

# Remarks on Epistemically Biased Questions

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## Abstract

Some varieties of polar interrogatives (polar questions) convey an epistemic bias toward a positive or negative answer. This work takes up three paradigmatic kinds of biased polar interrogatives: (i) positively-biased negative polar interrogatives, (ii) negatively-biased negative polar interrogatives, and (iii) rising tag-interrogatives, and aims to supplement existing descriptions of what they convey besides asking a question. The novel claims are: (i) a positively-biased negative polar interrogative conveys that the speaker assumes that the core proposition is likely to be something that is or should be activated in the hearer's mind, (ii) the bias induced by a negatively-biased negative polar interrogative makes reference to the speaker's assumptions about the hearer's beliefs, and (iii) the biases associated with the three constructions differ in strength, the one of the rising tag-interrogative being the strongest.

## 1 Introduction

Some varieties of polar interrogatives (polar questions) convey an epistemic bias toward a positive or negative answer. While previous research has revealed much on how different varieties of biased interrogatives contrast with each other in their syntactic and semantic properties, there is a great deal of complexity and subtlety concerning the usage of each type that calls for further investigations.

This work takes up three paradigmatic kinds of biased interrogatives, (i) positively-biased negative polar interrogatives (*Isn't she home already?*), (ii)

negatively-biased negative polar interrogatives (*Isn't she home yet?*), and (iii) rising tag-interrogatives (*She is home, isn't she?*), and aims to supplement existing descriptions of what they convey besides asking a question.

## 2 Negative Polar Interrogatives and Tag-Interrogatives

This section provides a brief overview of the basic facts about the three kinds of marked polar interrogatives.

### 2.1 Positively-Biased Negative Polar Interrogatives

Positively-biased negative polar interrogatives, or “outside-negation (outside-NEG)” interrogatives (the term due to Ladd, 1981), convey a positive bias toward the core proposition ( $p_c$ ), i.e., the proposition denoted by *the radical minus the negation*.<sup>1</sup>

- (1) H: John is such a philanthropist.  
S: Yeah, doesn't he even run some sort of charity group?  
(S thinks that  $p_c$ : “John (even) runs some sort of charity group” is likely to be true.)
- (2) H: OK, now that Stephen has come, we are all here. Let's go!  
S: Isn't Jane coming too?  
(S thinks that  $p_c$ : “Jane is coming (too)” is likely to be true.)  
(adapted from Romero and Han, 2004: 611)

<sup>1</sup>In examples and main text, “S” and “H” are used as abbreviations of “the speaker” and “the hearer” respectively.

Outside-NEG interrogatives (i) are compatible with a positive polarity item (e.g., *too* as in (2)) and (ii) do not license a negative polarity item. On this ground, McCawley (1988: 499, 571) characterizes the negations in outside-NEG interrogatives (and some instances of “postnuclear” rising tag-interrogatives; see below) as “fake” negations, which do “not count as negative for the purposes of syntactic rules that are sensitive to negation”.<sup>2</sup>

## 2.2 Negatively-Biased Negative Polar Interrogatives

Negatively-biased negative polar interrogatives, or “inside-negation (inside-NEG)” interrogatives, convey a negative bias toward  $p_c$  (= a positive bias toward  $\neg p_c$ ).

- (3) H: There is nothing John can help with here.  
 S: Doesn’t he even know how to keep accounts?  
 (S thinks that  $p_c$ : “John does not (even) know how to keep accounts” is likely to be true.)
- (4) H: So we don’t have any phonologists in the program.  
 S: Isn’t Jane coming either?  
 (S thinks that  $p_c$ : “Jane is not coming (either)” is likely to be true.)  
 (adapted from Romero and Han, 2004: 611)

Inside-NEG interrogatives (i) are not compatible with a positive polarity item, and (ii) license a negative polarity item (e.g., *either* as in (4)). This suggests that the negation involved is “genuine”, rather than “fake”.

## 2.3 Rising Tag-Interrogatives

Rising (or “non-falling”) tag-interrogatives (“nuclear” rising tag-interrogatives, to be precise; see below) convey a positive bias toward the proposition denoted by the host clause ( $p_h$ ). They contrast with falling tag-interrogatives, to be briefly taken up below, in prosody as well as in function. The prosodic contours that characterize rising and

falling tag-interrogatives can be equated with those that characterize canonical polar interrogatives and canonical declaratives, the exact phonological characteristics of which are not of concern for the purpose of the current work.

