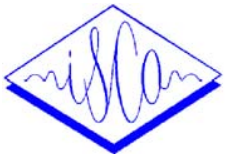

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Meanings and Configurations of Questions in English

Nancy Hedberg, Juan M. Sosa & Lorna Fadden

Department of Linguistics
Simon Fraser University, Burnaby
{hedberg; sosa; fadden}@sfu.ca

Abstract

This is a study of the interface between meaning and prosodic structure. Five syntactic types of questions were examined: positive yes/no, negative yes/no, positive declarative, negative declarative and wh-questions. 113 examples of English questions from the CallHome corpus were analyzed with respect to the effect nuclear tunes have on their meaning. We conclude that the direction of the final contour is the fundamental prosodic contributor to interactional pragmatic meaning.

1. Introduction

This paper addresses the interaction between the meaning of questions and their intonational structure. We examine five syntactic types of questions, positive yes/no, negative yes/no, positive declarative, negative declarative and wh-questions with respect to the effect nuclear tunes have on their meaning.

The main issues addressed are speaker and addressee commitment to a proposition, the potential assertive force of a question, and the anticipated answers that questions are intended to elicit.

2. Method

For data, we analyzed 113 examples of English questions drawn from the CallHome corpus [1], [2]. This is a collection of 125 recorded thirty-minute telephone conversations between native speakers of American English who know each other. We searched all the transcripts, identified a minimum of 21 of each of the five question types, and then extracted the sound files from the corpus for these samples. We also collected the contexts of the sample questions from the transcripts.

Using PitchWorks v5.0, we analyzed the intonation contours of each question and transcribed them using the ToBI system [3], linking the notation to the relevant text. Two coders arrived at a consensus on ToBI labeling. In cases of continued dispute a third coder was consulted. We looked at the data two ways, grouped by question type and grouped by nuclear tune type, and interpreted the semantic and pragmatic meanings associated with each parameter.

3. Data

Table 1 shows the distribution of nuclear tunes across question types in the data. Five question sentence types are distinguished. Yes/no questions contain an inverted auxiliary. We distinguish positive from negative ones. Declarative questions are yes/no questions without inversion. Thus they have declarative instead of interrogative syntax. Again we distinguish positive from negative ones. Wh-questions are questions with a fronted wh-word. Only positive ones were found.

The tunes are divided into four major categories: High-rise, Low-rise, Level and Fall according to the terminal contour. Different combinations of tones are included in those four categories, as seen in Table 1.

Table 1: *Distribution of Nuclear Tunes across Question Types*

	Pos. Y/N	**Neg. Y/N**	**Pos.Decl**	**Neg.Decl**	**WH**
High-Rise					
H*HH%	19%	19%		9%	5%
!H*HH%		5%			
H*H!H%				5%	
	19%	**24%**	**0%**	**14%**	**5%**
Low-Rise					
L*HH%	62%	38%	82%	68%	9%
L*H!H%		14%			
	62%	**52%**	**82%**	**68%**	**9%**
Level					
H*HL%	12%	5%	5%	10%	
!H*HL%		5%			5%
	12%	**10%**	**5%**	**10%**	**5%**
Fall					
L+H*LL%				5%	9%
H*LL%	4%	5%	10%	5%	23%
!H*LL%			5%		23%
L*LL%	4%	10%			27%
	8%	**15%**	**15%**	**10%**	**82%**
N	**26**	**21**	**22**	**22**	**22**

4. Question Type, Nuclear Tunes and Meaning

In this section we discuss the interaction between the meaning of the different tunes and question types.

4.1. Positive Yes/No Questions

Low-rise on positive yes/no questions is the most frequently occurring and is the tune that most clearly signifies a question requesting new information, with no expectation that the answer will be positive or negative, as in (1).

(1) Did she **have** her **ba**by yet?
H* L*HH%

High-rise on positive yes/no questions indicates discourse-linking [4] or surprise. In example (2) the speaker was under the impression that the addressee had been working

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in Atlanta. Later discourse revealed that this was not the case. The speaker's assumption was incorrect, which prompted the question in (2).

