ILLOCUTION AND ATTITUDE: ON THE COMPLEX INTERACTION BETWEEN PROSODY AND PRAGMATIC PARAMETERS

RASO, Tommaso[1]
ROCHA, Bruno[2]

[1]Universidade Federal de Minas Gerais (UFMG)
[2]Universidade Federal do Pará (UFPA)

Abstract: This paper aims at investigating the prosodic relations between the category of illocution and that of attitude, the latter defined as the way the illocution (verbal action) is performed (Modis on Actum). We set three experiments and relative perception tests seeking to understand: (i) how different attitudes of the same illocution (Order) are perceived in different contexts; (ii) whether the illocutions of Order and Instruction are conveyed by the same prosodic form; (iii) how pragmatic/cognitive parameters work to accommodate a different prosodic form, using the illocutions of Offer and Question of Confirmation. We conclude that the methodology for the study of the illocutionary prosodic forms must pay close attention to the prosodic aspects of attitude, since they are always present when an illocution is performed, superposing their features over those of the illocution. We also claim that the identification of a specific illocution must consider some pragmatic and cognitive parameters, and not only prosody, since different illocutions can be prosodically performed with the same form. This becomes clear if we look for data in spontaneous speech corpora, where the pragmatic conditions can be at least partially reconstructed.

Keywords: illocution; attitude; prosody; spoken corpora; pragmatics.

1 Introduction

In recent times, growing attention has been payed to empirical and experimental studies of the relation between prosody and illocutions (1–6), which have shown that prosody is an essential key to convey illocutions. This position was already stated, with different approaches and strength, in previous studies (7–15).

We claim that prosody has a double function in conveying illocutions. The first one is to mark the illocutionary status of an intonation unit, in opposition to other non-illocutionary units. The second one is to strongly contribute to the identification of a specific illocutionary value (calling, order, assertion, polar or partial question, warning, etc.). Nevertheless, we argue that prosody marks also the category of attitude, which interacts with that of illocution, changing the prosodic perception and contour of the illocution sometimes to a great extent. We will explore some methodological consequences of this interaction for the study of illocutions. Besides this, we will show that the different illocutionary forces are also identified with the contribution of pragmatic and cognitive parameters that interact with prosody. Although it is not easy to define a list of these parameters, it seems that changes in the pragmatic context can clearly affect our understanding of the illocution.

We will first show how prosodic contours can be interpreted as illocutionary or non-illocutionary, and, when they are illocutionary, how they can be interpreted with regards to specific illocutionary forces. Then, we will discuss how prosody marks illocutions and attitudes at the same time (but in different ways), and how it can methodologically affect the study of illocutions. Finally, we will show how some pragmatic or cognitive parameters can guide the illocutionary interpretation. In this paper, we will use lab recordings, spontaneous speech corpus examples, and experimental findings.

Author correspondence: tommaso.raso@gmail.com

2 Illocutions and prosody

2.1 Illocutionary VS. non-illocutionary sequences

It is a merit of the Language into Act Theory (1,16) to have shown how a locution, independently of its syntactic and semantic structure, can be prosodically performed with or without illocutionary force. A sequence can be interpreted in isolation, as an utterance, or as a nucleus of an utterance only if it is performed with illocutionary force. In this framework, the illocutionary unit is called Comment (COM). We will present some examples performed in lab or extracted from corpora of different languages[1].

Example 1[2] [audio 1, 1a, 1b, 1c, 1d]

As meninas inteligentes //=COM=
The girls clever //
The clever girls //

This sequence can be performed with different, prosodically marked, illocutionary forces. The audios show four different illocutions, which can be respectively labelled as *Assertion* (audio 1), *Polar Question* (audio 1a), *Partial Question* (audio 1b), *Prompt* (1c), *Warning* (1d).
However, the same sequence can be also uttered without any illocutionary force, thus not being pragmatically interpretable in isolation. In this case, the sequence

As meninas inteligentes / (audio 2a)

needs to be followed by an illocutionary unit, so that it can be pragmatically interpreted as a *Topic* (TOP). This can be exemplified with the sequence in example 2:

Example 2 [audio 2, 2a, 2b]

As meninas inteligentes /=TOP= vamos chamar elas //=COM=
The girls clever / we are going to call them //
The clever girls / let's call them //

In example 2, only the second intonation unit can be interpreted in isolation, as shown by audio 2b.
This difference between illocutionary and non-illocutionary units can be exemplified also with prosodic performances that attribute different information values to the NP and to the AP, as shown in examples 3 and 4, with their respective audios:

Example 3 [audio 3, 3a, 3b]

As meninas /=TOP= inteligentes //=COM=

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[1] The examples in this paper, when they are not performed in lab, are extracted from the LABLITA Italian Corpus (1), the C-ORAL-BRASIL (39) and the Santa Barbara corpus (17) re-segmented to be comparable with the first two (40). When the examples are extracted from corpora, text and utterance(s) are indicated.

[2] The double slash indicates terminal break, the utterance boundary; the simple slash indicates non-terminal break, the intonation unit boundary.

The girls / clever //

Example 4 [audio 4, 4a, 4b]

As meninas /=COM= inteligentes //=APC=
The girls / clever //

In example 3, the NP is performed without illocutionary force (as a Topic), while the AP conveys an illocution that we could label as *Strong Assertion*. Only the illocutionary unit is interpretable in isolation (audio 3b), while the non-illocutionary one is not (audio 3a). In example 4, on the contrary, it is the NP that is performed with illocutionary force (*Contrast* in audio 4 and *Polar Question* in audio 4a), and is therefore interpretable in isolation, while the AP is performed as an Appendix (APC) unit, and it is not interpretable without the illocution (audio 4b).

Example 5 (audio 5) shows a very complex utterance extracted from the C-ORAL-BRASIL corpus (39). This utterance features nine intonation units, each one conveying its specific information unit, except for the retracted unit, which is informationally empty. Nevertheless, just one unit is illocutionary (in bold). It is easy to perceive (audio 5a) how this unit can be interpreted in isolation, while the rest of the utterance, if we cut the Comment unit out (audio 5b), loses its pragmatic and prosodic interpretability, even though we are left with a main clause, syntactically speaking.

Example 5 - bfamdl02[102][3] [audio 5, 5a, 5b]

*BAO: porque / se eu for empregado / por exemplo / alguém vê que eu sou muito foda / medo de perder / o posto deles / es vão [/2] **es vão me dizar** / né //
BAO: because / if I am hired / for example / someone sees I am very good / fear to lose / their job / **they will snuff me out / right //*

Figure 1: Prosodic contour of ex. 5, with intonation unit segmentation, orthographic transcription and duration of the pauses (in milliseconds).

Example 6 presents a small excerpt extracted from the Santa Barbara Corpus (17). The excerpt shows many utterances, which are mostly made up of one intonation unit. The example shows how non-illocutionary units appear only when the utterance features more than one intonation unit. This is because no sequence could be pragmatically and prosodically interpreted, i.e. no sequence could make up an utterance, without the illocutionary unit. The

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[3] The acronym, here and in the other examples extracted from corpus, indicate the corpus language (a = American; b = Brazilian;), the context (fam = private/familiar; pub = public), the interactional typology (mn = monologue; dl = dialogue; cv = conversation), followed by the text number and, between square parenthesis, by the utterance's number.

illocution is therefore mandatory to build an utterance; it is its nuclear unit. Other units (like Topic, Appendix, Parenthesis, etc.) are optional and prosodically subordinated to the Comment.

