

# Encoding Information Structure in Yucatec Maya: On the Interplay of Prosody and Syntax

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The aim of this paper is to outline the means for encoding information structure in Yucatec Maya. Yucatec Maya is a tone language, displaying a three-fold opposition in the tonal realization of syllables which is lexically determined. From the morpho-syntactic point of view, the grammar of Yucatec Maya contains morphological (topic affixes, morphological marking of out-of-focus predicates) and syntactic (designated positions) means which uniquely specify syntactic constructions for their information structure. After a descriptive overview of these phenomena, we present experimental evidence which reveals the impact of the non-availability of prosodic alternatives on the choice of syntactic constructions in language production.

*Key words: cleft constructions, lexical tone, topic affixes, verb-initial language*

## 1 Preliminaries

Yucatec Maya is a Mayan language spoken by a population of 700,000 speakers (following the 1990 census) at the Yucatecan peninsula (Mexico). As in most other Mayan languages, the canonical order in Yucatec Maya is verb initial (see England 1991; Norman & Campbell 1978).

With respect to information structure, Yucatec Maya shares with other Mayan languages that preverbal placement of constituents is unambiguously associated with particular pragmatic functions: topic and focus. The topic constituent is placed clause initially and it is followed by a deictic suffix. Focus is encoded through cleft constructions that place the focused constituent in the immediately preverbal position.

As regards its prosodic characteristics, Yucatec Maya is exceptional in its language family in being the only Mayan language that has developed lexical

tones.<sup>1</sup> However, lexical tone and intonation do not interact in the expression of topic or focus (cf. Kügler & Skopeteas 2006).

The aim of this paper is to outline the means of encoding information structure in Yucatec Maya. Section 2 presents the morpho-syntactic devices that Yucatec Maya uses for the encoding of topic and focus. Section 3 gives an outline of the tonal characteristics of Yucatec Maya, presenting the prosodic realization of lexical tones and examining the availability of tonal reflexes of information structure. In Section 4, we will present the results of a production experiment and we will discuss the impact of the grammatical and prosodic properties of Yucatec Maya as outlined in sections 2 and 3 on the choice of grammatical constructions in language production. Section 5 summarizes the main results of this work.

The data were collected in December 2004 at the village Yaxley (Quintana Roo, Mexico). The subjects that participated in all reported experiments were native speakers of Yucatec Maya and bilingual in Spanish, but exclusively use Maya in their everyday communication within the community.

## **2 Morpho-syntactic Encoding of Information Structure**

As mentioned in Section 1, verb initial sentences are considered as canonical based on the criterion of structural markedness: Constructions with preverbal arguments are morphologically marked, hence the verb initial order is considered to be the canonical one (see Durbin & Ojeda 1978). Both VSO and VOS are possible orders in the language, but VOS, which is exemplified in (1), is considered to be pragmatically neutral.<sup>2</sup>

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<sup>1</sup> See Fisher (1976) for a discussion of the tonogenesis in the Yucatecan branch of Mayan languages.

<sup>2</sup> See Skopeteas & Verhoeven (2005) about the impact of definiteness, animacy, and ambiguity on the choice of postverbal order in Yucatec Maya.

- (1) T-u            hàant-ah            òon            Pedro.  
 PFV-A.3    eat:TRR-CMPL    avocado    Pedro  
 ‘Pedro ate avocado.’

Though sentences with two postverbal arguments such as (1) qualify as canonical sentences in Yucatec Maya based on the criterion of morphological markedness, this order only very rarely occurs in corpora (1% in a corpus query in Skopeteas & Verhoeven 2005). This is a consequence of the fact that verb-initial sentences arethetic, andthetic sentences only rarely occur in discourse. The most frequent sentence type with two lexically realized arguments in a corpus is generally a categorical sentence with a topicalized agent (see (2)).

Topicalized and (narrowly) focused constituents are placed preverbally, while a postverbal constituent may bear broad focus (as, e.g., the patient *òon* in (2)). A topicalized constituent occurs clause initially and is obligatorily right-bounded by a deictic suffix (*a* ‘D1’: deixis to the 1<sup>st</sup> person; *o* ‘D2’: deixis to the 2<sup>nd</sup> person; *e* ‘D3’: contextually given referent).<sup>3</sup>

- (2) Pedro-e’    t-u            hàant-ah            òon.  
 Pedro-D3    PFV-A.3    eat:TRR-CMPL    avocado  
 ‘As for Pedro, he ate avocado.’

