Acquisition of focus marking in European Portuguese.

Evidence for a unified approach to focus.

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1. Introduction.

Recent literature on the syntax-discourse interface in Romance languages indicates that the word order variation found in these languages correlates with the position of nuclear stress. For instance, in Romance languages allowing subject-verb inversion, it has been claimed that the subject is clause-final, because this is the position where nuclear stress falls (Zubizarreta 1998, Costa 1998, Ordóñez 1997, among others). The nature of focus marking across languages is subject to a lively debate. According to some authors, focus-marking is subject to parametric variation, in the sense that some languages mark focus syntactically, while others do it prosodically (Horvath 1986, Rizzi 1997). Under this view, if a language marks focus syntactically, as many Romance languages do, additional prosodic effects are coincidental. In other words, syntactic marking is sufficient for encoding focus information, and prosody plays no role. According to other authors, focus is universally marked by prosodic prominence. In case syntactic effects are associated with focus, they are a direct consequence of the prosodic organization of the language (Reinhart 1995, Szendroi 2001).

The goal of this paper is to investigate whether children make the distinction between syntactic marking and prosodic marking of focus. Since there is variation in focus-marking, children have to find out which strategy is used in their language, and, therefore, in the course of development, it is expected that they will make mistakes both in the production and comprehension of focus. In fact, initial results confirm the problematic status of focus-marking in different languages (Crain et al. 1994). There is reason to believe that the characteristic properties of the acquisition of focus may shed light on the theoretical debate with respect to the parametric nature of focus-marking. If focus marking was truly parametric, we would expect that children who acquire language with syntactic focus marking fail to comprehend marked word orders. In languages where focus is marked only prosodically, the expectation is that they initially fail to comprehend cases of prosodic markedness. Crucially, in a language such as European Portuguese, in which both strategies co-exist in some constructions, children are expected to fail on both. Therefore, children's mastery of word order and stress in

focus contexts provides a good testing ground for the comparison between the two approaches to focus.

The paper is organized as follows:

In section 2, we present the basic differences between two views on focus marking, the parametric view (e.g. Horvath 1986)[1] and the interface theory (Reinhart 1995, to appear), spelling out some of the predictions made by each of them for a language like European Portuguese, in which, in some specific constructions, stress-shift and word-order changes co-exist as strategies for marking focus.

In section 3, we explain how research on language acquisition may contribute to shed some light on the debate on focus.

In section 4, the results of an experiment on the comprehension of focus marking strategies by Portuguese children are presented.

Section 5 presents the main conclusions of the experiment.

2.   The debate on the nature of focus.

There is no consensus in the literature regarding the nature of focus marking in languages. According to some authors, as in Horvath (1986) and Rizzi (1997), focus is to be understood as a syntactic feature that may or may not correspond to a functional category, depending on the analysis. According to this view, languages in which there is syntactic movement for focus reasons, this type of movement occurs for identification or checking of a focus feature. If a language does not exhibit this type of movement, this is due to a parametric split between languages related to the grammar component in which focus is marked. This type of parametric approach is made explicit in Horvath (1995), who formulates it as follows:

(1)   **Focus parameter:**

1.   nature of the feature:

(i) freely occurring, i.e. not   vs. (ii) assigned by a specific X^0

   transferred from another   category (Hungarian)

   category (English)

2.   what X^0 functional category of the clause is the assigner, i.e.

   the source of the feature

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[1] Cf. Horvath (2000, 2004) for a different approach.

