On optional wh-/focus fronting in Igbo: a SYN-SEM-PHON interaction

Abstract This paper discusses surface optionality in focus fronting in the Benue-Congo language Igbo. A focused XP can occur in-situ or ex-situ. We argue that the optionality does not have its origins in the syntax: in fact, exactly one focused XP has to move to the designated focus position in the left periphery in the syntax. The alternation between in-situ and ex-situ rather arises at PF: either the lowest or the topmost copy of the focus chain is pronounced. The choice is determined by semantic-pragmatic factors, i.e., we see an interaction between PF and LF. This constitutes a challenge for a strict version of the Y-model of grammar.

1 Introduction

This paper deals with (apparent) optionality in focus fronting in the Benue-Congo language Igbo. The basic word order in an all-new context is subject – verb – direct object – adjuncts (SU-V-DO-ADJ), see (1):[1]

(1) *Òbí hù̩-rù̩ Àdá n'-áhị́á*
     Obi see–rV Ada P-market
     'Obi saw Ada at the market.'   *declarative*

The relevant case of optionality arises when a XP is in focus (term focus), e.g., when it is questioned or when it constitutes the answer to a question (new information focus). In this case, the focused XP can either remain in the position that it surfaces in in an all-new declarative sentence as in (1) – a pattern we will refer to as the in-situ strategy; or the focused XP occurs at the left edge of the clause, an alternative that we will call the ex-situ strategy in what follows. The two options are illustrated for the direct object of a transitive verb for question formation (see (2)) and for new information focus, see (3), as in an answer to the questions in (2). The XP in focus is underlined in these examples; focused XPs that are not wh-words are represented in small caps in the English translations throughout the paper.[2]

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[1]Unless noted otherwise, the data and judgments in this paper are provided by the co-author Mary Amaechi, a native speaker of Igbo. Glosses: DEM = demonstrative, DIR = directional, FOC = focus marker, IMPF = imperfective, NMZL = nominalizer, NOM = nominative, NEG = negation, P = preposition, PFX = prefix, *pg* = parasitic gap, SG = singular, 3 = 3rd person. Most of our examples contain a verb suffix glossed as *-rV*. The vowel V of this suffix harmonizes with the vowel of the verb stem in quality and tone. The function of this suffix is debated; many researchers gloss it as a past tense marker (Carrel 1970, Emenanjo 1978, Uwalaka 1988, Nwachukwu 1995), but it also has non-past interpretations in certain contexts (Nwachukwu 1976). Others identify it as an aspect marker (Manfredi 1997), as a factive marker (Déchaine 1993, Emenanjo 2015) or as an exponent of affirmative polarity (Amaechi 2020). Nothing hinges on its exact meaning for our purposes.

[2]Igbo can express focus also in cleft structures. We will not discuss these here as they also involve the ex-situ strategy in their syntax (plus) clausal embedding. For a detailed syntactic study of different types of clefts in Igbo, see Amaechi (2020).

(2) Questions:

    a.   *Òbí hù-rù <u>ònyé</u> n'-áhị́á*
        Obi see–rV who P-market
        'Who did Obi see at the market?'
                              wh-DO in-situ

    b.   *<u>Ònyé</u> kà   Òbí hù-rù n'-áhị́á*
        who FOC Obi see–rV P-market
        'Who did Obi see at the market?'
                              wh-DO ex-situ

(3) New information focus (answers to (2)):

    a.   *Òbí hù-rù <u>Àdá</u> n'-áhị́á*
        Obi see–rV Ada P-market
        'Òbí saw ADA at the market.'
                             foc-DO in-situ

    b.   *<u>Àdá</u> kà   Òbí hù-rù n'-áhị́á*
        Ada FOC Obi see–rV P-market
        'Obi saw ADA at the market.'
                             foc-DO ex-situ

Both the in-situ and the ex-situ strategy are well formed from a purely syntactic point of view. In this sense, we are dealing with optionality. Based on novel data, we will argue that the ex-situ/in-situ optionality does not arise in the syntax. In fact, there is no syntactic optionality in focus fronting in Igbo: exactly one focus XP has to move to the focus position (SpecFoc) in the left periphery in the syntax, also in (apparent) in-situ cases. We provide evidence that the optionality arises at PF: either the copy at the bottom or at the top of the focus movement chain can be pronounced, resulting in the in-situ (bottom copy pronounced) and the ex-situ (topmost copy pronounced) strategy, respectively, on the surface. The in-situ variant will be argued not to arise from pure LF-movement (without any syntactic movement). Moreover, in line with previous findings from the study of the relation between focus realization strategies and focus type, we show that the choice of the copy that is pronounced in Igbo is influenced by semantic-pragmatic factors, viz., the type of focus involved. Thus, we find that semantics/pragmatics influences pronunciation; put differently, the LF branch of the grammar has an effect on the PF-branch. This interaction is problematic for (a strict version of) the Y-model of grammar (Chomsky & Lasnik 1977:1), where LF (semantics) and PF are separate modules that do not interact. The Igbo findings thus force us to reconsider the strict separation of PF and LF advocated by the Y-model. As we will see, the Igbo facts can be reconciled with Bobaljik's (1995) Single Output Syntax version of the Y-model plus Bobaljik's (2002) Minimize Mismatch Principle, which demands parallel privileging of copies at LF and PF. In this sense, the Igbo facts provide support for Bobaljik's revised model of the Y-model.

      This paper is structured as follows: After a brief introduction to the basic grammatical properties of Igbo, we will summarize the morphosyntactic properties of the focus in-situ and ex-situ strategy in Section 2. We will argue that there is no optionality in focus fronting in the syntax. In Section 3 we propose a PF-approach to the optionality and provide evidence that the choice of copies for pronunciation is determined by semantic-pragmatic factors. Furthermore, we discuss the consequences for the Y-model of grammar and how the facts support Bobaljik's (2002) Minimize Mismatch Principle in a single output syntax. Section 4 summarizes the findings and concludes.

## 2 The syntax of in-situ and ex-situ focus in Igbo

2.1 The Igbo language

Igbo (Benue-Congo, Blench 1989) is spoken in Southern Nigeria by about 30 million people (grammars: Green & Igwe 1963, Carrel 1970, Manfredi 1991, Mbah 2006, Emenanjo 2015). Igbo is a tone language and distinguishes between low tone (*à*), high tone (*á*), and downstep (*ā*). Tone in Igbo has both lexical and grammatical functions (see Nwachukwu 1995). The language

has remnants of a case system in nouns: the 2sg and 3sg personal pronouns have a nominative–accusative distinction; nouns in general distinguish between a base form and a genitive form, used to encode possession. There is relatively rich verbal inflection concerning tense and aspect marking as well as the expression of derivational categories, e.g., applicative.

