Sequence of tenses in complementation structures: lexical restrictions and effects on language acquisition[1]

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Abstract

In this paper we discuss the combinations of tenses in main and complement clauses of European Portuguese, focusing on the issue that restrictions on the tenses allowed in complement clauses are observed with some predicates but not with others. We show that these lexical restrictions are independent of the mood occurring in the complement clause, though an integrated analysis of mood and tense may be achieved. The proposal is made that the observed lexical restrictions on embedded tenses have a semantic basis and follow from the fact that Portuguese is an SOT-language; i.e., a language where embedded tenses have semantic import. A preliminary investigation is conducted on the sequences of tenses produced at early stages of language acquisition.

1. Introduction

Sequences of tenses in the matrix and the embedded clause have been studied within the frameworks of Formal Semantics and Generative Syntax. In the first case, analyses on the subject have been focused on deriving the correct interpretation of tenses in embedded clauses. We do not focus on this issue here and, following Gennari (2003), we assume that the interpretation of tenses is the same regardless whether they are embedded or not.

We will instead consider a point that has been observed in several works of Generative syntax: the fact that (in Portuguese and other languages) some verbs impose restrictions on the tenses allowed in their complement clauses, contrary to other verbs. This is shown by examples

()-   (), from European Portuguese (henceforth EP), the language that we focus on. We observe that with verbs like *querer* ('want'), if the main clause is in the *present tense*, the complement clause needs to have the *present* as well, as shown in

(), while if the main verb is inflected in the past, only a past tense is allowed in the complement, as shown by   (). By contrast, if the main verb is a declarative verb, like *dizer* ('to say'), any tense can occur in the complement clause, regardless of the tense of the main clause, as shown by   ():

(1) Ele quer$_{\text{PRES}}$ que a Ana {esteja$_{\text{PRES-SUBJ}}$ / *estivesse$_{\text{PAST-IMPERF-SUBJ}}$} em

casa.

'He wants Ana to be home.'

(2) Ele quis$_{\text{PAST}}$ que a Ana {*esteja$_{\text{PRES-SUBJ}}$ / estivesse$_{\text{PAST-IMPERF-SUBJ}}$} em

casa.

'He wanted Ana to be home.'

(3) Ele {diz$_{\text{PRES}}$ / disse$_{\text{PAST}}$} que a Ana {está$_{\text{PRES-IND}}$ / estava$_{\text{PAST-IMPERF-IND}}$ /

esteve$_{\text{PAST-PERF-IND}}$ / estará$_{\text{FUT-IND}}$} em casa.

'He {says / said} that Ana {is / was / will be} home.'

In this paper, we will take into account such contrasts as the ones in (1)-(3) aiming at: (i) contributing to a better understanding of the facts that rule sequences of tenses in sentences with finite complementation; (ii) showing that the evaluation of child productions involving combination of tenses provides empirical evidence for hypotheses on the acquisition of finite complementation, namely, in what temporal dependence is concerned.

2. Lexical restrictions on sequences of tenses and the hypothesis of temporal dependence

In the framework of Generative Syntax, contrasts involving combination of tenses have been mainly explained by a lexical property of verbs that select for a complement clause, which we can roughly call temporal dependence (see, a.o., Picallo, 1984, for Spanish, and Raposo, 1987, Ambar, 1992, for EP). Approaches that rely on this property generally claim that some verbs require the presence of a dependent tense in their complement, the infinitive and the subjunctive being dependent tenses, contrary to the indicative, which would be specified for tense features. According to this, in indicative clauses, C is specified for T-features and CP is a temporal domain independent from the matrix; this would be the case of complement clauses of epistemic and declarative verbs (e.g., the equivalents of *think* and *say*), that rule the indicative. On the contrary, in subjunctive clauses, C is unspecified for T-features, CP is a temporal domain dependent from the matrix tense. This would be the case of volition verbs (e.g. the equivalent of *want*), that rule the subjunctive.

Such approaches lead to the prediction that restrictions on sequences of tenses are observed only in structures with subjunctive complements (cf. (2)), indicative complements being free (cf. (3)). Moreover, they predict obligatory disjoint reference of the subjects in subjunctive complement structures, a phenomenon known as obviation (cf. (4)), and optional disjoint reference of the subjects in indicative complement structures (cf. (5)):

(4) Ele$_i$ quer que [ ]$_{*i/j}$ chegue-$_{SUBJ}$ a tempo.

'He wants to arrive on schedule.'

(5)   Ele$_i$ pensa que [ ]$_{i/j}$ chega-$_{IND}$ a tempo.

'He thinks that he arrives on schedule.'

According to the syntactic analyses above mentioned, if subjunctive complements are linked to the tense of the main clause, the subjects cannot be co-referent because this would violate principle B of Binding Theory.