Example 6 – afamdl05[136-145][4] [audio 6]

*JEN: and that's good //=COM= shooting the moon is really hard to do //=COM= now look it /=AUX= I don't have a club //=COM=
*DAN: so you can throw hearts //=COM=
*JEN: \<there you go> //=COM=
*DAN: \<a light> heart //=COM= okay //=COM=
*JEN: I don't have a club //=COM= now /=AUX= somebody else /=TOP= did take hearts /=CMM= right //=CMM= or did he +=UNC= or am I mistaken //=COM=

The study of illocutions finds its object in the illocutionary units, which may coincide with the utterance or not.

Before presenting the prosodic properties of the illocution, we still need to add another point. The illocutionary force is not prosodically marked over the entire unit (1,11,18). In fact, the locutive content of the illocutionary unit is realized by a variable number of syllables. For many illocutionary types, only a small number of syllables carries the illocutionary force, while the rest of the syllabic material has only the function of conveying the segmental content that allows the semantic interpretation of the locution. The syllables that convey the illocutionary force can therefore be considered the illocutionary nucleus, while the remaining syllables are called *preparation* and *coda*, and are optional from the illocutionary point of view. Example 7 shows an illocution of *Expression of Surprise* extracted from the C-ORAL-BRASIL, in which only the first syllable is nuclear, as can be verified by listening to audios 7 and 7a. Example 8 shows a different illocution, whose nucleus is in the final syllables (audios 8, 8a)

Example 7 – bfamcv03[290] [audio 7, 7a]

*CAR: Nossa Senhora //
    My God //

Example 8 – bfam08[36] [audio 8, 8a]

*BRU: então é melhor você me ensinar pelo anel //
    so you better teach me through the ring //

In order to study the prosody of an illocution, we need therefore to look for the nucleus, to define its position and size inside the intonation unit, and to describe its prosodic characteristics.

2.2 Prosody as important cue of a specific illocutionary type

Each illocutionary type has an illocutionary form and listeners interpret the prosodic signal in order to identify the specific illocutionary type: question, assertion, order, invitation, warning, etc.

This can be verified by listening to the following examples extracted from the C-ORAL-BRASIL. Of course, it is not easy to find in spontaneous speech corpus different

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[4] The symbol + means interrupted utterance; \<…> means overlapping; AUX means auxiliary unit, i.e. Discourse Marker; CMM indicates patterned illocution. For more information about the tagging, see (16).

illocutions with the same semantic content, but a few cases were found in C-ORAL-BRASIL, so that we can better appreciate their prosodic cues.

Example 9 –bfamdl08[9-12] [audio 9]

*AND: mas cê nũ vai conseguir não //
      but you will not succeed //
*AND: porque tem duas entrada que é mais difícil //
      because there are two entrances that are harder //
*BRU: **certeza** //
      sure //
*AND: **certeza** //
      sure //

In example 9, BRU asks AND for him to assure her of something he had previously said, and AND confirms it. The prosodic forms of the nuclei look different, as figure 2 shows. In the first illocution, the nucleus in the stressed vowel has a slight rising movement followed by a falling movement; in the second one, the f0 peak is at the beginning of the stressed vowel and there is only a falling movement.
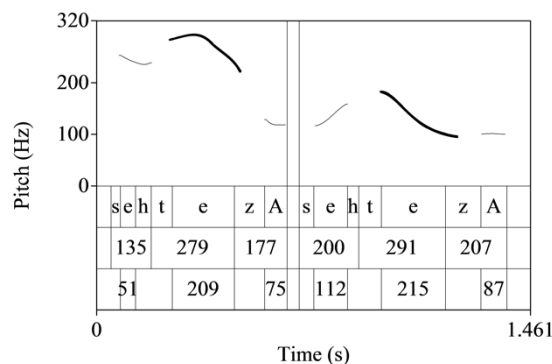

Figure 2: Course of f0 of the first (left) (left) and second (right) utterances in example 9 with the locutive content "certeza" (*sure*). The nuclei are in bold lines. The first tier shows the phonetic transcription of the utterance, the second tier shows the syllabic duration in milliseconds and the third tier shows the tonic vowel duration in milliseconds.

Examples 10 and 11 present two other cases of different illocutions.

Example 10 – bfamcv11[114-116] [audio 10]

*CAR: **quer peito** / pai // **quer peito** // <**quer peito**> //
      do you want the breast, dad // do you want the breast // do you want the breast //

Example 11 – bfamdl26[139-142] [audio 11]

*MBA: na hora de tomar o banho / abriu a boca pra chorar que nũ queria ir tomar banho / que
      nũ quer ir pa escola / que na escola tem malvadez // **malvadez** //
      when he had to take a bath / opened the mouth to cry because he didn't want to take a
      bath / because he didn't want to go to school / because at school there is perversity //
      perversity //
*LAO: **malvadez** //
      perversity //

MBA: é //
   yes //

In example 10, the same speaker offers the chicken breast to his father and then makes a *Prompt*, which is repeated twice. They are two different actions: pragmatically, the difference is that a *Prompt* implies a reason to push the interlocutor to react; prosodically, a *Prompt* is characterized by a rising movement with a final lengthening, as can be seen in figure 3, comparing the *Offer* on the left and the *Prompt* on the center and on the right.
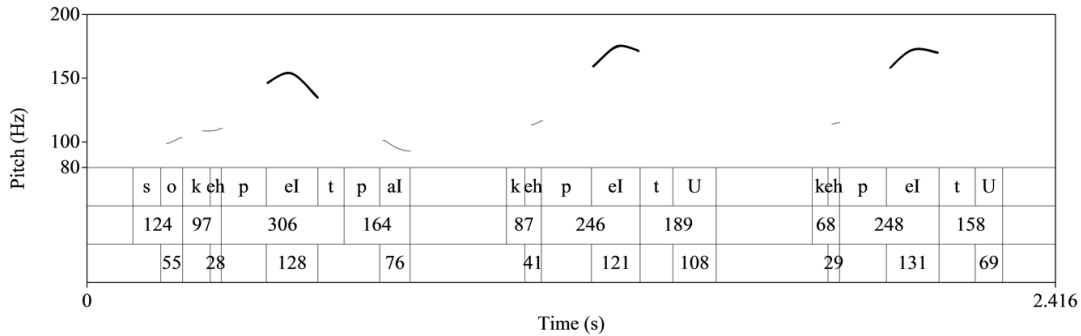

Figure 3: Course of f0 of *Offer* (left) and *Solicitation* (on the center and on the right) in example 10. The nuclei are in bold. The first tier shows the phonetic transcription of the utterance, the second tier shows the syllabic duration in milliseconds and the third tier shows the tonic vowel duration in milliseconds.