(2) Were you **far** from At**lan**ta?
H* H*HH%

Fall on a positive yes/no question indicates more of an assertion of the positive proposition. In (3), the speaker is expecting that the hearer will agree and is trying to elicit confirmation of this.

(3) A: I asked some of the students here whether they thought it was better to be there before or after the fall semester, and they said after.
B: Uh huh.
A: Do **you** a**gree**?
H* H*LL%

Level on a positive yes/no question indicates a mitigation of the meaning of a fall. The speaker still expects a positive answer and that the addressee will go along with his assertion.

(4) A: I saw Jennifer at the same conference.
B: Does she still **look like** a Teu**ton**ic **pin**-up?
H* !H* H* H*HL%

Only five out of 26 examples were falls or levels This is quite different from the corpus of televised political discussions which the authors of the presenst study reported on in [5], where 20 out of 29 positive yes/no questions were falls or levels. In the latter corpus, the conversation was less cooperative, more adversarial.

4.2. Negative Yes/No Questions

In interpreting negative yes/no questions, a distinction is made in [6] between "outer negation" and "inner negation". With outer negation, the speaker has reason to believe that the answer will be positive, as in (5).

(5) [B remembers that Moosewood Restaurant is in the area]
A: Where should we go to eat?
B: Isn't there a vegetarian restaurant in the area?

With inner negation as in (6), the speaker infers from previous discourse that the answer is likely to be negative and is questioning whether this negative proposition holds or not, i.e. "You mean there isn't a vegetarian restaurant in the area?"

(6) A: We'll have to eat meat tonight.
B: Isn't there a vegetarian restaurant in the area?

The majority of our negative yes/no questions are outer negation. Only two are inner negation, e.g. (7).

(7) Don't they **give** us a **war**ning?
L* L*HH%

Here the speaker has inferred that they don't give a warning and is asking whether this is correct.

The outer negation questions, on the other hand, assume that the positive proposition will hold, as in (8), where the speaker believes that Tenarife is by Africa and is asking for a confirmation.

(8) Isn't it **by Af**rica?
L* L*HH%

Sometimes the speaker's belief in the positive proposition is so strong that the outer negation yes/no question is really a comment rather than a question, as in (9), where the speaker intends to elicit nothing new or controversial.

(9) Isn't **that weird**?
H* L*HH%

Ten out of 21 of our negative yes/no questions were of this comment type.

As for intonation, 52% of negative yes/no questions were low-rise, as in examples (7)-(9) above, once again indicating that low-rise is the most frequent yes/no question intonation. 24% were high-rise; some of these were comments. In (10) and (11), the high-rise indicates surprise that the addressee does not appear to agree that the positive proposition is true.

(10) **Can't** you **get** a **rea**lly **cheap** one?
H* L* L* H*HH%

(11) **Aren't** you **lea**ving on the twenty-fifth?
H* H*HH%

In (10), high-rise indicates a real question whereas a low-rise in this same example would be taken as a suggestion.

Fall on negative yes/no questions has the effect of creating a comment out of the question regardless of whether the fall is from a high tone or a low tone. There were no samples in which a negative yes/no question with a fall contour appeared to genuinely request information.

(12) **Is**n't it a **pain** in the **ass** when they do that?
H* !H* L* LL%

(13) Oh isn't **she still** a-**go**in' **strong**?
H* H* H* H*LL%

Level nuclear tunes on negative yes/no questions appear to be a mitigated fall, conveying less certitude than a fall, although still maintaining assertability.

(14) **Don't** you **feel** like a **diff**erent **per**son.
H* !H* !H* !H* HL%

Three out of five negative yes/no falls and levels function as comments, which is consistent with these contours being associated with assertive-style questions.

There were no L+H* pitch accents on the negative auxiliary in the CallHome corpus, unlike in the corpus of televised political discussions examined in [5], where eight out of nine inverted negative auxiliaries were marked L+H*, again perhaps because the latter corpus was more adversarial.