In Amaechi & Georgi (2019) we argue that the basic structure of a declarative all-new sentence as in (1) is (4) (for a transitive verbal predicate):

(4)   Igbo clause structure:
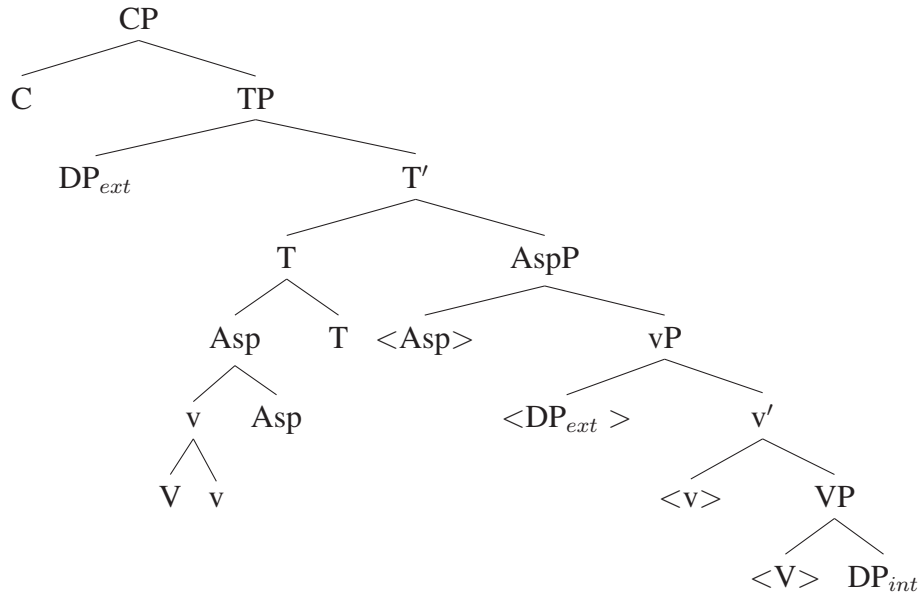
The VP is head-initial; the structurally highest argument (here, the external/agent argument of the transitive verb) undergoes obligatory EPP-movement to SpecT. The main verb raises cyclically to Asp. Furthermore, the structurally highest verb (the V+v+Asp complex or, if present, an auxiliary) raises to T to pick up the inflection (but see Déchaine 1993 for a different view on verb movement). Verb movement to T is motivated by the observation that only the finite verb precedes negation in a sentence with negative polarity, viz., the main verb if no auxiliary is present, and the auxiliary otherwise. EPP-movement of the subject is evident from the fact that the subject must precede the finite verb (and thus also negation, aspect markers, etc.).

2.2   Focus ex-situ involves movement

In this subsection we argue that focus ex-situ involves movement of the focused XP to the left periphery of the clause in Igbo. Furthermore, we briefly exemplify a subject/non-subject asymmetry with ex-situ focus.[3]

As was shown in (2b) and (3b) for direct objects, ex-situ focus involves fronting of the focused XP to the left edge of the clause, where it must be followed by the focus marker *kà* (see Amaechi & Georgi 2019 for arguments that *kà* is a focus marker). The same holds for all other non-subjects, viz., for focus fronting of indirect objects (IO) and adjuncts (ADJ), see (5). We illustrate this here with question formation, but exactly the same pattern holds for fronting of non-wh-XPs that are focused.

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[3]The argumentation in this subsection mainly summarizes the findings in Amaechi & Georgi (2019). However, while Amaechi & Georgi (2019) illustrate the facts with examples that involve non-wh-focus, we use question formation in this section (assuming that wh-words are inherently focused, see Horvath 1986, Rochemont 1986, Tuller 1986, Sabel 2000, Haida 2007, and Aboh 2007 for a different view). Furthermore, the evidence from cyclicity effects, viz., the tonal reflex of movement, is new and is not discussed in Amaechi & Georgi (2019).

(5) Focus fronting of indirect objects and adjuncts:

    a. *Ònyé kà   Òbí nyè-rè égō*
       who FOC Obi give–rV money
       'Who did Obi give money to?'   *IO question*

    b. *Èbéē kà   Òbí hù-rù Àdá*
       where FOC Obi see–rV Ada
       'Where did Obi see Ada?'   *ADJ question*

We assume that the fronting of the focused XP is brought about by movement in the syntax because the dependency is island-sensitive, exhibits reconstruction as well as cyclicity effects, and licenses parasitic gaps; these properties are the hallmarks of (Ā-)movement dependencies. (6) and (7) illustrate sensitivity to strong islands, viz. adjunct and complex noun phrase (CNP) islands.[4]

(6) Adjunct island:

    a. *Úchè pù-rù   túpú Òbí à-hú   Àdá n'-áhíá*
       Uche leave–rV before Obi NMLZ-see Ada P-market
       'Uche left before Obi saw Ada at the market.'   *declarative*

    b. **Ònyé kà Úché pù-rù   túpú Òbí à-hú   __ n'-áhíá*
       who FOC Uche leave–rV before Obi NMLZ-see   P-market
       Lit.: 'Who did Uche leave before Obi saw at the market?'   *DO question*

(7) CNP-island:

    a. *Úchè mà   nwókē áhú hū-rū Àdá n'-áhíá*
       Uche know man   DEM see–rV Ada P-market
       'Uche knows the man who saw Ada at the market.'   *SU-RC*

    b. **Ònyé kà Úché mà   nwókē áhú hū-rū __ n'-áhíá*
       who FOC Uche know man   DEM see–rV   P-market
       Lit.: 'Who does Uche know the man who saw __ at the market?'   *DO question*

Note that the ungrammaticality of (6b) and (7b) is not due to the distance spanned by the dependency because long-distance focus fronting as such is possible in Igbo, see (8) for long fronting of a wh-direct object. Thus, the ungrammaticality is indeed due to the crossing of an island boundary.

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[4]In the adjunct island examples throughout this paper, the verb in the embedded temporal clause is nominalized (nominalizing prefix *à-*). This nominalization happens in certain aspects as well as in some embedded clauses, though in the latter case it is not entirely clear what the conditions for its occurrence are. For example, it does not surface in all temporal embedded clauses. This nominalizing prefix is also absent whenever the preceding subject is a clitic pronoun. Crucially, the adjunct island effect we report here is independent of the form of the verb (nominalized or not), since it also arises in termporal adjunct clauses that do not trigger nominalization of the verb. Note that several tone changes occur in (6b) and (7b) (as well as in other examples in this paper) compared to their declarative counterparts (6a) and (7a): First, the final low tone of a subject DP becomes high when another element moves across it; this happens e.g. to *Uche* in (6b) and (7b), but not to proper names such as *Ada* and *Obi* here and in other wh-ex-situ examples in this paper since these names already end in a high tone underlyingly, so the effect is not visible. Second, Ā-movement of a subject, as e.g. subject relativization in (7b) triggers downstep on the verb *hù* 'see' (and harmonizing affixes), which otherwise surfaces with low tones. Another regular tonal change can be observed on the pronominal subject pronoun *ọ* throughout this paper: it bears a high tone in an affirmative sentence, but a low tone in negative clauses. For more discussion of these and other tonal effects (triggered by movement, polarity, and other factors) see Amaechi (2020).

(8) Long-distance questions:

    a. *Úchè chè-rè   nà Ézè hù̀-rù̀ Àdá n'-áhị́á*
       Uche think–rV that Eze see–rV Ada P-market
       'Uche thinks that Eze saw Ada at the market.'   *declarative*

    b. *Ònyé kà Úché chè-rè   nà Ézé hù̀-rù̀   __ n'-áhị́á*
       who FOC Uche think–rV that Eze see–rV   P-market
       'Who does Uche think that Eze saw at the market?'   *DO question*

The examples in (9) and (10) show that the fronted XP reconstructs e.g. for Principle C and variable binding. In (9b) we see that the matrix clause 3sg pronoun cannot be coreferent with the fronted wh-word, just like in the baseline example (9a), where coreference with both R-expressions is excluded by Principle C.

(9) Strong cross-over:

    a. *Ó   chè-rè   nà   Òbí hù̀-rù̀ Àdá*
       3SG.NOM think–rV that Obi see–rV Ada
       'S/he thinks that Obi saw Ada.'   *declarative*

    b. *Ònyé kà ó   chè-rè   nà Òbí hù̀-rù̀ __*
       who FOC 3SG.NOM think–rV that Obi see–rV
       *for which x, x thinks that Obi saw x   *DO question*

In (10) the variable contained inside the fronted wh-XP can be bound by the universally quantified subject of the embedded clause, as indicated by the possibility of pair-list answer in (10b) (note: 'to like' is expressed in Igbo as 'to see with the eye'). An alternative analysis in terms of quantifier raising (QR) of the universally quantified XP is excluded because this would involve long-distance QR, which is generally not available.