3. whether the feature-assigning category needs to be lexicalized

4. the mode/nature of the process of feature-assignment:
   (i) feature transfer
   (ii) Spec-head agreement

According to this type of formulation, a difference between Hungarian and English is whether focus is marked syntactically or prosodically. In what follows, we will refer to this view on focus as the **parametric view**. The assumption that languages split in the nature of focus marking (syntactic vs. prosodic) leads the parametric view to make some problematic predictions. If a language marks focus syntactically, additional prosodic effects are coincidental. This is problematic, since it is known that languages may resort to both prosodic and syntactic strategies or to prosodic strategies alone for marking focus, but, typologically, there appears to be no language that resorts to syntax alone, as mentioned in Givón (1990). In order to illustrate this problem, we can mention the case of Hungarian. According to Szendrői (2001), the target of focus movement is the place where nuclear sentence stress falls in Hungarian. According to the parametric view, this behaviour is coincidental and, therefore, left unexplained. It is also known that some languages resort to both prosodic and syntactic strategies in different syntactic environments. Consider the case of focalized possessives in European Portuguese (Castro and Costa 2003). Cardinaletti (1998) shows that post-nominal possessives in Italian are used in definite contexts, only if they are focussed. In Portuguese, unlike in Italian, a focalized possessive is not post-nominal. Rather, the focussed possessive in pre-nominal position receives a marked stress. This difference between the two languages is illustrated in (2) and (3), where capital letters signal prosodic proeminence:

(2)   *Italian*
        a.   il mio libro   (non-focused possessive)
                the my book
        b.   il libro MIO   (focused possessive)
                the book my
                "my book"

(3)   *European Portuguese*

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a.   o meu livro   (non-focused possessive)

    the my book

b.   *o livro MEU

    the book my

b'.   o MEU livro   (focused possessive)

    the my book

    "my book"

The case of possessives in European Portuguese is an instance of stress-shift in a language that typically marks focus syntactically, as most Romance languages do. If the type of focus marking were a consequence of a parametric split between languages, it should not vary with the type of construction at stake within the same language.[2]

The parametric view contrasts with the **Interface Theory**, as proposed in Reinhart (1995, to appear). According to this author, languages always mark focus prosodically. Under this view, syntactic movement does not operate for the sake of licensing a syntactic focus feature, but rather in order to place a focused constituent in the position where nuclear sentence stress falls. If, for some reason, the syntax is unable to perform this, stress shift is required. Accordingly, stress shift is a costly operation requiring reference set computation at the interface (Reinhart 1995, to appear). The basic idea of this approach is that stress-shift is an uneconomical operation requiring that one determines whether there is no syntactic derivation satisfying the same purposes without involving the superfluous operation of stress-shift. Consider the following example, taken from Reinhart (1999). Let us start by defining focus set of IP as consisting of the constituents containing the main stress of IP. Thus, for a sentence like (4) uttered with neutral stress (assigned independently of focus), the focus set is the one indicated below:

(4)   [IP My neighbour is building a DESK]

    Focus set: {IP, VP, Object}

Now, suppose that, for some reason, one wants to focus the verb alone. In that case, (4) is not good enough, since the verb alone is not part of the focus set. Stress-shift must apply, as shown in (5).

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[2] Cf. Costa and Figueiredo Silva (to appear) for further discussion.

(5)   [$_{IP}$ My neighbour is BUILDING a desk]
        Focus set: {IP, VP, V}

Since part of the focus set of (5) coincides with the focus set of (4), it must be computed whether there is no alternative without stress shift for the specific focus purposes. It is clear that reference-set computation is involved, since otherwise (4) and (5) would be equally good in IP-focus and VP-focus contexts, contrary to fact.

Costa (2004) and Szendrői (2004) independently argue that the apparent stress-driven movement in the syntax is an operation available for free, hence not imposing computational cost. In order to illustrate this claim, consider the case of subject-verb inversion in European Portuguese. As in other Romance languages, the subject may occur inverted if it is focused. Its position will then coincide with the position where sentence nuclear stress falls. Costa (2004) argues, based on locality effects, that this position for the subject is made available in the syntax whenever Case can be licensed under Agree. In other words, its position is not dependent on interpretation matters, but rather on different strategies for syntactic licensing.

