Alternative Questions: Distinguishing between Negated and Complementary Disjuncts.

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1 Introduction

Consider the following two questions. (1) is a Polar Question, which mentions only one proposition (henceforth, **PQ**); (2) is a Negative Alternative Question (henceforth, **NAQ**), which mentions one proposition and its negated alternative.

(1) It it heads? PQ

(2) Is it heads or not? NAQ

In a world in which coins only have two sides, a S(peaker) using either of these moves presents two possible resolutions for the A(ddressee) to choose from: one in which the coin landed on heads and one in which it landed on tails. Yet, despite their logical similarity, the two question types are known to differ pragmatically. First, PQs allow for a wider range of illocutionary acts than NAQs (Bolinger, 1978). For example, while the PQ (3-a) felicitously serves as a marriage proposal, the NAQ (3-b) does not. Second, NAQs convey a sense of insistence and suggest that a similar question must have already been asked in the previous discourse. This makes them perfect in discourses like (4), where S is trying to "corner" A into finally answering the question (Biezma, 2009). PQs, by contrast, carry no such cornering effect.

(3) As marriage proposal:
   a. Will you marry me?
   b. # Will you marry me or not?

(4) S: Are you making pasta?
   A: (Silence and dubitative faces)
   S: Are you making pasta or not?

As such, the divergent behavior of these moves opens an important window onto the interface between semantics and pragmatics. Specifically: what principles of meaning composition and interpretation allow us to account for the intuitive logical similarity and the pragmatic divergence between these two moves? While authors have proposed different analysis to solve this puzzle, either appealing to logical or pragmatic explanations, the current paper enriches the picture by investigating the difference between the two question types above

and Complement Alternative Questions like (5) (henceforth, **CAQ**), a third type of question that mentions two mutually exclusive propositions but makes no use of negation.

(5) Is it heads or tails? CAQ

In the present paper, we rely on data from three experiments to argue that CAQs like (5), while also inducing a partition comparable to the one associated with (1)-(2), feature another different set of pragmatic properties from the other two question types. This, in turn, has two theoretical consequences. First, the novel data on CAQs allows us to critically evaluate extant accounts of the difference between PQs and NAQs, showing that logical or purely pragmatic approaches to the illocutionary range of these moves fall short of explaining the full range of their empirical properties. Second, the cornering effect introduced above has been defined as consisting of two empirical hallmarks, which we will dub "Part 1" and "Part 2" of cornering. Both properties are present in NAQs and absent in PQs, which has so far lead to a joint analysis of the two in the literature. Our data show that the two properties fall apart in CAQs: CAQs behave like PQs with respect to Part 1 but like NAQs with respect to Part 2. To account for the overall emerging picture on illocutionary range and cornering, we will suggest an analysis that combines valuable insights from the previous literature with two additional ingredients: (i) focus-marking and information structure in PQs, NAQs and CAQs, and (ii) a general pragmatic principle **Repeat* banning repetition of previously discarded moves.

The paper is structured as follows. Section 2 reviews previous empirical observations on the difference between PQs and NAQs, as well as the analyses that have been proposed to account for them. Section 3 introduces CAQs, discusses the predictions that current analyses would make about their behavior, and formulates a further hypothesis so far absent in the literature. Sections 4, 5, and 6 present our three empirical studies testing such predictions, with results suggesting that none of the previous accounts is fully equipped to capture all the relevant data. Section 7 outlines an analysis of PQs, NAQs and CAQs that combines the two ingredients above with previous ideas from the literature. Section 8 concludes.

2 Background: Polar Questions vs "or not" Alternative Questions

2.1 The empirical landscape

It has been known that questions with seemingly similar logical content have significantly different pragmatic properties. A prime example comes from the distinction between Polar Questions and Negative Alternative Questions, their alternative counterparts with "or not".

(6) a. Are you coming? PQ
b. Are you coming or not? NAQ

As originally observed by Bolinger (1978), these two types of questions feature different distributional patterns. In particular, PQs tend to be more flexible than the corresponding NAQs in non-canonical illocutionary contexts, that is, in situations in which the question is

asked to achieve communicative purposes that do not boil down to seeking for information – e.g., to make an invite in (7), draw an inference in (8), or rhetorically comment on something that the interlocutor just did or said in (9):

(7) **Invite making**:
Scenario: A wants to offer a drink to B.
a. A to B: ✓Do you want something to drink?
b. A to B: # Do you want something to drink or not?

