

The ambiguity of *sapere*

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This paper discusses occurrences of Italian *sapere* ‘know’ in mental state attributions (*sa*). Following the proposal of Tsohatzidis (2012) for ‘knows’, the hypothesis put forward is that *sa*, when used in mental state attributions, is lexically ambiguous between a factive and a non-factive sense: when *sa* is used in its factive sense, a sentence such as *X sa che p* ‘X SA that *p*’ entails *p*, whereas, when *sa* is used in its non-factive sense, a sentence having the same surface form does not entail *p*. This hypothesis seems to be confirmed by some tests traditionally used to ascertain cases of lexical ambiguity. Moreover, it will be shown that there are syntactic environments where only one of the two readings is allowed, which also seems to confirm the hypothesis that there are two *sa*, a factive one and a non-factive one, which select different structures.*

KEYWORDS: *Sapere* – Mental state ascription – Factivity – Lexical Ambiguity

1. Introduction

This paper discusses uses of the Italian verb *sapere* (‘know’) in mental state attributions, such as in the following example:^{1 2}

- (1) *Gianni sa che Laura abita in Svezia.*
 ‘Gianni SA that Laura lives in Sweden.’

In the philosophical-epistemological tradition, *sapere* is considered as a ‘veridical’ verb, meaning that a sentence like (1) — when uttered in its positive declarative form — entails the truth of its complement (*p*: *Laura abita in Svezia* ‘Laura lives in Sweden’):³ if it is true that S(*Gianni sa che Laura abita in Svezia* ‘Gianni SA that Laura lives in Sweden’), then it must be true

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that *p* (*Laura abita in Svezia* ‘Laura lives in Sweden’). This relation of entailment is called ‘factivity’.

A problem for this analysis is the fact that *sapere*, in mental state attributions, can be used non-factively, that is, in contexts where it is evident that the proposition expressed by the subordinate clause is not necessarily true, as shown in the following example:⁴

- (2) *Gianni sa che Copenhagen è la capitale della Svezia.*
‘Gianni SA that Copenhagen is the capital of Sweden.’

How do we account for non-factive uses of *sapere*? Is the distinction between factive and non-factive occurrences of *sapere* a matter of pragmatics, meaning that *sapere* always is factive, but might be used non-factively by suspending its factivity?⁵ Or is the distinction rather encoded in the lexical semantics of this item?

The hypothesis put forward in this paper, following a proposal advanced by Tsohatzidis (2012) for *know*, is that *sapere*, when used in mental state attributions, is lexically ambiguous between a factive and a non-factive sense: when *sapere* is used in its factive sense, a sentence of the form *X sa che p* ‘X SA that *p*’ entails the truth of *p*; whereas, when *sapere* is used in its non-factive sense, a sentence with the same form does not entail the truth of *p*.

In the next section, I present some data that exemplify non-factive uses of *sapere*. In particular, it is argued that non-factive *sapere* might mean simply *believe* or *believe to know*. In section 3, the ambiguity hypothesis is tested by means of some semantic tests traditionally used to ascertain cases of lexical ambiguity: the conjunction reduction test, the contradiction test, and the endophoric reference test. In section 4, it is shown how the supposed ambiguity of *sapere* manifests itself in syntax. In particular, it is shown that factive SA and non-factive SA display different behaviours in syntax, that is, they apparently have different selectional properties. This seems to point out that the distinction between factive and non-factive uses of *sapere* cannot simply receive a pragmatic explanation. Finally, some few concluding remarks are presented in section 5.

2. Non-factive uses of *sapere*

In Italian, it is possible to utter the sentence in (3) without contradiction, and the sentence in (4) without redundancy:⁶

- (3) *Gianni sa che Laura abita in Svezia, ma non è vero.*
‘Gianni SA that Laura lives in Sweden, but this is not true.’

- (4) *Gianni sa che Laura abita in Svezia, ed è proprio così.*
 ‘Gianni SA that Laura lives in Sweden, and it is really so.’

Arguably, if it is possible to say, without contradiction, that *X sa che p, ma p non è vero* (‘X SA that *p*, but *p* is not true’), and furthermore it is possible to say, without redundancy, that *X sa che p, ed è proprio così* (‘X SA that *p*, and *p* is really the case’), this means that there are cases, at least in Italian, where the condition of truth does not seem to be a necessary condition for the truth of a sentence such as *X sa che p*. The hypothesis is that *sapere*, in these cases, can be paraphrased into *credere/pensare/essere convinto* ‘believe/think/be convinced’. In other words, the mental state ascription by SA denotes, in these cases, attribution of a mental state other than knowledge, supposedly attribution of simple belief or belief of knowledge.

In this non-factive sense, Italian *sapere* may function, for instance, as an evidential, as in (5):

- (5) [*Dov’è Maria?*]
 [‘Where is Maria?’]

Gianni sa che è andata al cinema.
 ‘Gianni SA that she went to the movies.’

In this case, the item *sa* is a functional element that refers to some source of information, and its use indicates an epistemic state of uncertainty or unexpressed commitment held by the speaker. In fact, the question *Dov’è Maria?* ‘Where is Maria?’ could have been answered as follows:

- (6) *Non so. Gianni sa che è andata al cinema.*
 ‘I don’t know. Gianni SA that she went to the movies.’

Hence the declarative sentence in (5-6) (*Gianni sa che è andata al cinema*) does not entail *p*.

In other cases, *sapere* just denotes the matrix subject’s epistemic state of subjective certainty about something,⁷ for instance something that is going to happen.⁸ In these cases, the ascription of mental state is true if it is true that *X believes that she/he knows* that *p*, hence if X believes herself/himself to have good reasons to believe that *p*.⁹ A typical feature for this case, unlike the case in which SA denotes a simple belief ascription, is that the item SA may receive focal stress (indicated in (7) by uppercase).¹⁰

- (7) a. *Maria SA che Gianni le risponderà domani.*
 ‘Maria SA that Gianni will answer her tomorrow.’
 b. *Maria SAPEVA che Gianni sarebbe tornato il giorno dopo.*
 ‘Maria SA-IMPF that Gianni would come back the next day.’

- c. *I risultati non sono ancora usciti, ma Maria SA che la prova è andata bene.*
'The exam results are not out yet, but Maria SA that it went well.'

Note the difference between (8a) and (8b), as paraphrased in the sentences in square brackets:

- (8) a. *Gianni SA che il seminario comincerà alle 14.00.*
'Gianni SA that the seminar will start at 2 p.m.'
[Gianni *is certain* that the seminar will start at 2 p.m.]
- b. *Gianni sa che il seminario comincerà alle 14.00.*
'Gianni SA that the seminar will start at 2 p.m.'
[Gianni *believes* that the seminar will start at 2 p.m.]