The interface theory of focus crucially predicts that both syntactic and prosodic strategies may co-exist in the same language. In fact, this is the case of European Portuguese in certain constructions. Apart from the case of possessives illustrated above, it can be shown that in ditransitive constructions narrow focus on the object may be obtained either by stressing it in-situ, shifting the stress from its normal clause-final position (5b), or by placing the direct object in clause-final position (5c):

(6)   a.   O João só atirou a cadeira ao Pedro. (Focus on VP or on Indirect Object)
                the João only threw the chair to the Pedro
                "João only threw the chair to Pedro"
        b.   O João só atirou A CADEIRA ao Pedro.   (Focus on Direct Object)
                the João only threw the chair to the Pedro
                "It was only the chair that João threw to Pedro"
        c.   O João só atirou ao Pedro a cadeira. (Focus on Direct Object, neutral)
                the João only threw to the Pedro the chair
                "It was only the chair that João threw to Pedro"

According to the Interface Theory, only (5b) involves reference set computation, since its focus set includes the VP, and requires comparison with (5c). Therefore, (5b) is ruled out at the interface with a VP-focus interpretation, and is computationally more costly. This difference will become relevant shortly for testing children's behaviour to the two different types of focus.[3]

3. Contribution from acquisition for the debate on focus.

In what follows, we intend to investigate whether children make the distinction between syntactic marking and prosodic marking of focus. Since there is crosslinguistic variation in focus-marking, children have to find out which strategy is used in their language, and, therefore, in the course of development, it is expected that they will make mistakes both in the production and comprehension of focus. In fact, initial results confirm the problematic status of focus-marking in different languages (Crain et al. 1994). There is reason to believe that the characteristic properties of the acquisition of focus may shed light on the theoretical debate with respect to the parametric nature of focus-marking. If focus marking was truly parametric, we would expect that children who acquire language with syntactic focus marking fail to comprehend marked word orders. In languages where focus is marked only prosodically, the expectation is that they initially fail to comprehend cases of prosodic markedness. Crucially, in a language such as Portuguese, in which both strategies co-exist, children are expected to fail on both. Therefore, children's mastery of word order and stress in focus contexts provides a good testing ground for the comparison between the two approaches to focus.

An experiment run for Dutch by Szendrői (2003) reveals that children fail to interpret stress-shift in ditransitive constructions as a strategy for assigning narrow focus to a direct object. Instead, to a Dutch sentence patterning like (5b), they assign a VP-focus reading. This shows that stress shift is problematic in a language that uses it for marking focus. This behaviour is expected under the interface view on focus, since stress-shift requires reference set computation at the interface and additional working capacities. The assignment of VP-focus interpretation straightforwardly follows from the Subset Principle (Crain et al. 1994) and reveals that children fail to assign the relevant interpretation to stress-shift.

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[3] Actually, under the interface theory (5b) should be ruled out, given the less costly alternative (5c). In Costa (2004), it is argued that the two co-exist for independent reasons due to binding effects in ditransitive constructions. This matter must be subject to further research.

Elaborating on these results, it becomes relevant to ask whether children also have problems in comprehending the effects of word order variation related to focus. The case of European Portuguese ditransitives is of particular interest, since it may contribute to compare the parametric view and the interface theory discussed in the previous section. Let us then consider the predictions made by each approach for acquisition.

Under the interface theory, children are expected to exhibit different behaviours when exposed to syntactic or marked prosodic focus marking. Since, according to what we have demonstrated above, only stress shift requires reference set computation at the interface, stress-shift is the only strategy expected to be problematic.

On the contrary, under the parametric view, since stress-shift is a strategy for marking focus parallel to the syntactic strategy, just reflecting different settings of the same parameter, children are expected to have problems with syntactic focus marking, since it is known from previous studies that they do have problems with interpreting stress-shift (cf. Szendrői (2003) for Dutch, and Crain et al. (1994) for English). Since, to our knowledge, children's sensitivity to stress-shift as a strategy for focus-marking has not been tested for European Portuguese, it is not clear whether the results will match those obtained for English or Dutch, but it is clear that the parametric view predicts no contrast in behaviour, since the two strategies follow from one single setting for the focus-parameter.