The term “tag-interrogatives” has been used in two different ways in the literature, either referring to the complex structure consisting of the host clause and the short polar interrogative (“tag”) following it, or referring only to the latter. In this work, I adopt the former terminology, according to which  $\alpha$  rather than  $\gamma$  in (5) is a tag-interrogative.

- (5) [ $\alpha$ [ $\beta$  Jane is coming], [ $\gamma$  isn’t she]]?  
 $\alpha$  = tag-interrogative,  $\beta$  = host (clause),  $\gamma$  = tag

The distributions of polarity items within tag-interrogatives are determined by the polarity of the host clause.

- (6) a. Jane is coming (too/\*either), isn’t she?  
 (The speaker thinks that  $p_h$ : “Jane is coming” is likely to be true.)  
 b. Jane isn’t coming (\*too/either), is she?  
 (The speaker thinks that  $p_h$ : “Jane is not coming” is likely to be true.)

## 2.4 Other Varieties of Negative Polar Interrogatives and Tag-Interrogatives

There are some varieties of negative polar interrogatives and tag-interrogatives which exhibit considerable similarities with the types mentioned above but nevertheless are distinct. I will provide brief descriptions of three such varieties, in purpose to clarify what exactly falls under the scope of the current work.

### 2.4.1 Unbiased Negative Polar Interrogatives

In English (and some other languages; Romero and Han, 2004), the unbiased interpretation of a negative polar interrogative is possible, but only when the negation is realized in non-preposed (post-verbal) position.

- (7) (**Situation:** S is organizing a party and she is in charge of supplying all the non-alcoholic beverages for teetotalers. S is going through a list of people that are invited. She has no previous be-

<sup>2</sup>Ito and Oshima (2015) make a similar remark on positively-biased negative interrogative in Japanese, which exhibit the same pattern as outside-NEG interrogatives as to the compatibility with polarity items, and furthermore are prosodically differentiated from their negatively-biased counterparts.

lief or expectation about their drinking habits.)

H: Jane and Mary do not drink.

S: OK. What about John? Does he not drink (either)?

S': #OK. What about John? Doesn't he drink (either)?

(Romero and Han, 2004: 610)

Patterning the same as the negatively-biased variety, unbiased negative polar interrogatives may contain a negative polarity item but is not compatible with a positive polarity item.

It should be noted that negative polar interrogatives with non-preposed negation, like ones with preposed negation, can be used as a positively-biased or negatively-biased question. There appears to be a tendency such that negative polar interrogatives with preposed negation are more easily interpreted as positively rather than negatively biased, and ones with non-preposed negation are more easily interpreted as negatively rather than positively biased; for some speakers, for example, (8S), the version with non-preposed negation, seems to be significantly preferred to (8S') in the described context.

(8) (**Situation:** S is going to the movies.)

H: Have fun!

S: Oh, aren't you coming?

S': Oh, are you not coming?

How speakers' intuitions may vary on the preferred interpretations of negative polar interrogatives with preposed and non-preposed negation is an interesting question, which I must leave to future research.

### 2.4.2 Falling Tag-Interrogatives

Falling tag-interrogatives have the same structure as rising ones except that the tag is associated with a falling intonation.

- (9) a. Jane is coming (too/\*either), isn't she.  
b. Jane isn't coming (\*too/either), is she.

While there is room for debate as to what the discourse function of the falling tag-interrogative is,<sup>3</sup> it

<sup>3</sup>Some ideas suggested in the literature are: (i) to signal "something like a hedge" (Ladd, 1981: 167), (ii) to "seek acknowledgment that the anchor [= host clause] is true" (Huddle-

seems to be largely agreed that their function is better characterized as making a statement rather than asking a question.

### 2.4.3 Postnuclear Tag-Interrogatives

"Postnuclear" tag-interrogatives are similar to regular (or "nuclear") rising tag-interrogatives in terms of the final intonation within the tag, but involve a weaker prosodic boundary (indicated by the equal sign in (10)) between the host and the tag.

(10) Jane isn't coming=is she?

Reese (2007) points out that postnuclear tag-interrogatives come in two varieties. Ones of the first variety are semantically equivalent to the corresponding regular rising tag-interrogatives, and exhibit the same pattern as to the compatibility with polarity items, as in *Jane isn't coming either=is she?/Jane is coming too=isn't she?*

Postnuclear tag-interrogatives of the second type always have a host with a ("fake") negation, which may contain a positive polarity item, as in *Jane isn't coming too=is she?*. Reese characterizes their meaning as a "neutral question". Huddleston (2002: 894) remarks that they convey that the speaker is "afraid that the positive answer is the true one", also suggesting that it may involve a mild degree of positive bias.

