) is compatible with the requirement that all alternatives be doxastically possible.

4.1   What is at issue?

In our account, at the point that $PF(p)$ is asserted, the QUD consists of p and its alternatives in C. And yet, the speaker does not assert p, but rather, $PF(p)$, which amounts to claiming that according to what the speaker believes is normally the case, p is the most likely alternative. A different analytical possibility would be to assume that PF does not affect the semantic content of the sentence, and therefore what is asserted is simply p; the contribution of PF would be to signal weakened commitment to p. Under this account PF would be treated as a speech act modifier, along the lines of the treatment of tag interrogatives and rising declaratives in Farkas & Roelofsen (2017).

The reasons that led us to take PF to contribute to the semantic content of the sentence in which it occurs are the following. First, PF sentences may embed, as exemplified in (27).[2]

(27) a. <u>Immagino</u> che Carlo sarà   già   arrivato.
          <u>Imagine</u>   that Carlo will-be already arrived

       I imagine that Carlo would have already arrived.

      b. Chi lo   conosce <u>crede/pensa/è certo/è convinto</u> che   Carlo
         That him knows   believe/think/is   certain/is convinced

         avrà fatto carte   false per rivedere suo figlio.
         that Carlo will-have made false cards   to   see-again his son

         Those who know him believe/think/are certain/are convinced that Carlo would have done all he could to see his son again

Second, the data in (28) show that agreeing with a sentence asserting $PF(p)$ involves agreeing with $PF(p)$, and not just with p:

(28) a. Gianni sarà   a casa.
         Gianni will-be at home

         Gianni will be home.

      b. Sì,   sono d'accordo.   Gianni sarà   a casa.
         Yes, am   of-agreement. Gianni will-be at home

         Yes, I agree. Gianni will be at home.

      c. Sì,   sono d'accordo.   #Gianni è a casa.
         Yes, am   of-agreement. Gianni is at home

         lit: Yes, I agree. Gianni is at home.

Assuming that agreement involves committing to the semantic content of the interlocutor's previous assertion, the data in (28) show that this content is $PF(p)$, and not just p. Similarly, (29) shows that in disagreeing with a previous $PF(p)$ statement, the speaker is not committing to $\neg p$ but rather to $\neg PF(p)$, which is why she may explicitly commit to the possibility of p being true.

(29) a. Gianni sarà   a casa.
         Gianni will-be at home

         Gianni will be at home.

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2 The embedding potential of PF sentences is not completely free, as discussed in Mihoc et al. (2019). Restrictions on the embedding potential of necessity and possibility modals have also been noted – see, for example, Hacquard & Wellwood (2012), Anand & Hacquard (2013), Ippolito (2018)). Going into the details on the limits of this freedom is beyond the scope of this paper.

b. No, non sono d'accordo,   anche se   non posso escluderlo.
No, not am of-agreement. even though not can rule-it-out

No, I don't agree, even though I can't rule it out.

Finally, we turn to the question of whether the implicit *i* anchor in (21) is necessarily bound by the speaker in unembedded PF declaratives. Frana & Menèndez-Benito (2015) and Giannakidou & Mari (2013)) argue that it is. Frana and Menèndez-Benito's example, modelled after an example in Kratzer (2009), is given in (30):

(30)   Filing Cabinet
None of us has had access to the information in this filing cabinet, but we know that it contains the complete evidence (including possibly forged evidence) about the murder of Philip Boyes and narrows down the set of suspects. We are betting on who might have killed Boyes according to the information in the filing cabinet.

a. Harriet: According to the information in the filing cabinet, I might have killed him.

b. Harriet: #Secondo   l'informazione contenuta in questo archivio,
Harriet: According-to the-information contained in this   cabinet,
l'avrò   ucciso io.
him-will-have killed I

lit: According to the information contained in this cabinet, I will have killed him.

Note, however that the implicit anchor can be bound by the argument of *according to x* in (31):

(31)   *Where is Gianni?*

Non lo so,   ma secondo   sua madre, sarà   stato trattenuto dal
Not it know, ma according-to his mother, will-be been kept   from-the
direttore in ufficio.
director in office

I don't know, but according to his mother, he must have been kept in the office by his boss.