Bearing these predictions in mind, we will present, in the next section, the results of an experiment conducted with Portuguese children in order to test their behaviour under the two relevant conditions: stress-shift and word order change.

4. Experiment on the comprehension of focus marking strategies.
4.1. Methodology.

We conducted a truth-value judgement task with 21 normally developing children aged between 3 yrs 11 mo and 5 yrs 9 mo (average age 4 yrs 11 mo) and 6 adult controls. Two subjects were excluded, since one did not understand the task and another one had a yes-bias. The task was modelled after Gualmini et al. (2002). It consisted of a story acted out with props, followed by a statement by a puppet. The child's task is to determine whether the puppet's statement was true or false.

The conditions tested were:

a) **Condition 1:** Word order change - the aim of this condition was to test whether children have problems comprehending focus-related word order change.

b) **Condition 2:** Stress-shift – the aim of this condition was to determine whether Szendrői's (2003) results for Dutch are reproduced in European Portuguese, that is, detect whether children fail to comprehend focus-related stress-shift.

c) **Condition 3:** Control – the control condition was included in order to show that children do not have problems with unmarked stress and unmarked word order.

The tested sentences all included the focus-sensitive operator 'só' (*only*) in a preverbal position. The reason for this is that otherwise changes in focus do not give rise to truth-conditional differences. Examples of the test items are given in (7):

(7)   *Condition 1:*

a.   O Tigre só deu ao Piglet o jogo.

Tigger only gave to Piglet the game.

"It was only the game that Tigger gave to Piglet"

Condition 2:

b.   O Tigre só deu O JOGO ao Piglet.

Tigger only gave the game to Piglet

"It was only the game that Tigger gave to Piglet"

Condition 3:

c.   Só caiu o Pooh.

Only fell Pooh

"Only Pooh fell" or "Pooh only fell"

The context stories were designed in such a way that adult-like competence was reflected by a yes-answer. Six stories were used: one per condition and three fillers.

4.2. Expected results.

Crain et al. (1994) show that, in the case of focus ambiguity, children, unlike adults, opt for the widest possible interpretation. According to the authors, this is due to the semantic subset principle. Since the widest interpretation entails the other possible

interpretation, it would be impossible for the child to find out that the widest reading is possible on the basis of positive evidence, in case the narrowest is adopted. For this argumentation to become clearer, consider the following example:

(8)   O Tigre só deu o jogo ao Piglet.
        the Tigger only gave the game to Piglet.
        "Tigger only gave the game to Piglet"

The focus set of (8) contains VP and the Indirect Object, as illustrated in the possible paraphrases in (9):

(9)   a.   Giving the game to Piglet was the only thing that Tigger did.
        b.   It was only to Piglet that Tigger gave the game.

Crucially, (9a) entails (9b). Hence, the child can discover the (9b) interpretation by assuming (9a) as a possible interpretation, but she will not be able to do the reverse, without facing a learnability problem. The results obtained in Szendrői (2003) confirm this.

Assuming this background and the predictions made by the interface theory, the expected results for each of the test items at stake are the following:

- S only V PP$_{IO}$ DP$_{DO}$ Focus set: {DP$_{DO}$}   *Word-order condition*

The story presented makes the Direct Object reading true and the VP reading false, therefore the expected response, both for children and for adults is *yes*. In other words, since there is no ambiguity, and the interface theory predicts that syntactic focus-marking is unproblematic, it is expected that children interpret this sentence in an adult-like manner.

- S only V DP$_{DO}$ PP$_{IO}$ Focus set: {DP$_{DO}$, VP}   *Stress-shift condition*

The story makes the Direct Object and Indirect Object readings true and the VP reading false. If children, unlike adults, fail to comprehend the role played by stress-shift in marking focus, and if the Semantic Subset Principle is operative, it is expected

that children's and adults' behaviours are different. Children, unlike adults, should have problems interpreting this sentence, assigning it a VP-focus interpretation, and interpreting it as false. Adults, on the contrary, should judge the sentence as true.