### 2.5 Section Summary: The Semantic Contrast

The three marked kinds of polar interrogatives – the positively-biased negative polar interrogative (outside-NEG interrogative), the negatively-biased negative polar interrogative (inside-NEG interrogative), and the rising tag-interrogative – semantically contrast with the unmarked polar interrogative, and with one another, in terms of the presence and direction of the bias:

- (11) a. *unmarked positive polar interrogative*  
Is Jane coming?  
[neutral (no bias)]  
b. *inside-NEG polar interrogative*  
Isn't Jane coming (too)?  
[positive bias]

ston, 2002: 894), and (iii) to indicate that the speaker is aware that the hearer already knows the content of the host clause (Oshima, 2014: 442).

- c. *outside-NEG polar interrogative*  
Isn't Jane coming (either)?  
[negative bias]
- d. *rising tag-interrogative (with a positive/negative host clause)*  
Jane is coming, isn't she? / Jane isn't coming, is she?

The summary above, however, leaves out some important semantic features of the three constructions. In the following, I will argue that outside-NEG and inside-NEG interrogatives convey additional, subtle meanings that cannot be reduced to the presence and direction of a bias, and that rising tag-interrogatives convey a stronger bias than negative polar interrogatives do.

### 3 A Brief Note on Existing Research

In this work, I adopt the view that the three kinds of biased interrogatives conventionally implicate epistemic biases and other subtle meanings (to be discussed below) as part of their constructional meanings (in the Construction-Grammatical sense).

Alternative ideas have been put forth, according to which such meaning components are derivative of (i) other independently motivated features of the three constructions, and/or (ii) more general processes including conversational implicature (e.g., van Rooy and Šafářová, 2003; Romero and Han, 2004; Romero, 2005; Reese, 2007; Farkas and Roelofsen, 2017; Krifka, 2017). This work does not aim to make any claim against such “reductionist” theories. My goal here is to provide thorough descriptions of the meanings of the three constructions, which hopefully will contribute to the discussion of how and to what extent different kinds of reductionist approaches are useful in accounting for the relevant semantic/pragmatic phenomena.

### 4 Inside-NEG Interrogatives and the “Inference on the Spot” Condition

Ladd (1981) points out that an inside-NEG interrogative indicates that the speaker previously expected  $\neg p_c$  to be true, but “has just inferred”  $\neg p_c$  in the discourse situation. Romero and Han (2004), in a similar vein, state that the speaker “starts with the positive belief or expectation” when asking an

inside-NEG interrogative. (12) exemplifies a felicitous utterance that satisfies this “inference on the spot” condition. (13), on the other hand, is infelicitous due to violation of this constraint.

- (12) (**Situation:** Pat and Jane are two phonologists who are supposed to be speaking in the workshop tomorrow.)

H: Pat is not coming. So we don't have any phonologists in the program.

S: Isn't Jane coming either?

(adapted from Romero and Han, 2004: 611)

- (13) (**Situation:** S is preparing lunch for Jane. S thinks that Jane is probably not a vegetarian, but wants to make sure. He sees Nancy, Jane's sister, and asks her:)

S: #Hey, isn't Jane a vegetarian?

S': Hey, Jane is not a vegetarian, is she?

In this sense, the inside-NEG interrogative can be said to have a flavor of *mirativity*, which DeLancey (1997, 2001) defines as “linguistic marking of an utterance as conveying information which is new or unexpected to the speaker”.

The “inference on the spot” condition as put forth by these authors leads to the prediction that (14) conveys that S had estimated the chance of Jane's coming to be significantly higher than 50%, rather than been neutral on the matter. Speakers' judgments on this point could be subtle, but the experimental results presented by Filippo et al. (2017) seem to support their intuition.

- (14) (**Situation:** S and Nancy are going to the movies. S is waiting for Nancy, who went to check if Jane would want to join them. Nancy comes back by herself. S asks:)

Isn't she coming?