(10) Variable binding:

    a. *Òléē baby yā Úché sì nà nwátà òbụ́lá hù̀-rù̀ n'ányá kárị́chá*
       which toy 3SG Uche say that child every see–rV P-eye exceed.all
       'Which of his toys does Uche say that every child likes best?'

    b. *Úché sì nà Àdá hù̀-rù̀ bọ́ólù̀ yá n'ányá kárị́chá, Òbí hù̀-rù̀ ńkítā yā*
       Uche say that Ada see–rV ball 3SG P-eye exceed.all, Obi see–rV dog 3SG
       n'ányá kárị́chá, mà Ézè hù̀-rù̀ bùúsù yā n'ányá kárị́chá
       P-eye exceed.all and Eze see–rV cat 3SG P-eye exceed.all
       'Uche says that Ada likes her ball best, Obi likes his dog best, and Eze likes his cat best.'

Thus, the focus fronted XP in Igbo can be interpreted in the position of the gap, which follows if the XP has undergone movement and has thus left a lower copy/trace, which is accessible for interpretation at LF.

    Moreover, movement dependencies in Igbo exhibit cyclicity effects. One of these effects is tonal: the final tone bearing unit on the subject DP becomes a high tone when an XP is moved across it (Goldsmith 1976, Nwachukwu 1976, Manfredi 2018). Consider the examples in (11):

(11)   a. *Úchè hù̀-rù̀ Àdá n'-áhị́á*
       Uche see–rV Ada P-market
       'Uche saw Ada at the market.'   *declarative*

    b. *Ònyé kà Úché hù̀-rù̀ __ n'-áhị́á*
       who FOC Uche see–rV   P-market
       'Who did Uche see at the market?'   *DO question*

In the declarative sentence, the subject *Úchè*, a proper name, ends in a low tone, see (11a). If the direct object undergoes focus fronting to the left periphery and thereby crosses the subject, the final tone of the subject obligatorily becomes high, see (11b). In long-distance focus fronting, this tonal reflex can be observed in every CP that is crossed by movement, see (8b), where the tonal change affects both the embedded subject *Ézè* and the matrix subject *Úchè*. Crucially, this tonal reflex does not arise in Ā-dependencies that do not involve movement but rather base-generation (topicalization), and they do not arise under A-movement; thus, they only track Ā-movement. See Amaechi (2020: ch.4) for the relevant data and more cyclicity effects in Igbo.

Finally, (12) shows that focus fronting a constituent from the matrix clause can license a parasitic gap (*pg*) in an adjunct clause (Amaechi & Georgi 2019: 18).[5]

(12) *Gínī̱ kà Àdá kwè-rè __ ọ́nū̱ túpú ọ̀ zú-rụ́ pg*
      what FOC Ada agree–rV   mouth before she buy–rV *pg*
      'What did Àdá price before buying?'   *object question*
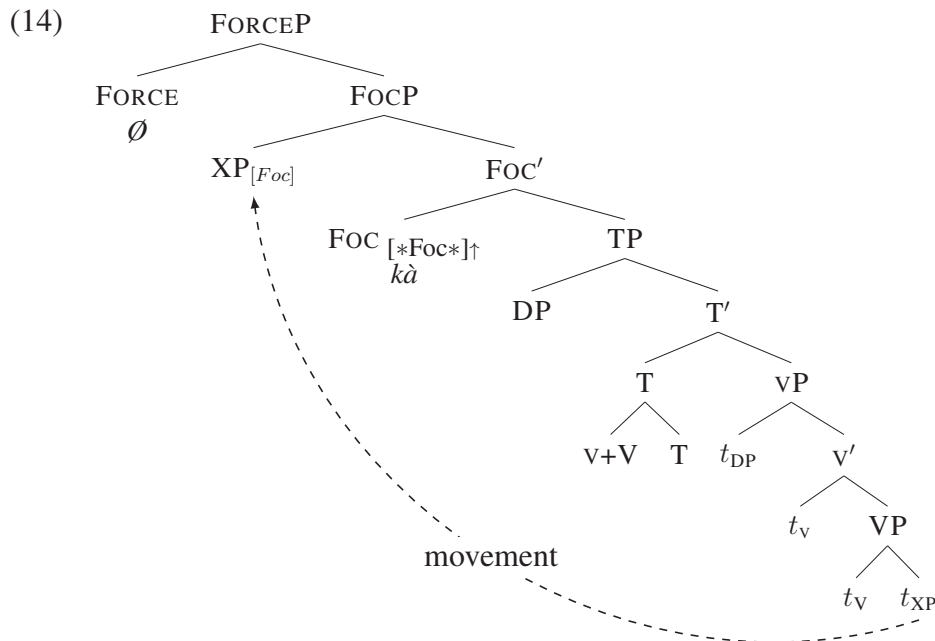
These findings provide evidence that movement is involved in focus fronting in Igbo.

Another property of Igbo focus fronting that will play a role in what follows is the observation that only one XP can ungergo focus fronting in the language. This is illustrated in (13) for multiple questions. Even though there are several wh-words in the sentence, only one of them can occur in the ex-situ left-peripheral position. Fronting more than one (regardless of their linear order and the position of the focus marker *kà*) results in ungrammaticality. Hence, the wh-words that do not front stay in-situ. Note that Igbo does not exhibit superiority effects in focus fronting, and hence any of the multiple wh-XPs can in principle front, as long as it is just one that undergoes movement.

(13)   Multiple questions (Amaechi & Georgi 2019: 9):
        a. *Òbí hù̱-rù̱ Àdá n'-Àbá*
            Obi see–rV Ada P-Aba
            'Obi saw Ada in Aba.'   *declarative*
        b. *Ònyé kà Òbí hù̱-rù̱ n'-èbéē*
            who FOC Obi see–rV P-where
            'Who did Obi see where?'   *wh: DO, ADJ*
        c. *N'-èbéē kà Òbí hù̱-rù̱ ònyé*
            P-where FOC Obi see–rV whom
            'Who did Obi see where?'   *wh: DO, ADJ*
        d. **Ònyé kà n'-èbéē kà Òbí hù̱-rù̱*
            whom FOC where FOC Obi see–rV
            'Who did Obi see where?'   *wh: DO, ADJ*

To summarize, exactly one focused XP in Igbo must move to the left periphery of the clause (unless there is no focused XP in the structure, of course). In Amaechi & Georgi (2019) we argue that this position is the specifier of FocP (SpecFoc) in a split CP-system. Given this assumption, the structure of ex-situ focus looks as follows (exemplified for an ex-situ direct object):

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[5]Note that *to prize* is expressed by an inherent complement verb construction in Igbo that literally means 'agree to mouth something'. Syntactically, 'mouth' is the (inherent) complement (direct object) of the verb, while 'something' is an applied argument (i.e. an indirect object) that linearly precedes the direct object, just like indirect objects in double object constructions do in the language. Crucially, indirect objects, including applied ones, behave exactly like direct objects with respect to Ā-movement in Igbo. They can undergo Ā-movement such as focus fronting, Ā-movement of indirect objects also leaves a gap, and they are also pronominalized by the accusative form of the personal pronoun.

(14)

FORCEP

FORCE Ø

FOCP

XP$_{[Foc]}$

FOC'

FOC $_{[*Foc*]\uparrow}$
kà

TP

DP

T'

T

vP

v+V   T

t_{DP}

V'

t_V VP

t_V t_{XP}

movement

The focused XP moves from its base position inside the vP to the specifier of FocP; this movement is driven by the probe-feature [*Foc*]↑, which is satisfied (and hence deleted/deactivated) as soon as there is an XP in SpecFoc. Put differently, [*Foc*]↑ probes upwards, viz. it seeks a focus XP that c-commands it, which is the case when an XP is in SpecFoc. The head of FocP, viz., Foc^0 is realized as *kà* (the focus marker) if an overt (viz., pronounced) XP occupies Spec-Foc; otherwise Foc^0 remains silent (Ø). The motivation for the sensitivity of Foc^0 spell-out to the overtness of the XP in SpecFoc will be introduced in Subsection 2.3.