In example 11, two clearly different illocutions are performed. Figure 4 shows the two realizations; in the first one the nucleus (the last syllable) is uttered with creaky voice and the movement is falling. In the second one, the movement in the nucleus is rising.
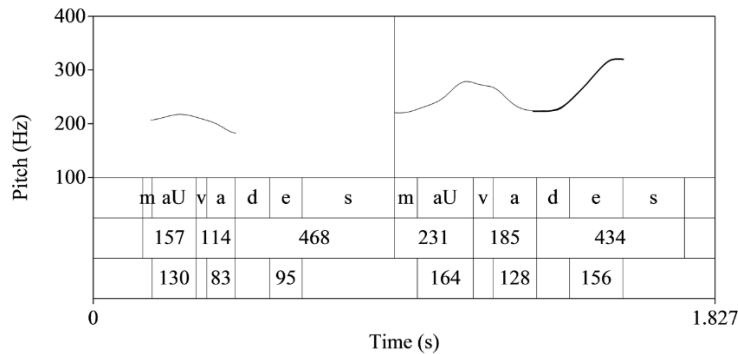

Figure 4: Course of f0 of the first (left) and the second (right) utterances in example 11 with the locutive content "malvadez" (*perversity*). The first tier shows the phonetic transcription of the utterance, the second tier shows the syllabic duration in milliseconds and the third tier shows the tonic vowel duration in milliseconds.

Example 12 shows an interesting case in which the same locution is used four times with three different illocutions.

Example 12 – bfamdl04[99-107] [audio 12, 12a, 12b, 12c, 12d]

KAT: o quê //
   what //

*SIL: copos // copos de Urano / que tem aí //
  glasses // glasses of Urano / that are here //
*KAT: copos de quê //
  glasses of what //
*SIL: **Urano** //
*KAT: **Urano** //
*SIL: é // **Urano** // **Urano** //
  Yes //

The first *Urano* is an *Answer*, the second one, uttered by KAT, can be labelled as an *Expression of Incredulity*, and the third and the fourth ones are *Confirmations*, with two slightly different attitudes. The figure 5 shows the differences in the 4 profiles.
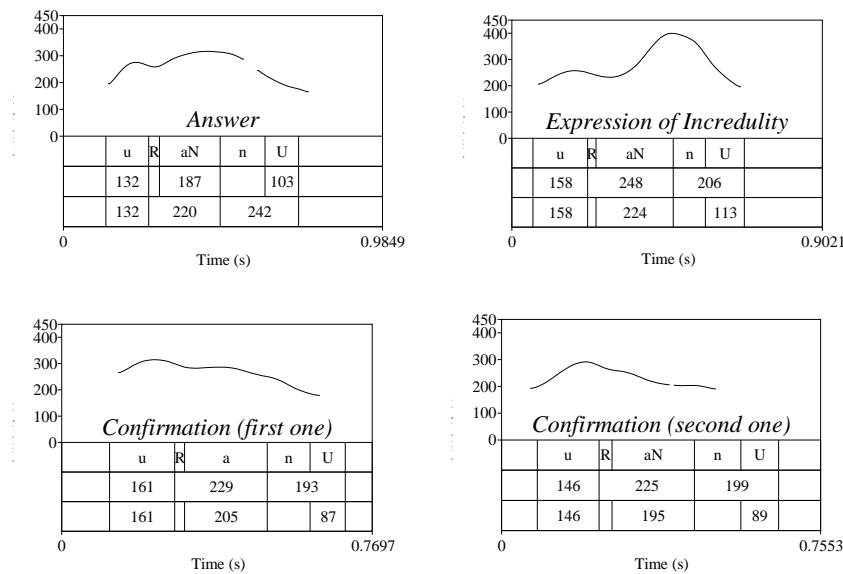

Figure 5: Course of f0 of the utterances in which the same locution ("Urano") is used four times with three different illocutions (*Answer*, *Expression of Incredulity* and *Confirmation*) in example 12.

The importance of the prosodic features for distinguishing different illocutionary types is also experimentally demonstrated by Hellbernd & Sammler (6).

3 Attitude and prosody

3.1 Prosody as the main feature that marks attitude

When we observe the prosodic features of an illocution, we cannot forget that prosody marks also a different category: attitude. In the literature, the terms "illocution", "attitude" as well as "modality" and "mood" can be used to refer to the same category or aspects of the same category (19–25); it also happens that the same name is used by different authors for different categories. It is important, therefore, to give a definition for what we call attitude, given that illocution is what marks the type of action performed by an utterance (26). As for *Attitude*, we define it as *the way an illocution is performed*. Paraphrasing Bally (27), we could say that *Attitude* can be intended as the *Modus* on *Actum*. In fact, performing a given illocution, say, an *Order*, we can be polite or aggressive, seductive, irritated, urgent, etc.

If we accept this definition of attitude, we need to conclude that the performance of an illocution implies an attitudinal choice: it is not the case that illocutions can be performed without attitude. However, we need to consider that attitude is also marked by prosody (4,28–33). Therefore, to properly analyze the prosodic form of an illocution, it is important to distinguish what is functional at the illocutionary level from what is functional at the attitudinal level (34–36). Moreover, while illocution is a categorical cue, attitude can be more or less marked. An illocution of *Order*, for example, is interpreted due to its pragmatic and prosodic cues, which distinguish it from a different illocution; it is not the case that we can say that one performance of *Order* bears an illocutionary mark with respect to another performance of *Order*. On the contrary, the attitude present in the performance of one illocution is usually different from that of another performance of the same illocution. Even when we recognize a similarity in the attitude, let's say, both expressing politeness, usually we can recognize a difference in terms of grade of a specific attitude with respect to another performance, for instance one politer than the other.

In example 13, a child calls her grandmother two times, and we clearly recognize that the second call is conveyed with a more impatient attitude than the first one. This impatient attitude reflects on the different range of the whole profile, as figure 6 shows.

Example 13 - prvdl23[53-57]

*NON: allora ne mettano un altro lì //
       so they put another one there //
*NIP: **nonna** //
       grandmother //
*NON: pe' andà' nella piazza / giù //
       to go to the square / down //
*NIP: **nonna** //
       grandmother //
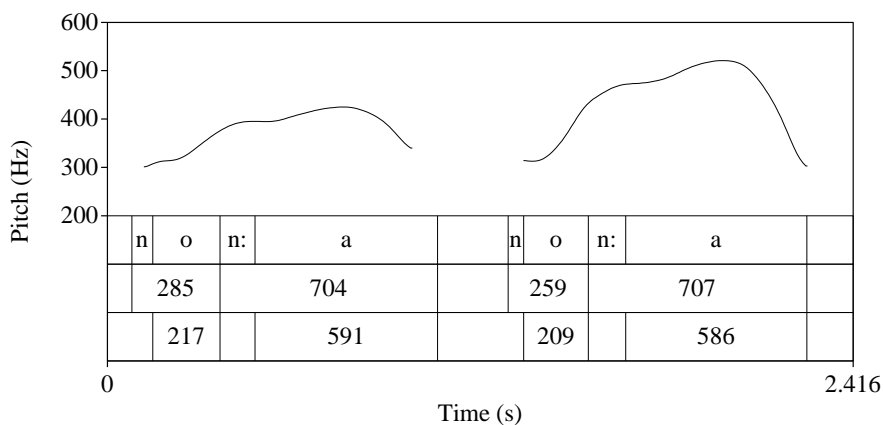*NON: zitta //
       shut up //

Figure 6: f0 course of the first (left) and second (right) utterances in example 13 with the locutive content "nonna" (*grandmother*). The first tier shows the phonetic transcription of the utterance, the second tier shows the syllabic duration in milliseconds and the third tier shows the tonic vowel duration in milliseconds.