### 5 Outside-NEG Interrogatives and the “Matter of Interest” Condition

Unlike the inside-NEG interrogative, the outside-NEG interrogative does not implicate that the (positive) epistemic bias has been formed in the discourse situation. The following example illustrates this point:

- (15) (**Situation:** S's roommate comes back from a trip to a conference. S has previously heard from Jane, S and H's mutual friend, that she was planning to attend the same conference.)

S<sub>1</sub>: How was the conference?

H: It was pretty good. My talk went okay, and I got to talk to quite a few people.

S<sub>2</sub>: Wasn't Jane there too?

Outside-NEG interrogatives, however, appear to be subject to be a subtle pragmatic constraint that has not been explicitly discussed in the literature. Observe that outside-NEG interrogatives (16S') and (18S') are less natural than the corresponding (i) positive polar interrogatives and (ii) rising tag-interrogatives with a positive host, and that the same sentences are fully acceptable in the alternative contexts specified in (17) and (19).

- (16) (**Situation:** S needs assistance from somebody who speaks Chinese. He has heard that Amy speaks Chinese, but wants to make sure. He asks his roommate.)

S: Does Amy speak Chinese? (positive polar interrogative)

S': ?Doesn't Amy speak Chinese? (outside-NEG)

S'': Amy speaks Chinese, doesn't she? (rising tag)

- (17) (**Situation:** S has heard that Amy speaks Chinese.)

H: Prof. Li is looking for a TA for his Chinese linguistics course. Can you think of anybody? He would prefer somebody who speaks Chinese.

S: Does Amy speak Chinese? (positive polar interrogative)

S': Doesn't Amy speak Chinese? (outside-NEG)

S'': Amy speaks Chinese, doesn't she? (rising tag)

- (18) (**Situation:** S needs some postage stamps. He thinks that the nearby convenience store should have them, but he is not completely sure. He goes to the living room and asks his wife:)

S: Can you buy postage stamps at convenience stores? (positive polar interroga-

tive)

S': ?Can't you buy postage stamps at convenience stores? (outside-NEG)

S'': You can buy postage stamps at convenience stores, can't you? (rising tag)

- (19) (**Situation:** S's wife asks him if he can quickly drive to the post office to buy some postage stamps. He thinks that it will be easier to go to the nearby convenience store, but is not completely sure if they have postal stamps. So he asks her:)

S: Can you buy postage stamps at convenience stores? (unmarked polar interrogative)

S': Can't you buy postage stamps at convenience stores? (outside-NEG)

S'': You can buy postage stamps at convenience stores, can't you? (rising tag)

Utterances (16S') and (18S'), though fully interpretable, sound deviated from the natural dynamics of conversation. They give the hearer the impression that the speaker has failed to provide some relevant preliminary information, much like in cases of presupposition failure. I suggest that an outside-NEG interrogative conveys that the speaker assumes that the core proposition is likely (i) to hold true, and, furthermore, (ii) to be something that is activated in the hearer's mind (as in (15)) or that the hearer should pay attention to (as in (17)/(19)).

It can be easily confirmed, with a discourse like (20), that the inside-NEG interrogative is not subject to this constraint, which I tentatively name the "matter of interest" constraint.

- (20) (**Situation:** S has always thought Jane is a vegetarian. One day, he sees a picture of her holding a chicken wing on her website. Surprised, he says to Nancy, her sister, who happened to be sitting next to him:)

Oh, isn't Jane a vegetarian? (inside-NEG)

## 6 Truth vs. Accepted Truth

Another difference between the inside-NEG interrogative on the one hand and the outside-NEG interrogative and the rising tag-interrogative on the other is that only the former makes reference to

the speaker's assumptions (expectations) about the hearer's beliefs.

Outside-NEG interrogatives and rising tag-interrogatives can be felicitously used when it is contextually clear that  $p_c$  is *not* part of the hearer's beliefs, with the intention to suggest the hearer to revise his beliefs. (21S, S') illustrate this point.

(21) (**Situation:** H is Jane's brother.)

H: Jane really should stop lazing around and get a job.

S: Aren't you too harsh on your sister? You know what the current job market is like.

S': You are too harsh on your sister, aren't you? You know what the current job market is like.

I suggest that an inside-NEG interrogative conveys that the speaker believes not only that  $\neg p_c$  is likely to be true, but also that  $\neg p_c$  is likely to be part of the hearer's beliefs. This supposition is motivated by the contrast illustrated in the following set of examples. (Notice that  $p_c/p_h$  for (22S)/(22S') and  $\neg p_c$  for (22S'') are truth-conditionally equivalent.)