Narrow focus is assigned by the displacement of an argument in the preverbal position (cf. (3)). Focus on the agent of a transitive verb triggers a special ‘out of focus’ form of the verb (cf. (4)): The aspect auxiliary is dropped together with the cross-reference clitic for the agent. In the perfective aspect, the extrafocal verb bears the zero form subjunctive marker in non-clause-final position (Bricker 1979, Lehmann 1990). The constructions in (3) and (4) are cleft sentences. The main clause only contains a noun phrase which in Yucatec Maya as in many other Mesoamerican languages may constitute an independent

<sup>3</sup> See furthermore Bohnemeyer (1998) and Lehmann (1990) about topicalization in Yucatec Maya.

nominal clause. Verb and postverbal argument form a relative clause (relative clauses in Yucatec Maya are not introduced through a relative pronoun). The analysis of these constructions as cleft sentences explains the occurrence of the verb form in (4): This verb form does not occur elsewhere in main clauses, and it is this verb form that is used in relative clauses that are headed by an agent NP.

(3) òon t-u hàant-ah Pedro.  
 avocado PFV-A.3 eat:TRR-CMPL Pedro  
 ‘It was (an) avocado that Pedro ate.’

(4) Pedro hàant òon.  
 Pedro eat:TRR(SUBJ) avocado  
 ‘It was Pedro who ate (an) avocado.’

### 3 Prosody: Tone and Intonation in Yucatec Maya

In this section, we attempt to show that information structural categories such as topic or focus are not expressed by means of post-lexical tones (intonation) in Yucatec Maya. To show this, we first introduce the inventory of lexical tones of Yucatec Maya as well as their phonetic realization in section 3.2. Based on these observations, in section 3.3 we analyse target words bearing lexical tones in different syntactic positions that encode distinct information status. Comparing the realization of lexical tones on target words occurring in broad and narrow focus as well as in topic position, we observe no further tonal effects that might arise by intonation. The following section 3.1 introduces basic methodological issues of the production experiment as well as the data analysis.

#### 3.1 Procedure of the production experiment and data analysis

The speech data for the analysis reported in this section were recorded during the same field period as all the other data reported in this paper. Data elicitation

has been done by means of a production experiment with an experimental setup that allows for separating lexical and post-lexical tones. The general procedure is inspired by the work of Bruce (1977) on the tonal aspects of Swedish word accents. Three distinct sentence structures served for the elicitation of target words in broad and narrow focus (post- and preverbal position, respectively), and in topic position (cf. section 2). The structures are listed in (5), where (5a) evokes broad focus in a sentence with the target word as a single argument of the existential verb, (5b) narrow focus in a sentence with the target word in the focus position, and (5c) topic in a sentence with the target word in the topic position. In all sentences the target words are non-initial and non-final, in order to avoid interactions with sentence initial reset or sentence-final lowering.

(5) a. Broad focus construction

yàan      hun-túul      \_\_\_      ichil le      nah-o'.  
 EXIST    one-CL.AN    \_\_\_    in      DEF house-D2  
 'There is a \_\_\_ in the house.'

b. Narrow focus construction

ho'lyak-e',      \_\_\_      hàant-ik      le      òon-o'.  
 yesterday-D3      \_\_\_      eat:TRR-INCMPL DEF avocado-D2  
 'Yesterday, it was \_\_\_ who ate the avocado.'

c. Topic construction

ku ts'o'kol-e'      le      \_\_\_ -e'      h      bin-ih.  
 afterwards-D3    DEF    \_\_\_-D3      PFV go-B.3  
 'Afterwards, what the \_\_\_ concerns, (s)he went away.'