So far, we have only considered examples with non-subject XPs in the ex-situ strategy. This is because subject focus differs slightly from non-subject focus with respect to the availability of in-situ vs. ex-situ focus in Igbo. Focused subjects, like focused non-subjects, can occur in-situ, i.e. without the focus marker, see (15a).[6]

However, it is impossible to add *kà* to the subject if the subject is focused (in the minimal clause), see (15b). Since with non-subjects *kà* can only attach to ex-situ focus XPs, this suggests that subjects cannot be focused ex-situ in Igbo but have to stay in their canonical position SpecT. In fact, Amaechi & Georgi (2019) provide further arguments for this view, e.g. from another tonal reflex of movement. Before we can illustrate this, note that the restriction to focus in-situ for subjects only holds for clause-bound Ā-dependencies. Long-distance subject focus is possible, and in this case the subject is also followed by the focus marker *kà*, just like any other ex-situ focus XP, see (15d) based on (15c). (15d) also shows that under long subject movement, we see a tonal effect on the verb in the clause in which the subject originates: its tones (underlyingly low, see (15c)) surface with downstep. Amaechi (2020) shows that this

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[6]In fact, the possibility of using in-situ subject focus is limited. In-situ subject focus is possible for wh-subjects and non-wh-subjects preceded by a focus-sensitive particle like 'only'. However, in-situ focus is not available for 'bare' focused subjects that are neither wh-words nor accompanied by a focus-sensitive particle as e.g. in an answer to a subject question "Who came?" – "John came". This answer would be ungrammatical in Igbo, even with stress on the subject; Igbo does not (primarily) use phonetic cues to indicate focus. No such restrictions hold for in-situ focus on non-subjects. This is in line with Fiedler et al.'s (2010) generalization that subject focus – unlike non-subject focus – must be marked in West African languages (and beyond). In Igbo this involves some morpho-syntactic indication of focus, e.g. wh-morphology, the occurrence of the focus marker (generally unavailable for in-situ focus, however) or the presence of a focus-sensitive particle. Otherwise, the string is morpho-syntactically indistinguishable from a declarative clause (as in the answer "John came." above.). The only way to express focus on a "bare" subjects (in the minimal clause) is to use a cleft structure ("It is John who came.").

tonal reflex only arises in movement dependencies (focus fronting) but not in base-generation Ā-dependencies (topicalization). Crucially, this tonal reflex is absent when the subject of the minimal clause is focused: the tones on the verb stay low, see (15a). This is a further argument for the claim that local subjects can only be focused in-situ in Igbo.[7],[8]

(15)   a.   *Ònyé hù-rù   Àdá n'-áhị́á*
           who   see–rV Ada P-market
           'Who saw Ada at the market?'   *local SU question*

       b.   **Ònyé kà   hū-rū   Àdá n'-áhị́á*
           who   FOC see–rV Ada P-market
           'Who saw Ada at the market?'   *local SU question*

       c.   *Úchè chè-rè   nà   Òbí hù-rù   Àdá n'-áhị́á*
           Uche think–rV that Obi see–rV Ada P-market
           'Uche thinks that Obi saw Ada at the market.'   *declarative*

       d.   *Ònyé kà   Úché chè-ré   __ hū-rū   Àdá n'-áhị́á*
           who   FOC Uche think–rV   see–rV Ada P-market
           'Who does Uche think saw Ada at the market?'   *long SU question*

Amaechi & Georgi (2019) attribute the immobility of local subjects to an anti-locality constraint on movement; see the paper for a detailed analysis.

   Due to the restrictions on subjects with respect to the availability of the ex-situ/in-situ strategy, and given that it is not totally clear whether focused matrix subjects undergo movement to SpecFoc (see Footnote 8), we will only consider non-subjects in what follows when we compare focus ex-situ and focus in-situ. See Fiedler et al. 2010, Zimmermann 2011, Zimmermann & Onea 2011 for more subject/non-subject splits in focus marking similar to that found in Igbo and reasons for the split. Such splits seems to be wide-spread cross-linguistically and they always go in one direction (special behavior of subjects compared to non-subjects).

2.3   Foc-in-situ involves syntactic movement

We now turn to the syntax of focus in-situ. There are two basic views on the nature of focus in-situ in the literature (see Bayer & Cheng 2017 for a recent overview on analyses of wh-/focus in-situ). First, in-situ XPs may be literally in-situ, i.e., they do not undergo (focus) movement in the syntax at all and are located in the same position they occupy when they are not focused (i.e., in an all-new declarative clause). Under this view, the in-situ element is interpreted either by

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[7]Note that, as illustrated e.g. in (7b), local subject relativization – unlike local subject focus fronting – also triggers the tonal reflex of movement on the verb of the relative clause. This shows that the reflex is not per se restricted to long subject extraction. As for the difference between local subject relativization vs. focus fronting, we have argued in Amaechi & Georgi (2019) that local subject relativization can exceptionally move to the C-domain of the minimal clause since this movement is required for interpretation (lambda abstraction). See the aforementioned paper for details and a formal implementation of this difference in local subject Ā-movement.

[8]Island-sensitivity cannot be used to test for movement in local subject focus fronting: The distance spanned by the putative movement from SpecT (the canonical subject position) to SpecFoc is too short to cross e.g. an adjunct or a complex NP-island. Subextraction of a conjunct from a coordinated subject is possible, but only with a resumptive pronoun instead of a gap, and in this case the subject is also followed by the focus marker, unlike when the entire subject is locally focused. *pg*-licensing is also not informative for subjects since the *pg* must not be c-commanded by the true gap (Engdahl 1983), which is, however, the case if the Ā-moved XP is a subject. See Amaechi & Georgi (2019) for other potential movement diagnostics (e.g., D-linked wh-phrases, fragment answers), most of which can, however, not be applied in Igbo for independent reasons (because the constructions do not exist in the first place or they do not exhibit a distinction between ex-situ/in-situ focus XPs in general, not even with non-subjects).

moving to their scope position at LF (May 1985) or without LF-movement via unselective binding (Pesetsky 1987). The second view is that focused XPs do undergo movement to the ex-situ focus position (here: SpecFoc) in the syntax, but are pronounced in their base position. In the latter case, the difference between ex-situ and in-situ focus thus obtains in the PF-component: either the topmost copy of the movement chain (the one in SpecFoc) is pronounced, leading to focus ex-situ on the surface, or the lowest copy of the chain (base position of the XP) is phonologically realized, resulting in an in-situ focus XP on the surface (see Nissenbaum 2000, Bobaljik 2002). In this subsection we argue that the second view is appropriate for focus in-situ in Igbo, i.e., the optionality between focus ex-situ and in-situ arises at PF. In the syntax, one focus XP has to move to SpecFoc. Evidence for this claim comes from the observation that focus in-situ in Igbo (illustrated here again with wh-words) exhibits (Ā-)movement properties: it is island-sensitive, can license parasitic gaps and does not induce Beck intervention effects. The parasitic gap data also argue against LF-movement.

First, consider (16). It shows that an in-situ wh-word cannot occur inside an island (here, an adjunct island). This follows if there is syntactic movement involved, which is blocked by islands.