One necessary condition under which mental ascriptions by non-factive SA are true is, so it seems, that *X believes that p*. Besides, *p* may be true or false—hence *p* is not entailed. As *p* may be true or false, it is possible to deny *p*, explicitly (9a-d) or implicitly (9e), without contradiction:

- (9) a. *Dobbiamo informare Maria! Lei sa che Gianni arriverà domani, ma lui ha cambiato idea e non verrà.*¹¹
'We must inform Maria! She SA that Gianni will arrive tomorrow, but he has changed his mind and will not come.'
- b. *Maria sapeva che Gianni sarebbe tornato il giorno dopo. Invece lui non tornò più.*
'Maria SA-IMPF that Gianni would come back the next day, but he never came back.'
- c. *Gianni sa che il seminario comincerà alle 14.00. Non si è accorto che l'orario è stato anticipato.*
'Gianni SA that the seminar will start at 2 p.m. He didn't notice that the time was moved up.'
- d. *Tutti sapevano che lo stress causava l'ulcera, prima che due medici australiani, nei primi anni '80 dimostrassero che l'ulcera, in realtà, è causata da un'infezione batterica.*¹²
'Everyone SA-IMPF that stress caused ulcers, before two Australian doctors in the early 80s proved that ulcers are actually caused by bacterial infection.'
- e. *Nel Medioevo sapevano che la Terra era piatta.*¹³
'In the Middle Ages they SA-IMPF that the Earth was flat.'

These sentences cannot be true unless *p* is false. That is, *sapere* denotes in these cases a mental state of false belief or false belief of knowledge.

If these data were a matter of pragmatics, we would explain them by simply assuming that the speaker, by uttering these sentences, suspends the presupposition of factivity: in other words, she uses a factive item non-factively. By contrast, in this paper, it is argued that the explanation lies in the lexical semantics of *sapere*, not in its use by the speaker. The hypothesis is that *sapere* is

lexically ambiguous between a factive and a non-factive sense, hence between a sense that entails *p*, and a sense that does not entail *p*.

In the following sections, empirical data will be presented in favour of the ambiguity hypothesis argued for here.

3. Testing the ambiguity hypothesis: Evidence from semantics

In this section, the hypothesis that *sapere* is ambiguous between a factive and a non-factive sense is tested by means of some tests traditionally used to ascertain cases of lexical ambiguity: the ‘conjunction reduction’ test (Zwicky & Sadock 1975), the ‘contradiction’ test (Quine 1960, Zwicky & Sadock 1975, Gillon 1990, 2004), and the ‘endophoric reference’ test (Gillon 2004).¹⁴ These tests seem to confirm the hypothesis that Italian *sa*, in mental state attributions, is a lexically ambiguous item.

3.1. Conjunction reduction test

According to the first test, if a word is ambiguous, it cannot be used with different meanings in the same sentence (if the sentence is not a joke). Thus, if two conjunct predications refer to the same word, there cannot be a ‘crossed’ reading, i.e. the word cannot be interpreted in a sense with respect to one predication, and in another sense with respect to the other. As Zwicky and Sadock (1975: 18) observe,

If:

(59) Morton tossed down his lunch.

were unspecified (rather than ambiguous) as to whether Morton bolted his lunch or threw it to the ground, then the parallel example:

(60) Oliver tossed down his lunch.

would also be unspecified, and the reduced sentence:

(61) Morton and Oliver tossed down their lunches.

would have four understandings, not two, because the identity condition on conjunction reduction cannot require identity of elements that are not part of syntactic structure. But (61) lacks the crossed understandings (except as a joke), and we conclude that (59) is ambiguous.

This test suggests that, if *sapere* is lexically ambiguous, it cannot convey different senses in the same sentence. In other words, crossed understandings of *sapere*, between factive and non-factive sense, are not allowed in the same sentence:

(10) *Gianni e Maria sanno che Laura abita in Svezia.*
‘Gianni and Maria SA.3PL that Laura lives in Sweden.’

- (11) *Gianni sa che Parigi è la capitale della Francia e che Copenaghen è la capitale della Svezia.*
'Gianni SA that Paris is the capital of France and that Copenhagen is the capital of Sweden.'

In a sentence like (10), *sa* cannot denote ascription of different mental states to Gianni and to Maria. In a sentence like (11), where *Gianni SA that p* (= true) *and that q* (= false), *sa* can be interpreted factively, in the sense that both the truth of *p* and *q* is entailed (hence the sentence is false); or it can be interpreted non-factively, in the sense that both the truth of *p* and *q* is not entailed (which would not lead to the falsity of the sentence); however, it cannot be interpreted in the sense that the truth of *p*, but not the truth of *q* is entailed, or, conversely, the truth of *q* but not the truth of *p*. A crossed reading is allowed only if the word is repeated:

- (12) *Gianni sa che Parigi è la capitale della Francia, ma sa pure che Copenaghen è la capitale della Svezia.*
'Gianni SA that Paris is the capital of France, but he also SA that Copenhagen is the capital of Sweden.'

Crucially, *sapere* can be used factively and non-factively in the same sentence only if these two different senses are conveyed by two lexical items.

3.2. Contradiction test

The contradiction test consists in predicating contradictory properties to the same referent, by means of the same lexical item. The test is grounded on the idea that, if a word is ambiguous between readings that denote 'privative opposites' (where one semantic representation is more specific than the other), then it should be possible, without contradiction, to assert the general while denying the specific. In the case of *sa*, we can assume that factivity makes one semantic representation more specific than the other. The relation of privative opposition is defined by Zwicky & Sadock (1975: 6) as follows:

U_1 and U_2 are PRIVATIVE OPPOSITES with respect to F if U_1 can be represented as being identical to U_2 except that U_1 includes some specification for F that is lacking in U_2 . *Parent* and *mother* have understandings that are privative opposites with respect to a gender feature; so do the technical term *dog* 'male canine' and the ordinary language term *dog* 'canine'.

As pointed out by Gillon (1990: 407), the contradiction test allows a sentence to be both truly affirmed and truly denied for a given state of affairs (cf. Quine 1960: 130):

- (13) A: *Gianni sa che Maria parla svedese, perché gliel'ha detto Marco.*
'Gianni SA that Maria speaks Swedish, because Marco told him that.'

- B: *Allora, Gianni ancora non sa che è proprio così, perché non ha avuto modo di sentir parlare Maria in prima persona!*
'Then, Gianni doesn't SA that it is actually so because he didn't personally hear Maria speaking!'

The following examples in (14) show that using *sa* in conjuncts that are apparently contradictory does not result in a contradiction (because *sa* occurs in two different senses), while using a verb like *dire* ('say') in a similar context gives rise to a contradiction:¹⁵

- (14) a. *Gianni sa che Maria si è trasferita in Australia, ma in realtà non sa che è proprio così.*
'Gianni SA that Maria moved to Australia, but he doesn't really SA it.'
- b. *#Gianni dice che Maria si è trasferita in Australia, ma in realtà non dice che è proprio così.*
'Gianni says that Maria moved to Australia, but he doesn't really say it.'