(22) (**Situation:** S and H are organizing an academic colloquium. On the day before the colloquium, H shows S the room that he has arranged. S expected H to choose a larger room, and thinks that the arranged room will be too small to accommodate the audience. S says:)

S: Isn't this room {too small/not large enough}? (outside-NEG)

S': This room is too small, isn't it? / This room is not large enough, is it? (rising tag)

S'': #Isn't this room large enough? (inside-NEG)

The infelicity of (22S'') cannot be attributed of the violation of the "on the spot" condition, as in the provided scenario it is clear that S's assumption that the room is likely not to be large enough (likely to be too small) did not exist prior to the discourse, and was formed right before his utterance. The infelicity of (22S'') should rather be attributed to the fact that S cannot sensibly expect H to share the belief that the room is likely not to be large enough before his utterance.

## 7 Degrees of Likelihood

To summarize the discussions so far, the three marked polar interrogative constructions contrast with the unmarked positive polar interrogative and with each other in the following way (CI stands for "conventional implicature"):

(23) a. *unmarked positive polar interrogative*  
Is Jane coming?

CI: none

b. *outside-NEG interrogative*

Isn't Jane coming (too)?

CI: S believes that  $p_c$  is likely to (i) hold true and (ii) be a matter of interest for H.

c. *inside-NEG interrogative*

Isn't Jane coming (either)?

CI: S previously believed that  $p_c$  was likely to be true, and has just come to believe that  $\neg p_c$  is likely to (i) hold true and (ii) be part of H's beliefs.

d. *rising tag-interrogative*

Jane is coming, isn't she?

CI: S believes that  $p_h$  is likely to hold true.

A further question that needs to be addressed is: Are the three marked interrogatives associated with the same *degree* of epistemic bias? Lassiter (2017) argues that markers of epistemic modality, including the auxiliaries *must* and *might*, indicate that the likelihood (probability) of the semantically embedded proposition's holding true is above or below some threshold value. More specifically, he proposes that the threshold values associated with *might*, *must*, *possible*, *likely*, and *certain* are ordered as in (24), and that each marker indicates that the likelihood of the embedded proposition exceeds its threshold value.

(24)  $\theta_{possible} < \theta_{might} < \theta_{likely} < \theta_{must} < \theta_{certain}$   
(Lassiter, 2017: 140)

The relative order between *might* and *likely*, for example, can be confirmed by observing the contrast between (25) and (26).

(25) (**Situation:** The estimated chances of John's being in his office/the library/the cafeteria are 60%/20%/20% respectively.)

a. John might be in his office.

- b. John is likely to be in his office.
- (26) (**Situation:** The estimated chances of John's being in his office/the library/the cafeteria are 34%/33%/33% respectively.)
- a. John might be in his office.  
b. #John is likely to be in his office.

It can be shown that the epistemic biases conveyed by the three marked interrogatives are, in a similar vein, associated with different degrees of likelihood.

### 7.1 The Outside-NEG Interrogative vs. the Rising Tag-Interrogative

The bias conveyed by a rising tag-interrogative is stronger than that conveyed by an outside-NEG interrogative. This can be illustrated with discourse sets like the following.

- (27) (**Situation:** A guard sees a group of youth drinking beer on a river bank. They look like about **16 years old**. (The drinking age here is 21.) The guard asks:)
- S: Aren't you guys under age?  
S': You guys are under age, aren't you?
- (28) (**Situation:** A guard sees a group of youth drinking beer on a river bank. They look like about **19 years old**. (The drinking age here is 21.) The guard asks:)
- S: Aren't you guys under age?  
S': ?You guys are under age, aren't you?
- (29) (**Situation:** H goes to the library to see if John is there. S estimates the chance of John's being there is about **95%**. H comes back, and S asks her:)
- S: Wasn't John there?  
S': John was there, wasn't he?
- (30) (**Situation:** H goes to the library to see if John is there. S estimates the chance of John's being there is about **75%**. H comes back, and S asks her:)
- S: Wasn't John there?  
S': ?John was there, wasn't he?