However, there are some problems for these classical analyses. First, the concept of tense dependence needs a more accurate definition. In fact, it seems reasonable to assume that there is temporal dependence when the temporal perspective point (TPpt[2]) of the embedded tense is the time interval occupied by the situation described by the main clause. Thus, if the embedded tense has utterance time (t$_0$) as its TPpt, main and embedded clauses form two temporal domains and there is no temporal dependence (cf. Silvano, 2002; Gonçalves, Cunha & Silvano, 2010). But, given this, one might observe that temporal dependence is not lexically conditioned, contrary to what is proposed by Raposo (1987), Ambar (1992), and others. In fact, the same main verb can enter in constructions with temporal dependence (cf.
(a),   (a)), as well as in constructions with temporal independence (cf.
(b),   (b)), a fact also remarked by Kempchinsky (1990) for Spanish:

(6)   a. Ele decidiu-$_{PAST}$ que ia-$_{PAST\text{-}IMPERF\text{-}IND}$ ao cinema com a Rita.

'He decided that he would go to the cinema with Rita.'

b. Ele decidiu-$_{PAST}$ que vai-$_{PRES\text{-}IND}$ / irá-$_{FUT\text{-}IND}$ ao cinema com a Rita.

'He decided that he will go to the cinema with Rita.'

(7)   a. Ele lamentou-$_{PAST}$ que estivéssemos-$_{PAST\text{-}SUBJ}$ atrasados.

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[2] Temporal Perspective Point (Kamp & Reyle 1993) is the time interval from which the situation is viewed or perspectivized.

'He regretted that we were late.'

b. Ele lamentou-PAST que estejamos-PRES-SUBJ atrasados.

'He regretted that we are late.'

In fact, temporal dependence exists or doesn't exist depending on whether the embedded tense is deictic (i.e., takes t_0 as its TPpt) or anaphoric, in which case its TPpt may be given by the main clause and temporal dependence obtains.

Another problem for the considered proposals is that they correlate temporal (in)dependence with mood selection: indicative complements would be temporally independent; subjunctive complements would be temporally dependent. However, this correlation does not apply, since some verbs that select for the indicative impose restrictions on the tenses allowed in the complement clause (cf.(8)), and some verbs that select for the subjunctive allow for any tense in the complement clause (cf. (9)).

(8) Ele decidiu-PAST que {*tinha ido-PAST-PERF-IND / *foi-SIMPLE_PAST-IND /

   He decided that [he] {*had gone   / *went   /

   ia-PAST-IMPERF-IND / vai-PRES-IND / irá-FUT-IND} ao cinema   com a   Rita.

   would go   / goes   / will go}   to-the cinema with the Rita

(9) O João pediu-PAST que a irmã {fosse-PAST-SUBJ / vá-PRES-SUBJ} ao cinema

   com ele.

   'João asked his sister to go to the cinema with him.'

More generally, restrictions on combinations of tenses in verb complement structures of EP are independent of mood selection: some verbs that select the indicative (e.g., *decidir* 'decide') impose restrictions on the tense acceptable in their complement (cf. (8)), contrary to other indicative rulers (e.g., *perceber* 'realize'; cf (10)), and the same is observed with verbs that select the subjunctive, that is, subjunctive rulers like *querer* ('want') impose restrictions on the tense allowed in the complement clause (cf. (11)), other subjunctive rulers, like *pedir* ('ask') do not (cf. (9)).

(10) O João   percebeu-$_{PAST}$ que a irmã   {tinha ido-$_{PAST\text{-}PERF\text{-}IND}$ /

      the João   realized   that the sister {had gone   /

      foi.-$_{SIMPLE\_PASTIND}$ / ia-$_{PAST\text{-}IMPERF\text{-}IND}$ / vai-$_{PRES\text{-}IND}$ / irá-$_{FUT\text{-}IND}$} ao

      went   / would go   / goes   / will go}   to-the

      cinema com a   Rita.

      cinema with the   Rita

(11) O João quis-$_{PAST}$ que a irmã {*tivesse ido-$_{PAST\text{-}PERF\text{-}SUBJ}$ / fosse-$_{PAST\text{-}IMP\text{-}SUBJ}$ / *vá-$_{PRES\text{-}SUBJ}$ } ao cinema com a Rita.

      Lit.: John wanted that his sister {*had gone / would go / *goes} to the cinema with Rita.

3. Temporal Orientation

In a work on the distribution of inflected and uninflected infinitive in EP complement clauses, Duarte, Gonçalves & Santos (2012) question the relevance of temporal dependence as the mechanism that rules that distribution. The authors show, contrary to Raposo (1987), a.o, that not all temporal independent domains allow for inflected infinitives; instead, they propose that the relevant lexical property is temporal orientation (i.e., whether the main verb specifies the temporal location of the embedded situation as being in a relation of anteriority, overlapping or posteriority with the situation described by the main clause).

Assuming temporal orientation as a mechanism implied in sequences of tenses, we may account for interesting contrasts. Verbs as *querer* ('want') and *decidir* ('decide') are prospective: the temporal location of the situation described by their complement clause follows the attitude time. It seems clear that this temporal orientation specified by the main verb blocks some combinations of tenses, such as the sequence PRES + PAST in (1) or PAST + PAST PERFECT in (8). It makes no sense to desire or to desire now to do something in the past.

