

# Epistemic attitudes and the Italian subjunctive.

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## Abstract

Semantic approaches of mood choice predict belief predicates to be indicative selectors by assuming a clash between (i) their Hintikka semantics featuring a homogeneous modal base and (ii) the constraint according to which the subjunctive is triggered by the presence of alternatives in the matrix predicate's modal base. Italian *credere* (*believe*) and *essere sicuro* (*be certain*) license the subjunctive and escape this cross linguistic generalization. Pragmatic solutions propose that subjunctive licensing *credere* features weakness, implicating that the attitude holder is 'not sure' that the prejacent is true.

We offer new data showing that *credere* (+ind) and *essere sicuro* (+ind) are not synonymous as predicted by pragmatic approaches. We propose a new semantics for *credere*, which disentangles a doxastic homogeneous space from an epistemic non-homogeneous one. We assume a uniform semantics for belief predicates across languages and offer an OT analysis to predict variations in mood choice intra and cross linguistically (including variation in mood choice under negation for languages that show no variation in positive contexts, like French).

While we predict free variation in the grammar for Italian, we argue that that communicative purpose determine mood choice in context and identify two uses of belief-sentences: the 'expressive' and the 'inquisitive' use.

We finally show that *essere sicuro* presupposes indirect evidence and the mood choice depends on the reliability of the evidence, given normality assumptions.

**An old puzzle.** Semantic approaches of mood choice (e.g. Quer, 1998; Giannakidou, 1999; Farkas, 2003; Villalta, 2008; Anand and Hacquard, 2013) predict belief predicates to be indicative selectors across languages by assuming a clash between (i) Hintikka (1962) semantics (1), where  $\text{Dox}_\alpha(w)$  is a *homogeneous* modal base that consists of  $p$  worlds, and (ii) the constraint according to which the subjunctive is triggered by the presence of *alternatives* (ordered (Villalta, 2008) or polar and not ordered (Giannakidou 1999)) in the matrix predicate’s modal base (see also Rubinstein, 2012).

(1) ‘ $\alpha$  believe  $p$ ’ is true in  $w$  iff  $\forall w' \in \text{Dox}_\alpha(w), p$  is true in  $w'$ .

Italian *credere* (*believe*) (2), which licenses both the subjunctive and the indicative, is a notable exception to this cross-linguistic generalization. The licensing of the subjunctive cannot be captured by semantic approaches, as they stand.

(2) Credo che Maria **sia**.SUBJ / **è**.IND incinta. – I believe that Mary is pregnant.

According to pragmatic approaches to mood choice, the indicative presupposes commitment of the attitude holder to  $p$  (e.g. Schlenker, 2005; Portner and Rubinstein, 2012). Upon assuming that the holder of a belief is committed to her/his own belief, belief predicates are predicted to be indicative selectors (Portner and Rubinstein, *ibid.*). The licensing of the subjunctive by Italian *credere* is once again puzzling, unless one proposes that the Italian subjunctive marks lack of commitment (Farkas, 2003). This is at odd with the data. In (3), as *davvero* (*really*) reveals, the speaker is committed to her/his own belief, yet s/he chooses the subjunctive.

(3) Credo davvero che Maria **sia**.SUBJ / **è**.IND incinta.  
I really believe that Mary is pregnant.

**Belief, certainty and knowledge.** A promising line of analysis considers alternatives ordered by strength. Homer (2007) argues that the pair *credere-essere sicuro* (*be certain*) forms a scale along the doxastic dimension, with *credere* triggering the scalar implicature ‘I am not sure’ and thus licensing the subjunctive. This implicature is claimed to be cancelled by the indicative, and, when it embeds a verb in the indicative, *credere* is predicted to have the same distributions as *essere sicuro*. This prediction, however, is not borne out (4). We newly note that, unlike *credere*, *essere sicuro* imposes a restriction on the evidence type. Looking at a person:

(4) a. #Sono sicuro che **è**.IND bella. – I am certain that she is beautiful.  
b. Credo che **è**.IND / **sia**.SUBJ bella. – I believe that she is beautiful.

With Sauerland (2008) we consider the lexical set  $\{\textit{credere}, \textit{sapere} (\textit{know})\}$  rather than  $\{\textit{credere}, \textit{essere sicuro}\}$ , with *credere* being infelicitous in a context in which the attitude holder knows  $p$ , (5).

(5) Knowing that it rains.  
#Credo che **piova**.SUBJ / **piove**.IND – I believe that it is raining.

We endorse the view according to which *credere* conveys *epistemic* uncertainty, which we code as a definedness condition. To explain intra and cross-linguistic variation, we newly consider the interplay between the doxastic (involving beliefs, preferences, ...) and the epistemic dimension (involving consideration of facts) of *credere*. (NB At the end of the abstract, we consider the relation between direct evidence and knowledge with predicates of personal taste and consider how the definedness condition ‘not know  $p$ ’ is satisfied in (4-b)).

**Analysis §1** Let  $E_i(w_0)$  be an epistemic modal base, which contains worlds compatible with the facts known by the attitude holder  $i$  in  $w_0$ . We use a doxastic ordering source  $\mathcal{D}$  (Kratzer, 1991) and define Best worlds as per Portner (2009) .