The target words have been chosen from the YUCLEX database (Lehmann s.d.), in order to consider instances of all possible tonal patterns (see Table 1).<sup>4</sup>

**Table 1:** Tonal patterns in lexical items. (N = neutral; L = low; H = high; grave accent indicates low tone, acute accent high tone).

| tonal pattern | lexical item      | translation     |
|---------------|-------------------|-----------------|
| N             | <i>am</i>         | spider          |
| L             | <i>lòol</i>       | flower          |
| L             | <i>mìis</i>       | cat             |
| H             | <i>mïis</i>       | broom           |
| H             | <i>láal</i>       | stinging nettle |
| N-N           | <i>ahaw</i>       | chief           |
| N-L           | <i>konkùum</i>    | pot seller      |
| N-H           | <i>konchúuk</i>   | shoe seller     |
| L-N           | <i>yùuyum</i>     | bird            |
| L-H           | <i>kòolnáal</i>   | farmer          |
| L-L           | <i>xtùuxkùuts</i> | pheasant        |
| H-N           | <i>yáalam</i>     | fawn            |
| H-L           | <i>óochkàan</i>   | snake           |
| H-H           | <i>tóokchúuk</i>  | coal merchant   |

The speech data were elicited by means of question-answer pairs. Since most Yucatec Mayan speakers are not trained in reading Mayan orthography, we had to present our stimuli orally. The carrier sentences with target items as given in Table 1 were thus read by a native speaker before running the experimental sessions. The pitch contour of each provided sentence, however, has been reduced to a flat level pitch in order to eliminate all linguistic information that is encoded by pitch. In the experimental sessions, informants heard the resynthesized stimuli. The informants' task, then, was to answer a generic

<sup>4</sup> In this article, we particularly discuss the realizations of the minimal pair *mïis* 'cat' and *mìis* 'broom'.

question by repeating the text they had just heard before. All recordings were made on a DAT recorder (SONY 100) using head microphones. For the manipulation of the test sentences and for pitch analysis we used Praat (Boersma & Weenik 2006).

In total, twelve (male and female) speakers have been recorded. However, all twelve speakers did not produce sentences with all test items. The individual time-normalized measurements are based on two to six speakers.

The pitch analysis has been made using a hanning window of 0.4 seconds length with a default 10 ms analysis frame. The pitch contour has been smoothed using the Praat smoothing algorithm (frequency band 10 Hz) to diminish microprosodic perturbations. Following Xu (1999) the pitch tracks have been time-normalized with ten measuring points during the voiced part of each of the labeled intervals. The time-normalized plots reported below thus only refer to the voiced parts of the words leaving voiceless parts away. The F0-values measured in Hertz have been converted into semitones<sup>5</sup> to normalize across the physiological differences of male and female voices.

### 3.2 Lexical Tones

In this section we provide an overview of the realization of lexical tones in Yucatec Maya. It has been claimed that Yucatec Maya exhibits a tonal distinction between high and low tones with additional toneless syllables (e.g. Pike (1946)). We will show this three-way distinction.

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<sup>5</sup> The conversion from Hertz into semitones is made according to the equation below with an arbitrarily chosen reference of 100 Hz (e.g. Reetz 1999):

$$f(\text{st}) = 12 \log_2 (f(\text{Hz}) / 100 \text{ Hz})$$

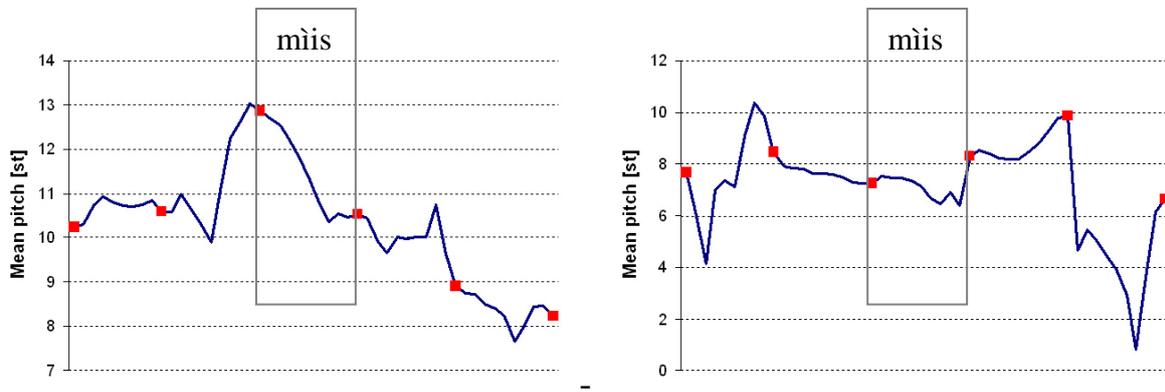
See also Nolan (2003) who has convincingly demonstrated that the semitone scale fits best the intonational equivalence scale; see Ladd (1996:260ff) for the notion of semitones with respect to pitch range.