(16)   Island-sensitivity of wh-in-situ:

    a. *Àdá zù-rù   [nwááǹyì áhú zū-rū **gíní**]
       Ada meet–rV   woman DEM buy–rV what
       Lit.: 'Àdá met the woman who bought what?'   *CNPC-island*

    b. *Àdá hù-rù Òbí [túpú ọ̀ zú-rú **gíní** n'-áhị́á]
       Ada saw   Obi before she buy-rV what P-market
       Lit.: 'Àdá saw Òbí before she bought what at the market?'   *ADJ island*

Second, wh-in-situ can license a parasitic gap (*pg*), see (17). *Pg*s are only licensed by Ā-movement in the narrow syntax, but not by LF-Ā-movement (Engdahl 1983; see Branan & Sulemana 2019 for the same effect with wh-in-situ in Bùlì). Hence, (17) does not only provide evidence that the (apparent) in-situ wh-word has undergone Ā-movement, but also that this movement has happened in the narrow syntax, and not at LF. This argues against the alternative approach to wh-in-situ mentioned above, where the in-situ wh-element does not move in the syntax, but rather at LF.[9]

(17)   *pg*-licensing by wh-in-/ex-situ:

    a. *Gíní kà Àdá kwè-rè* _ *ọ́nū túpú ọ̀ zú-rú pg*
       what FOC Ada agree–rV   mouth before she buy–rV *pg*

    b. *Àdá kwè-rè* **gíní** *ọ́nū túpú ọ̀ zú-rú pg*
       Ada agree–rV what mouth before she buy–rV *pg*
       'What did Ada price before buying?'

Finally, (18) illustrates that negation (and also focus-sensitive particles) can intervene between an in-situ wh-word and its putative landing site in SpecFoc. If the wh-word were indeed in its base position in the syntax, it would be c-commanded by negation and should thus induce a Beck intervention effect (Beck 1996; 2006, Kotek 2017a;b; see e.g. Kobele & Torrence 2006 for such effects with wh-in-situ in Asante Twi). These intervention effects are suspended by syntactic movement of the wh-element across the potential intervenor (though LF-movement alone does not safe the intervention effect). Hence, the wh-in-situ element in Igbo also behaves as if it has undergone syntactic movement in this respect.

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   [9]See Branan & Sulemana (2019) and references cited there for a critical discussion about whether LF-movement can or cannot license parasitic gaps.

(18) a. *Gị́nị̄ kà Àdá á-gū-ghị́*
what FOC Ada NMLZ-read-NEG
'What did Àdá not read?'

b. *Àdá á-gū-ghị́* **gị́nị̄**
Ada NMLZ-read-NEG what
'What did Àdá not read?'

We can thus conclude that focus in-situ is only apparent in the sense that the focused XP undergoes movement to SpecFoc in the syntax, but the lowest copy of the chain is pronounced (cf. Bobaljik 2002). At this point it becomes clear why we formulated the conditions on the realization of the focus head Foc^0 with reference to the overtness of the XP in SpecFoc in Section 2.2: recall that elements that are focused in-situ (on the surface) cannot co-occur with the focus marker *kà*. If Foc^0 were always realized as *kà* when an XP occupies its specifier, it should also surface with (apparent) focus in-situ given that we have argued that there is also movement of the focused XP to SpecFoc in these sentences. What seems to matter for the realization of Foc^0 is whether the XP in SpecFoc is overt or not. If the XP in SpecFoc is pronounced, then Foc^0 is also pronounced, viz., *kà* surfaces; if, however, the XP in SpecFoc remains unpronounced (focus in-situ) then Foc^0 remains silent, too.

Recall that only one focus XP can move to SpecFoc in Igbo (see (13)). We thus predict that in multiple questions, all but one wh-XP are in fact in-situ in the syntax, i.e. do not undergo movement to SpecFoc in the syntax (and since there are no superiority effects in Igbo, see (13), in principle any of the wh-words in a multiple question can move, as long as just one of them does). Thus, we propose that there are two types of wh-in-situ elements in Igbo: true (unmoved) ones as in multiple questions, and apparent in-situ ones that have in fact undergone movement but are pronounced in their base position, as in simple questions. Evidence for this split of in-situ wh-elements comes from the following observations. First, true wh-in-situ elements in multiple questions are not sensitive to islands, see (19): the wh-word *gị́nị̄* 'what' is inside an adjunct island, but the sentence is grammatical.[10] The reason is that it has not undergone wh-movement at all. The sole ex-situ focus position SpecFoc in the matrix clause is visibly occupied by *ònyé* 'who', the direct object of the matrix verb. Hence, *gị́nị̄* can (and in fact must) stay in its base position.[11] Compare this with (16b) where the sole wh-element cannot be inside the adjunct island because it has to move to matrix SpecFoc, since there is no other wh-element that can do this.

(19) *Ònyé kà Àdá hù-rù* __ [*túpú ò zú-rú* **gị́nị̄** *n'-áhị́á*]
who FOC Ada see–rV before she buy-rV what P-market
Lit.: 'Who did Àdá see before she bought what at the market?' *ADJ island*

Second, we consider evidence for two types of wh-in-situ elements from *pg*-licensing in multiple questions. Look at the question in (20); both objects of the ditransitive matrix verb are wh-pronouns, with the direct object in the ex-situ position and the indirect object in-situ. It is not possible in this configuration to have a *pg* licensed by each of the wh-words. The reason is that *pg*s require a syntactically moved antecedent. But the wh-word representing the indirect object is truly in-situ, i.e. it has not undergone movement at all in the syntax – the sole landing site is visibly occupied by the wh-direct object. Hence, licensing of pg_1 fails (the linear order of objects in Igbo is indirect object $\succ$ direct object).

(20) **Gị́nị̄ kà Àdá gòsì-rì ònyé* [*túpù ò nyé* pg_1 pg_2]
what FOC Ada show–rV who before she give *pg pg*
Lit.: 'What did Ada show whom before she gave (it to him)?'

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[10]We thank Katharina Hartmann for pointing out to us the prediction related to island-sensitivity of true in-situ wh-words in multiple questions.

[11]We assume that true wh-in-situ in multiple questions is interpreted via unselective binding (Pesetsky 1987).

Compare this *pg*-licensing behavior of a truly in-situ wh-element with that of an apparent in-situ wh-element (moved but pronounced in-situ) in a simple question as in (17b): the apparent wh-in-situ element can license a *pg* – unlike the truly in-situ one in (20) – since it can move to the ex-situ focus position SpecFoc.

This account of the grammaticality difference between (20) and (17b) further predicts that (20) becomes grammatical if pg_1 representing the (truly in-situ) indirect object is replaced by an overt pronoun; pg_2 should be licensed since its antecedent is the ex-situ wh-direct object. Indeed, this sentence is grammatical in Igbo, see (21).

(21)   *Gínī kà Àdá gòsì-rì ònyé* [*túpù ọ̀ nyé yá pg*]
        what FOC Ada show–rV who   before she give him
        Lit.: 'What did Ada show whom before giving him?'

Finally, if both wh-words in a multiple question remained in-situ, one *pg* should be licensed, regardless of which wh-element it is related to. This should hold since any of the two wh-words can move to the sole ex-situ focus position SpecFoc (no superiority effects). (22) illustrates that this is borne out, too:

(22)   a.   *Àdá gòsì-rì ònyé gínī* [*túpù ọ̀ nyé pg yá*]
                Ada show–rV who what   before she give   it
                Lit: 'Ada showed whom what before she gave it (to him)?'
    b.   *Àdá gòsì-rì ònyé gínī* [*túpù ọ̀ nyé yá pg*]
                Ada show–rV who what   before she give him
                Lit.: 'Ada showed who what before she gave him (it)?'