On the contrary, declarative verbs (*dizer* 'say') and epistemic verbs (*pensar* 'think') do not impose restrictions on the temporal location of the situation described by their complement clause and the sequence PRES + PAST is allowed (cf. (3)).

However, the temporal orientation specified by the matrix verb is not sufficient to explain all the lexical restrictions, given that the sequence PAST + PRES

is blocked in structures with some epistemic verbs, which do not specify any temporal orientation (we may believe that something *was* the case, *is* the case or *will be* the case):

 (12) Supus-PAST que ela {*está-PRES-IND / estava-PAST-IND} em casa.

          I supposed that she {*is / was} at home.

 (13) Duvidei-PAST que ela {*esteja-PRES-SUBJ / estivesse-PAST-SUBJ} em casa.

          I doubted that she {*is / was} at home.

4.   Towards an explanation of lexical restrictions on the sequence PAST + PRES

In this section, we focus on the sequence of tenses PAST + PRES in EP. As seen above, this sequence of tenses is blocked or allowed depending on the verb of the main clause. We suggest that an investigation on the semantics of the matrix verbs that takes into account the idea of reference to the real world will shed some light on the question of why is this sequence of tenses allowed in some cases but not in others. But first, it is important to consider the interpretation of the present tense.

We know that present under past (PAST + PRES) yields different readings in so-called S(equence) o(f) T(ense) languages (English, French, Portuguese) and non-SOT languages (Japanese) (see Ogihara, 1999). Specifically, in SOT languages present under past has a Double Access reading, i.e. the embedded tense must denote an interval overlapping two reference times, the matrix situation time and the utterance time, while in non-SOT languages the present tense will be semantically vacuous and a simultaneous reading obtains. This means that in SOT languages the interpretation of the present tense forces the consideration of t_0 both when it occurs in complement clauses as when it occurs in other kinds of sentences. At least concerning EP, this is a valid observation both for the present indicative as for the present subjunctive. Moreover, the present subjunctive cannot occur in counterfactual sentences, which shows that this tense points not only to t_0 but also to the reference world (which, by default, is the real world, w_0). In sum, in SOT languages, the present tense is deictic. Its interpretation requires the consideration of the context of assertion, given that it points to utterance time and the reference world. In other words, in Portuguese (as, presumably, in other SOT languages), the present tense points to how the world is or might be, as seen from the context of assertion. Given this, let us now consider the lexical restrictions on the sequence PAST + PRES. The examples (14)-(18) show that this sequence is possible if the verb of the main clause is one of the following classes:

  a. factive verbs (e.g., *surpreender* 'surprise', *saber* 'know')

b. implicative verbs[3] (e.g., *conseguir* 'manage', *preocupar-se* 'bother')

c. declarative verbs (e.g., *dizer* 'say', *garantir* 'assure')

d. commissive verbs (e.g., *prometer* 'promise', *jurar* 'swear')

e. deontic verbs (e.g., *mandar* 'order', *permitir* 'allow')

(14) Nunca te surpreendeu-$_{PAST}$ que haja-$_{PRES-SUBJ}$ tantas estrelas?

'Were you never surprised that there are so many stars?'

(15) «A Lotus conseguiu-$_{PAST}$ que, além da facilidade de utilização, os seus

potenciais utilizadores não se sintam-$_{PRES-SUBJ}$ frustrados por limita-

ções na sua nova estrela.»   (*CetemPúblico*, par=ext178447)

'Lotus managed that, apart from user-friendliness, their potential cus-

tomers do not feel frustrated by limitations of its new star.'

(16) Ele disse-$_{PAST}$ que está-$_{PRES-IND}$ em casa

'He said that he is home.'

(17)   Ele prometeu-$_{PAST}$ que me avisa-$_{PRES-IND}$

'He promised that he warns me.'

(18) O general ordenou-$_{PAST}$ às tropas que cerquem-$_{PRES-SUBJ}$ o aeroporto

'The general ordered the troops to surround the airport.'

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3 Both the terms 'implicative verbs' and 'factive verbs' are taken from Karttunen (1971). Factive verbs allow the inference that its complement clause is true, regardless of the truth value of the main clause; implicative verbs allow the inference that its complement clause is true when the main clause is affirmative, but do not allow such an inference when the main clause is negated.

The examples (19)-(21) show that the sequence PAST + PRES is blocked if the main verb is one of the following classes:

a. volition verbs (e.g., *querer* 'want', *esperar* 'hope')

b. doxastic verbs (e.g., *supor* 'suppose', *duvidar* 'doubt')

c. negative verbs (e.g., *impedir* 'prevent', *evitar* 'avoid')

(19) *Ele quis-PAST que a Ana lhe telefone-PRES-SUBJ.

Lit.: '*He wanted that Ana will phone him.'

(20) *Supus-PAST que ele está-PRES-IND em casa.

'*I supposed that he is at home.'

(21) *O nevoeiro impediu-PAST que o avião aterre-PRES (agora).

Lit.: '*The fog didn't allow the plane to land (now).'