Previous accounts are partly controversial regarding the tonal system of modern Yucatec Maya. All investigations agree that long vowels are obligatory tone bearing units and display an opposition between a high tone and a low tone. Short vowels are treated as contrasting two levels of pitch in Pike (1946), or as instantiating a third tone termed as “neutral” in Fisher (1976), or as having no tone in Blair & Vermont-Salas (1965). The tonal distinction as well as the distinction between long and short vowels is shown to be contrastive: *luk’ul* ‘goes away’ - *líuk’ul* ‘swallow’ - *lùuk’* ‘mud’ (examples from Lehmann 1990; see also Blair & Vermont-Salas 1965 and Pike 1946).

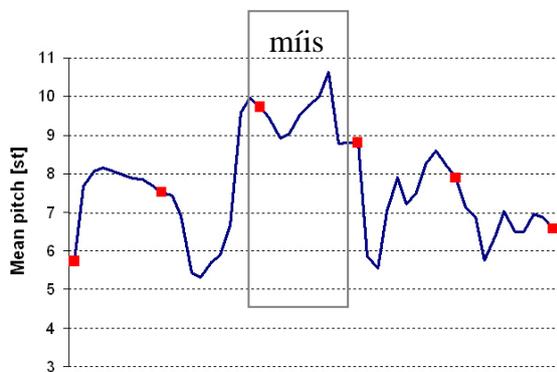
As for the realization of tones, authors agree that the low tone is realized as a level tone (Blair & Vermont-Salas 1965, Pike 1946, Straight 1976). Concerning the lexical high tone, three different realizations have been claimed: (i) rising (Blair & Vermont-Salas 1965, Straight 1976) (ii) falling (Fisher 1976), and (iii) falling from high or high level (Pike 1946). However, Fisher (1976) shows that the falling realization occurs in monosyllabic words while in the first syllable of disyllabic words the lexical tone is realized as a rise. None of these investigations argues that the several realizations of a high tone are contrastive at the lexical level.

On the basis of empirical data gained through our production experiment, we identified a lexical low and a lexical high tone in Kügler & Skopeteas (2006). While the low tone is realized as a low level tone (cf. Fig. 1, right panel) which is in accordance with the previous accounts discussed above, we find evidence for the high tone being realized as a rise in pitch (cf. Fig 2), thus supporting the analysis of Blair & Vermont-Salas (1965), Straight (1976), and partly that of Fisher (1976). The difference in the observed contours in Fig. 1 is due to a difference in tonal structure. In the broad focus condition (left panel of Fig. 1) a high tone on the indefinite marker *huntúul* precedes the lexical low

tone of the target word, whereas a toneless syllable precedes the target syllable in the topic condition.



*Fig. 1: Target word mìis 'cat' with lexical low tone; in postverbal position (broad focus and canonical word order, five speakers) in the left panel, and in preverbal topic position in the right panel (five speakers).*



*Fig. 2: Target word míis 'broom' with lexical high tone in postverbal position (broad focus and canonical word order, four speakers).*

For syllables containing long vowels this tonal distinction is obligatory, whereas syllables containing short vowels are empty TBUs.

### 3.3 Tonal effects of information structure

In this section, we argue that information structure does not affect the realization of lexical tones in Yucatec Maya, i.e. the language does not encode a particular focus structure by means of prosodic properties. We observe no interaction of lexical tones and post-lexical tones (intonation) meaning that Yucatec Maya does not use pitch accents. Properties of Yucatec Mayan intonation are dealt with in Blair & Vermont-Salas (1965), which offer a detailed annotation of intonational contours made for didactic purposes. Furthermore, Straight (1976) gives an inventory of rules that predict different realizations of the lexical tones in several tonal environments.