The difference between the unacceptable (30) and the acceptable (31) concerns, we claim, the nature of the anchor: in (30) the anchor is non-agentive, and therefore not able to assess the likelihood of a proposition, while in (31), it is agentive and capable of such assessment. We therefore conclude that PF is not necessarily speaker oriented.

Based on the arguments in this section we conclude that PF contributes to the semantic content of the sentence in which it occurs.

4.2 Interaction with negation

A possible challenge to the conclusion of the preceding subsection is the fact that PF appears to necessarily be interpreted under the scope of negation:

(32) Non avrà   passato il test.   (PF>neg, *neg>PF)
      Not will-have passed the test

      He must not have passed the test.
      NOT: It is not the case that he must have passed the test.

In our account, the seeming impossibility of negation to take scope over PF is a by-product of the existence presupposition triggered by PF. Recall that according to (21), PF presupposes that there exists a unique alternative that is the most likely alternative in C given what is normally the case. Because of this presupposition, $\neg PF(p)$ is equivalent to $PF(\neg p)$. To see why, consider first the case in which the set of alternatives is $\{p, \neg p\}$. In this case, asserting that it is not the case that p is the most likely alternative (given what is normally the case), the presupposition that there is a most likely alternative entails that this most likely alternative is $\neg p$. For cases where C contains more alternatives, the same result is reached, under the assumption that the alternatives in C are mutually exclusive. For example, suppose that the issue is Gianni's whereabouts, and suppose that there are three possible mutually exclusive alternatives {*Gianni is at home*, *Gianni is at the office*, *Gianni is at the gym*} (or, in short, {*home*, *office*, *gym*}).

(33) *Where is Gianni?*

      Sono le 6. Non sarà   in ufficio.
      It-is the 6. Not will-be in office

      It's 6 o'clock. He would not be at the office.

In (33), the speaker asserts that it is not the case that *office* is the most likely alternative. Given the presupposition contributed by PF (that there is a most likely alternative in C), it follows from $\neg PF(office)$ that one of the other alternatives is the most likely one. Since the alternatives are mutually exclusive, it follows that the most likely alternative, whichever it might be, entails that not-*office* is true. In our account then, $\neg PF(p)$ and $PF(\neg p)$ are equivalent, and this equivalence is responsible for the illusion of fixed scope relative to negation.

This concludes our discussion of PF in declaratives. We turn to interrogatives in the next section.

5   PF in interrogatives

We assume a semantics for interrogatives according to which the denotation of an interrogative is the set of propositions that constitute its complete possible answers. We exemplify schematically with the denotation of a polar interrogative PF sentence in (34).

(34) $[\![PF(p)?]\!] = \{[\![PF(p)]\!], W \setminus [\![PF(p)]\!]\}$

The positive answer to the interrogative commits its speaker to the proposition $PF(p)$, whereas the negative answer commits its speaker to $\neg PF(p)$. This is illustrated in (35).

(35)   a. Sarà   già   arrivato Gianni?
          will-be already arrived Gianni

          Will Gianni have arrived already?

        b. Sì, sarà   già   arrivato.
          Yes, will-be already arrived

          Yes, he is presumably already arrived.

        c. No, non sarà   ancora arrivato.
          No, not will-be yet   arrived

          No, he is presumably not arrived yet.

Note that the negative answer in (35) is understood obligatorily with narrow scope negation for the reasons explained in section 4.2.

Following the literature on evidentials, such as Murray (2010), we assume that the anchor of PF becomes the addressee in interrogatives via "interrogative flip". The account predicts that in a PF interrogative, the addressee is not assumed to know the answer to the QUD. To see that this prediction is correct, compare the LACK OF COMPETENCE case in (36) with the QUIZ case in (37).

(36)   *Two egyptologists have just discovered a sarcophagus. It contains a mummy. One egyptologist says to the other*:

        Sarà   un uomo or una donna?
        Will-be a man   or a   woman

        Would this be a man or a woman?