4.1 Lexical restrictions and possible worlds semantics

The observed division between the verbs that allow and those that block the sequence PAST + PRES is not equivalent to the division between the verbs that select the indicative and those that select the subjunctive. In fact, both the group of verbs that allow the sequence PAST + PRES and the group of verbs that block it include verbs that select the indicative and verbs that select the subjunctive (cf., e.g., the equivalents of *promise*, an indicative ruler, and *order*, a subjunctive ruler, for the first group of verbs, and the equivalents of *suppose*, indicative ruler, and *doubt*, subjunctive ruler, for the second group of verbs). However,

given that in Portuguese (as in other Romance languages) verbal inflection does not involve independent morphemes for mood and tense, it makes sense to have a common analysis of mood and tense in complement clauses. As we will try to show, a semantic analysis within possible worlds semantics, which has proved to be useful in the semantic analysis of modality and mood, may shed some light on the lexical restrictions on sequences of tenses.

In possible worlds semantics, the meaning of a proposition is a set of worlds: the one where the state of affairs described by the proposition is verified. Concerning mood, the observation has been made (Marques, 2009; Giannakidou, 2013, a.o.) that the indicative occurs in those contexts whose meaning involves the consideration of only p-worlds (i.e., worlds where the proposition p is verified) and the subjunctive occurs when at least one non-p world is taken into consideration. This is different from the claim of traditional grammars, which state that the opposition between indicative and subjunctive mirrors the *realis / irrealis* opposition. In other words, it is not the case that the indicative is selected iff the proposition describes reality. The verb *to think*, for instance, selects the indicative even if its complement clause is taken to be false in the real world. The reason for this verb to select the indicative is that the epistemic model the verb points to includes only p-worlds. For instance, the sentence *John thinks that Sydney is the capital of Australia* means that in every world compatible with John's beliefs, Sydney is the capital of Australia. If John is not certain that the proposition is true, then his epistemic model includes at least one non-p world (that is, he admits the possibility that the sentence is false),

and in this case the subjunctive has to be selected. In sum, the selection of mood is not dependent on whether the sentence is actually true in the real world: in the considered example, the complement clause of *to think* is false in the real world (the capital of Australia is Camberra), but the indicative would be selected. Instead, what is relevant for the selection of mood is whether the meaning of the construction involves only p-worlds or at least one non-p world. Given this, let us now return to the lexical restrictions on the PAST + PRES sequence of tenses.

It was observed that the sequence PAST + PRES is ruled out when the main verb is a volition verb, a doxastic verb or a negative verb. If we consider the sets of possible worlds denoted by the complement clause of these verbs, it is clear that concerning negative verbs the real world does not belong to this set. That is, these verbs are anti-veridical (Giannakidou, 1999): they allow the inference that their complement clause is false. As for doxastic verbs, they do not allow the inference that their complement clause is true in the real world nor that it is false. In other words, the set of worlds denoted by the complement clause of these verbs might include the real world as it might not include it. Hence, negative verbs and doxastic verbs have in common the fact that their complement proposition does not have to include the real world. As for volition verbs, we might think that their complement clause denotes a set of worlds where the desire is fulfilled. Obviously, this set of worlds does not have to include the real world (to want p does not guarantee that p will actually happen). If this is so, the observation follows that the meaning of the three considered

kinds of verbs (negative, epistemic and volition verbs) does not impose that the real world belongs to the set of worlds denoted by the complement clause. In other words, the meaning of these verbs does not force the consideration of reality.

By contrast, the meaning of the verbs with which the sequence PAST + PRES is allowed seems to impose the consideration of the real world. This does not mean that the complement clause of all these verbs is taken to be true in reality. It means that the denotation of the complement clause of these verbs is a set of worlds that necessarily includes the real world. This is clearly the case of factive verbs, whose complement clause describes a fact of the real world, and also of implicative verbs, which, in affirmative sentences, allow the inference that the complement clause is true in the real world. As for the other kinds of verbs that allow the sequence PAST + PRES − declarative, commissive, and deontic verbs −, though they do not convey the truth of their complement clause in the real world, we argue that their meaning also involves the consideration of reality. Concerning declarative verbs, a sentence like *John said that Bill is a spy* reports an assertion, and, as it is known from Speech Act Theory, by asserting a sentence, the speaker expresses his belief that the sentence is true (in the real world) and that he has adequate evidence that it is true. Likewise, concerning commisive verbs, a sentence like *John promised to read the book* expresses the information that John assumed the compromise to read the book and, thus, to make the complement clause to be true in the real world. Hence, both declara-

tive and commisive verbs express a commitment of someone with the truth of the complement proposition in the real world. This means that these verbs are veridical, in the sense of Giannakidou (1999). Epistemic verbs, like *to think*, are also veridical verbs: they allow the inference that the complement clause is true in the relevant model. However, epistemic verbs do not commit the attitude holder to the truth of the proposition in the real world in the same way as declarative and commissive verbs. If someone says that p is true and it turns out that in fact p is false, or if someone promises to do something and does not do it, he may be accused of being dishonest. But if someone believes that p is true and it turns out that in fact p is false, he is not accused of being deceptive. Hence, the conclusion follows that the set of worlds denoted by the complement clause of declarative and commissive verbs necessarily includes the real world (these verbs express a commitment of someone with the truth of their complement in the real world), contrary to the set of worlds denoted by the complement clause of epistemic verbs.