The fact that (14a) is not contradictory is shown by (15):

- (15) *Gianni sa che Maria si è trasferita in Australia, perché gliel'ha detto Marco, ma in realtà non sa che è proprio così perché non ha avuto modo parlare con Maria.*
'Gianni SA that Maria moved to Australia, because Marco told him that, but he doesn't really SA that this is actually the case because he didn't have a chance to talk to Maria.'

Under this line of reasoning, Tsohatzidis (2012: 455) shows that two different senses of *know* apply respectively to epistemic states whose contents have been or have not been evidentially undermined:

if the verb "know" did not have but a *single* sense, allowing it to apply to an epistemic state independently of whether or not the content of that state is evidentially undermined, sentences like (15) or (17) would be contradictory, just as, for example, sentences like (16) or (18) are:

- (15) If the President knew this just on the basis of unreliable evidence, he didn't really know it.
(16) *If the President believed this just on the basis of unreliable evidence, he didn't really believe it.
(17) If you know this simply on the basis of what these ignoramuses have been telling you, you don't know it at all.
(18) *If you believe this simply on the basis of what these ignoramuses have been telling you, you don't believe it at all.

However, neither (15) nor (17) are contradictory, even though both (16) and (18) are. And that can only be because, in each of (15) and (17), the initial and final occurrences of the verb "know" have different senses, one of which allows it to apply to epistemic states whose contents have been evidentially

undermined and the other of which prevents it from applying to epistemic states whose contents have been evidentially undermined.

Moreover, as we can see in (16), given that $q = \sim p$, it is not contradictory to assert, in the same utterance, that someone SA *that p and does not SA that q*, although these two sentences seem to imply contrary propositions:¹⁶

- (16) *Gianni sa che p [Maria si è trasferita in Australia] e non sa che invece q [Maria ha deciso di restare in Italia].*
'Gianni SA that p [Maria moved to Australia] and doesn't SA that q [Maria decided instead to stay in Italy].'

Again, the ambiguity hypothesis seems to be confirmed.

3.3. Endophoric reference test

As previously seen in section 2, empirical data suggest that, in some cases, a sentence such as *X sa che p* 'X SA that p' has the same truth conditions of a sentence such as *X believes that p*. This hypothesis is validated by the 'endophoric reference' test (Gillon 2004). Since the denotation of an endophoric expression is determined by its antecedent or precedent in the context, meaning that the endophoric expression and its antecedent/precedent have the same sense, the prediction is that it is possible to utter a true sentence by using *credere/pensare* 'believe/think' as an endophoric expression whose denotation is determined by non-factive *sa*. This prediction is borne out, as shown by the following examples:

- (17) a. *Gianni sa che Copenhagen è la capitale della Svezia, e anche Marco lo pensa.*
'Gianni SA that Copenhagen is the capital of Sweden, and Marco thinks it too.'
- b. *Anche Marco pensa come Gianni, il quale sa che Copenhagen è la capitale della Svezia.*
'Even Marco thinks as Gianni, who SA that Copenhagen is the capital of Sweden.'

The sentences in (17) may be true, which means that the item *sa* and the item *pensa* are synonyms in these sentences. Hence, we can claim that non-factive *sa* may mean 'believes/thinks'.¹⁷

In summary, in this section, we have seen that semantic tests, traditionally used to ascertain cases of lexical ambiguity, seem to confirm the hypothesis that *sa* is an ambiguous item. In the next section, we will explore how this ambiguity manifests itself in syntax.

4. Testing the ambiguity hypothesis: Evidence from syntax

If there are two senses related to *sa*, one factive and one non-factive, the hypothesis is that these two senses may display different behaviours when pro-

jected in syntax. In particular, we expect them to have different selectional properties. This prediction is borne out, which indicates that the distinction between factive and non-factive uses of *sapere* cannot simply receive a pragmatic explanation.

In this section, it is shown that there are syntactic environments where only one of the two readings is allowed.

4.1. When SA is unambiguously factive

4.1.1. X_{SA} + *wh*-complement

In this subsection, I argue that the constructions in which *sapere* is completed by a *wh*-clause, and occurs in a declarative sentence, are all instances of factive *sapere that*.¹⁸ If, for instance, S [*Gianni sa chi ha fatto x*] ('Gianni SA who did x') is true, then it must be true that S' [*Gianni sa che un certo individuo X ha fatto x*] ('Gianni SA that a certain individual X did x'). In the following examples, paraphrasable into the sentences in square brackets, it is shown that denying the propositional content expressed by a *wh*-complement embedded under *sapere* results in semantic anomaly:¹⁹

- (18) a. *Gianni sa chi ha regalato quei fiori a Maria.*
 'Gianni SA who gave those flowers as a gift to Maria.'
 [*Gianni sa che X ha regalato quei fiori a Maria.*]
 ['Gianni SA that X gave those flowers as a gift to Maria.']
- b. *#Gianni sa chi ha regalato quei fiori a Maria, ma in realtà è stato qualcun altro.*
 'Gianni SA who gave those flowers as a gift to Maria, but it was actually someone else.'
- (19) a. *Gianni sa cos'ha comprato sua moglie in Brasile.*
 'Gianni SA what his wife bought in Brasil.'
 [*Gianni sa che sua moglie ha comprato x in Brasile.*]
 ['Gianni SA that his wife bought x in Brasil.']
- b. *#Gianni sa cos'ha comprato sua moglie in Brasile, ma in realtà lei ha comprato qualcos'altro.*
 'Gianni SA what his wife bought in Brasil, but she bought actually something else.'
- (20) a. *Gianni sa dove abita Maria.*
 'Gianni SA where Maria lives.'
 [*Gianni sa che Maria abita nel posto x.*]
 ['Gianni SA that Maria lives at place x.']
- b. *#Gianni sa dove abita Maria, ma in realtà lei abita da un'altra parte.*
 'Gianni SA where Maria lives, but she lives actually somewhere else.'
- (21) a. *Gianni sa quanto costa un dvd.*
 'Gianni SA how much a dvd costs.'
 [*Gianni sa che un dvd costa x (Euros).*]
 ['Gianni SA that a dvd costs x (Euros).']

- b. #*Gianni sa quanto costa un dvd, ma in realtà un dvd costa di più / meno.*
 ‘Gianni SA how much a dvd costs, but it actually costs more/less.’
- (22) a. *Gianni sa quando Maria è rientrata dalle vacanze.*
 ‘Gianni SA when Maria came back from her vacation.’
 [*Gianni sa che Maria è rientrata dalle vacanze il giorno x.*]
 [‘Gianni SA that Maria came back from her vacation the day x.’]
- b. #*Gianni sa quando Maria è rientrata dalle vacanze, ma in realtà lei è rientrata prima / più tardi.*
 ‘Gianni SA when Maria came back from her vacation, but she actually came back earlier/later.’
- (23) a. *Gianni sa perché Maria non lo saluta più.*
 ‘Gianni SA why Maria doesn’t say hello to him anymore.’
 [*Gianni sa che Maria non lo saluta più per il motivo x.*]
 [‘Gianni SA that Maria doesn’t say hello to him anymore for the reason x.’]
- b. #*Gianni sa perché Maria non lo saluta più, ma in realtà è per un altro motivo.*
 ‘Gianni SA why Maria doesn’t say hello to him anymore, but it is actually for a different reason.’
- (24) a. *Gianni sa come Maria prepara il risotto alla milanese.*
 ‘Gianni SA how Maria prepares *risotto alla milanese*.’
 [*Gianni sa che Maria prepara il risotto alla milanese facendo ACTIONX*]
 [‘Gianni SA that Maria prepares *risotto alla milanese* by doing ACTIONX.’]
- b. #*Gianni sa come Maria prepara il risotto alla milanese, ma in realtà lei lo prepara in un altro modo.*
 ‘Gianni SA how Maria prepares *risotto alla milanese*, but she actually prepares it in another way.’