(6) Best worlds as per  $\mathcal{D}$ . –  $\text{Best}_{\mathcal{D}}: \{w' \in E_i(w_0) : \forall q \in \mathcal{D}(w' \in q)\}$

$\text{Best}_{\mathcal{D}}$  is the set of worlds in  $E_i(w_0)$  in which all the propositions in  $\mathcal{D}$  are true, i.e. all worlds of the epistemic modal base that better conform to the beliefs of  $i$ .

(7) a.  $\llbracket i \text{ credere } p \rrbracket^{E,i,\mathcal{D}}$  is defined iff  $(\exists w'' \in E_i(w_0)(\neg p(w''))) \wedge (\exists w''' \in E_i(w_0)(p(w''')))$   
 b. If defined  $\llbracket i \text{ credere } p \rrbracket^{E,i,\mathcal{D}} = 1$  iff  $\forall w'[w' \in (\text{Best}_{\mathcal{D}})(p(w'))]$

According to (7),  $i$  is in a state of epistemic uncertainty (15-a), and that  $p$  is true in all worlds of the epistemic modal base that better conform to the beliefs of  $i$  (15-b).

The attitude holder  $i$  is thus in a state of epistemic uncertainty and of doxastic certainty. The epistemic modal base is a non-homogeneous set of worlds (-Homogeneity (-H)) and the doxastic set of worlds  $\text{Best}_{\mathcal{D}}$  is a homogeneous one (+Homogeneity (+H)), i.e. there is no world compatible with the ordering source  $\mathcal{D}$  in which  $\neg p$  is true.

§2 As standard, we assume that the grammar provides a set of constraints relating mood and semantic characteristics of embedding predicates. We cast the analysis within a OT framework (e.g. Hendriks and de Hoop, 2001; de Swart, 2010), in the spirit of Farkas (2003) and Giannakidou and Mari (2015a,b) treatment of flexible mood choice. Following Giannakidou and Mari (*ibid.*), we propose that (see (8)) the indicative is licensed if the predicate is +H, and the subjunctive is licensed if the predicate is -H. This is consistent with the view that the subjunctive, in embedded contexts, is triggered by the presence of polar alternatives in the modal base of the matrix predicate (as *per* Giannakidou, 1999; Giannakidou and Mari *ibid.*; see also Smirnova, 2014).

(8) a. Ind/+H – b. Subj/-H

*Credere* is both -H (in the presupposition) and +H (in the assertion) (we write *credere*<sub>-H/+H</sub> in (14)). We also follow Giannakidou and Mari (*ibid.*) in assuming that mood is sensitive to information hosted at both these two levels of meaning.

§3 For Italian, the resulting system is in (9).

(9)	<i>credere</i> <sub>-H/+H</sub> [CP . . . V <sub>Mood:...</sub> . . . ]	Ind/+H	∴	Subj/-H
	→ V <sub>Mood:Ind</sub>	*	∴	
	→ V <sub>Mood:Subj</sub>		∴	*

Since *credere* is -H/+H, both indicative and subjunctive violate a constraint. We propose that, in Italian, the constraints are not ranked (10) and both the subjunctive and the indicative are licensed.

(10) Italian absence of ranking. – {Ind/+H, Subj/-H}.

§4 Upon assuming that (14) extends to belief sentences across languages, we predict that indicative is selected by a language featuring the ranking in (11-a) (we consider French (11-b) representative of this class of languages). The resulting system is in (12).

(11) a. French-type languages ranking. – Ind/+H  $\gg$  Subj/-H.  
 b. Je crois qu'elle **est**.IND enceinte. – I believe that she is pregnant.

(12)	<i>croire</i> <sub>-H/+H</sub> [CP . . . V <sub>Mood:...</sub> . . . ]	Ind/+H	Subj/-H
	→ V <sub>Mood:Ind</sub>	*	
	V <sub>Mood:Subj</sub>		*!

§5 With negation, both the indicative and the subjunctive are licensed in both French and Italian.

- (13) a. Il ne croit pas qu'il **soit arrivé**.SUBJ./**est arrivé**.IND. presque au sommet. (Fr.)  
 b. Non crede che **sia arrivato**.SUBJ./**é arrivato**.IND. quasi alla cima. (It.)  
 He does not believe that he has almost arrived at the top of the mountain.

Our account predicts this variation (we use Italian in the entries, but the same analysis applies to French). Subjunctive is predicted under the interpretation in (14). Not all worlds in the set of Best worlds are  $p$  worlds. Since both the epistemic and the doxastic spaces are -H, the subjunctive is predicted. Under this analysis  $i$  doubts that  $p$  is true: both the epistemic and the doxastic space are partitioned (see Portner, 1997 for a parallel view, although expressed in terms of ‘forces’).