This issue seems to be relevant for the lexical restrictions on sequences of tenses, given that, as seen above, EP doxastic verbs do not allow the sequence PAST + PRES, contrary to declarative and commissive verbs. Finally, deontic verbs also allow such sequence of tenses. These verbs are identical to commissive verbs in the sense that both kinds of verbs point to the attainment of the action described by their complement. The main difference is that in the case of commissive verbs the responsibility for the fulfillment of the action belongs to the agent of the promise and, in the case of deontic verbs, the agent of the ac-

tion is someone else than the one who gives the order or makes the request. This difference apart, both commissive and deontic verbs point to the execution of an action in the real world. Hence, also in the case of deontic verbs, reality has to be considered in the denotation of the complement clause.

If this is so, the following generalization follows: in EP, the sequence PAST + PRES is possible only if the set of worlds denoted by the complement clause necessarily includes the real world.

The explanation for this comes easily if one considers that the present tense is deictic, pointing to the utterance time and the real world: if the set of worlds denoted by the complement clause does not include the real world or may not include it, the present tense would have no reference or could have no reference. Hence, the anomaly of PAST + PRES with the observed kinds of verbs would be a case of reference failure of the present tense.

However, there are three problems for this analysis, which will be considered in the next subsection: (i) the assumption that the real world does not necessarily belong to the denotation of the complement clause of volition verbs is questionable; (ii) at least for some speakers of Portuguese, the sequence PAST + PRES is acceptable when the main verb is *sonhar* 'to dream'[4], as shown by (22):

(22) Na noite passada, sonhei-PAST que o meu nome está no quadro dos vencedores.

‘Last night I dreamt that my name is in the winners’ board.’

(iii) if the sequence PAST + PRES is blocked by some verbs because the present tense would have no reference, how to explain that the sequence PRES + PRES or PRES + FUT is acceptable with the same verbs?

4.2 Aktionsart *and accessible possibilities*

In the previous subsection, we proposed that the denotation of volition verbs does not have to include the real world (it is possible that desires are never fulfilled), contrary to the denotation of the complement of deontic verbs. However, this may be problematic if one assumes the analysis of volition verbs proposed by Heim (1992). Briefly, she observes that these verbs express an ordering of the available possibilities. A sentence like *John wants to teach on Mondays* means that, given the possibilities for John to teach on Mondays or in another day of the week, he prefers the first possibility. It does not (necessarily) mean that in all worlds that conform to John's desires he teaches on Mondays (for him, the best world may be one where he does not teach at all). In other words, the meaning of volition verbs involves a comparison between the *p*-worlds and the non-*p* worlds that are doxastically accessible for the attitude holder. One may add that the same kind of comparison of available possibilities seems to be involved in the meaning of deontic verbs. To ask or to order someone to do something means that there is the possibility of doing that or not doing it and the request is made to choose the first possibility. This being so, it seems hard to maintain that volition verbs are different from deontic verbs con-

cerning the set of worlds considered in the complement clause. So, the question remains why the sequence PAST + PRES is impossible with volition verbs and acceptable with deontic verbs.

Following Marques (2013), we propose that, apart from the set of worlds denoted by the complement clause, the *Aktionsart* value of the main predicate also plays a role in the restrictions on SOT. Roughly, the idea is that a relevant factor for the lexical restrictions on sequences of tenses is whether the kind of attitude which the main predicate refers to is temporally bounded or not. For instance, the attitudes of knowing, believing or desiring are temporally unbounded (these are stative predicates), but the attitudes of ordering, saying, or becoming aware, for instance, do not extend indefinitely in time. Now, when the reported attitudes are temporally unbounded, by inflecting the attitude verb in the past (perfect) the speaker conveys the information that the attitude is no longer verified at the utterance time. However, such information is not conveyed if the reported attitude is temporally bounded, even if the verb is inflected in the past. For instance, the sentence *John wanted Mary to leave* does not allow the information that he still wants her to leave, but the sentence *John asked Mary to leave* may convey the information that John's request maintains. In other words, the inflection in the past perfect of a verb that refers to an unbounded attitude is a strategy to impose a boundary on the attitude and convey the information that the attitude is not verified at the report time.

Given this, the construction **Ela quis-*PAST *que lhe telefones-*PRES (lit: 'she wanted that you phone her') would be contradictory: on one side, the present

tense in complement clause points to the utterance time (the report time); on the other side, the inflection of the main verb in the past indicates that the attitude is not verified at the utterance time. On the contrary, the construction *ela pediu-*PAST *que lhe telefones*-PRES ('lit.: 'she asked that you phone her') is natural because the reported attitude is temporally bounded and the inflection of the main verb in the past does not imply that the request is no longer verified at the report time.