(8) **Inference drawing**:
Scenario: B thought David was away, and wants to double check that he's back.
a. A: I just saw David.
B: ✓Is he back from Toronto?
b. A: I just saw David.
B: # Is he back from Toronto or not?

(9) **Rhetorical questions**:
Scenario: B just did something very surprising. A intends to comment on that.
a. A: ✓Are you crazy?
b. A: #Are you crazy or not?

When it comes to info-seeking uses, NAQs feature a restricted distribution as well. In particular, Biezma (2009) observes that these moves induce a *cornering* effect, whereby they put the discourse in a 'cul de sac' (Biezma 2009), pressuring the hearer to provide an answer. According to Biezma, the cornering effect can be broken down into two distributional restrictions. First, NAQs are inappropriate discourse-initially, as shown in the following example.

(10) **Cornering, Part 1**
Scenario: You are in charge of coordinating the cooks for the colloquium dinner. John is one of the cooks. Dinner is tomorrow and you need to know what is happening with the pasta.
You: # Are you making pasta or not? NAQ

Second, NAQs are necessarily discourse-final, that is, they do not license followup questions/subquestions.

(11) **Cornering, Part 2**
Scenario: You are in charge of coordinating the cooks for the colloquium dinner. John is one of the cooks. Dinner is tomorrow and you need to know what is happening with the pasta.
You: Are you making pasta?
John: (Silence and dubitative faces)
You: ✓Are you making pasta or not? NAQ
John: (Silence and dubitative faces)
You: # Are you making pasta?

It follows from these restrictions that NAQS are only felicitous in a context in which a question has already been asked before and no other question follows it. Note that PQs are not subject to either component of cornering. They can be followed by further questions, as shown in (11); and they are a felicitous discourse-initially, as shown in (12).

(12) **Scenario**: You are in charge of coordinating the cooks for the colloquium dinner. John is one of the cooks. Dinner is tomorrow and you need to know what is happening with the pasta.
You: ✓Are you making pasta?

The contrast in the distribution of these two question types is summarized in Table 3 below.

Question type	Invite	Inference	Rhetorical	"Info-seek: discourse initial"	"Info seek: licenses follow up question"
PQ	✓	✓	✓	✓	✓
NAQ	#	#	#	#	#

Table 1: Comparative distribution of NAQs and PQs

2.2 Previous accounts

Several different lines of explanation have been put forward to account for the divergent distribution of PQs and NAQs. We now turn to review each of them.

2.2.1 Same semantics, but different pragmatics

One line of analysis, proposed by van Rooij and Šafàřovà (2003), captures the different distribution of PQs and NAQs in terms of their pragmatics; in particular, the author maintain that, at least for the non-canonical uses, the contrast between PQs and NAQs is grounded in the speaker's decision to explicitly mention one vs. two alternatives, which conveys a crucially different message concerning the pragmatic status of the two propositions. This account is founded on two tenets. First, both PQs and NAQs are logically identical: they denote a set containing a proposition and its complement, that is {p,¬ p}. Second, PQs, by virtue of pronouncing only one proposition, the speaker *highlights* that proposition; that is, they convey that, from a pragmatic perspective, such an alternative has a higher *Utility Value* than the unmentioned disjunct. By contrast, NAQs, by pronouncing both alternatives, signal that both options are seen as having equal Utility Value. In the authors' decision-theoretic framework, the notion of Utility Value of a proposition is essentially determined by the two parameters that represents an agent's mental state: their *beliefs*; and their *desires*.

(13) Given an agent's belief-desire state <P, U> -where P represents the agent's beliefs and U (roughly) her preferences–, a proposition has high expected utility if:

a. p being true would cause a wide revision of the agent's beliefs, or
b. p being true would bring the agent closer to her goals.