The outside-NEG interrogative and the rising tag-interrogative semantically differ in that only the lat-

ter is subject to the aforementioned "matter of interest" condition. Thus, the choice between them cannot be fully reduced to the matter of the degree of certainty. Utterance pairs (27S/S') and (28S/S'), and utterance pairs (29S/S') and (30S/S'), however, differ only with respect to the degree of likelihood that the speaker assigns to  $p_{c/h}$ . To account for the observation that only the acceptability of the rising tag-interrogatives is sharply affected by the decrease of the estimated likelihood, it must be concluded that the rising tag-interrogative is associated with a higher threshold value on the scale of likelihood than the outside-NEG interrogative, i.e.,  $\theta_{Out-NEG-Int} < \theta_{Rising-Tag-Int}$ .

### 7.2 The Inside-NEG Interrogative vs. the Rising Tag-Interrogative

To compare the strength of the biases conveyed by a rising tag-interrogative and by an inside-NEG interrogative, we need to construct discourse situations where (i) the "on the spot" condition is met and (ii) " $\neg p_c$  is true and known to H" and " $p_h$  is true" practically entail each other. Discourse sets (31)–(34) satisfy these criteria.

- (31) (**Situation:** S and H know that Jane eats meat very infrequently – **at most a couple of times a year**. S notices that there is a sandwich on the table, and asks H whose it is.)
- H: I bought this for Jane, but she cannot come. You can have it if you like.  
S: So, doesn't it have any meat?  
S': So, it doesn't have any meat, does it?
- (32) (**Situation:** S and H know that Jane eats meat sparingly – **about 2–3 times in a week**. S notices that there is a sandwich on the table, and asks H whose it is.)
- H: I bought this for Jane, but she cannot come. You can have it if you like.  
S: So, doesn't it have any meat?  
S': ?So, it doesn't have any meat, does it?
- (33) (**Situation:** S and H are roommates. H told S in the morning that he would go to the city library. When H goes to the city library, he **always** checks out three or more books and put them in the bookcase in the living room. S comes home in the evening, and notices that

there is no library book in the bookcase. S asks:)

S: Didn't you go to the library?

S': You didn't go to the library, did you?

- (34) (**Situation:** S and H are roommates. H told S in the morning that he would go to the city library. When H goes to the city library, he **usually** checks out some books and put them in the bookcase in the living room, but sometimes he does not check out any books. S comes home in the evening, and notices that there is no library book in the bookcase. S asks:)

S: Didn't you go to the library?

S': ?You didn't go to the library, did you?

The illustrated contrasts between (31) and (32) and between (33) and (34) indicate that the threshold value of likelihood for the rising tag-interrogative is higher than the one for the inside-NEG interrogative, i.e.,  $\theta_{In-NEG-Int} < \theta_{Rising-Tag-Int}$ .

### 7.3 The Outside-NEG Interrogative vs. the Inside-NEG Interrogative

The remaining question is: How do the outside-NEG and inside-NEG interrogatives compare in terms of the strength of bias? The procedure of constructing minimal pairs and placing them in different contexts, which was used above to compare the rising tag-interrogative and the two kinds of negative polar interrogatives, cannot be easily applied here, because it is hard to construct discourse situations where (i) either an outside-NEG interrogative or the inside-NEG interrogative corresponding to it can be felicitously uttered (without violating the “matter of interest” or “inference on the spot” condition), where the correspondence relation is defined as: outside-NEG  $Q_1$  corresponds to inside-NEG  $Q_2$  (and vice versa) if and only if  $p_c$  of  $Q_1$  is equivalent (in the context) to  $\neg p_c$  of  $Q_2$ , and furthermore (ii) the “ $\neg p_c$ ” for the inside-NEG is practically equivalent to “ $\neg p_c$  is known to H”.

I do not attempt to provide a definitive answer to this question. It can be pointed out, however, that the two constructions seem to exhibit a subtle difference as to their compatibility with hedge phrases such as *maybe* and *possibly*; that is, the outside-NEG interrogative seems to be more tolerant to the occurrence

of a hedge phrase following it, after a intonation-phrase boundary.

- (35) a. Is Jane coming too, {maybe/possibly}?  
b. Isn't Jane coming too, {maybe/possibly}?  
c. Isn't Jane coming either, {?maybe/?possibly}?