As already shown in Section 2, a crucial aspect of the Yucatec Mayan grammar is that the syntactic realization of the arguments is determined by information structure. As a result, it is not possible to examine the prosodic effects of information structure independently of syntax, i.e. it is not possible to design minimal pairs of identical carrier sentences that will be produced in contexts that induce distinct information structures. With this constraint in mind, the question of prosodic effects of information structure in Maya may be inspected by using the same lexical unit in different information structural – but necessarily also syntactic – positions (cf. (5) above).

In Kügler & Skopeteas (2006) we investigated the interaction between lexical tones and intonation in Yucatec Maya and concluded that there are no pitch accents for the expression of focus or topic. As illustrated in Section 2, narrow focused constituents appear preverbally (cf. (5b) above). If a word containing a lexical pre-specified tone occurs in the focus position, the underlying shape of the tone as described in Section 3.2 remains preserved. Thus, we observe no interaction of lexical tone and intonation, in particular pitch accents for the expression of focus. Consider the pitch track of the monosyllabic

target word *míis* ‘broom’ with lexical high tone in narrow focus position in the left panel of Fig. 3. The target word is realized with the rise in pitch identical to the high tone rise established in Section 3.2. There appears no further tonal event that might be analyzed as a pitch accent indicating focus tonally. If we compare the narrow focus realization of a target word containing a lexical high tone with a realization in broad focus (postverbally, cf. Fig. 2 above) or in topic position (preverbally as in the narrow focus condition, cf. the right panel of Fig. 3), we observe the same tonal pattern, i.e., a rise in pitch on the target word. Thus, we conclude that information structural components such as topic, narrow and broad focus are not expressed by means of post-lexical tones (pitch accents) as is the case in intonation languages such as English (cf. Ladd 1996, Gussenhoven 2004).

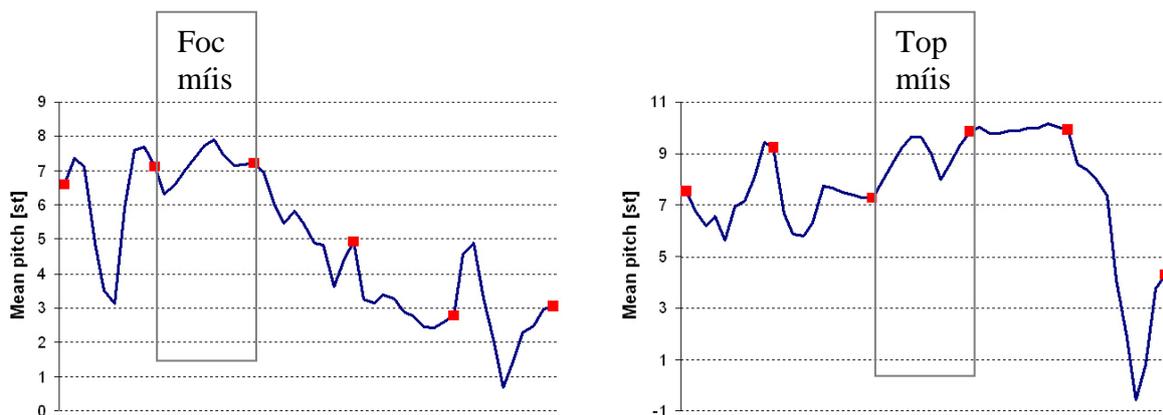


Fig. 3: Target word *míis* 'broom' with lexical high tone in preverbal position, normalized across six speakers; the left panel shows narrow focus, and the right panel topic position.

### 3.4 Summary

Concerning the prosodic properties of Yucatec Maya, we have shown that a lexical low tone is realized as a low level pitch, whereas a lexical high tone is realized as a rise in pitch (cf. also Kügler & Skopeteas 2006). Further, the realization of the lexical tones is not affected by information structure, i.e. we

observe no pitch accents highlighting a particular focus constituent. Focus is only expressed by means of syntax, which is explored in more detail in the next section.