- (14) a.  $\llbracket i \text{ non credere } p \rrbracket^{E,i,D}$  is defined iff  $(\exists w'' \in E_i(w_0)(\neg p(w'')) \wedge (\exists w''' \in E_i(w_0)(p(w'''))))$   
 b. If defined  $\llbracket i \text{ non credere } p \rrbracket^{E,i,D} = 1$  iff  $\neg \forall w' [w' \in (\text{Best}_{\mathcal{D}})(p(w'))]$  (-H)

Indicative is predicted under the neg-raising interpretation in (15). In this case, the speaker is doxastically certain about  $\neg p$ .

- (15) a.  $\llbracket i \text{ non credere } p \rrbracket^{E,i,D}$  is defined iff  $(\exists w'' \in E_i(w_0)(\neg p(w'')) \wedge (\exists w''' \in E_i(w_0)(p(w'''))))$   
 b. If defined  $\llbracket i \text{ non credere } p \rrbracket^{E,i,D} = 1$  iff  $\forall w' [w' \in (\text{Best}_{\mathcal{D}})(\neg p(w'))]$  (+H)

The difference between (14) and (15) can be inaudible as it can reduce to there being just one  $p$  world in the Best set in (14). As we shall show the status of  $p$  in the common ground can play a role in choosing between these two available options.

§6 Back to Italian and to the positive form, while we predict free variation in the grammar we newly propose that the communicative purpose is one of the factors determining mood choice in context. Capitalizing on (8), we argue that the indicative favors +H (hence doxastic certainty, since the doxastic space is +H) and the subjunctive favors -H (hence epistemic uncertainty, since the epistemic space is -H), enhancing different interpretations of *credere*-sentences which we label ‘expressive’ (triggered by the indicative) and ‘inquisitive’ (triggered by the subjunctive) (*pace* Giorgi and Pianesi, 1996). We newly show that this otherwise difficult to see distinction emerges with predicates of personal taste, and particularly with those conveying negative appreciations. Scenario: two friends are arguing with each other.

- (16) a. Credo davvero che **sei**.IND un cretino. (Expressive use.)  
 b. Credo davvero che tu **sia**.SUBJ un cretino. (Inquisitive use.)  
 I really believe that you are stupid.

(*Tu (you)* in (16-b) disambiguates *sia* (be.PRES.3SG/2SG.SUBJ)). (16-a) and (16-b) have a different impact on the hearer. By uttering (16-a) the speaker intends to make his/her own belief known (doxastic certainty is foregrounded). By choosing (16-b) and foregrounding epistemic uncertainty, the speaker intends to convey that s/he is looking for facts proving the stupidity of the addressee. (16-b) is indeed felt as more insulting.

§7 As is known (Homer, 2007), *essere sicuro* licenses both the indicative and the subjunctive (this fact is left unexplained under any theory of the subjunctive we are aware of).

- (17) Sono sicura che **è**.IND / **sia**.SUBJ incinta. – I am certain that she is pregnant.

We newly propose that *essere sicuro* has an evidential component and presupposes *indirect* evidence (i.e. the evidence does not directly decide  $p$ ;  $K_i$  in (18)). This predicts the oddness of (4-a). Two variants can be defined, depending on the strength of the evidence. Let  $\mathcal{N}$  be a normative ordering source that selects those worlds in  $E_i(w_0)$  that conform to normalcy and/or stereotypicality conditions (see Porter, 2009 for discussion) ( $\text{Best}_{\mathcal{N}}: \{w' \in E_i(w_0) : \forall q \in \mathcal{N}(w' \in q)\}$ ).

- (18) a.  $\llbracket i \text{ essere sicuro}_1 p \rrbracket^{K,E,i,\mathcal{N}}$  is defined iff  $K_i$  does not directly decides but entails that  $p$  is true in  $E_i(w_0)$ . If defined,  
 $\llbracket i \text{ essere sicuro}_1 p \rrbracket^{K,E,i,\mathcal{N}} = 1$  iff  $\forall w' \in E_i(w_0)(p(w'))$
- b.  $\llbracket i \text{ essere sicuro}_2 p \rrbracket^{K,E,i,\mathcal{N}}$  is defined iff  $K_i$  does not directly decides and it is compatible with  $p$ . If defined,  
 $\llbracket i \text{ essere sicuro}_2 p \rrbracket^{K,E,i,\mathcal{N}} = 1$  iff  $\forall w' \in (\text{Best}_{\mathcal{N}})(p(w'))$

In (18-a) the epistemic state  $E_i$  is homogeneous and the indicative is licensed. In (18-b), since the evidence is only compatible with  $p$ , the epistemic space is partitioned between  $p$  and  $\neg p$  worlds, and absence of homogeneity in the epistemic state licenses the subjunctive. Finally note that (18-a) does not entail that  $p(w_0)$  (Egré and Spector, 2015), as one cannot exclude that the attitude holder uses misleading evidence.

§8 We finally argue that ‘direct evidence for  $p$ ’ does not imply ‘knowledge that  $p$ ’ with predicates of personal taste - PPT- (as for (4-b), even though  $i$  sees the person,  $i$  does not ‘know that she is good-looking’). Upon admitting that there can be a non-relative truth with these predicates (see discussion in Stephenson, 2007), its determination would require knowing a standard, and direct evidence does not entail such knowledge with PPT.

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