Given the assumption that *sapere wh* always is an instance of factive *sapere*, we can predict, by referring to the conjunction reduction test, that *sa* is unambiguously factive in the case of co-predication, where *sa* takes as a complement a coordinate clause made up of a *that*-complement and a *wh*-complement. This prediction is borne out as shown in the examples in (25):

- (25) a. *Gianni sa che Maria è andata al cinema e se le è piaciuto il film (#ma Maria non è andata al cinema).*
 ‘Gianni SA that Maria went to the cinema and whether she liked the movie (but Maria didn’t go to the cinema).’
- b. *Gianni sa che Maria parla svedese e dove l’ha imparato (#ma non è vero che Maria parla svedese).*
 ‘Gianni SA that Maria speaks Swedish and where she learned it (but it’s not true that Maria speaks Swedish).’

The examples above confirm that factive *sapere* and non-factive *sapere* have different selectional frames. Non-factive *sapere* seems to have a similar selectional frame as *credere* ('believe'), which cannot be completed by a *wh*-complement (cf. Hintikka 1975: 21):

- (26)
- a. #*Gianni sa chi ha scritto quella mail, ma in realtà è stato qualcun altro.*
'Gianni SA who wrote that mail, but it was actually someone else.'
 - b. **Gianni crede chi abbia scritto quella mail, ma in realtà è stato qualcun altro.*
'Gianni believes who wrote that mail, but it was actually someone else.'
 - c. *Gianni sa che Marco ha scritto quella mail, ma in realtà è stato qualcun altro.*
'Gianni SA that Marco wrote that mail, but it was actually someone else.'
 - d. *Gianni crede che Marco abbia scritto quella mail, ma in realtà è stato qualcun altro.*
'Gianni believes that Marco wrote that mail, but it was actually someone else.'

In the following, I therefore assume that non-factive *sapere* and *credere* display similar selectional behaviours.

4.1.2. Benissimo ('very well')

When modified by *benissimo*, *sapere* necessarily has factive reading. When *sa benissimo* occurs in environments where it is clear that *sa* is used in its non-factive sense, the utterance sounds contradictory as in (27a). Crucially, this adverbial cannot modify a non-factive verb like *credere* as in (27b).

- (27)
- a. #*Gianni sa benissimo che Maria si è trasferita in Australia, ma non è vero.*
'Gianni SA BENISSIMO that Maria moved to Australia, but it is not true.'
 - b. **Gianni crede benissimo che Maria si sia trasferita in Australia, ma non è vero.*
'Gianni believes BENISSIMO that Maria moved to Australia, but it is not true.'

A plausible explanation for these facts is that *benissimo*, in this context, refers to an epistemic state of certainty held by the speaker (and not only by the matrix subject).²⁰

4.1.3. Subordinate clause pronominalization

The cataphoric clitic pronominalization of the subordinate clause is a construction allowed only by factive *sa*.²¹ In fact, the following sentence in (28) sounds contradictory, while the sentence in (29) is redundant:

- (28) #*Gianni lo sa che Maria si è trasferita in Australia, ma non è vero.*
'Gianni SA it that Maria moved to Australia, but it is not true.'
- (29) #*Gianni lo sa che Maria si è trasferita in Australia, ed è proprio così.*
'Gianni SA it that Maria moved to Australia, and it is really so.'

This behaviour is reasonably explained by assuming that the pronoun *lo* 'it', here, denotes specificity, which means that the speaker is pointing at *p* as some univocally determinate content, not as one among several possibilities. An NP is taken to be specific when it has scope over an operator (cf. Fodor & Sag 1982, Enç 1991). So, if *lo* denotes specificity, the prediction is that, given a sentence such as *X non lo sa che p* 'X NEG SA it that *p*', *lo* would have scope over negation, and the sentence would be univocally interpreted as 'There is a true *p* such that X NEG SA it' (meaning that the external negation reading would be blocked). This prediction is borne out, as shown by the following examples: the first conjunct in (30) can be interpreted as "There is no true *p* such that X SA it", hence can match with the second conjunct (expressed by the causal subordinate clause); while (31), on the other hand, is anomalous.

- (30) *Gianni non sa che Maria abita a Firenze, perché, infatti, Maria abita a Milano.*
'Gianni doesn't SA that Maria lives in Florence, because Maria actually lives in Milano.'
- (31) #*Gianni non lo sa che Maria abita a Firenze, perché, infatti, Maria abita a Milano.*
'Gianni doesn't SA it that Maria lives in Florence, because Maria actually lives in Milano.'

The assumption that *lo sa* 'SA it' always is factive is confirmed by the endophoric reference test (Gillon 2004: 180 ff.). If *lo sa* always is factive, the prediction is that, whenever this expression occurs, for instance, as an anaphoric expression, its denotation cannot be determined by a non-factive antecedent. This prediction is borne out, as it is possible to truly say (32a), while (32b) is necessarily false and (32c) is contradictory:

- (32) a. *Gianni sa che Roma è la capitale d'Italia, e anche Marco lo sa.*
'Gianni SA that Rome is the capital of Italy, and Marco SA it too'
- b. *Gianni sa che Copenaghen è la capitale della Svezia, e anche Marco lo sa.*
'Gianni SA that Copenhagen is the capital of Sweden, and Marco SA it too'
- c. #*Non è vero che Maria si è trasferita in Australia, ma Gianni lo sa (che si è trasferita).*
'It is not true that Maria moved to Australia, but Gianni SA it (that she moved).'

This is a further argument in favour of the ambiguity hypothesis.

4.1.4. Subordinate clause definite nominalization

The definite nominalization of the subordinate clause is a construction

selected only by factive *sapere (di)*. In fact, the following sentence in (33) sounds contradictory, while the sentence in (34) is redundant:

- (33) #*Gianni sa del trasferimento di Maria, ma in realtà Maria è rimasta in Italia.*
 ‘Gianni SA about Maria’s removal, but, actually, Maria still lives in Italy.’
- (34) #*Gianni sa del trasferimento di Maria, ed è proprio vero che Maria si è trasferita.*
 ‘Gianni SA about Maria’s removal, and it is true that Maria moved.’

In this case, the syntactic constraint might be explained by assuming that definite nominal phrases presuppose the existence of their referent.