4.3. Positive Declarative Questions

The meaning of declarative questions is explained in [7] as preserving the commitment to the propositional content characteristic of any declaratiave utterance. In the case of

declarative statements, the commitment is by the speaker, and in declarative questions, the commitment is by the addressee.

Of the 22 positive declarative questions, 18 have a low-rise nuclear tune, as in (15) and (16).

(15) You're **get**ting like **bunk** beds?
H* L*HH%

(16) **He** has a **B**M**W**?
H* !H* L*HH%

This question type contains proportionately the least amount of nuclear tune variability.

We found no high-rise positive declarative questions. We speculate that a high-rise would indicate that the speaker is surprised that the positive proposition is true, as in the constructed example in (17).

(17) **He** has a **B**M**W**?
H* !H* H*HH%

The difference in meaning between declarative questions and statements is situated in [7] as a function of the rising versus falling contour, but we found some declarative questions that were falling (3/22), shown in (18) and Figure 1, and one was level, shown in (19).

(18) So you **still** have your **off**ice as your **off**ice?
H* !H* !H*LL%

(19) You **want** me to just **give** you some **head**lines?
H* L* H*HL%

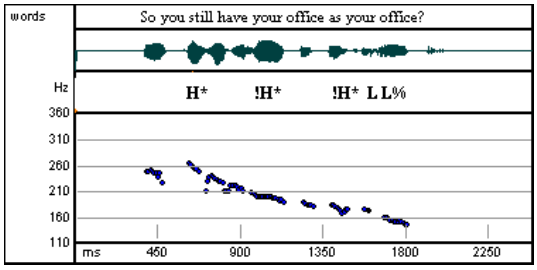

Figure 1: *Fall on Positive Declarative.*

We checked the speech files and transcripts carefully to verify that these indeed functioned as questions. We concluded that they did because the speaker had some degree of uncertainty and they invited addressee response. They were also marked with question marks in the transcripts.

4.4. Negative Declarative Questions

All of the negative declarative questions in our data set are of the inner negation type [6]. Here we can extend Gunlogson's account of declarative questions [7] to negative declarative questions in which the addressee is committed to a negative proposition.

Again the majority were low-rise (68%), as in (20).

(20) Her **mother** didn't **call** her?
H* L* HH%

Of those that have a high-rise nuclear tune, we observed that they may be discourse-linked questions [4], and in some cases even echo questions. Their occurrence in our data is dependent on previous mention in the discourse. High-rise, as with the previous question types, indicates surprise or some degree of disbelief. The speaker has held the assumption that the opposite is true, now the addressee's discourse has made him or her change his/her mind and ask for confirmation. Examples are shown in (21) and (22), and in Figure 2.

(21) A: Once they make friends with you, then they're nice to you. But, I don't know what the secret is of cracking the code. You know.
B: And **you** haven't **cracked** it with **an**ybody yet?
H* L*+H H*HH%

(22) A: Mom and dad won't have black.
B: **They** don't **want** black?
L* H* HH%

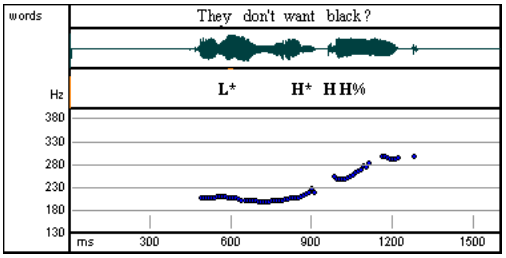

Figure 2: *High rise on Negative Declarative.*

There were two negative declarative questions with a falling nuclear tune. The fall occurs because the speaker is relatively sure of the answer and shares to a degree the commitment to the truth of the propositional content, as in (23), in which the speaker is asking for confirmation that the addressee hadn't taken a financial markets course. It did elicit the expected confirmation.

(23) But you **had**n't **tak**en it?
H* H*LL%

There were also two level nuclear tunes, and once again these indicate the same as a fall, which is asking for confirmation.