Example 14 - bfamcv03[114-121] [audio 14]

*TON: uhn // <vai ser a conta> / hein / sô //
   it will be just enough / huh / man //
*CEL: <**rola o quinze** / sô> // **rola o quinze** / sô //
   hit the fifteen / man // hit the fifteen / man //
*TON: quinze [/1] o quinze é bola grande / hein / sô // que beleza / hein //
   fifteen / the fifteen is a big ball / huh / man // great / huh //
*CEL: **rola o quinze** / sô // melhor coisa que cê faz //
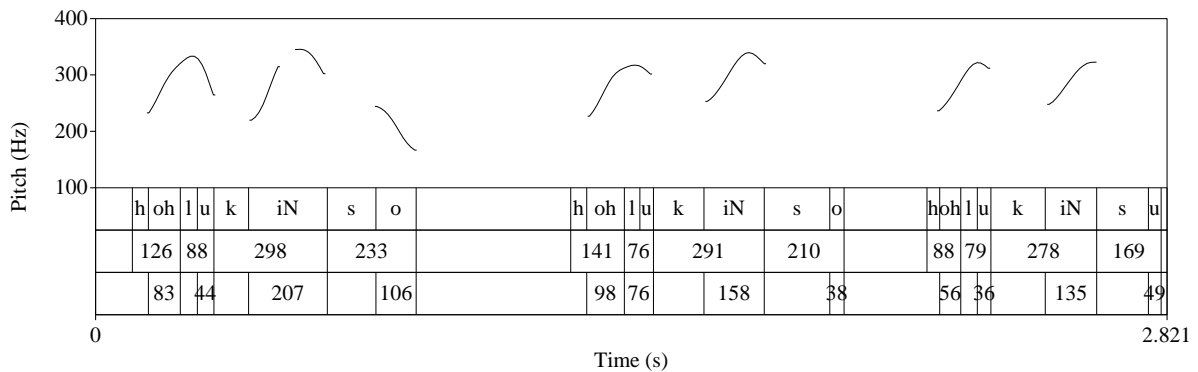   *hit the fifteen / man // it is the best thing you can do //*

Figure 7: f0 course of the first (left), second (center) and third (right) utterances of example 14 with the locutive content "rola o quinze" (*hit the fifteen*). The first tier shows the phonetic transcription of the utterance, the second tier shows the syllabic duration in milliseconds and the third tier shows the tonic vowel duration in milliseconds.

As mentioned before, each concrete utterance presents an illocution performed with an attitude. We can say that the category of illocution has a more abstract status; when the illocution is concretely performed it always embodies the features of a specific attitude that superimposes its cues onto those of the illocution. Considering that, how can we figure out which prosodic features are due to the illocution and which ones are due to the attitude?

As already said, the illocution is prosodically marked only on the nuclear syllables (whose number and position can vary depending on the illocutionary type and on the locutive structure). Usually these syllables can be clearly identified. On the other hand, attitude is marked over the entire intonation unit. This means it still interacts with the illocutionary parameters in the nuclear syllables.

We will show here some cases of different attitudes for the same illocution of *Order*. We call *Order* the illocution whose *goal is to have the listener change the world somehow*, e.g. to have the listener turn on the light, leave, stop talking, etc. We designed an experiment to elicit different attitudes for the illocution of *Order* performed with the same locutive contents with three different sizes: a large one (*pega o livro preto pra mim* – take the black book for me), a medium one (*pega o livro preto* - take the black book) and a small one (*pega o livro* – take the book). This allows us to control how the prosodic parameters behave with respect to the locution size. It also allows to see changes due to the presence of a *coda* (the two final syllables of the large locution) with respect to locutions that are entirely nuclear (medium and small locutions).

We planned four different environments to better elicit the different attitudes for the same illocution in the three locution sizes. Videos 1, 2, 3 and 4 show the elicitation scenes where utterances are performed with medium locutive content. We called the five attitudes *Reference* attitude, *Politeness*, *Urgency*, *Irritation* and *Strong Irritation*. As for *Reference* attitude, we do

not mean that it is a sort of neutral attitude; what we mean is that this attitude is perceived by native speakers as a more common attitude for *Order* and therefore is less marked and can serve as a basis for comparison to describe the features of the other attitudes.

Video 1 shows the elicitation scene for the attitude of *Reference*. In this video, two people are studying math. While discussing how to solve a problem, the man orders the woman to *take the black book* that the professor had used to explain the problem that the two are working on.

Text of video 1

MAN: já / terminou //
   have you already finished //
WOM: não // parei aqui //
   no // I stopped here //
MAN: uai / mas / agora / o' / cê já isolou a variável // então / cê pega ela / joga nessa função aqui / com a constante de Johnson //
   oh / but / now / look / you have already isolated the variable // so / you take it / and pass it into this function with Johnson's constant //
WOM: ah / mas não era a de Richardson //
   ah / but wasn't it that by Richardson //
MAN: não // &ne [/1] nesse caso aqui / é a constante de Johnson / o professor falou //
   no // in this case over here / it is Johnson's constant / the professor said //
WOM: mas eu lembro o professor falando / ensinando naquele livro preto / que era a de Richardson //
   but I remember the professor saying / teaching with that black book / that it was the one by Richardson //
MAN: uai // **pega o livro preto** //
   oh / take the black book //

In video 2, which shows the attitude of *Politeness*, a man is trying to unlock the main door of his house while holding some objects in his hands. A neighbor approaches him and asks if he needs help. The man politely orders the neighbor to *take the black book* in his hand.

Text of video 2

WOM: bom dia //
   good morning //
MAN: bom dia //
   good morning //
WOM: quer uma ajuda //
   do you need any *help //*
MAN: ai / quero // **pega o livro preto** // brigado //
   oh / I do // take the black book // thanks //

Video 3 shows the attitude of *Urgency*. The video portrays a scene in which two hackers are hurriedly trying to break into a system. The man sitting in front of the computer realizes that he needs an algorithm that is in a black book and orders his partner to *take (bring him) the black book*.

Text of video 3

WOM: já conseguiu invadir o sistema deles //
   have you succeed in breaking into their system yet //

MAN: não // falta quanto tempo pra eles irem atrás da gente //
     no // how much time do we have before they come after us //
WOM: dez minutos e meio //
     ten minutes and a half //
MAN: vou precisar daquele algoritmo // **pega o livro preto** //
     I'll need that algorithm // take the black book //

Video 4 shows a sequence of the utterance *take the black book* with the attitudes of *Reference*, *Irritation* and *Strong Irritation*. In this scene, a woman is playing a game on her computer and she is approached by her boyfriend, who starts to tell her what to do. At some point, he tells her to *take the black book* in the game (*Order* with attitude of *Reference*). She is more skilled than him in this game and knows that taking the black book will kill her character, so she refuses to do it. Her boyfriend repeats the order, but this time with an irritated attitude. Since she refuses to take the book, he repeats the illocution one more time, now being even more irritated.