#### **4 Encoding information structure in spontaneous production**

We have seen in Section 2 that Yucatec Maya displays a number of morpho-syntactic devices for the encoding of topic and focus. We have shown in Section 3 that the language does not employ tonal means for the encoding of information structure. In this Section, we will present data gained through a production experiment that elicits spontaneous responses of native speakers to different question types. This data show the impact of the mentioned structural and prosodic properties on the choice of a given grammatical construction in particular discourse conditions.

The experiment discussed in this paper has been developed within the project D2 “Typology of Information Structure” (part of the SFB 632 “Information Structure”) and are part of the QUIS<sup>6</sup>.

##### *Experimental procedure*

The subjects were shown a sheet of paper that contained four pictures. All pictures presented situations in which two entities were involved in an event of affection ( $x$  hits  $y$ ,  $x$  kicks  $y$ ,  $x$  carries  $y$ ,  $x$  cuts  $y$ , etc.). The subjects were given one minute to observe what happens in the pictures; after that, the pictures were taken away and four questions relating to the pictures were played from the laptop. The questions were pre-recorded with two native speakers on a DAT recorder (SONY 100) and digitized at a sampling frequency of 22050 Hz.

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<sup>6</sup> See Skopeteas et al. (2006:119ff.) for a full documentation of the experimental procedure and material.

Subjects were instructed to listen to the questions and give a spontaneous answer. This experiment was part of a longer session (about 40 min.) that contained pseudo-randomized tasks from six different production experiments that were used as fillers for each other.

Sixteen native speakers of Yucatec Maya participated in this experiment. Their responses have been recorded using head microphones on the same DAT recorder.

### *Experimental conditions*

For the purposes of this paper, we will consider four of the eight conditions of this experiment. Two factors are instantiated in the four conditions:

- (a) solicited argument: agent or patient;
- (b) relation of the (intended) answer to the question: completive (i.e., filling a gap in the presupposed information) vs. corrective (i.e., replacing a part of the presupposed information).

The combination of these factors results in four conditions. The questions establishing these conditions are exemplified in (6).

- (6) a. question inducing completive answer: agent
- |      |                 |     |          |
|------|-----------------|-----|----------|
| máax | léench'in-t-ik  | le  | xìib-o'? |
| who  | push-TRR-INCMPL | DEF | man-D2   |
- ‘Who is pushing the man?’
- b. question inducing completive answer: patient
- |             |                |     |          |
|-------------|----------------|-----|----------|
| ba'x t-u    | léench'in-t-ah | le  | xìib-o'? |
| who PFV-A.3 | push-TRR-CMPL  | DEF | man-D2   |
- ‘What is the man pushing?’
- c. question inducing corrective answer: agent
- |          |                 |     |          |
|----------|-----------------|-----|----------|
| x-ch'úup | léench'in-t-ik  | le  | xìib-o'? |
| F-woman  | push-TRR-INCMPL | DEF | man-D2   |

‘Is a woman pushing the man?’ (with respect to a stimulus in which  
‘a man is pushing the man’)

d. corrective answer: patient

|                 |             |           |      |       |
|-----------------|-------------|-----------|------|-------|
| le              | x-ch’úup-o’ | táan      | wáah | u     |
| DEF             | F-woman-D2  | PROG      | INT  | A.3   |
| léench’in-t-ik  |             | hun-túul  |      | xìib? |
| push-TRR-INCMPL |             | one-CL.AN |      | man   |

‘Is the woman pushing a man?’ (with respect to a stimulus in which  
‘the girl is pushing a woman’)

The conditions exemplified in (6) have been factorially implemented in 16 items presenting different events, all involving two participants. Each subject has been confronted with each item once and with each experimental condition twice. Thus the experimental procedure resulted in a corpus of  $(16 \times 2 =) 32$  answers per condition, which are discussed in the following Subsection.

### *Gained data*

In accordance with the syntactic properties of the language as presented in Section 2, all question types presented in (6) elicited focus constructions to some extent. In the following examples, the argument which is solicited through the question is placed preverbally and the argument which is part of the background of the question is placed postverbally.