(23) So he **still** hasn't **made** any **in**roads?
H* !H* H* HL%

The one example of a rise-fall nuclear contour that we found outside of wh-questions is shown in (24). The speaker is surprised to find out that something she had assumed (that the addressee got a letter she sent) was not the case.

(24) You didn't **get** my **lett**er?
H* L+H* LL%

The meaning of the rise-fall parallels the high-rise in conveying surprise, although the rise-fall is more exclamatory.

4.5. WH-Questions

The great majority of our wh-questions had falling (82%) nuclear tunes, and 5% were level. This is consistent with the findings of [8] for English in a corpus-based study. In her data only 8% or 9% of wh-questions were uttered with a final rise.

Ten of the falling ones in our data are high-falls, six are low-falls, and two are rise-falls. In this question type the rise-fall is just a more exclamatory form of a fall. There was one high-rise, shown in (25).

(25) **When** are you **plan**ning on **com**ing?
H* H* H*HH%

Here, the propositional content of the question is linked to previous discourse, in that the speaker indicates that he or she should already be aware of the answer but has forgotten and is asking for a reminder.

One of the two low-rise wh-questions is also of this type, shown in (26) and in Figure 3. Here the speaker indicates, "Maybe I should know, but I don't."

(26) **What** are they?
L*HH%

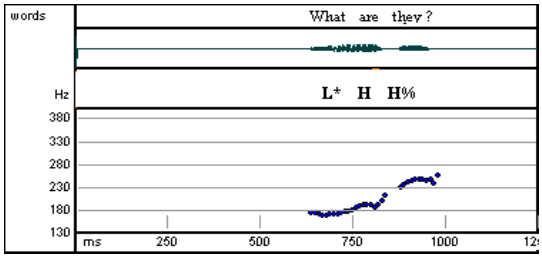

Figure 3:*High rise on Wh-Question.*

(27) Then **when** will you **come** to **Ro**chester?
H* !H* L*HH%

In (27), the question sounds very uncertain. The possibility is left open that she's not coming at all. As [9] puts it for wh-questions in Spanish, the low-rising intonation weakens the affirmative base of the question.

There was one example of a level nuclear tune in the data:

(28) **How old** was **he**?
H* !H* !H*HL%

Again we have the reminder meaning. Thus the level tune in wh-questions is a variant of a rise, rather than a variant of a fall as in the other four question types.

Finally, we found only one L+H* pitch accent on the wh-word, which contrasts with the political discussion corpus reported on in [5], where 20 out of 33 wh-words in positive wh-questions (61%) had L+H* on the wh-word. In the CallHome corpus, 82% were H* or !H*.

5. Discussion and Conclusion

We believe that is not possible to fully examine the meaning of questions without addressing the contribution of the nuclear tunes associated with them. Our data have shown that in interaction with the five question types that we have examined, different nuclear tunes convey different meanings with respect to speaker and addressee commitment, degree of assertability, and anticipated answer.

In the yes/no questions and declarative questions, most of the final contours (80%) were rising, in the wh-questions, most of the final contours (82%) were falling. We found that if we grouped the possible nuclear tone combinations (pitch accen, phrase accent and boundary tones) into falls, low-rises, high-rise and level contours, they are more revealing and allow for better generalizations about categories of meaning.

The high-rise terminal contour seems to be consistent across the question types in implying surprise or various degrees of disbelief. High-rise and low-rise wh-questions typically function as discourse-linked, reminder question. Falls in yes/no and declarative questions indicate that there is a relatively large degree of speaker certainty about what the answer is going to be. There isn't an open request for new information. Levels are analogous to falls but with a mitigated effect. However, with wh-questions, the opposite effect applies since level final contours group with rises. The rise-fall in the negative declarative type correlated in meaning with the high-rises, but with wh-questions, the opposite effect applies once again since they are a variant of a fall contour.

Our examination of the interface between intonation and meaning of questions in real speech reveals that the prosodic structure, specifically, the direction of the final contour, is fundamental to interactional pragmatic meaning. Our results show the importance of studying sentences in context since this allows for participants' commitments and expectations to be assessed.

6. References

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