Let us now consider the second problem identified above: the acceptability of the sequence PAST + PRES with the verb *sonhar* 'to dream'. This verb indicates that its complement proposition is true in the dream world (in the dream, the dreamer believes that the proposition is true). The complement proposition may also be true in the real world or not. In this respect, this verb is identical to, e.g., the verbs *to think* or *to believe*, which block the sequence PAST + PRES. But, contrary to these verbs, *to dream* (in its literal sense) refers an attitude temporally bounded (the attitude ends at least when one wakes up). Thus, the inflection of the verb in the past simple does not give rise to the inference that the dreamer no longer believes that the complement proposition is true. Hence, the prediction arises that the sequence PAST + PRES is acceptable with the verb *to dream*. It indicates that the dreamer still admits the truth of the complement proposition.

Finally, let us consider the third problem identified above: if some verbs block the access to t_0 by the embedded tense, why is the sequence PRES + PRES possible with these verbs? One possibility is to consider that in these cases the

embedded tense is semantically vacuous, assuming a mechanism like Ogihara's deletion under identity (or an equivalent mechanism available in the literature). However, this approach would have problems with the sequence PRES + FUT, and an analysis that assumes that embedded tenses always have semantic import, in the line of Gennari (2003), would be preferable.

Moreover, following Portner (1997), it may be convenient to replace the notion of possible world by the notion of possible situation, as defined by Kratzer (1989).[5] Given this, a sentence with the present tense would denote a set of possible situations that include t_0, and, as seen above, the real world must be considered in the denotation of the proposition. Hence, a sentence with the present tense points to a set of possible situations ("slices" of possible worlds) and this set has to include a part of the real world that contains t_0. Likewise, a sentence with the future tense would denote a set of possible situations that temporally follow t_0 (a set of possible continuations of the real world in the future). In other words, the present tense points to what is or might be the case at the context of utterance and the future tense points to possible continuations of reality.

The possibilities (how the world is, might be or will be) are a set of possible situations. In main and adverbial clauses, this set is part of the context set (the set of possible worlds or possible situations compatible with what is known or assumed to be the case). In the case of complement clauses, the possibilities

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[5] Roughly, possible situations are parts of possible worlds; a possible world being a maximal possible situation.

are a set available to the holder of the attitude expressed by the main verb (it is the set of possible worlds or possible situations compatible with what the attitude holder knows or assumes to be the case). Now, given that the present tense points to t_0, a complement clause with this tense denotes a set of situations that must be available to the attitude holder both at the time of the attitude and at utterance time. This is what happens in the cases of PRES + PRES or PRES + FUT. However, in the case of PAST + PRES, the situations will be available to the attitude holder both at the time of the attitude and at the context of utterance only if the attitude extends from the time of the attitude until utterance time. Given this, consider the following examples:

(23) A Sara acha-PRES que está-PRES-IND grávida.

    'Sara thinks that she is pregnant.'

(24) *A Sara achou-PAST que está-PRES-IND grávida.

    'Sara thought that she is pregnant.'

In both constructions the complement proposition denotes a set of possible situations where Sara is pregnant at utterance time. The attitude expressed in (23) relates the attitude holder (Sara) and the same set of situations. That is, Sara being pregnant at t_0 is a possibility available to Sara at the time of the attitude. So, the set denoted by the complement clause is available to Sara at utterance time and at the attitude time. But (24) does not allow the inference that Sara still thinks that she is pregnant. So, the set denoted by the complement

clause − a set of possible situations where she is pregnant at t_0 − is not available to the attitude holder at utterance time and at the attitude time.

5. Acquisition of complementation, first combination of tenses and SOT: some data

Given the state of affairs described in the last section, we can say that the interpretation of tenses in the main and the embedded clause results from general properties of grammar (subordination) and the value of particular tenses. However, the combination of tenses in the main and in the embedded clause is also constrained by a parameter (the SOT parameter; briefly, in non-SOT languages present under past is semantically vacuous, while in SOT languages it has semantic import) and by lexical semantics, in the sense that it is constrained by the semantics of the matrix predicate.

According to Hollebrandse (2000), acquisition of SOT, as any relation of temporal dependence between matrix and embedded clauses, depends on the acquisition of complementation (thus, it should signal its acquisition). Children who lack complementation cannot interpret a dependent tense, they will always take utterance time as the TPpt of the embedded tense.

When children acquire complementation and the possibility of dependent tense, they will need to determine whether their language is a SOT or a non-

SOT language, something that can be thought of as parameter setting (Demirdache & Lungu, 2009). This will condition the interpretation of present under past structures. As described in section 4, positively setting the SOT parameter for Portuguese will also make available the lexical semantic restrictions on PAST+PRES.

In this section, we examine the child performance in the beginning stages of acquisition of complementation, as a first step of a larger research project on the development of syntax and semantic aspects of complementation. We report here the results of the analysis of spontaneous production in stages including first production of complement clauses, in the assumption that choice of tenses in the first complement clauses may add to the discussion of acquisition of complementation and SOT. We therefore posed two questions for language acquisition, when examining early child productions:

(i) Do children produce structures of verbal complementation where main and embedded clauses form a single temporal domain?