Text of video 4

MAN: uai / cê tá jogando com meu personagem //
     oh / you are playing with my character //
WOM: tô // cê ainda tá muito no começo / tentando melhorar ele //
     I am // you are still in the very beginning / I'm trying to make him better //
MAN: **pega o livro preto** //
     take the black book //
WOM: não / o preto é o que mata //
     no / the black one is the one that kills you //
MAN: não / sô // o que mata é o verde //
     no / girl // the one that kills is the green one //
WOM: claro que não / é o preto // jogo esse jogo há um tempão //
     of course not / it is the black one // I have played this game for a really long time //
MAN: **pega o livro preto** //
     take the black book //
WOM: não vou pegar // é o que mata //
     I will not // it is the one that kills //
MAN: **pega o livro preto** //
     take the black book //
WOM: cê que sabe //
     it's up to you //

Figure 8 shows the overlapping of the prosodic profiles of the utterances of *Order* performed with the five attitudes and medium locutions. For each attitude, three performances are shown in the figure. All the utterances were recorded by the same speaker, a 30-year-old male. It is possible to have the immediate perception that while the movement and their alignment are always the same (a partial exception is the final movement in the attitude of *Politeness*), the range and sometimes the whole duration are clearly different[5].

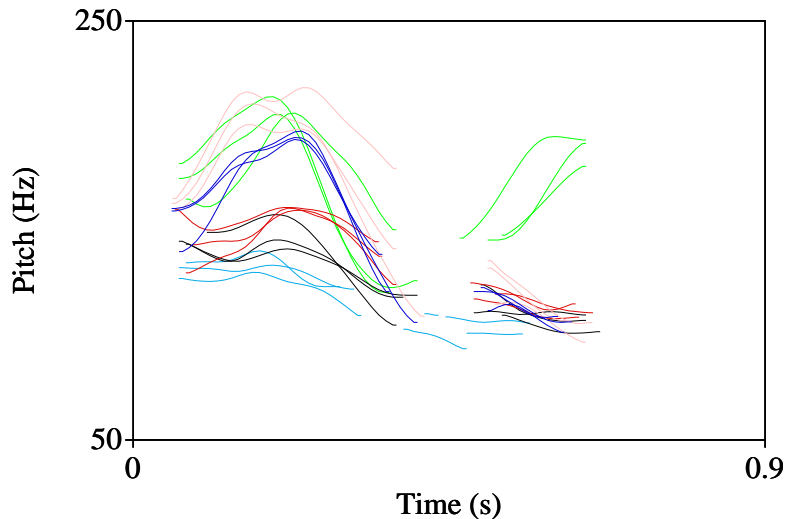[5] For a detailed description of all the profiles, see (37, 5).

Figure 8: Overlapping of the courses of f0 of the utterances of Order with attitudes of Reference (black), Urgency (cyan), Politeness (green), Irritation (blue) and Strong Irritation (pink). Medium locutive content – pega o livro preto (take the black book).

The prosodic form of *Order* features a nucleus with two f0 movements. The first one is flat or rising, with its peak aligned to the first post-stressed syllable of the utterance. The second one is always falling. The f0 peak shows values from 128Hz in the attitude of *Urgency* with small locutive content to 251Hz in the attitude of *Strong Irritation* with large locutive content (variation of 96%). The onset values feature less variation (45%), from 129Hz in the attitude of *Urgency* with small locutive content to 187Hz in the attitude of *Strong Irritation* with small locutive content. The minimum f0 value also features less variation (29%), from 90Hz in the attitude of *Urgency* with medium locutive content to 116Hz in the attitude of *Reference* with large locutive content. This suggests that the f0 range in the illocution of *Order* be regulated by the height of the peak. Besides this, the first stressed vowel of the nucleus must exhibit a duration compatible with that of the last one, which must be realized with a falling movement.

Each attitude exhibits some specific variations in this pattern – see also (5,37). What we refer to as attitude of *Reference* is performed with two f0 movements. The first one is flat (in small utterances) or rising (in medium and large utterances), with a variation rate between 14 and 35. The second movement is falling, with a variation rate between -93 and -111. F0 and intensity peaks are in the left side of the utterance, but more to the right when the utterance is larger. With respect to the speaker's basic f0, which is 131 Hz, this attitude shows higher values in the onset (7-10%) and the peak (11-15%). The lowest value is lower (11-15%). The first tonic vowel is reduced (between -2 and -3, according to the SG_Detector normalization (37)). The last stressed syllable is also reduced (between -0,81 and -2,93). The articulation rate varies between 9,2 and 10,4.

The attitude of *Politeness* features three movements: rising-falling-rising. The first two present higher variation rates with respect to the attitude of *Reference*. The last movement is at the end of the utterance; when the utterance features a *coda*, the last movement coincides with the coda. The f0 and intensity peaks are close to each other, on the left part of the utterance, but they move more to the right in larger utterances. The highest and lowest f0 values are higher than in the attitude of *Reference*. This attitude is also characterized by a lengthening in the first post-stressed syllable and in the last tonic.

The *Urgency* attitude shows two f0 movements: the first one is flat or rising followed by a falling one. F0, duration and intensity values are close to those of the attitude of *Reference*. The most important cue that differentiate the *Urgency* attitude is the high articulation rate.

The attitude of *Irritation* is realized with a rising movement followed by a falling one. Variation rate is much higher than that of the *Reference* attitude. Also, values of the highest f0 and duration of the first stressed syllable are higher. Intensity and f0 peaks are always on the left part of the utterance, differently from the *Reference* attitude.

Utterances with different degrees of *Irritation* were produced. All the tendencies described are more prominent in the attitude of *Strong Irritation*.

As figure 8 shows, the performance of the illocution of *Order* with these different attitudes strongly impact on the prosodic profile of the utterance. The same can be observed in spontaneous speech data, as shown by example 13.

3.2 Methodological consequences of the interaction between illocution and attitude

The implications of such an impact of different attitudes on the prosodic profile of the same illocution should be taken into account in a methodology aiming at studying illocutionary prosodic forms.

The LABLITA methodology for the study of illocution (3,38) does not take into account the effects of attitude on illocutions. In order to conclude whether two illocutions have or have not the same prosodic form, LABLITA's proposal concentrates specifically on discussing the prosodic form of the illocutions of Order and Instruction. They call Order, as we do, the illocution whose goal is to have the listener change the world operationally. They call Instruction the illocution with which the speaker supplies the listener with the cognitive knowledge for him or her to change the world, if and when he or she decides to do it. Moneglia (3) describes an experiment in which two scenes were recorded; in them an Instruction and an Order are performed with the same locutive content, gira a destra (turn right). After that, the goal was to verify whether the two profiles are interchangeable. He did it by replacing the utterance elicited in one fictional context with that produced in the context eliciting the other illocution. The assumption was that, if the utterances were perceived as interchangeable, the two illocutions would share the same form; if not, they had different illocutionary prosodic forms. This procedure is called substitution test. The last part of the substitution test was the evaluation of the videos by native speakers. According to Moneglia, native speakers judged the substitution as non-acceptable. This led Moneglia to conclude that the two illocutions have different prosodic forms.