Against this background, the Utility Value of a proposition is measured in terms of the differential improvement that it would bring about for the agent's state if such a proposition were added to the Common Ground: the more a proposition is informative (with respect to the agent's beliefs) and/or preferrable (with respect to the agent's desires), the higher its Utility. In this perspective, the divergent distribution of the two question types is explained by the fact that questions asked to make invites, draw inferences or make rhetorical comments presuppose that p has higher Utility Value than ¬p. Concerning invites such as (7), the PQ signals that p – that is, being willing to accept the invite – has higher Utility value for the hearer than $\neg p$ – that is, declining the invite. This asymmetry is not conveyed with a NAQ, which infelicitously signals that both accepting and non accepting the invite have equal value, and thus result in incongruous pragmatic behavior. Concerning inference-drawing questions as in (8), p is the alternative that would allow us to confirm our hypothesis and explain the relevant state of affairs. As such, it holds greater Utility Value than its complement, which would leave us in a state of bewilderment about David's whereabouts. Again, PQs effectively convey this asymmetry; NAQs, by contrast, fail to do so, suggesting that for the speaker each alternative has equal value. Finally, concerning rhetorical uses, p has higher Utility in that it is the proposition that would lead to a significant leap in the speaker's belief state: since the expectation is that the interlocutor is not crazy, learning that this is instead the case would result in considerable important epistemic gain, whereas learning that this is not the case (i.e., $\neg p$) would have negligible informativity. Also in this case, only a PQ would be able to convey the expected prominent status of p as the more informative option; signaling indifference by means of a NAQ, by contrast, would fail to flag the non-equal status of the alternatives, again resulting in incongruous pragmatic behavior.

2.2.2 Different semantics, hence different pragmatics

The second line of analysis, by contrast, holds that PQs and NAQs conventionally encode different meanings. A PQ denotes the singleton {p} and signals that this singleton does not exhaust the set of salient alternatives SalientAlts(c) –i.e, the Q(uestion) U(nder) D(iscussion)– currently being considered in context c. An Alternative Question *p or q?*, instead, denotes the set {p, q} containing mutually exclusive alternatives and, via the final falling boundary tone, signals that this set exhausts SalientAlts(c) (Biezma 2009, Biezma and Rawlins 2012). This is exemplified with the following examples from Biezma and Rawlins (2012):

(14) a. Are you making pasta? Polar Question
SalientAlts(c) = {You are making pasta (explicit), You are making fish (implicit),You are making stew (implicit), . . . }

b. Are you making pasta or fish? Alternative Question
SalientAlts(c) = {You are making pasta (explicit), You are making fish (explicit)}

What makes NAQs special, among alternative questions, is that they present *logically opposite* alternatives, that is {p,¬p}. It is precisely this semantic property that underlies both parts of the *the cornering effect*, and more in general the restricted distribution of these types of questions. As far as the specifics of how the link between the empirical distribution and the denotation of these questions should be modeled, two proposals have been made.

Biezma (2009) suggests that, by virtue of their special denotation, NAQs necessarily exhaust the possibility space in discourse, presenting the hearer with no option other than picking one of the two proposed alternatives. As such, they can only be resolved with an answer that selects one of those options, ruling out follow up questions or other inquisitive strategies. This explains their necessarily discourse-final position. In addition, Biezma observes that the strong interactional pressure that these questions induce carries the implication that there must have been already some discussion on the topic, and that softer inquisitive strategies must have not been successful in addressing the question. This implication explains the infelicity of NAQs in discourse-initial position, both for info-seeking uses and non-canonical uses. In particular, asking a question to make invites, draw inferences and make rhetorical comments does not require that the issue has already been raised before; as such, resorting to a NAQ for these communicative goals is incongruent with the property of these speech acts, and hence infelicitous (see Section 7.3 for further discussion). By contrast, PQs, by virtue of denoting an open list, do not corner the addressee. Since they leave open plenty of options other than the mentioned one, they are adequate to start a conversation and can be followed by further questions; likewise, they can be used in contexts in which the question need not be preceded by another one, such as the non-canonical uses above.

In subsequent work, Biezma and Rawlins (Biezma and Rawlins 2014, 2018) integrate Biezma (2009)'s analysis of cornering by introducing the notion of *bundling*. In the authors' account, bundling refers to the particular strategy that a speaker adopts for "packaging" the available alternatives when asking a question. For example, in the following exchange, the speaker changes their inquisitive strategy turning a WH-Question into a PQ, bundling an open set of alternatives – i.e., "places for lunch" – into the category of "vegetarian places".