Hence, the generalization for Igbo is that in a sentence in which one or more XPs are focused, exactly one XP must undergo movement to SpecFoc in the syntax (though it may be pronounced in its base position). This restriction to the movement of one focused XP can be formalized in an optimality-theoretic approach with ranked and violable constraints (cf. Prince & Smolensky 1993).[12] We need the following constraints:

(23)   a.   Focus Criterion (FOC-CRIT, cf. Rizzi & Shlonsky 2004, Rizzi 2006):
            A [foc]-bearing XP in Igbo must occupy SpecFoc.
    b.   Last Resort: (LR, cf. Chomsky 1995):
            Movement must be feature-driven (result in discharge of a probe feature)
    c.   ranking: LR ≫ FOC-CRIT

FOC-CRIT basically demands that focused XPs must occupy SpecFoc and hence must move from their vP-internal position to the left periphery. This holds for all focused XPs in the clause. In order to restrict the XPs that move to SpecFoc to exactly one, FOC-CRIT interacts with the constraint LR. LR says that every movement step must result in the checking of a feature. Recall from Section 2.2 that the focus head Foc^0 bears a probe feature that probes upwards and is discharged as soon as it finds an XP in SpecFoc. Thus, this probe feature $[*Foc*]\uparrow$ is deleted after the first focus XP moved to SpecFoc. Any further focus XP that intends to move to SpecFoc (to satisfy FOC-CRIT) violates LR because it does not result in feature checking (given that the sole focus movement related probe feature has been discharged by the first instance of

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[12]Since the details of the OT-analysis of the focus fronting generalization are not crucial for the main point of this paper, we only briefly outline the logic of the analysis in this section. The interested reader is referred to Amaechi & Georgi (2019) for a detailed OT-analysis, including, for example, relativization and long-distance focus movement.

focus movement). Since LR outranks Foc-Crit, we derive the restriction that only one focus XP moves to SpecFoc; any potential other focus XPs in the clause stay in-situ, in violation of Foc-Crit. The immobility of local subjects with respect to focus movement can be integrated into this analysis by a high-ranked anti-locality constraint à la Erlewine (2016) that prohibits movement steps that are too short as defined in (24):

(24)   Spec-to-Spec anti-locality (SSAL, Erlewine 2016: 431):
        Ā-movement of a phrase from the Specifier of XP must cross a maximal projection other than XP

Movement of a focused subject XP from its canonical position SpecT (due to Igbo's obligatory EPP-feature on T) to SpecFoc would be too local in this sense as it does not cross a phrase other than TP, see the tree in (14). If SSAL outranks in particular Foc-Crit, see (25), subjects will not undergo focus movement to the local SpecFoc, in violation of Foc-Crit.

(25)   Constraint ranking (extended): SSAL ≫ LR ≫ Foc-Crit

This brief sketch of the analysis illustrates one way of modeling the requirement that exactly one focus XP must move to SpecFoc in the syntax in Igbo. The formalization of this generalization will, however, not be important in what follows, only the empirical pattern will be immediately relevant.

2.4   Interim summary

We have argued in Section 2 that the optionality between focus ex-situ and focus in-situ in Igbo does not arise in the syntax: if there is at least one focus XP present in the structure, exactly one focus XPs must undergo movement to left-peripheral focus position (SpecFoc) in the syntax. We find true syntactic focus in-situ only if there are multiple focused XPs; all but the one XP that moves to SpecFoc in the syntax stay in their base positions. The optionality between focus ex-situ and in-situ arises at PF, viz., what is variable is which of the copies in the focus movement chain is pronounced: either the topmost copy, viz., the one in SpecFoc, is pronounced, which leads to focus ex-situ on the surface; or the lowest copy of the chain (XP's base position) is pronounced, which results in (apparent) focus in-situ on the surface.

3   Factors that govern copy deletion / spell-out

If the ex-situ / in-situ distinction is a matter of PF, the next question is whether we can identify any factors that govern the choice between the pronunciation of the topmost copy vs. the lowest copy in the focus movement chain. In this section we show that – in line with previous mainly semantic studies of ex-situ vs. in-situ focus – semantic/pragmatic consideration, viz., the type of focus to be expressed, is the main factor involved in the choice. This PF-LF interaction suggests that these two modules can interact.

3.1   Focus types and the structure-meaning correlation

Focus is a means to highlight that there are contextually salient alternatives that are relevant for the interpretation of an utterance (Rooth 1985, Rooth 1992, Krifka 2008). Different types of focus have been identified in the literature; these arise if additional semantic and pragmatic factors come into play, see Zimmermann & Onea (2011). A common distinction is between

identificational focus (or contrastive focus) vs. new information focus (Rochemont 1986, É. Kiss 1998, Aboh 2007), but more fine-grained distinctions have been argued for, e.g. in Dik (1997) and more recently in Bazalgette (2015). Bazalgette adopts a four-way distinction between simple focus (only triggers alternatives), implicational focus (comes with a cancelable implicature of contrast, exclusivity or unexpectedness), pragmatic focus that is associated with a presupposition (e.g. existence, exhaustivity) and focus that has an effect on the truth-conditions of the utterance (scalar, exhaustive or exclusive readings). Crucially for present purposes, É. Kiss (1998), Vallduví & Vilkuna (1998) claim that there is a correlation between focus realization (the morpho-syntactic strategy used to encode focus) and focus interpretation (the focus type) based on studies of focus in Hungarian, Finnish and Catalan: whereas in-situ focus encodes new information focus (viz., the simple presence of alternatives), ex-situ focus is used to express additional semantic and pragmatic meaning components (exhaustivity, contrast, etc.). Thus, morpho-syntactic complexity correlates with complexity in meaning. Hartmann & Zimmermann (2007), Zimmermann (2011) find by and large the same tendency in West Chadic languages (information focus tends to be morpho-syntactically unmarked, while contrastive focus is marked). They formulate this correlation in the Meaning-Structure Hypothesis:[13]

(26)   Meaning-Structure Mapping Hypothesis (Hartmann & Zimmermann 2007:378):
        Different focus positions are linked to different semantic interpretations.

More concretely, the idea is that ex-situ foci always come with an additional meaning component. We tested (some of) the contexts listed in Bazalgette (2015) and discussed / exemplified in van der Wal (2016) to check whether this general tendency also holds in Igbo.

3.2   The meaning-structure interaction in Igbo

In this subsection we will investigate whether there is a correlation between focus type and focus position (ex-situ/in-situ) along the lines of the Meaning-Structure Mapping Hypothesis in (26). We will not illustrate each focus type here, but restrict ourselves to a few illustrative examples that test whether ex-situ focus is indeed associated with additional meaning components such as contrast, exhaustivity, etc. For a comprehensive overview of (term) focus types, see Bazalgette (2015), van der Wal (2016).

   As we have already shown in (3), in-situ focus in Igbo can be used to express new information focus as in an answer to questions such as in (2). It is not excluded to use the ex-situ strategy in the answers (see (27)), but in-situ focus is the preferred option in this context, as expected under the Meaning-Structure Mapping Hypothesis.

(27)   New information focus:
        a.   *Ònyé kà   Òbí hù̩-rù̩   n'-áhíá*
              who   FOC Obi see–rV P-market
              'Who did Obi see at the market?'   *DO question*
        b.   *Òbí hù̩-rù̩   Àdá n'-áhíá*
              Obi see–rV Ada P-market
              'Obi saw ADA at the market.'   *DO in-situ focus*
        c.   *Àdá kà   Òbí hù̩-rù̩   __ n'-áhíá*
              Ada FOC Obi see–rV   P-market
              'Obi saw ADA at the market.'   *DO ex-situ focus*

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[13]See Zimmermann (2011: 1192) for a critical discussion of the Meaning-Structure Mapping Hypothesis especially with respect to contrastive focus. He adopts a somewhat weaker version of the hypothesis, viz., the Focus-Marking Implication, based on ideas in Skopeteas & Fanselow 2009.

Contrastive focus can also be expressed both by focus in-situ and ex-situ, but this time with a preference for the ex-situ strategy; see (28) and (29) for examples.