4.2. When SA is unambiguously non-factive

4.2.1. Indefinite nominalization

In the previous subsection, we have seen that only factive *sapere (di)* can be completed by a definite NP. Here, on the other hand, the claim is that, when completed by an indefinite NP, *sapere (di)* is always non-factive. In fact, neither (35a) is contradictory, nor (35b) is redundant, while (35c) is anomalous:

- (35) a. *Gianni sa di una festa a casa di Maria, ieri sera, ma in realtà Maria non ha dato nessuna festa.*
 ‘Gianni SA about a party at Maria’s place last night, but Maria didn’t actually give any party.’
- b. *Gianni sa di una festa a casa di Maria, ieri sera, ed è proprio vero che Maria ha dato una festa.*
 ‘Gianni SA about a party at Maria’s place last night, and it is true that Maria gave a party.’
- c. #*Gianni sa di una festa a casa di Maria, ieri sera, e anche Marco lo sa.*
 ‘Gianni SA about a party at Maria’s place last night, and Marco SA it too.’

This case is plausibly explained by assuming that indefinite nominal phrases, unlike definite ones, do not presuppose the existence of their referent.

4.2.2. Adjunct extraction

It is a well-known fact that extraction is constrained by factivity. In several languages, complement clauses embedded under factive verbs are considered to be ‘islands’ to some extraction phenomena—they are so called ‘factive islands’ (Ross 1967). Argument extraction is possible (36a), while adjunct extraction is not allowed (36b):

- (36) a. *What_i does she regret that John bought t_i?* [arg.extr.]
 b. **Why_i does she regret that John bought that car t_i?* [adj.extr.]

On the other hand, non-factive predicates like *think*, *believe*, *say* are so called ‘bridge verbs’ (Erteschik-Shir 1973: 83), i.e. they allow extraction of both arguments and adjuncts from their complement clause:

- (37) a. *What_i does she think that John bought t_i?*
b. *Why_i does she think that John bought that car t_i?*

If we assume that *sa* is lexically ambiguous between a factive and a non-factive sense, and moreover that non-factive *sapere* behaves, in some cases, as *credere/pensare* ‘believe/think’, we can predict that factive *sa* and non-factive *sa* behave differently with respect to extraction. This prediction is borne out, as the following examples show that non-factive *sa* behaves like a bridge verb (*pensare* ‘think’, in the following example) and allows adjunct extraction (see (38) compared to (39)), while this transformation is blocked whenever *sa* occurs in its factive sense (40):

- (38) A: *Ho sentito Gianni e ha detto che forse Marco è a New York.*
‘I heard Gianni and he said that Marco may be in New York.’
B: *Perché Gianni sa che Marco è andato a New York?*
‘Why does Gianni SA that Marco went to New York?’
A: *Per vedere gli Yankees. (Ma non è così. La verità è che è andato a trovare la sua ragazza.)*
‘To see the Yankees. (But this is not true. The truth is that he went to see his girlfriend.)’
- (39) A: *Ho sentito Gianni e ha detto che forse Marco è a New York.*
‘I heard Gianni and he said that Marco may be in New York.’
B: *Perché Gianni pensa che Marco sia andato a New York?*
‘Why does Gianni think that Marco went to New York?’
A: *Per vedere gli Yankees.*
‘To see the Yankees.’
- (40) A: *Marco è a New York. Lo sanno tutti, anche Gianni.*
‘Marco is in New York. Everybody knows it, even Gianni.’
B: *Perché Gianni sa che Marco è andato a New York?*
‘Why does Gianni SA that Marco went to New York?’
A: a. *Perché gliel’ha detto Maria.*
‘Because Maria told him that.’
b. *#Per vedere gli Yankees.*
‘To see the Yankees.’

These data are easily explained if we assume that there are two different instances of *sa* behaving differently with respect to extraction.

4.2.3. Evidentiality

In section 2, we have already seen that non-factive *sapere* may function as

an evidential, a functional element that refers to some source of information, the use of which indicates an epistemic state of uncertainty or unexpressed commitment held by the speaker (Chafe & Nichols 1986, Rooryck 2001a, 2001b, Speas 2004). More specifically, following Willett's (1988) distinction between three basic categories of evidence,²² I argue that *sapere*, in these cases, encodes the category of 'reported evidence (hearsay)' (also called 'quotative': e.g. Oswalt 1986: 40).

- (41) A: *Cosa mi dici di Maria?*
'What can you tell me about Maria?'
- B: *Gianni sa che si è trasferita in Australia.*
'Gianni SA that she moved to Australia.'

That the speaker is not necessarily committed to the truth of *p* is demonstrated by the fact that she may also refer to several sources of information without contradiction:

- (42) A: *A che ora è arrivato Gianni?*
'At what time did Gianni arrive?'
- B: *Maria sa che è arrivato alle cinque, mentre Marco sa che è arrivato alle otto.*
'Maria SA that he arrived at five o'clock, while Marco SA that he arrived at eight o'clock.'

Moreover, *sapere*, in this case, may receive a 'say'-reading, which is confirmed by the fact that the speaker might mistrust the source of information:

- (43) A: *Cosa mi dici di Maria?*
'What can you tell me about Maria?'
- B: *Gianni sa che si è trasferita in Australia, ma io non gli credo.*
'Gianni SA that she moved to Australia, but I don't believe him.'

In (41) and (42), it is clear that the proposition embedded under *sa* is not a proposition to which the speaker is necessarily committed—it is just *assumed* or *claimed* by someone else, and the speaker, by referring to this someone else as source of information, is communicating her own epistemic state of uncertainty (because, if she were epistemically certain that *p*, it would have been more appropriate to assert that *p*).²³ Of course, it can be the case that the speaker also believes that *p* (because, for instance, she trusts the source completely), but this is not necessarily implied by her utterance.

In the following, I will show that there are syntactic environments that are typical for evidential *sa* (hence cases in which evidentiality is expressed through a particular syntactic structure). More specifically, I argue that evidential *sa* can

be completed by a small clause (i) or by a sentential proform ('profrasi') (ii), and can be used parenthetically as a verb of saying or believing (iii).

(i) Small clause

When completed by a small clause, *sapere* functions as an 'evidential', referring to some source of information and indicating an epistemic state of uncertainty or unexpressed commitment held by the speaker. In the following example, the speaker, talking about Maria, attributes to Gianni a mental state toward a proposition on which the speaker herself does not manifest any commitment. The request of information that justifies the answer in (44) could be, for instance, 'Who is Maria?' or 'What about Maria?'

(44) A: *Chi è Maria?*
'Who is Maria?'

B: *Maria è la migliore amica di mia cugina. Gianni la sa felicemente sposata con un francese. Forse la incontreremo alla festa di Michele.*
'Maria is my cousin's best friend. Gianni SA her happily married to a Frenchman. We may meet her at Michele's party.'