- Only $V_{Unacc}S$ Focus set: {Subj, IP}   *Control condition*

Since the story makes the subject reading true and the IP reading false, it is expected that children, unlike adults, fail to interpret it correctly, assigning it the IP reading. Accordingly, the expected responses are "no" for children and "yes" for adults.

4.3. Results.

In the following tables, the results of the experiment are presented:

Table 1: Results for children

	YES	NO
Word order condition (expected response: **YES**)	78,95% (15/19)	21,05% (4/19)
Stress-shift condition (expected response: **NO**)	5,26% (1/19)	89,47% (17/19)
Control condition (expected response: **NO**)	84,21% (16/19)	15,79% (3/19)

Table 2: Results for adults

	YES	NO
Word order condition (expected response: **YES**)	100% (6/6)	0% (0/6)
Stress-shift condition (expected response: **YES**)	100% (6/6)	0% (0/6)
Control condition (expected response: **YES**)	66,6% (4/6)	33,3% (2/6)

The results presented above enable us to draw the following general conclusions

a) Syntactic focus marking is unproblematic for children;

b)   Stress-shift is problematic for children.

4.4.   Discussion.

Focusing on a comparison between the results obtained for the word order condition and the stress shift condition, it is clear that only the latter is problematic for children. This result supports the interface theory over the parametric view. Recall that the parametric view predicts no contrast between the two conditions, while the interface approach predicts that children should have problems with stress shift only, since this is the only strategy requiring reference set computation.

One problematic result is the one obtained for the control condition. The problem is that, since since VS is ambiguous, children should assign it the IP-reading, contrary to fact, because of the Semantic Subset Principle. A possible way of explaining this unexpected behavior is to link it to the fact that, in unaccusative contexts, both VS and SV orders are grammatical with wide focus reading. If children analyse VS as a non-canonical order, there would be no ambiguity for them. The evidence for this potential explanation is mixed. On the one hand, adults response was only 66% YES in this condition, indicating the presence of the ambiguity, while children performed more uniformly (84%). However, production data indicate that a younger child treats unaccusative VS as a canonical order (Adragão 2001). An alternative explanation stems from the fact that although both an IP- and a S-focus reading is potentially available in the case of unaccusatives, nevertheless intervening factors block the 'blind' application of the Semantic Subset Principle (e.g. subject is often not part of the focus). In such a case, an alternative strategy could be invoked to resolve the ambiguity. One such strategy that has been proposed to apply in a similar ambiguity situation is that children try to be 'charitable': i.e. facing two possible interpretations, they adopt the one that makes the utterance *true*. This would also explain why children adopt the S-focus interpretation in the case of unaccusatives. Further research is needed in order to clarify this issue.

5.   Conclusions.

The experiment reported in this paper allowed for showing that Portuguese children do not treat different strategies for focus marking in the same way. It was shown that children have problems with comprehending stress shift, a result already

achieved for other languages. Conversely, syntactic focus-marking is not problematic for children.

These results permit comparing two approaches to focus: the interface theory, as outlined in Reinhart (1995, to appear), and parametric views, such as the one advocated in Horvath (1986). It was argued that the results obtained favour the former approach, since a parametric view predicts that children should not exhibit a contrast in responding to prosodic and syntactic focus marking. Therefore, children's performance favours a unified approach to focus, according to which syntax and prosody are not independent, and work together for the purpose of focus marking.

Moreover, the results obtained cast doubt on the prosodic bootstrapping hypothesis for the setting of parameters related to word order. This hypothesis crucially relies on the assumption that sensitivity to the location of prosodic prominence precedes sensitivity to word order variation and stress shift. In particular, it is fundamental to this hypothesis that children 'ignore' data with non-canonical stress placement. However, as we demonstrated, children are able to identify the interpretative consequence of word order variation, while they fail to do the same in the case of marked prosody.

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