(15) Question 1: Where should we go for lunch? Wh-Q
. . .
Question 2: Should we go to a vegetarian place? PQ

The authors, specifically, argue that every bundling choice made by a speaker is subject to a *Qualitative Constraint*: there must be some reason to group alternatives together as a strategy in a particular way, distinct from prior discourse. Combined with NAQs' semantic properties, such a constraint is precisely what explains the two components of cornering. Let us consider the following example again.

(16) **Scenario**: You are in charge of coordinating the cooks for the colloquium dinner. John is one of the cooks. Dinner is tomorrow and you need to know what is happening with the pasta.
You: Are you making pasta?
John: (Silence and dubitative faces)
You: ✓Are you making pasta or not?

Here, following the initial PQ, the use of a NAQ re-organizes the logical space around p, bundling any alternative to it under $\neg p$. Per the Quality Constraint, the only possible reason to re-organize the logical space of discourse in this way is the following: p must already be the prominent alternative in discourse. This requirement derives the two components of cornering as follows. Concerning Part 1 of cornering, for p to be already prominent in discourse it must be the case that the interlocutors have accepted a bias for p – that is, that ?p has been asked before. Crucially, this constraint is not met in discourse-initial questions, explaining Part 1 of cornering and the infelicity of NAQs in non-canonical uses. Concerning Part 2 of cornering, NAQs cannot be subject to further bundling; that is, no bundling strategy that is more informative is available to the speaker once a NAQ has been asked, making any further inquisitive strategy irrelevant. This explains NAQs' necessarily discourse-final status.

Note that, on this account as well, PQs are correctly not predicted to give rise to cornering. Since their denotation includes further, unmentioned propositions beyond the mentioned one, the use of this strategy does not induce a situation in which the entire logical space is organized around p. Because of this, PQs do not presuppose that p is already prominent in discourse, and are hence felicitous discourse-initially; furthermore, they can be followed by more informative bundling strategies, such as NAQs indeed, and are thus not necessarily discourse-final.

2.3 The next step

The emerging picture is one in which the restrictions on NAQs can be can be explained via three alternative accounts. One account posits that the two moves are logically identical and derives their different behavior in terms of Utility Value and the pragmatic implications linked to highlighting one or two alternatives in non-canonical uses; note that this account, however, does not address the restricted distribution of NAQs in info-seeking contexts. The other two accounts posit that NAQs and PQs are different semantically, and that such a difference is at the root of the limited distribution of the former. In Biezma (2009) the distribution is captured by exclusively appealing to the status of the alternatives as exhaustive, exclusive, and logically opposite; in Biezma and Rawlins (2018) the distribution is captured via a combination of these semantic features and more general pragmatic principles, modeled via the notion of bundling.

While all these proposals offer a well-grounded explanation to the puzzle, the question remains open as to what line of reasoning is more adequate to derive the divergent distribution of such questions types. Crucially, the analyses discussed above cannot be evaluated by merely looking at the behavior of NAQs in comparison to PQs. Having been specifically conceived of to account for the same set of properties, they are all consistent with the observed empirical differences between these two types of question. In the remainder of the paper, we thus aim to expand our testing ground by looking at Complement Alternative Questions (henceforth, **CAQ**). This type of question, as we turn to explain shortly, poses two logically opposite alternatives, but spells out the second disjunct with a complementary antonym, as opposed to via negation. Two examples are provided below.

(17) a. Is it heads <u>or tails?</u>
b. Is the computer on or <u>off</u>?

As we now turn to discuss, CAQs represent a suitable testbed to shed light on the dynamics underlying the distinctive profile of PQs and NAQs. First, the accounts above make different predictions concerning the distribution of CAQs, so exploring the behavior of CAQs will afford a first opportunity of assessing and comparing such theories. Second, CAQs will also allow us to test a possibility that have not discussed yet, and that we suggest as a further hypothesis: that Part 1 and Part 2 of cornering in NAQs are not all driven by the same cause, regardless of whether such a cause corresponds to pragmatic highlighting, logical exhaustivity or bundling; but rather that Part 1 and Part 2 are driven by different semantic/pragmatic principles, which apply besides the domain of NAQs, and just happen to coalesce in this particular construction. We now turn to discuss such predictions in greater detail.