This contrast, if proven to be real, may be taken as evidence that the inside-NEG interrogative conveys a stronger bias than the outside-NEG interrogative. Arguably, such hedge phrases are used to convey that the speaker's estimate of the likelihood of the relevant proposition does *not* exceed a certain threshold value, which is designated here as  $\alpha$  for convenience. In (35a,b), the hedge phrases indicate that the speaker's estimate of *prob(Jane-is-coming)* does not exceed  $\alpha$ . In (35c), the hedge phrases would indicate that the speaker's estimate of *prob( $\neg$ Jane-is-coming)* does not exceed  $\alpha$ .<sup>4</sup> The contrast between (35b) and (35c) can be accounted for if we hypothesize that  $\alpha$  is, at least typically, set higher than  $\theta_{Out-NEG-Int}$  but lower than  $\theta_{In-NEG-Int}$  (i.e.,  $\theta_{Out-NEG-Int} < \alpha < \theta_{In-NEG-Int}$ ), leading to inconsistency between a “high” expectation conveyed by an inside-NEG interrogative and a “not-so-high” expectation signaled by a hedge phrase.

## 8 Summary

This work examined the semantic contrasts between the three kinds of marked polar interrogatives: (i) the positively-biased negative polar interrogative (the outside-NEG interrogative), (ii) the negatively-biased negative polar interrogative (the inside-NEG interrogative), and (iii) the rising tag-interrogative. It was argued that (i) a positively-biased negative polar interrogative conveys that the speaker assumes that the core proposition is likely to be something that is or should be activated in the hearer's mind, (ii) the bias associated with a negatively-biased negative polar interrogative makes reference to the speaker's assumptions about the hearer's beliefs, and (iii) the biases associated with the three constructions differ in strength, the one of the rising tag-interrogative being the strongest.

<sup>4</sup>Given that the negation involved in an inside-NEG interrogative is a regular kind of negation (§2.2), it is natural to expect that it falls under the scope of a hedge phrase.



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## References

- Scott DeLancey. 1997. Mirativity: The grammatical marking of unexpected information. *Linguistic Typology*, 1(1):33–52.
- Scott DeLancey. 2001. The mirative and evidentiality. *Journal of Pragmatics*, 33(3):369–382.
- Donka F. Farkas and Floris Roelofsen. 2017. Division of labor in the interpretation of declaratives and interrogatives. *Journal of Semantics*, 34(2):237–289.
- Domaneschi Filippo, Maribel Romero, and Bettina Braun. 2017. Bias in polar questions: Evidence from English and German production experiments. *Glossa: A Journal of General Linguistics*, 2(26):1–28.
- Rodney Huddleston. 2002. Clauset type and illocutionary force. In Rodney Huddleston and Geoffrey K. Pullum, editors, *The Cambridge Grammar of the English Language*, pages 851–946. Cambridge University Press, Cambridge.
- Satoshi Ito and David Y. Oshima. 2016. On two varieties of negative polar interrogatives in Japanese. In Michael Kenstowicz, Ted Levin, and Ryo Masuda, editors, *Japanese/Korean Linguistics*, volume 23, pages 229–243. CSLI Publications, Stanford.
- Manfred Krifka. 2017. Negated polarity questions as denegations of assertions. In Chungmin Lee, Ferenc Kiefer, and Manfred Krifka, editors, *Contrastiveness in Information Structure, Alternatives and Scalar Implicatures*, pages 359–398. Springer, Heidelberg.
- D. Robert Ladd. 1981. A first look at the semantics and pragmatics of negative questions and tag questions. In *Proceedings of the 17th Annual Meeting of Chicago Linguistic Society*, pages 164–171.
- Daniel Lassiter. 2017. *Graded Modality: Qualitative and Quantitative Perspectives*. Oxford University Press, Oxford.
- James D. McCawley. 1988. *The Syntactic Phenomena of English*, volume 2. The University of Chicago Press, Chicago.
- David Y. Oshima. 2014. On the functional differences between the discourse particles *ne* and *yone* in Japanese. In *Proceedings of the 28th Pacific Asia Conference on Language, Information and Computation*, pages 442–451.
- Brian Reese. 2007. *Bias in Questions*. Ph.D. thesis, University of Texas Austin.
- Maribel Romero and Chung-Hye Han. 2004. On negative “yes/no” questions. *Linguistics and Philosophy*, 27(5):659–658.
- Maribel Romero. 2005. Two approaches to biased *yes/no* questions. In John Alderete, Chung-hye Han, and Alexei Kochetov, editors, *Proceedings of the 24th West Coast Conference on Formal Linguistics*, pages 352–360. Cascadilla Press, Somerville.
- Robert van Rooy and Marie Šafařová. 2003. On polar questions. In Robert B. Young and Yuping Zhou, editors, *Proceedings of Semantics and Linguistic Theory XIII*, pages 292–309. CLC Publications, Ithaca.