It is evident, from the context of utterance, that the sentence containing the mental state attribution is not an utterance about Gianni (to whom the mental state is ascribed), but rather about Maria. The main point of assertion consists of the proposition expressed by the small clause, which answers to some request of information.²⁴ However, this proposition is not asserted by the speaker, but indicated by the speaker as asserted or believed by someone else. The ascription by which the speaker attributes a mental state to Gianni serves the unique purpose to point out Gianni as the source of information on which the speaker cannot express herself with certainty. Of course, it is possible that the speaker also believes, as Gianni, that Maria is happily married to a Frenchman (45a), or it is possible that she does not believe it at all (45b):

(45) a. *Maria è la migliore amica di mia cugina. Gianni la sa felicemente sposata con un francese. Infatti, ho sentito dire che abita a Parigi.*
'Maria is my cousin's best friend. Gianni SA her happily married to a Frenchman. In fact, I've heard she lives in Paris.'

b. *Maria è la migliore amica di mia cugina. Gianni la sa felicemente sposata con un francese. Io, invece, credo che suo marito sia svedese.*
'Maria is my cousin's best friend. Gianni SA her happily married to a Frenchman. But I believe that her husband is from Sweden.'

However, this speaker's commitment is not necessarily conveyed by her linguistic act in (44). From (44), we cannot say whether *p* is true or not.

(ii) X sa di sì/di no ('X SA that yes/that no'), X sa così ('X SA so')

When *sapere* is completed by sentential proforms like *sì*, *no*, *così*, a similar instance is realized as the previous case of *sapere* completed by a small clause.²⁵ In the previous case, we have seen that the main point of assertion consists of the proposition expressed by the small clause, which answers to some request of information about someone. Even in this case, the main point of assertion consists of the complement (*sì/no, così*), which offers an answer to a *yes/no*-question, whereas the mental state attribution serves the unique purpose to point out someone as the source of information on which the speaker cannot express herself with certainty:

- (46) A: *Viene Laura alla festa di Maria?*
'Is Laura coming to Maria's party?'
- B: a. *Gianni sa di sì.*
'Gianni SA so.'
- b. *Gianni sa di sì. Infatti, non era a casa quando ho cercato di chiamarla.*
'Gianni SA so. In fact, she wasn't at home when I tried to call her.'
- c. *Gianni sa di sì, ma è probabile che si sia sbagliato.*
'Gianni SA so, but he is probably wrong.'
- (47) A: *Gianni non doveva arrivare ieri?*
'Shouldn't Gianni arrive yesterday?'
- B: a. *Non ne ho idea, ma Maria sapeva così.*
'I have no idea, but Maria SA-IMPF so.'
- b. *Sì. Maria almeno sapeva così.*
'Yes. Maria at least SA-IMPF so.'
- c. *Maria sapeva così, ma Luigi ha detto che ha rimandato la partenza.*²⁶
'Maria SA-IMPF so, but Luigi said that he postponed his departure.'

Again, in these cases, *p* is not entailed.

(iii) Parenthetical use

Both factive and non-factive *sa* can occur in a parenthetical clause:²⁷

- (48) *Maria abita a Stoccolma, Gianni lo sa, capitale della Svezia.*
'Maria lives in Stockholm, Gianni SA it, the capital of Sweden.'
- (49) *Maria abita a Stoccolma, sa Gianni, capitale della Svezia.*
'Maria lives in Stockholm, SA Gianni, the capital of Sweden.'

Parenthetical clauses have to be interpreted as operators having scope on

their main clause, that is, the clause in which they are inserted (in this sense, see Borgato & Salvi 1995: 167). More specifically, parenthetical clauses modify the content of the proposition expressed by their main clause in a similar way as modal adverbial phrases do (cf. Urmson 1952: 487; Venier 1991: 49).

Considering (48) and (49), we find that their parenthetical clauses have different scopes on the main clause: parenthetical *X lo sa (che p)* ('X SA it (that p)') in (48) can be paraphrased into 'in all certainty, and X knows it'; whereas parenthetical *X sa (che p)* ('X SA (that p)') in (49) is paraphrasable into 'according to X'.

So the parenthetical clause in (48) actually is a coordinate structure whose content is asserted by the speaker together with the proposition expressed by the main clause. The utterance in (48) consists of two assertions by the speaker — the assertion that Maria lives in Stockholm and the assertion that Gianni knows that Maria lives in Stockholm.

On the other hand, the parenthetical clause in (49) functions as an evidential constituent that indicates the source of the information asserted in the main clause. The utterance in (49) also expresses two different commitments, but by two different sources: the commitment expressed by the speaker's assertion that Gianni SA that Maria lives in Stockholm, and the assertion (actual claim) or belief by Gianni that Maria lives in Stockholm.

Crucially, when parenthetical *sa* is used non-factively as an evidential, it preferably precedes the subject, which, in Italian, is a typical behaviour displayed by verbs of saying or believing when occurring in parenthetical clauses (Borgato & Salvi 1995: 169):

- (50) a. *Maria abita a Stoccolma, dice Gianni, capitale della Svezia.*
'Maria lives in Stockholm, says Gianni, the capital of Sweden.'
- b. **Maria abita a Stoccolma, Gianni dice, capitale della Svezia.*
'Maria lives in Stockholm, Gianni says, the capital of Sweden.'
- c. *Maria abita a Stoccolma, pensa Gianni, capitale della Svezia.*
'Maria lives in Stockholm, Gianni thinks, the capital of Sweden.'
- *Maria abita a Stoccolma, Gianni pensa, capitale della Svezia.*
'Maria lives in Stockholm, Gianni thinks, the capital of Sweden.'

These data confirm the ambiguity hypothesis.

In summary, in this section, I have shown that the hypothesis proposed in this paper, that *sa* is lexically ambiguous between a factive and a non-factive sense, finds confirmation in syntax, where the supposed different instances of *sa* present different selectional properties and thus occur in different environments.

5. Conclusion

In this paper, I have discussed the hypothesis that the Italian verb *sapere*, when denoting mental state attributions, is lexically ambiguous between a factive and a non-factive sense. In its factive sense, a sentence such as *X sa che p* ‘X SA that *p*’ entails *p*, while, in its non-factive sense, a sentence such as *X sa che p* ‘X SA that *p*’ does not entail *p*. I have argued that this hypothesis can account for the fact that *sapere*, in mental state attributions, is used non-factively, namely in contexts where it is evident that the proposition expressed by the subordinate clause is not true. The claim is that, if we consider its occurrences, *sa*, on the one hand, is used to ascribe a mental state of knowledge, while, on the other hand, *sa* can be used to ascribe a mental state other than knowledge. I have put forward semantic and syntactical evidence that seem to confirm the soundness of this hypothesis. In particular, on the one hand, I have applied some traditional tests used to ascertain cases of lexical ambiguity—the conjunction reduction test, the contradiction test and the endophoric reference test. On the other hand, I have shown that factive and non-factive *sa* display different syntactical behaviours, hence seem to have different subcategorization frames. Therefore, it is plausible to assume that non-factive uses of *sapere* do not call for a pragmatic account, but rather for a strictly semantic explanation.