(28)   Contrastive focus:
    a.   Speaker A:

        Òbí hụ̀-rụ̀   Àdá n'-áhíá
        Obi see–rV Ada P-market
        'Òbí saw Àdá at the market.'

    b.   Speaker B:

        *M̀bà, Òbí hụ̀-rụ̀ **Úchè** n'-áhíá*
        no   Obi see–rV Uche P-market
        'No, Obi saw UCHE at the market.'   *DO in-situ focus*

    c.   Speaker B:

        *M̀bà, **Úchè** kà   Òbí hụ̀-rụ̀ __ n'-áhíá*
        no   Uche FOC Obi see–rV   P-market
        'No, Obi saw UCHE at the market.'   *DO ex-situ focus*

(29)   Contrastive focus:
    a.   *Òbí hụ̀-rụ̀ Àdá n'-áhíá mà Úchè hụ̀-rụ̀ **Ùgó** n'-áhíá*
        Obi see–rV Ada P-market but Uche see–rV Ugo P-market
        'Obi saw Ada at the market but Uche saw UGO at the market.' *DO in-situ focus*

    b.   *Òbí hụ̀-rụ̀ Àdá n'-áhíá mà **Ùgó** kà   Úché hụ̀-rụ̀ n'-áhíá*
        Obi see–rV Ada P-market but Ugo FOC Uche see–rV P-market
        'Obi saw Ada at the market but Uche saw UGO at the market.' *DO ex-situ focus*

Moreover, the ex-situ strategy expresses exhaustivity, viz., it indicates that the predicate holds solely for the mentioned alternative but for none of the other contextually salient alternatives. That ex-situ focus induces exhaustivity is evident from the following observations:[14] (i) Focus ex-situ is incompatible with the particles *also* and *even* (É. Kiss 1998), while they can co-occur with focus in-situ (new information focus in answers to questions), see (30). Note that (30b) is not unacceptable because the focus-sensitive particle cannot attach to an ex-situ focus, as a reviewer suggests; it is indeed out because focus ex-situ induces exhaustivity (and the additive particle is incompatible with that semantically), since (30c), without the focus-sensitive particle but with an additional alternative in an afterthought is also unacceptable. (ii) In the focused conjoined XPs test (Szabolcsi 1981) we compare a pair of sentences in which one contains a focused conjoined XP and the other sentence contains a focused non-conjoined XP which is identical to one of the conjuncts of the focused XP in the first sentence. If the sentence with the coordination entails the sentence without coordination, focus is not (obligatorily) exhaustive. (31) and (32) illustrate the test for focus in-situ (e.g. in an answer to an object question) and focus ex-situ in Igbo.

(30)   a.   *Àdá rì-rì   mà jí*
        Ada eat–rV also yam
        'Ada also ate yam.'

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[14]We illustrate exhaustivity tests here with ex-situ focus XP that are not wh-elements. However, the same holds for content questions: ex-situ wh-elements induce exhaustivity, while in-situ ones don't. Since focused subjects cannot undergo local Ā-movement, i.e. they have to remain in-situ, wh-subjects in a matrix question do not have an exhaustive interpretation, as expected. See Amaechi (2020) for further applications of exhaustivity tests in Igbo, e.g. in *it*-clefts.

b. *#Mà jí kà Àdá rì-rì*
also yam FOC Ada eat–rV
'Ada ate ALSO YAM.'

c. *#jí kà Àdá rì-rì, mà ó rì-kwà-wà ákpú*
yam FOC Ada eat-rV and 3SG.NOM eat-also-rV fufu
'Ada ate YAM, and she also ate fufu.'

(31) Focus in-situ:

    a. *Àdá rì-rì jí nà édè*
    Ada eat–rV yam and cocoyam
    'Ada ate yam and cocoyam.'

    b. *Àdá rì-rì jí*
    Ada eat–rV yam
    'Ada ate yam.'

(32) Focus ex-situ:

    a. *Jí nà édè kà Àdá rì-rì*
    yam and cocoyam FOC Ada eat–rV
    'Ada ate YAM AND COCOYAM.'

    b. *Jí kà Àdá rì-rì*
    yam FOC Ada eat–rV
    'Ada ate YAM.'

(31a) entails (31b), but this does not hold for (32a) and (32b). This shows that only ex-situ focus expresses exhaustivity.

Ex-situ focus is also compatible with an exclusive meaning component in Igbo: one can add the co-text "and not Y" to a sentence with an ex-situ focused XP, which explicitly excludes an alternative (Chafe 1976). This is, however, not possible with in-situ focus, see (33) (where the verb is focused; ex-situ verb focus requires nominalization in Igbo):

(33)   Context: Before going out, you ask your son to prepare fufu for dinner. When you came back in the evening the fufu is ready and you want to know how he prepared it: by pounding or by stirring. You ask your daughter, who was at home with your son, how he did it. She answers:

a.   *#Ó sù-rù yá, ò sé-ghī yá*
    3SG.NOM pound–rV it 3SG.NOM stir-NEG it
    'He POUNDED it, he didn't stir it.'

b.   *Òsúsú kà ó sù-rù yá, ò sé-ghī yá*
    pounding.NMZL FOC 3SG.NOM pound–rV it 3SG.NOM stir-NEG it
    'He pounded it, he didn't stir it.'

In addition, ex-situ focus in Igbo can induce an implicature, e.g., in the interpretation of numerals that in-situ focus does not induce: It has been noted that numerals, which are in principle ambiguous between an exact amount reading and an "at least this amount" (upward entailing) reading, can only have the exact amount reading under (exhaustive) focus, see among others van Rooij & Schulz (2004) for discussion. In Igbo, we observe that in-situ focus can have the upward entailing "at least" reading, while ex-situ focus only has the exact amount reading, see (34).

(34)   Numeral interpretation:

    a. *Ó nà-ènwétá ótù ǹdè n'ónwá*
    3SG IMPF-NMZL.have.DIR one million P-moon
    'S/he earns (at least) one million a month.'   *in-situ, upward entailing*

    b. *Ótù ǹdè kà ọ́ nà-ènwétá n'ónwá*
    one million FOC 3SG IMPF-NMZL.have.DIR P-moon
    'S/he earns (exactly) one million a month.'   *en-situ, not upward entailing*

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The loss of the "at least" reading under focus is assumed to be the result of a conversational implicature. Thus, ex-situ focus is associated with this additional pragmatic component, while in-situ focus is not.

The above examples illustrate that there is in fact a (non-perfect) correlation between the focus strategy used and the expressed focus type in Igbo in accordance with the Meaning-Structure Mapping Hypothesis: in-situ focus expresses solely information focus; ex-situ focus is (often) associated with additional meaning components (such as contrast, exhaustivity, implicatures) that are not available with in-situ focus. Thus, meaning has an influence on the choice of the focus realization strategy, which we argued to be a matter of PF rather than syntax. We will discuss the consequences of these findings for the architecture of grammar in the following subsection.

3.3   Consequences for the architecture of grammar

To summarize our findings, we can say that the (apparent) optionality between in-situ and ex-situ focus is not a syntactic effect but is rather determined at PF (realization of the topmost vs. the lowest copy in the syntactic movement chain). The choice of the copy that is to be pronounced is influenced by semantic/pragmatic factor, viz., focus type. We thus see an interaction between the two non-syntactic components PF (phonological form) and (roughly) LF (logical form). In a commonly assumed model of grammar in the Extended Standard Theory (Chomsky 1973) and its descendants, PF and LF are separate post-syntactic modules, see (35). This model is called the Y-model or T-model (Chomsky & Lasnik 1977) because the two modules PF and LF branch off from syntax:

(35)   Lexicon
              |
            Syntax
              |
             /\
           PF   LF
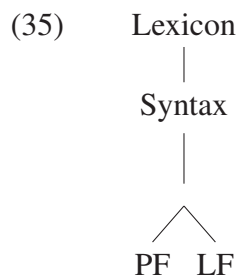
In this model, syntactic processes can feed or bleed (i.e., can influence) PF and LF-processes (pronunciation and interpretation), but not vice-versa, since PF and LF come too late to have an effect on syntax. Moreover, PF and LF do not interact since they constitute separate branches; they can both be sensitive to the output of syntax, but not to each other. Interestingly, the Igbo focus optionality poses a challenge for this view: apparently, PF is sensitive to LF in the language in that the choice of chain copy that is to be pronounced is determined by semantic/pragmatic factors. Such an interaction is unexpected under the Y-model.