(7) a. A-focus

Q= Who is looking at the girl?

|           |                  |                |
|-----------|------------------|----------------|
| hun-túul  | xibpal           | pak-t-ik       |
| one-CL.AN | man:child        | see-TRR-INCMPL |
| le        | x-ch’úuppal-o’.  |                |
| DEF       | F-woman:child-D2 |                |

‘It is a boy that is looking at the girl.’

b. P-focus

Q= What is the man kicking?

|                      |          |           |          |
|----------------------|----------|-----------|----------|
| hun-p'éeel           | esten... | k'áanche' | k-u      |
| one-CL.INAN          | HESIT    | chair     | IPFV-A.3 |
| kóochek'-t-ik        | le       | xìib-o'.  |          |
| kick:foot-TRR-INCMPL | DEF      | man-D2    |          |

‘It is a chair that the man is kicking.’

The solicited information may also occur postverbally, as in the following example. The argument which is part of the background of the question is placed in the topic position.

(8) Q= Is the man kicking a table?

|             |         |          |                      |
|-------------|---------|----------|----------------------|
| le          | xìib-o' | túun     | kóochek'-t-ik        |
| DEF         | man-D2  | PROG:A.3 | kick:foot-TRR-INCMPL |
| hun-p'éeel  | silla   |          |                      |
| one-CL.INAN | chair   |          |                      |

‘The man is kicking a chair.’

Answers with two preverbal arguments also occur, but only in the conditions in which the agent is a topic and the patient is in focus (and not vice versa).

(9) Q= Is the woman hitting a flower?

|            |     |             |             |       |          |
|------------|-----|-------------|-------------|-------|----------|
| ma',       | le  | x-ch'úup-o' | hun-p'éeel  | k'áax | k-u      |
| NEG        | DEF | F-woman-D2  | one-CL.INAN | wood  | IPFV-A.3 |
| lox-ik.    |     |             |             |       |          |
| hit-INCMPL |     |             |             |       |          |

‘No, the girl hits a piece of wood.’

Since the subjects have been instructed to give a spontaneous answer to the recorded questions, the gained data contains many elliptical sentences that do not allow for insights concerning the function of sentential positions.

(10) Q= Who is carrying the pot?

hun-túul máak.

one-CL.AN man

‘A man.’

Argument ellipsis is attested, too. In these answers, the focused argument and the verb are realized and the argument which is part of the question’s background is elided. There are two possible realizations of focused arguments in these sentences, either in the preverbal focus position (11b) or postverbally (11a).

(11) a. Postverbal realization

Q= What is the man pulling?

túun kóol-ik hun-p’éeel mesa

PROG:A.3 pull-INCMPL one-CL.INAN table

‘He is pulling a table.’

b. Preverbal realization

Q= What is the man carrying?

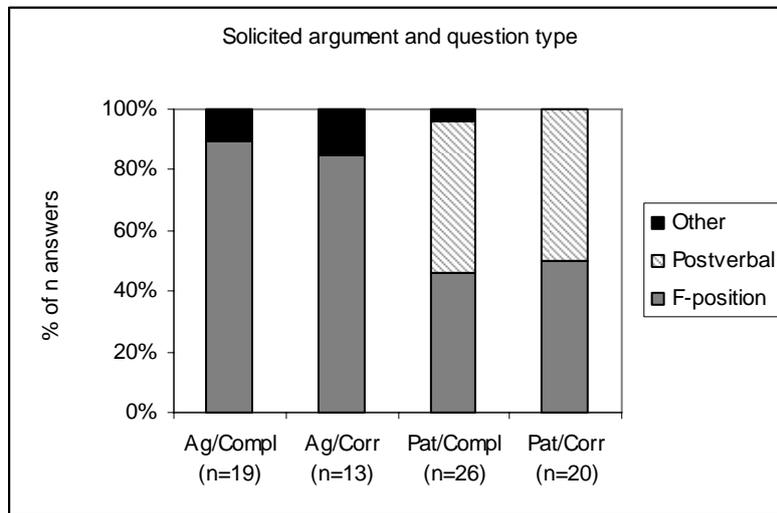
hun-túul x-ch’úup k-u bis-ik

one-CL.AN F-woman IPFV-A.3 carry-INCMPL

‘It is a girl that he’s carrying.’