3 Enter CAQs: predictions and hypotheses

Let us consider PQs, NAQs and CAQs in parallel, reproducing the example with which we opened the paper.

(18) a. It it heads? PQ
b. Is it heads or not? NAQ
c. Is it heads or tails? CAQ

In this section, we discuss how CAQs could serve as a case study to assess the proposals discussed above, as well as to shed light on the different pragmatic properties of polar vs alternative questions more broadly. First, we spell out the predictions that each of the three current accounts make concerning the behavior of CAQs; second, we outline another hypothesis that has not been discussed in the previous literature, namely that Part 1 and Part 2 of cornering are not driven by the same factor, but rather are grounded in independent communicative principles.

3.1 CAQs ad previous accounts

Given available accounts of the divergent properties of PQs and NAQs, how are CAQs predicted to fare with respect to this contrast?

Let us consider the van Rooij and Šafàřovà (2003) first, and the Utility Value account. As can be recalled from Section 2.1, the authors suggest that NAQs are not felicitous in non-canonical uses because they pronounce both disjuncts, and thus signal that each of them has equal Utility. This conflicts with the fact that, for different reasons, invites, inferences and rhetorical questions do presuppose that the positive alternative have higher utility than the negative one, thus engendering a pragmatically incongruous move. On this view, this account makes a pretty straightforward prediction concerning CAQs: since they also mention both alternatives, they highlight both of them; as such, these questions should convey that the speaker is indifferent between the two alternatives, and thus turn out to be infelicitous when used in non-canonical contexts. This means that CAQs are predicted to pattern like NAQs and unlike PQs across non-canonical contexts. As can be recalled, the authors do not address the contrast between PQs and NAQs in info-seeking contexts, and thus it is not possible to make a prediction about how CAQs should behave in these uses.

Concerning analyses that posit a semantic distinction between NAQs and PQs, the predictions for CAQs differ depending on the specific factor that is held responsible for the difference between the other two questions. If, as suggested by Biezma (2009), the restrictions on cornering is linked to the fact that the disjuncts exhaust the epistemic space of in discourse, CAQs should also be subject to the same constraints, since they likewise pose logically opposite alternatives. Since there are no possible worlds in which the coin does not land on either heads or tails, and no worlds in which it lands on both, the two disjuncts are logically exhaustive. This analysis thus predicts that CAQs should behave exactly like NAQs: they should be banned in the non-canonical uses discussed above; and they should be licensed in info-seeking contexts on the condition that they are necessarily discourse final and never discourse-initial.

Finally, if, as Biezma and Rawlins (2018), NAQs' restricted felicity is driven by the strategy to bundle the alternatives around p, then CAQs should not be subject to such constraints. Since they spell out the second disjunct with a full proposition, they do not bundle all available options around p; as such, CAQs do not presuppose that p is the most prominent alternative, and thus do not require that the interlocutors have accepted a bias for p. This would predict that CAQs should not induce cornering: they should be felicitous in non-canonical and discourse-initial contexts, and they can be followed by more informative bundling strategies in the continuation of the conversation. On this view, CAQs are expected to diverge from NAQs and instead pattern fully with PQs.

The emerging picture is one in which exploring the behavior of CAQs in the critical environments discussed above would allow us to tease apart the first two accounts, which make similar predictions, from the third one.

Account	Invite	Inference	Rhetorical	"Info-seek: discourse initial"	"Info seek: licenses follow up question"
van Rooij and Šafàřovà (2003)	#	#	#	N/A	N/A
Biezma (2009)	#	#	#	#	#
Biezma & Rawlins	✓	✓	✓	✓	✓

Table 2: Predicted distribution of CAQs

3.2 Info-seeking uses: A further possibility

Before testing these predictions, we would like to put forward another possibility. All accounts considered thus far suggest that all restrictions on NAQs are linked to the same underlying mechanism, although they provide different accounts of what such a mechanism is. We suggest that, at least in principle, an alternative hypothesis ought to be entertained: each restriction on NAQs could be the result of separate dynamics, and thus explained independently from the others. We now move on to outline an alternative scenario for restrictions in non-canonical and info-seeking uses; for such a scenario, we spell out how CAQs are predicted to behave, and how this behavior would differ from the one predicted by the accounts outlined above.