As mentioned before, this methodology does not consider the effects of the category of attitude. Therefore, we wanted to verify whether the fact that two prosodic forms are judged as non-replaceable would necessarily depend on a difference in the illocutionary prosodic form or could simply depend on the attitudinal difference with which the same illocution (or two different illocutions with the same prosodic form) was performed.

We have designed a substitution test to see whether the substitution of the utterance of Order with a different attitude would be considered acceptable or not in a context designed for the same illocution but with a different attitude. In this test, we produced versions of the four elicitation scenes of Order in which we replaced the utterance take the black book with those produced in the other scenes. In total, we produced 16 videos (4 original videos + 12 with the replaced utterances).

The hypothesis was that some substitutions would be more acceptable than others. The results confirmed the hypothesis.

Table 1: Rejection and acceptance rates for the substitution test.

			REJECTION Ranks 1 and 2		INDECISION Rank 3		ACCEPTANCE Ranks 4 and 5	
Scene	Attitude	Group	Freq.	%	Freq.	%	Freq.	%
Reference	Reference	B	6	13,0	1	2,2	33	84,8
Politeness	Politeness	A	5	10,0	0	0,0	45	90,0
Irritation	Irritation	A	6	12,0	1	2,2	43	86,0
Urgency	Urgency	B	4	8,7	2	4,3	40	87,0
Politeness	Urgency	B	17	37,0	1	2,2	28	60,9
Reference	Urgency	A	23	46,9	1	2,2	25	51,5
Urgency	Reference	A	8	16,5	1	2,2	41	82,0
Irritation	Reference	B	11	23,9	2	4,3	33	71,7

For the test, we recruited a group of 96 Brazilian Portuguese native speakers at the Federal University of Minas Gerais (Brazil), with ages between 18 and 30. Their task was to watch a series of 4 videos and to judge, for each video, whether the utterance *pega o livro preto* (take the black book) fitted the context, ranking the utterance in a scale from 1 (completely inadequate) to 5 (completely adequate). The stimuli were randomly presented to the participants, who had to evaluate each of them before watching the following video.

The subjects were divided into 2 groups: group A, with 50 subjects, and group B, with 46 subjects. Both groups watched 4 videos:

- 2 original videos (e.g. video of *Urgency* with attitude of *Urgency*; video of *Politeness* with attitude of *Politeness*; etc.);
- 2 videos in which the original utterance was replaced with an utterance elicited by another video (e.g. video of *Politeness* with attitude of *Urgency*; video of *Irritation* with attitude of *Reference*).

Table 1 shows in the first two columns the scene portrayed in each video and the attitude of the utterance of *Order*. The first four videos are those with the original elicited utterances. The last four are the videos in which the original utterances were replaced. The third column indicates the group that watched each scene. As mentioned before, in every video, the target utterance conveyed the illocution of *Order*, and the only differential feature among the utterances was the attitude with which the illocution was accomplished. Also, Table 1 shows in the last three columns the ranks attributed to each video by the subjects, in a scale from 1 to 5, both in absolute and relative frequencies. Ranks 1 and 2 (which indicates *rejection* of the attitude with respect to the scene) were grouped together, as were ranks 4 and 5 (which indicate *acceptance* of the attitude).

According to our experiment, it seems that the rejection of the substitution does not imply that there is difference in the illocutionary prosodic devices. Attitudinal differences are sufficient, in certain cases, to cause the perception of inappropriateness in case of substitution. The test showed that the same illocution of *Order* with different attitudes are not always interchangeable: if the substitution works rather well when the attitude of *Reference* is used in the context of *Urgency* (16,5% of grades 1 and 2) and also in the context of *Irritation* (23,9% of grades 1 and 2), the substitution is not well accepted when the attitude of *Urgency* is inserted in the context of *Politeness* (37% of grades 1 and 2) or in the context of *Reference* (46,9% of grades 1 and 2).

These observations were confirmed by two chi-square tests. In the first one, we compared grades 1 and 2 of the original videos and the same grades of the videos in which the attitude of *Urgency* was inserted in the context of *Politeness* and *Reference*. This test confirmed that ranks 1 and 2 were not attributed randomly by the judges to the videos ($\alpha = 5\%$, $p = 1{,}14.10^{-02}$). On the other hand, another chi-square test showed that there is no statistical difference between ranks 1 and 2 in the original videos and the videos in which the attitude of *Reference* was inserted in the context of *Urgency* and *Irritation* ($\alpha = 5\%$, $p = 0.4536$).

After that, we decided to replicate Moneglia's experiment. We recorded one scene that elicited an *Order* and another that elicited an *Instruction*, using the same locutive content, *vira à direita* ('turn right'). We chose contexts that, in principle, should not elicit these illocutions with marked attitudinal values.

In the scene of *Order*, a man receives a friend who needs to park in his garage. The friend asks where he should park, and the man gives him some directions and then orders: *vire à direita* (turn right) (video 5).

Text of video 5

MAN1: e aí // achou aqui fácil //
           so // did you find it easy to get gere //
MAN2: achei // onde é que eu paro o carro //
           I did // where do I park //
MAN1: pode ir / até lá no fundo / até lá no fundo // **vire à direita** //
           go / all the way there / all the way there // turn right //

In the scene of Instruction, a man is walking in his building's garage when a woman asks him if he knows where visitors are supposed to park. The man says: *vire à direita* (turn right) (video 6).

Text of video 6

WOM: oi // cê mora aqui //
          hello // do you live here //
MAN: ham ham //
WOM: sabe me dizer onde que é a vaga de visitante //
          can you tell me where the parking for visitors is //
MAN: tá vendo aquele corredor lá no fundo //
          do you see that corridor over there //
WOM: sim //
          yes //
MAN: **vire à direita** //
          turn right //
WOM: ah / então tá // brigada//
          ah / okay // thanks //
MAN: nada //
          you're wellcome //

A perception test was set in order to evaluate the reaction of native speaker judges. We divided 71 judges in two groups: a group of 36 people should evaluate the two scenes with their original illocutions and a group of 35 people should evaluate the two scenes with the substitutions. The evaluation consisted in watching the two scenes and grading the adequacy of the intonation profile of the illocution from 1 to 5. The results show that the judges found the prosodic forms performed in the scenes of *order* and of *instruction* perfectly replaceable. In the

group that was watching the original scenes, when evaluating the scene of *Order*, 29 judges (81%) rated it 4 or 5 and 7 judges rated it 1 or 2; in the same group, when evaluating the scene of instruction, 31 judges (86%) rated it 4 or 5 and 5 rated it 1 or 2. In the group that was judging the scenes with the substitution, when evaluating the scene of *Order* with the illocution of *Instruction*, 28 judges (80%) rated it 4 or 5 and 6 rated it 1 or 2; when evaluating the scene of *Instruction* with the illocution of *Order*, 28 (80%) rated it 4 or 5 and 7 rated it 1 or 2. The results of the rejection grades (1 and 2), indecision grade (3) and acceptance grades (4 and 5) were compared in a chi-square test that confirmed that the ranks were not attributed randomly by the judges ($\alpha = 5\%$, p = 2,19.10-11).