Does that mean that we have to give up the Y-model? Not necessarily. In a study of head- and A-movement dependencies that also seem to exhibit a PF/LF-interaction similar to the one in Igbo, Bobaljik (2002) provides a solution to the puzzle (building on previous work in a similar spirit, e.g., Brody 1995). First, he adopts a single output syntax based on the copy theory of movement. This means that there is no distinction anymore between overt movement (movement in the narrow syntax which can feed PF, viz., ex-situ constructions) and covert movement (movement at LF which cannot feed PF and thus results in in-situ constructions) as in the pre-copy theory (trace) era. Rather, movement is always syntactic; a movement chain involves several copies and PF and LF decide which of these copies they interpret (phonetically or semantically), with potential mismatches between the two post-syntactic modules. If PF

chooses to privilege a higher copy in a chain than LF, we get reconstruction effects (an XP is interpreted in a lower position than where it surfaces); if, on the other hand, LF interprets a higher copy than PF, we get in-situ effects (an XP is interpreted in a higher position than where it surfaces). This intuition is precisely what we have argued to be the case in Igbo (apparent) focus in-situ: there is a movement chain in the syntax (with its scope position being the highest copy), but the lowest copy of it is pronounced at PF. This assumption still does not predict an interaction of PF and LF, of course. The second assumption Bobaljik makes to enforce such an interaction is the economy constraint in (36):

(36)   Minimize Mismatch (Bobaljik 2002: 251):
         (To the extent possible) privilege the same copy at PF and LF.

This constraint requires LF and PF to operate in parallel, i.e. to interpret the same copy because this is the most economical option (only one copy needs to be considered in both modules). Mismatches of the kind outlined above (reconstruction effects, in-situ effects) are not excluded, but they are dispreferred by (36) and must thus be triggered by other (more important) constraints.

Minimize Mismatch describes an interaction of PF and LF; they have to "talk" to each other to evaluate this constraint. We believe that the Igbo PF/LF-interaction can also be modeled in Bobaljik's (2002) framework given the economy condition in (36): If the lowest copy in the focus movement chain is interpreted (and this position is associated with information focus), then (36) strongly favors the pronunciation of the same copy, which results in focus in-situ. If, however, an additional meaning component (e.g. exhaustivity, contrast, etc.) is to be expressed, the highest copy in the chain is interpreted at PF (a position associated with such meaning components); given the Minimize Mismatch condition, this highest copy is also privileged at PF, viz., it is pronounced. The economy condition is not absolute, it can be overwritten by other constraints, as Bobaljik has pointed out. And in fact, there is no strict one-to-one correlation between interpretation (focus type) and focus marking strategy, see Zimmermann & Onea (2011), Zimmermann (2011). Such exceptions to Minimize Mismatch can also be modeled in an optimality-theoretic analysis with ranked and violable constraints. We leave it for future research to identify such interacting constraints and to model the interactions. What is crucial for present purposes is that the Igbo facts are in conflict at least with the initial version of the Y-model because PF and LF seem to interact, which the model excludes. It is, however, possible to reconcile the data with Bobaljik's (2002) revision of the model that is based on a single output syntax and the economy condition Minimize Mismatch, which postulates the required interaction between PF and LF. In particular, it demands isomorphism between PF and LF in terms of the choice of the privileged copy, which is precisely what we see in Igbo (and many other languages) focus realization vs. focus type. Note however, that the constraint Minimize Mismatch is still not in line with the Y-model in a strict sense: it postulates an interaction between two modules that should not interact because the LF and the PF-branch are strictly separated in the model. This raises the question whether the Y-model can be upheld in its present form given that we have evidence for a PF-/LF-interaction from head movement, A-movement (e.g. Bobaljik 2002) and Ā-movement (e.g. from the Igbo data in this paper).

On a final note, we would like to highlight the difference of the current study of focus marking in Igbo to similar previous studies that center around the Meaning-Structure Mapping Hypothesis (see (26)). As this hypothesis expresses, scholars (in particular semanticists) working on focus types (see the references above) have noted quite a while ago that there is a correlation between the focus position (ex-situ vs. in-situ) and focus type, with the more semantically/pragmatically complex types preferably expressed ex-situ and information focus expressed in-situ. In this sense, the Igbo facts are not surprising and support the hypothesis.

However, in previous work on this topic, the syntax of focus in-situ has not been studied in any detail, i.e., the syntactic status of focus in-situ (moved with pronunciation of the lower copy or unmoved) remains largely unclear. In the discussions of focus type and focus positions in the literature, focus in-situ is usually talked about as if it were 'real' focus in-situ, viz., the focused XP does not undergo syntactic movement at all. But often no tests to support this view are applied, though see e.g. Keupdjio (2020) for a recent study on Medumba (Grassfields Bantu): he shows that focus in-situ has not undergone movement in the syntax (and we find a similar split as in Igbo regarding the interpretation between focus in-situ and ex-situ). Now, imagine this were indeed the case in the languages discussed in the semantic literature on the topic, viz., focus ex-situ involves syntactic movement, while focus in-situ does not involve syntactic movement at all, the focus XP stays in its base position. Furthermore, the structurally highest copy is pronounced in each case, viz., the highest copy in the ex-situ scenario and the sole copy in the in-situ scenario. In this case, we have a *syntactic* difference between the ex-situ and the in-situ strategy. The interpretative component (semantics, pragmatics) can be sensitive to this syntactic difference because in the Y-model syntax feeds LF. A high copy (that is the topmost one among a number of other copies in a focus movement chain) is then associated with additional meaning components (exhaustivity, contrast, etc.), while a focus chain that consists of only one element (a trivial chain, since no movement has applied and hence no copies have been created) is interpreted as information focus. In such a scenario, no interaction between PF and LF is necessary, because the difference is already present in the syntax, which feeds both PF and LF. A real problem arises if there is no syntactic difference between focus ex-situ and in-situ, which we claim to be the case in Igbo. Still, the Meaning-Structure Mapping Hypothesis seems to hold. To achieve this, communication between PF and LF is necessary, such that the pronunciation of a copy (in a chain) is affected with its interpretation (focus type). Thus, a problem for the Y-model only arises if there is no syntactic difference between focus ex-situ and in-situ in that there is movement to a dedicated focus position (at the left edge of the clause or the vP) in both cases. This is how the Igbo facts are different and potentially more informative about the architecture of grammar than languages in which focus ex-situ and in-situ differ syntactically.

4   Conclusion

In this paper we have presented a study of an (apparent) optionality between focus ex-situ and in-situ in Igbo (Benue-Congo, Nigeria). We have argued that the optionality does not arise in the syntax; in this component both strategies involve focus movement (of exactly one focus XP) to the left periphery of the clause. Instead, the optionality emerges at PF: either the topmost copy or the copy at the bottom of the focus movement chain is pronounced. The choice is not completely optional, however. It is influenced by the semantics/pragmatics, i.e., the focus type that is to be expressed along the lines of the Meaning-Structure Mapping Hypothesis: information focus is preferably expressed with the in-situ strategy, while additional (pragmatic) meaning components, e.g., exhaustivity are preferably realized by the ex-situ strategy. Igbo differs from other languages with a similar correlation between focus type and focus realization strategy in that it requires an interaction between PF and LF. This is the case because there is no syntactic difference between the ex-situ and the in-situ strategy in Igbo (unlike, presumably, in some of the other languages discussed in the literature on focus types – though the syntactic properties of focus in-situ in these languages remains to be investigated). Hence, syntax cannot mediate between PF and LF in this case. A direct interaction between PF and LF is, however, challenging for the standard Y-model of grammar where PF and LF branch off from syntax and are separate branches. We have shown that Bobaljik's (2002) Single Output Syntax combined

with the economy constraint Minimize Mismatch provides a partial solution to the problem, though an interaction between LF and PF is still required (for the evaluation of the economy constraint), and hence, a strict version of the Y-model cannot be upheld.

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