Notes

¹ The Italian sentences have been translated into English, except for the verb at issue *sapere*, as I do not want to commit myself to any idiomatic translation in English. In fact, this paper is about Italian data and does not aim at investigating, in a proper way, cross-linguistic relations. When *sapere* occurs in the Present tense (Indicative), it is indicated as SA in the English translation; when *sapere* occurs in the Imperfect (imperfective Past tense, Indicative), it is indicated as SA-IMPF. Note, moreover, that SA and SA-IMPF stand for mental state third person attributions, both in the singular (*sa*, *sapeva*) and in the plural (*sanno*, *sapevano*).

² Italian *sapere* can also occur with other meanings than ‘to have a certain epistemic mental state’. Indeed, the basic meaning is ‘to know’. The word *sa* may however denote ability (i), or a state (taste, smell, flavor) as attributed to something according to one’s perception (ii):

(i) *Maria sa nuotare.*

‘Maria can swim.’

(ii) *Questo cioccolato sa di vecchio.*

‘This chocolate tastes old’.

In this paper, the investigation is limited to uses of *sapere* in mental state (third person) attributions.

³ In the standard analysis going back to Plato’s *Thaetetus* (201) and *Meno* (98) (cf. Plato 1997: 223 and 895-896), to *know* means to *have a true and justified belief* (e.g. Chisholm 1966, 1982). In other words, the sentence in (1) is true if and only if: (a) Gianni *believes* that *p* [Laura abita in Svezia], (b) *p* is the case, and (c) Gianni has *good reasons to believe* that *p* (hence Gianni’s belief is justified). I am aware

that the definition of knowledge (the answer to the question “What is knowledge?”) is far from being uncontroversial. However, this is an epistemological issue I do not deal with. That is, I do not intend to discuss well-known cases that have called the standard definition of knowledge into question (see, for instance, Gettier 1963, Goldman 1976). For an overview, see Bernecker & Dretske 2000.

⁴ This fact has been recently noted by Allan Hazlett (2009, 2010, 2012) for ‘knows.’ Hazlett proposes that a distinction has to be drawn between the concept of knowledge, as analysed by epistemologists, and the concept of knowledge, as used in language, where the first one is a factive concept, in the sense that nothing false can be known, whereas the second one is not. Hazlett (2009: 605) claims that what ‘knows’ implicates in language use is a Gricean conversational implicature. However, Hazlett does not seem to explicitly commit himself to this claim in his later work from 2010, where he proposes a pragmatic, “Gricean”, explanation for non-factive uses of ‘knows’, without specifying the kind of implication. According to him, “one who utters ‘S knows p’ typically implies that p is true” (Hazlett, 2010: 520; emphasis mine). In his latest work, Hazlett (2012) argues that factivity is a matter of cancellable pragmatic presupposition, with reference to Stalnaker’s (1999) notion of pragmatic presupposition (see Stalnaker 1972, 1973, 1974, 1999, 2002). Hazlett’s proposal has been challenged by Turri (2011), Tsohatzidis (2012), Buckwalter (2014), and Colonna Dahlman (2016).

⁵ This would be the solution suggested by the so called cancellation analysis (Gazdar, 1979: 64 ff.). If we assume that the relation between a sentence like *X sa che p* ‘X sa that p’ is not a relation of entailment, but only a *presupposition* (cf. Kiparsky & Kiparsky (1970: 143), “..the presupposition by the speaker that the complement of the sentence expresses a true proposition”), and moreover that a presupposition is not a truth-conditional relation between propositions, but rather a relation between a speaker and a proposition, then it is possible to suppose that this relation is cancellable. Note, however, that this move means that we should abandon the idea that *sapere* entails *p* (in this sense, Hazlett 2010, 2012).

⁶ The data presented in this paper are sentences formulated by the author as a native speaker of Italian. However, in 2013, acceptability judgments of other native speakers of Italian (n=15), from different parts of Italy (Northern and Southern Italy), were collected to make sure that the judgments were not a result of regional variety. The speakers were asked to express their acceptability judgments on sentences put in contexts where it was clear that the word *sa* was used non-factively and the speaker using *sa* was not committed to the truth of the embedded proposition. All informants judged the sentences as acceptable (judgments between 4 and 5 in a 1-5 scale). Most recently, experiments conducted by Filippo Domaneschi and Simona Di Paola (ms.) confirm that speakers of Italian judge sentences containing non-factive occurrences of *sapere* as perfectly natural. In the literature, Fabrizio Macagno & Alessandro Capone (2017) point out the potential ambiguity of Italian *sapere* and distinguish between a “presumptive” reading of *sapere* as ‘to know’ and a “non-presumptive” reading as ‘to believe’. These authors observe that the non-presumptive reading may be considered as a case of parasitic use (the use is tolerated, despite its being ungrammatical). However, they emphasize that Italians, in informal speech, do not perceive this use as ungrammatical. Admittedly, non-factive *salsapeva* is a form that mostly occurs in spoken, rather than written Italian, but frequency and contexts of use are not at issue in the present study. Federica Venier (p.c.) and an anonymous reviewer observe that the examples where *sapere* occurs in the Imperfect (*sapeva*) are the only acceptable ones or, at least, they are more acceptable than those in which *sapere* occurs in the Present tense (*sa*). An explanation for this preference may be found in Squartini (2016: 55), who writes that “the Romance imperfect

has assumed a prominent role among the verb forms expressing *inactuality* or *distance*.” (emphasis mine). This judgment, however, stands in contrast to the judgment expressed by other informants who unproblematically accept sentences in which non-factive *sapere* occurs in the Present tense. Moreover, from a strictly semantic point of view, there is no reason to distinguish between the mental state attribution by non-factive *sa* (*sapere*, Present tense) and that by non-factive *sapeva* (*sapere*, Imperfect-Past tense), as exemplified by the following sentences:

(i) *Gianni sa che Maria si è trasferita in Germania, ma si sbaglia: Maria è rimasta in Italia.*

‘Gianni_{SA} that Maria moved to Germany, but he is wrong: Maria still lives in Italy.’

(ii) *Gianni sapeva che Maria si era trasferita in Germania, ma si sbagliava: Maria era rimasta in Italia.*

‘Gianni_{SA-IMPF} that Maria had moved to Germany, but he was wrong: Maria still lived in Italy.’

Both in (i) and in (ii), the speaker ascribes a non-factive mental state, in fact the same kind of non-factive mental state, to Gianni. Crucially, what distinguishes (i) from (ii) is not the kind of mental state as attributed to Gianni, but the temporal reference point, that is, the point at which Gianni is described by the speaker as entertaining the mental state indicated by ‘sa’/‘sapeva’. This point, in the first case, is simultaneous with the moment of utterance (that is, it is located in present time), while, in the latter case, it precedes the moment of utterance (that is, it is located in past time).

⁷ On the distinction between epistemic certainty (= *p* is certain) and subjective certainty (= someone is certain that *p*), see Stanley 2008. Cf. Hintikka (1975: 23).