Figure 9 shows the prosodic profiles of the illocution of *Order* and *Instruction* elicited by our scenes (left) and the two forms in Moneglia's experiment (right):
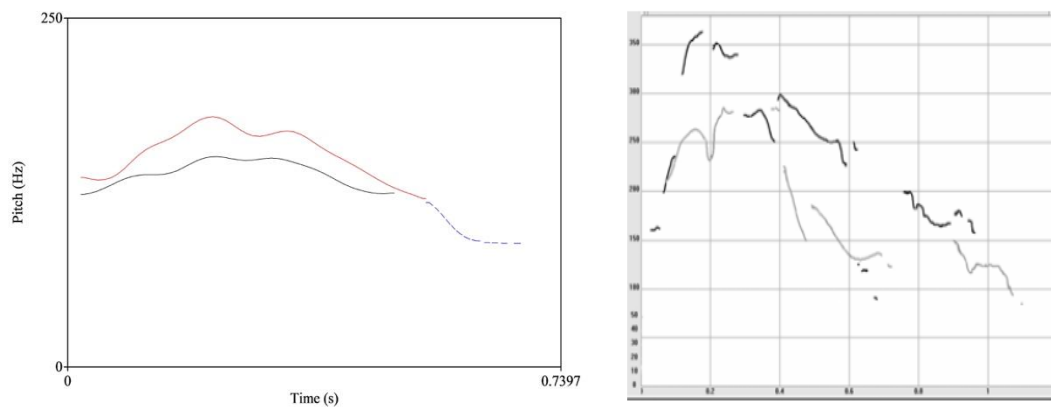

Figure 9: On the left, the superposition of the profiles of the illocution of *Order* (red) and *Instruction* (black). The dotted line shows the last syllable ("ta") of the *Order* profile, not realized in the instruction. On the right, the superposition of the profiles of the illocution of *Order* (black) and *Instruction* (grey) in Moneglia (3)

A rough description of the nucleus of the two profiles of figure 9 presents the characteristics of table 2:

Table 2. Description of the nucleus of the illocutions of *Order* and *Instruction* shown in figure 9.

	Order (nucleus)	**Instruction** (nucleus)
Duration	Nucleus: 526ms Stressed vowel: 147ms	Nucleus: 484ms Stressed vowel: 129ms
f0	Rising-falling configuration Onset: 129Hz Peak: 183Hz Final: 121Hz Variation of the rising movement: 54Hz Variation of the falling movement: -62Hz Mean: 153Hz Variation rate (rising movement): 225 Hz/s Variation rate (falling movement): -136 Hz/s	Rising-falling configuration Onset: 121Hz Peak: 153Hz Final: 122Hz Variation of the rising movement: 32Hz Variation of the falling movement: -31Hz Mean: 137Hz Variation rate (rising movement): 139 Hz/s Variation rate (falling movement): -62 Hz/s
Alignment	The rising movement corresponds to the first two syllables ("vira"), with its peak on the post-tonic syllable ("ra"). The rising	The rising movement corresponds to the first two syllables ("vira"), with its peak on the post-stressed syllable ("ra") and in the

| movement starts on the next syllable. The last stressed vowel (the diphthong "ei") seems to be lengthened in relation to the other vowels | following one. The falling movement starts on the next syllable. The last stressed vowel (the diphthong "ei") seems to be lengthened in relation to the other vowels |

In both illocutions the nucleus is characterized by a rising-falling f0 movement, with the f0 peak at the end of the second syllable. In the *Order*, the falling movement starts right after the peak; in the *Instruction*, the peak lasts until the onset of the next vowel, where the falling movement begins. The onset of the first movement and the end of the second one have very similar f0 values for both illocutions (onset: 129Hz for *Order* and 121Hz for *Instruction*; end: 121Hz for *Order* and 122Hz for *Instruction*). The two f0 peaks have a difference of 30Hz, with *Order* exhibiting higher values. The similarity of onset and final values, along with the difference in f0 at the peak, is a typical pattern in the different attitudes for *Order*. This could be another argument to support the hypothesis that these two illocutions share the same illocutionary form.

Based on these results, we can make some considerations. First, we cannot confirm that *Order* and *Instruction* do exhibit different prosodic forms. Rather, it seems they have the same form, even if they are presumably often associated with different attitudinal values, which in such case are not distant enough to yield a rejection of the substitution. We must expect that the number of illocutionary values is too high for each illocution to be marked by a specific prosodic form. Therefore, we should expect that in many cases different illocutions share the same prosodic form. Of course, each illocution is more likely to associate with certain attitudes and not with others, and therefore they are more likely to realize certain profiles than others. But this can be regarded as a matter of probability, rather than a clear-cut rule.

It is worth noticing that, by saying that some groups of illocutions share the same prosodic form, we do not contradict the previous statements that (a) each illocutionary type has a prosodic form and (b) speakers can identify the illocution conveyed by an utterance based on its prosodic form. The last observations only suggest that there are other aspects of the utterance that work together with its prosodic form in order to convey the illocution. In other words, the prosodic form is a necessary but not a sufficient feature to identify an illocution in natural context.

4 Illocution and pragmatic parameters

4.1 Different pragmatic parameters guide the interpretation of the prosodic form

To identify a specific illocutionary value in natural context, some pragmatic and cognitive parameters seem crucial. We will try to exemplify this statement using the illocutions of *Order* and *Instruction* once more. We have already said that *Order* is the illocution that has the goal to have the listener change the world either by doing something in the world or to himself, while *Instruction* is the illocution that has the goal to change the cognitive conditions of the listener, so that he or she will be able, if and when he/she wants, to make changes in the world. Therefore, there is a precise pragmatic/cognitive way to distinguish *Order* from *Instruction*.

This way of distinguishing different illocutions was proposed in some works by researchers from the LABLITA lab (1–3 and especially 32). More generally, what is proposed is that illocutions can be defined through a small set of pragmatic/cognitive parameters, such as

goal (operational or cognitive), distance, visibility (between speaker and listener and between speaker and the reference object), attention (shared or unshared) between speaker and listener, and a few others. This list of parameters should be built based on observation of speech in natural context, looking for the pragmatic/cognitive features that allow us to identify the action performed by a specific utterance.

This also means that illocutions can be distinguished based on their prosodic form and/or pragmatic/cognitive parameters. As we have said, it should be expected that the number of illocutions is greater than the number of possible prosodic forms. Research conducted in the LABLITA lab present repertoires with almost one hundred illocutions – see (2) for the last version; even the last version is still presented as incomplete. It is not likely that we can have such a large number of illocutionary distinctive forms. Therefore, we assume that in many cases different illocutions share the same prosodic form, and that the distinction among them is left to the difference in terms of pragmatic and prosodic parameters.

If we think in functional terms, we can hypothesize that differences in prosodic forms should be easily identifiable through perception. Different forms that could easily be mixed up with each other would not be functionally useful and would not help communication. This would be the case of the illocutions of *Order* and *Instruction* if we would conclude that they have different forms, since they, at least in some cases, can be substituted without yielding any awkwardness to be perceived by listeners. It is more likely that differences in prosodic forms be clear, and that the same prosodic form apply to illocutions that could be easily identified on pragmatic grounds. This could be the case of *Order* and *Instruction*, which can be easily distinguished through the parameter of operational or cognitive goal.