(ii) How do children deal with lexical restrictions on SOT?

We examined the spontaneous production corpus of Santos (2006), extended version. The corpus includes data from three children, each file corresponding to 45-50 minutes of adult-child interaction (details are given in table 1).

Table 1 - *Corpus* (Santos, 2006, enlarged)

Child	Age	MLUw	Number of files

INI	1;6.6-3;11.12	MLUw 1.5-3.8	21
TOM	1;6.18-3;0.22	MLUw 1.2-3.3	21
INM	1;5.9-2;9.3	MLUw 1.3-1.95	16

The corpus was manually coded for all complement clauses and posteriorly annotated for all combinations of tenses. The first occurrences of the complementizer *que* 'that', which introduces a finite complement clause, are found at 2;1.7 (TOM), 2;1.10 (INI) and 2;6.19 (INM) (see Santos, 2006). However, the first occurrences are cases such as (25), where no embedded tense is found.

(25) TOM: xxx [//] # acho que sim.   TOM (2;1.7)

                                think that yes

                         'I think that it is true.'

The first finite subordinate clauses whose combination of tenses could be analyzed occur at 2;5. 37 cases of such finite complement clauses were found in the sample. In 21 of these cases (57%), the embedded tense has t_0 as its TPpt: in 16 cases, the combination is PRES + PRES (see (26)); in 5 cases, the matrix tense is present and the embedded tense is a different tense, t_0 being maintained as the TPpt (see (27)).

(26) não # eu ach(o) qu(e) é   um menino e uma menina.   INI (3;0.15)

   no   I think-PRES that is   a   boy   and a   girl

   'No # I think that it is a boy and a girl.'

(27) eu ach(o)   qu(e) ela vai chorar.   INI (3;0.15)

   I think- PRES that she goes cry

   'I think that she is going to cry.'

In two cases, the TPpt of the embedded tense is not t_0. These cases occur after 3;0, and show that the child may define a TPpt different from t_0; however, they do not exhibit temporal dependence, since in this case the TPpt is not provided by the main clause, it is instead given by discourse (see (28) and (29)).

(28) não acham # qu(e) ele ia   assim   com (u)ma cara?

                                                              INI (3;4.6)

   NEG think- PRES that   he go-PAST-IMPERF like-that with a   expression

   'Don't you think that he was going with such an expression?'

(29) eu ach(o)   qu(e) el(e) ia   era cai(r) dali de cima. INI (3;4.6)

   I think-PRES that   he go-PAST-IMPERF was fall   from up there

   'I think that he was going to fall from upstairs.'

Only in 3 cases, produced by the same child and always after at 3 years of age, do the embedded and the complement clause clearly share the same temporal domain, the TPpt for the embedded tense being provided by the matrix. In

these cases, we have a past (perfect "Pretérito Perfeito" or imperfect "Pretérito Imperfeito") in the matrix clause and an anaphoric tense, a past ("Pretérito Imperfeito"), in the embedded clause.[6]

(30) mas o rei qu(e)ria qu(e) a filha casasse com

but the king wanted that the daughter marry-PAST-SUBJ with

um príncip(e).   INI (3;11.12)

a prince

'But the king wanted the daughter to marry a prince'

(31) ele disse   que   não   podia   dar.   INI (3;4.6)

he said-PAST that   NEG   could-PAST-IMPERF give

'He said that he couldn't give.'

(32) papá disse qu(e) er(a)   um   te(r)mómetro. INI (3;0.15)

dady said-PAST that was-PAST-IMPERF a   thermometer

'Daddy said that it was a thermometer.'

The data presented so far thus suggest that, at the first stages of production of complementation, a clear preference is observed for tenses in the complement clause that take t_0 as its TPpt. The greater frequency of deictic tenses,

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[6] Other combinations of tenses also present in the data are imperative + present or infinitive + present, as well as cases of an omitted auxiliary.

which take t_0 as the TPpt, may be due to the data-collection situation, mostly centered in the here and now. But it may also be due to the impossibility of computing temporal dependence in these early stages. This is actually compatible with the view that not all semantic aspects of subordination may be available at the beginning stages of production of clausal complementation. Acquisition of SOT is dependent on acquisition of complementation ("Complementation Hypothesis"; Hollebrandse, 2000). There is actually some evidence of temporal dependence in the observed data, but not at the earliest stages and it could not be observed in the speech of all the children.

On the other hand, no case of a lexically restricted combination of tenses (namely PRES+PAST, PAST+PAST (PERF) or PAST+PRES) is found in child speech. It is expectable that lexical restrictions are acquired later than general possibilities of the grammar. In the case of PAST+PRES, we have seen that such lexical restriction may be derived from the double access interpretation of a present under past in a SOT language. Thus, acquisition of PAST+PRES may be conditioned by positively setting the SOT parameter in the acquisition of Portuguese. The absence of such combination of tenses in these beginning stages is therefore expected also in light of preceding work suggesting fluctuation between SOT and non-SOT values of the parameter in 5 to 7 year-olds (see Demirdache & Lungu, 2009).