(37)   *Quiz show host to contestant:*

        #In che   anno sarà stato   firmato il   trattato di Versailles?
        In   what year will have-been signed the treaty   of Versailles

In what year would the treaty of Versailles have been signed?

PF is acceptable in (36) because the addressee (one of the two egyptologists) is not assumed to know whether the mummy is a man or a woman. In (37), on the other hand, PF is inappropriate because in quiz contexts the addressee cannot be assumed not to know the answer to the question. Note, however, that if the context is as in (38), where the contestant has already proven his ignorance, the host's PF interrogative becomes acceptable:

(38) *Host to contestant*:

In che   anno è stato firmato il   trattato di Versailles?
In what year is been signed the treaty   of Versailles

In what year was the treaty of Versailled signed?

Contestant remains silent

Host to contestnat:

Insomma, su,   cerchi di ragionare. Sappiamo che seguì   la
Well,   com'on, try   to reason.   We-know that it-followed the
Prima Guerra Mondiale. Quindi, in che   anno sarà   stato firmato il
first   war   world.   Thus,   in what year will-have been signed the
trattato di Versailles?
treaty   of Versailles

Com'on, think. We know that it followed World War I. So, in what year would the treaty of Versailles have been signed?

Finally, (39) shows that in contexts in which the addressee is presupposed to know whether the prejacent is true, PF is infelicitous:

(39) *Maria is talking on the phone with her sister Anna who she hasn't spoken to in years.*

#Avrai   ancora quelle emicranie che ti   venivano   da giovane?
Will-have still   those migraines that to-you used-to-come as young

Do you still have those migraines you had when you were young, I wonder.

The question in (39) becomes felicitous in situations where the addressee is absent (as in a written communication). In this case, the question can be interpreted as self-addressed, and PF is felicitous.

We conclude that the semantics of PF developed in Section 4 extends to interrogatives without further modification.

6   Conclusion and open issues

To summarize, we argued that PF in Italian contributes a normality base (a property it shares with normality modals), a subjective likelihood component, and a presupposition that plays a crucial role in accounting for discourse properties of PF sentences, and for the interaction of PF with negation. We argued that what is at issue when a PF sentence is uttered is the prejacent proposition. Since what is at issue is the truth of the prejacent, the use of PF will trigger the implicature that the speaker is not in a position to appeal to what she knows in order to support her commitment to the prejacent. Hence, the observation that PF is often used to offer a "guess" to answer the QUD. The proposed account covers PF in both declarative and interrogative sentences, and predicts the possibility of its occurrence in embedded contexts, though the constraints on embedded PF have not been explored here.

There are two further non-temporal uses of the future in Italian that have been discussed in the literature (cf. Squartini (2012)). The first is its use in rejecting echo exclamatives exemplified in (40a).

(40)   a. A: Sei   stupido. B: Stupido sarai   tu!
           A: you-are stupid.   B: Stupid   will-be you

           A: You are stupid. B: You are the stupid one.

The second, more widely attested in other languages, is the future used in concessives, exemplified in (41b):

(41)   a. Gianni studied for days.

       b. Avrà   pure studiato per giorni, però non ha comunque passato
          Will-have also studied for days, but   not has anyways   passed
          l'esame.
          the-exam

          He might have studied for days, but he still failed the exam.

We leave to the future a discussion of whether and how these occurrences are connected to the ones we have discussed in this paper.

Going beyond Italian, there are several important questions that remain open. The first is whether one can find a principled explanation for why in Italian, as well as in many other languages, it is the future tense that allows the presumptive meaning we have investigated here. Answering this question will require one to consider and compare existing theories of the temporal future (cf. Copley (2009), Kaufmann (2005), Cariani & Santorio (2017) among others). The second question concerns the differences among presumptive uses of the future cross-linguistically. Finally, we leave open the question of how PF compares with particles such as *wohl*

in German or *darou* in Japanese, which have similar though not identical effects. Common to all these forms is that they are used as means of nuancing commitment to the prejacent. As such, the question of connections with evidential systems also arises. Accounting for the non-temporal use of the future in a particular language, as we have done above, provides, we hope, the basis for future explorations of the semantics of PF across languages.

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