⁸ If *p* denotes a future event or situation, I argue that *p* cannot be evaluated neither as true nor as false. In this sense, see Austin (1961: 69): “And further, it is overlooked that the conditions which must be satisfied if I am to show that a thing is within my cognizance or within my power are conditions, not about the future, but about *the present and the past*: it is not demanded that I do more than *believe* about the future.”

⁹ Thanks to Christian Dahlman, for having suggested this point.

¹⁰ This is a feature that this kind of non-factive *sapere* shares with factive *sapere*. A plausible generalization seems to be that, if *p* is entailed, the item *SA* might receive focal stress (i), whereas, if *p* is not entailed, the item *SA* cannot receive focal stress (ii) unless it denotes subjective certainty (iii):

(i) *[Tutti sappiamo che Laura si è trasferita in Svezia. Ma è vero che Gianni pensa che abiti ancora in Francia?]*

‘We all know that Laura moved to Sweden, but is it true that Gianni thinks that she still lives in France?’

No, Gianni SA che Laura abita in Svezia. (→ *p* is entailed)

‘No, Gianni *SA* that Laura lives in Sweden.’

(ii) *No, Gianni sa che Laura abita in Spagna.* (→ *p* is not entailed)

‘No, Gianni *SA* that Laura lives in Spain.’

(iii) *Pensa? No, Gianni SA che Laura abita ancora in Francia!* (→ *p* is not entailed)

‘No, he doesn’t simply think, he *SA* that Laura still lives in France!’

¹¹ Thanks to Pier Marco Bertinetto, who provided me the example in (9a).

¹² This example is the translation from English of an authentic example presented by Hazlett (2010: 501, example (1)).

¹³ This example is an adapted translation of a similar example presented by Turri (2011: 147, example K4). Note that I am not considering this example as a case of ironic statement. Following Grice (1989: 34), I take verbal irony as generally giving rise to the conversational implicature that the intended proposition is exactly the opposite of the uttered one. In the case of (9e), the utterance of the sen-

tence does not necessarily convey the opposite meaning. For alternative accounts of irony, see Sperber & Wilson 1981, Sperber 1984, Wilson 2006, Wilson & Sperber 1992, 2012. An anonymous reviewer suggests that an “echoic” explanation of irony, as proposed by Relevance theorists, “could throw new light on the alleged non-factive meaning of *sapere*.” Note, however, that this view cannot account for cases where non-factive *sapere* is used in utterances that are clearly non-ironical.

¹⁴ On these and other ambiguity tests, see also Channell 1994 and Zhang 1998.

¹⁵ The symbol # is a sign for semantic anomaly or unacceptability.

¹⁶ In fact, if we assume that the factivity of *sapere* results not only in veridicality, but also in pragmatic presuppositionality, then we can claim that both a sentence like *X sa che p* (‘X sa that p’) and a sentence like *X non sa che p* (‘X NEG sa that p’) imply *p*, as presuppositions are assumed to be preserved under negation (at least, when negation is intended as internal negation). See Sbisà 2007: 33 ff.

¹⁷ As an alternative explanation, an anonymous reviewer suggests that in (17a) we accommodate the presupposition of *anche* (‘too’), namely that Gianni thinks that Copenhagen is the capital of Sweden. In this view, the occurrence of *sa* in (17a) would not be merely equivalent to ‘think’. I cannot agree with this line of reasoning. I do not see how an explanation that appeals to accommodation can account for the fact that a sentence such as (i) is always necessarily false:

(i) *Gianni sa che Copenaghen è la capitale della Svezia, e anche Marco lo sa.*

‘Gianni SA that Copenaghen is the capital of Sweden, and Marco SA it too.’

Accommodation is a repair strategy that interlocutors can use in conversations when they are willing to add new information to their common ground of beliefs (Lewis 1979, Heim 1983). This conversational strategy does not account for the truth value of any sentence.

¹⁸ On the connection between factivity and question-embedding, see Égré 2009, Spector & Égré 2015. Égré (2009) proposes that all veridical attitude verbs are question-embedding (while the converse assumption is not true, as it is not the case that all verbs that admit both *that*-complements and *whether*-complements are veridical). Égré (2009: 80) refers to a hypothesis originally presented by Hintikka (1975: 21), namely that the difference in question-embedding behaviour between *know* and *believe* seems to be correlated with the factive (= veridical) vs. non-factive feature of these two verbs (which Hintikka calls “success force”).

¹⁹ Here, I do not consider a second possible reading of *know* + *wh*-complement, namely the reading where the *wh*-element does not denote someone/something definite, but someone/something generic. In this reading, a sentence such as *X knows who does x* is true if whenever someone does *x*, then *X* knows it. On the difference between two readings of *know* + *wh*-complement, see Hintikka (1975: 5 ff.).

²⁰ Note that *benissimo* (‘very well’) occurs with SA without modifying the knowing relation. As Stanley (2004) puts it for English data, *benissimo* here functions as a pragmatic indicator rather than as a semantic modifier.

²¹ In this sense, see also Capone 2013: 475.

²² Willett (1988: 57) differentiates three general kinds of evidence within the direct/indirect distinction. In particular, direct evidence is labeled as ‘attested evidence’, and involves the visual sense, the auditory sense, and/or one of the other three senses. On the other hand, two main types of indirect evidence are evidence via verbal report (labeled as ‘reported evidence’), which involves either second-hand or third-hand information (hearsay) or oral literature (folklore), and evidence upon which an inference is based (labeled as ‘inferring evidence’), which involves either observable evidence (results) or a mental construct only (reasoning).

²³ In this sense, see Simons (2007: 1041): “When an embedding verb is used evidentially, part of its function is very often to indicate the weakness of the speaker’s commitment to the truth of the complement.”

²⁴ In this sense, Anderson (1986: 274): “Evidentials are not themselves the main

predication of the clause, but are rather a specification added to a factual claim about something else.”

²⁵ On these sentential proforms in Italian (so called *profrasi*), see Bernini 1995: 198. Bernini (1995: 199) mentions that epistemic factive predicates like *sapere* can be completed by these constructions. According to my account, it is not factive *sapere*, but its non-factive counterpart that admits these constructions.

²⁶ Thanks to Carla Killander Cariboni, who provided me the examples in (47).

²⁷ The notion of “parenthetical verbs” was introduced by Urmson 1952. For a thorough analysis of these predicates, of their function and their semantic and syntactic features, see Venier 1991. On the link between evidentiality and parentheticality, and the claim that parentheticals may be considered as evidential markers, see Rooryck 2001a, 2001b, Simons 2007. Hooper (1975: 96) observes that “A parenthetical predicate [...] informs the hearer that the speaker may have mild reservations about the truth of the complement proposition, or at least that the speaker does not take the proposition to be a statement of absolute truth.” On the occurrence of factive verbs in parenthetical clauses, see Simons 2007. Banfield (1982: 192) observes that “factives in parentheticals enjoy the neutrality of non-factives.”

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