Fig. 4 and Fig. 5 show the results gained in the four experimental conditions. Note that the figures only contain those answers that (a) do not imply a failure in the interpretation of the stimulus and that (b) do not display verb ellipsis. Three types of answers are distinguished in Fig. 4: focus constructions as exemplified in (7), postverbal placement of the solicited information as

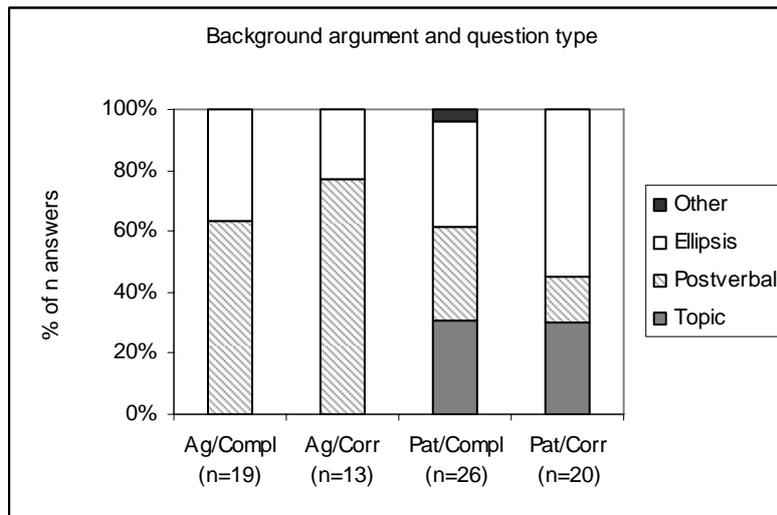
illustrated in (8) and “other”. The cases classified as “other” contain pseudo-clefts or complex sentences with a dislocated argument.



*Fig. 4: Encoding the argument which is solicited through the question*

Fig. 4 shows an asymmetry in the encoding of agents and patients, when solicited through the questions. Agents are almost always placed in the preverbal focus position, while patients may occur in the postverbal position, too. This result reveals that patients may also be focused in situ. Furthermore we can observe in Fig. 4 that the type of question (i.e., corrective vs. completive) does not have an impact on the data pattern.

The argument which is part of the background of the question is encoded either as a topic (see (8) and (9)), or postverbally (see (7)), or it is elided (see (11)). The occurrence of these options is presented in Figure 5: In the agent questions the background argument presented in the figure is the patient, and in the patient question the background argument is the agent.



*Fig. 5: Encoding the background argument*

Figure 5 shows that an asymmetry holds for the topicalization of the arguments, too: only the agent is placed in the topic position when it is background information (see patient questions), while the patient which is the background information of the agent questions is always encoded postverbally. As already observed with respect to the encoding of the solicited argument, the difference between corrective and completive answers does not crucially affect the encoding of the background argument in Yucatec Maya.

The common denominator between the two observed asymmetries is a general preference for Agent < Verb < Patient over Patient < Verb < Agent orders. In sentences with two third person lexical NPs, one of which is topicalized, the construction is ambiguous due to the lack of case marking. For these sentences, there is a strong preference to interpret the topicalized argument as an agent which probably results in the asymmetry presented in Fig. 5.

## 5 Summary

We have demonstrated in Section 2 that Yucatec Maya provides unambiguous syntactic means for the encoding of information structure. In Section 3, we have illustrated that information structure does not have a reflex on the realization of

the lexical tones. The consequence of these observations is that speakers have to choose a syntactic device in order to encode the information structure of arguments. This hypothesis has been confirmed through the production experiment that we presented in Section 4: in all question types, speakers produced a high amount of constructions that focused the solicited argument. The data gained through this experiment also revealed an asymmetry between focused patients and focused agents: while agent questions almost always triggered agent focus, patient questions only triggered patient focus in half of the answers. In the other half, the patient – though being the solicited argument – remains in situ. The data from topicalization have revealed a reverse asymmetry; the agent is the preferred topic while the patient does not occur in topic position. Both asymmetries have been attributed to a general preference for Agent < Verb < Patient over Patient < Verb < Agent orders in Yucatec Maya.

## 6 References

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