4.2 Pragmatic parameters and accommodation of the prosodic form

The importance of the pragmatic and cognitive parameters can be shown by another experiment. We recorded two scenes showing two different illocutions, *Offer* and *Question of Confirmation*, performed with the same locutive content, *suco de pêssego* (peach juice). After that, we proposed a perception test to 38 native speakers. Our goal was to understand whether the prosodic forms of the two illocutions, which are clearly different, could be accommodated in the presence of strong differences in pragmatic parameters. Each participant watched 4 videos: (i) the video of *Offer* with its original utterance; (ii) the video of *Question of Confirmation* with its original utterance; (iii) the video of *Offer* with the utterance elicited in the video of *Question of Confirmation*; (iv) the video of *Question of Confirmation* with the utterance elicited in the video of *Offer*. The videos were presented randomly. Observing the results, we noticed that, in the third and fourth answers, rates were always good, while in the first two positions there was more variation in the scores. It is likely that the judgements for videos in third and fourth positions will not be reliable. We therefore decided to take into consideration only the first two videos the subjects watched. The *Offer* video with the *Offer* utterance was watched by 49 people in the first or second position: 45 (92%) people rated it 4 or 5 and only 4 people rated it 1 or 2 (8%). The *Question of Confirmation* video with its original utterance was watched by 40 people in first or second positions: 38 (95%) rated it 4 or 5 and two rated it 1 or 2 (5%). Forty-eight people watched the *Offer* video with the *Question of Confirmation* utterance: 39 (81%) rated it 4 or 5, 1 rated it 3 (2%) and 8 rated it 1 or 2 (17%). Forty-three people watched the video of *Question of Confirmation* with the *Offer* utterance: 37 (86%) rated it 4 or 5 and 6 rated it 1 or 2 (14%). A chi-square test was carried out in order to compare the rejection grades (1 and 2), the indecision grade (3) and the acceptance grades (4 and 5) of all videos and it showed that the grades were not attributed randomly by the judges ($\alpha = 5\%$, $p < 2{,}2 \cdot 10^{-16}$).

The result was that 76 out of 91 people said that the substitution was satisfactorily acceptable, showing that when the pragmatic context does not admit the illocution prosodically performed, the action elicited by the context can be recovered (probably this is not true for all types of illocution) through accommodation. This result was validated by a chi-square test that compared only the acceptance grades (4 and 5) of every video. According to the test, there is no statistical difference between the grades attributed to the videos ($\alpha = 5\%$, $p = 0.8073$).

Video 7 shows a woman offering some peach juice to a man and uttering *suco de pêssego // (peach juice)*.

Text of video 7

WOM: **suco de pêssego** //
   peach juice
MAN: &he / pode ser água //
   &he / can I have water //
WOM: pode / claro //
   You can / of course //

Video 8 shows the man serving some juice to the woman and the woman uttering with the pattern of the illocution of *Question of Confirmation* the utterance *suco de pêssego // (peach juice)*.

Text of video 8

MAN: aqui o' // trouxe umas coisas pra gente beber // enquanto a gente conversa //
   look // I brought things for us to drink // while we chat //
WOM: **suco de pêssego** //
   peach juice //
MAN: é / ham ham //
   yeah / ham ham //
WOM: pode pegar //
   can I get it //
MAN: pode / pode //
   you can / of course //
WOM: brigada //
   thanks //
MAN: nada //
   you're wellcome //

Figure 10 shows respectively the superposition of the two utterances (left) and of their nuclei (right). *Question of Confirmation* in red and *Offer* in black.
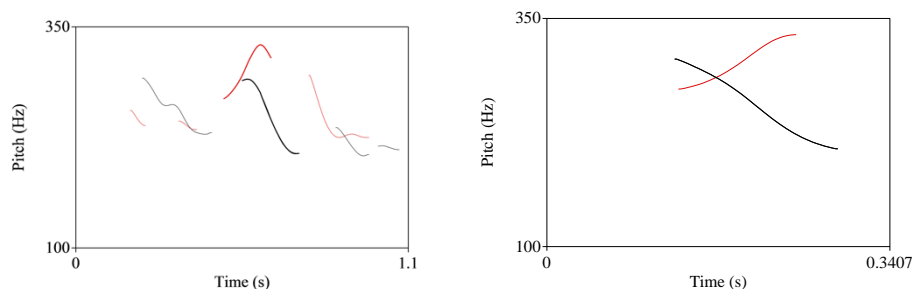
Figure 10: On the right, the superposition of the profiles of the illocution of *Question of Confirmation* (red) and *Offer* (black). On the left, the nuclei of the profiles of *Question of Confirmation* (red) and *Offer* (black)

A brief description of the two contours of the nucleus can help better appreciate the differences.

Table 3: Description of the prosodic contours of the nucleus of the illocutions of *Offer* and *Question of Confirmation*.

	Offer	**Question of Confirmation**
Duration	Nucleus 299ms Stressed vowel: 183ms	Nucleus: 240ms Stressed vowel: 137ms
f0	Falling movement Onset: 298Hz (peak of the unit) Final: 199Hz Mean: 250Hz Variation: -99Hz Variation rate: -330 Hz/s	Rising movement Onset: 272Hz Final: 342Hz (peak of the unit) Mean: 305Hz Variation: +70Hz Variation rate: 390 Hz/s
Alignment	The movement coincides with the whole nucleus: it starts on the onset of the stressed V	The movement coincides with the whole nucleus: it starts on the onset of the stressed V

The two illocutions have different nuclear movements: *Offer has a* falling movement and *Question of Confirmation* has a rising one. While the f0 values of the nucleus are similar at the onset, they are clearly distinct at the end. The two f0 peaks are significantly distant. Duration values are clearly higher for *Offer*.

5. Final remarks

Some final remarks can be made. Given that it is not possible to find illocutions without attitude, how should we study the prosodic markings of the two categories at the same time? First of all, we should recognize that the category of illocution has a more abstract status. In speech, the pure prosodic form of any illocution does not exist without the superimposed features of the attitude with which the illocution is realized. This means, in our opinion, that we cannot know the abstract form of illocution without understanding what is invariant in the different attitudes that are performed together with a specific illocution. As we have observed comparing different attitudes of the illocution of Order, each one features one or some particular cues, and also the type of prosodic movement can change to a certain extent.

This also means, in our opinion, that the substitution test is not a proper methodology to adequately understand the prosodic form of an illocution, since we will never know whether its non-acceptability is due to a different illocutionary form or to an attitude incompatible with the specific context. It is also possible that two different illocutions can seem to have different forms because they are normally associated with different attitudes. This risk seems to be stronger when prosodic differences involve mainly range. Besides this, it is likely that different illocutionary prosodic forms are clear and not ambiguous. Therefore, we propose that, to

understand the abstract illocutionary form, we should examine the greatest number of attitudes we can find and analyze them to look for what remains invariant.

These considerations about how prosody impacts on two different categories make it even more important that we study the pragmatic/cognitive parameters, so as to define the different illocutions and to make it possible for us to identify and differentiate them. The last experiment we described confirms, on one hand, the great importance of these parameters; on the other hand, it warns us about the fact that, if, for some reason, an illocution is not performed with its proper form, the context can still accommodate it and the listener can use the pragmatic parameters to recover the illocution, despite its prosody.

For all these reasons, the prosodic study of illocution in spontaneous speech cannot rely on a limited set of examples.

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