6. Conclusion

In this work, we developed an approach to sequences of tenses in matrix and finite complement clauses and explored some data that shed some light on the acquisition of complementation.

We claimed that, although temporal dependence and temporal orientation are two mechanisms relevant to account for the sequences of tenses in finite complements, some lexical restrictions (independent of the mood occurring in the complement clause) are also required, namely to explain the impossibility of PAST + PRES with volition, doxastic and negative verbs. We then proposed that this sequence is only possible when the set of worlds denoted by the complement clause necessarily includes the real world. Further, we showed that all verbs allow PRES + PRES and PRES + FUT by assuming that present tense points to t_0 and, therefore, a complement clause with this tense denotes a set of situations that must be available to the attitude holder both at the time of the attitude and at utterance time.

As for the acquisition issue, the preliminary data point to a first stage where a preference for t0 as the TPpt is notorious. Only later are children sensitive to temporal dependence.

References

Ambar, M. (1992). Temps et structure de la phrase en portugais. In H. Oben-hauer & A. Zribi-Hertz (eds.), *Structure de la phrase et Théorie du Liage* (pp. 29-49). Saint-Denis: Presses Universitaires de Vincennes.

Demirdache, H. & Lungu, O. (2009). Sequence of tense in (French) child language. *Linguistic Variation Yearbook*, 8:101-130.

Duarte, I., Gonçalves, A. & A. L. Santos (2012). Infinitivo flexionado, independência temporal e controlo. In A. Costa, C. Flores & N. Alexandre (eds.). *Textos selecionados do XXVII Encontro Nacional da Associação Portuguesa de Linguística* (pp. 217-234). Lisboa: APL.

Gennari, S. P. (2003). Tense Meanings and Temporal Interpretation. *Journal of Semantics,* 20: 35-71.

Giannakidou, A. (1999). Affective dependencies. *Linguistics and Philosophy*, 22: 367-421.

Giannakidou, A. (2013). The epistemic basis of mood: selection, nonveridical weakening, and emotive verbs. In Blaszack, J. *et al*. (eds.), *Tense, Mood, and Modality: New Perspectives on Old Questions*. University of Chicago Press.

Gonçalves, A., Cunha, L. F. & Silvano, P. (2010). Interpretação temporal dos domínios infinitivos na construção de reestruturação do Português europeu. In A. Brito, J. Veloso & A. Fiéis (eds.), *Textos seleccionados do XXV Encontro Nacional da Associação Portuguesa de Linguística* (pp. 435-447). Porto: APL.

Heim, I. (1992). Presupposition projection and the semantics of attitude verbs. *Journal of Semantics,* 9: 183-221.

Hollebrandse, B. (2000). *The Acquisition of Sequence of Tense*. PhD dissertation, University of Massachusetts, Amherst.

Kamp, H. & Reyle, U. (1993). *From discourse to logic: Introduction to modeltheoretic semantics of natural language, formal logic and discourse representation*. Dordrecht: Kluwer Academic Publishers.

Karttunen, L. (1971). Implicative Verbs. *Language*, 47: 340-358.

Kempchinsky, P. (1990) Más sobre el efecto de referencia disjunta del Subjuntivo. In I. Bosque (ed.), *Indicativo y Subjuntivo* (pp. 234-258). Madrid: Ediciones Taurus.

Kratzer, A. (1989). An investigation of the lumps of thought. *Linguistics and Philosophy*, 12: 607-653.

Marques, R. (2009). On the selection of mood in complement clauses. In L. Hogeweg, H. de Hoop & A. Malchukov (eds.), *Cross-linguistic semantics of tense, aspect, and modality* (pp. 179-204). Amsterdam, Philadelphia: John Benjamins.

Marques, Rui (2013) Référence au réel et concordance des temps en portugais européen. Communication presented at the *27ème Colloque du CerLiCO Du réel à l'irréel – 2*, Univ. Limoges / CeReS, France.

Ogihara, T. (1999). Double-access sentences generalized. In T. Matthews & D. Strelovitch (eds.), *Proceeding of SALT IX* (pp. 224-236). Ithaca, N.Y.: CLC Publications, Cornell University.

Picallo, C. (1984). The Infl node and the Null Subject Parameter. *Linguistic Inquiry*, 15: 75-102.

Portner, P. (1997). The semantics of mood, complementation and conversation-al force. *Natural Language Semantics*, 5: 167-212.

Raposo, E. (1987). Case Theory and Infl-to-Comp: The inflected infinitive in European Portuguese, *Linguistic Inquiry,* 18: 85-109.

Santos, A. L. (2006). *Minimal answers. Ellipsis, syntax and discourse in the acquisition of EP*. PhD dissertation, Universidade de Lisboa.

Silvano, P. (2002). *Sobre a semântica da sequência de tempos em Português Europeu. Análise das relações temporais em frases complexas com comple-tivas*. MA dissertation, Universidade do Minho