3.2.1 Discourse-initial position

As can be recalled, the two distributional restrictions on NAQs in info-seeking contexts are discussed by Biezma (2009) and Biezma and Rawlins (2018), who link both constraints to the same underlying mechanism: logical exhaustivity/exclusivity (in Biezma 2009) and logical exhaustivity/exclusivity plus bundling (in Biezma and Rawlins 2014, 2018). We suggest, however, that each part of cornering could be driven by independent forces, which are orthogonal to one another, and happen to come together in NAQs.

Concerning NAQs' ban in discourse-initial position, we suggest that it could be grounded in the interaction between focus and information structure. What motivates our proposal is the observation that infelicity in discourse-initial position is not found only with NAQs, but, more generally, with questions with focus on the polarity. The contrast below shows this for PQs with the focus on the auxiliary, as opposed to on the property (Goodhue 2015, Lohnstein 2012).[1]

(19) **Speaker A**: Jane had a baby!
   a. **Speaker B**: Is it a BOY$_F$? Focus on the property
   b. **Speaker B**: #IS$_F$ it a boy? Focus on the polarity

Crucially, NAQs precisely present two opposite polar values as disjuncts. As such, following the generalization that all alternative questions mandatorily place main focal stress on the disjuncts (Bartels 1999, Truckenbrodt 2013), they necessarily have focus-marking on the polarity, similar to (19-b) above.

(20) **Speaker A**: Jane had a baby!
   Speaker B: Is it a boy (yes$_F$) or not$_F$? Focus on the polarity

As such, concerning Part 1 of cornering, the additional hypothesis that should be considered besides those outlined above is the following: To the extent that focus on the polarity blocks the use of an interrogative clause at the beginning of a conversation, this factor could stand behind NAQs' infelicity in discourse-initial position.

[1] Focus accent on a tense verb may express, among other things, focus-marking on the polarity as in (i), verum focus as in (ii) (Höhle 1992) or so-called 'dictum' focus as in (iii) (Creswell 2000). Since (6b) with focal stress on the tense verb is infelicitous in the given context, none of these three uses is licensed discourse-initially. In this paper, the polarity focus use will be most relevant.

(i) John arrived. Bertha DIDn't.

(ii) A: Rumor has it that Alan finished his dissertation.
   B: HE Finished his dissertation.

(iii) A: Are we going to the party?
   B: Right! ARE we going?

3.2.2 Necessarily discourse-final position

Similarly, Part 2 of cornering – that is, the necessarily discourse-final status of NAQs – could also be explained via an independent principle. Let us consider the crucial piece of data again.

(21) **Cornering, Part 2**
Scenario: You are in charge of coordinating the cooks for the colloquium dinner. John is one of the cooks. Dinner is tomorrow and you need to know what is happening with the pasta.
You: Are you making pasta?
John: (Silence and dubitative faces)
You: ✓Are you making pasta or not?
John: (Silence and dubitative faces)
You: # Are you making pasta?

Our hypothesis is that the infelicitous status of the final PQ might be driven not by the preceding NAQ, but by the fact that a PQ had already been asked with no success beforehand. Specifically, following a standard view of discourse moves as strategic attempts to solve a salient Question Under Discussion (Roberts 2012 among others), we suggest that speakers should not resort to strategies that already proved unsuccessful to solving the QUD in the previous turns. Doing so would result in pragmatically irrational behavior, since it would amount to adopting a strategy that, in light of what happened in the previous stages of the conversation, is very likely to fail. We summarize this idea in the **Repeat* principle, a conversational constraint that applies to discourse moves across the board. On this view, Part 2 of cornering would be orthogonal to the properties of NAQs, resulting instead from this more general principle.

(22) ***Repeat**: Do not resort to a discourse move that already proved unsuccessful.

Crucially, the hypothesis that the two restrictions are driven by independent factors makes different predictions from the accounts discussed earlier about the behavior of CAQs in info-seeking contexts. Specifically, CAQs should behave differently from NAQs in discourse-initial position; and neither CAQa nor NAQs should be necessarily discourse-final, as long as the question that follows them has not been used yet in the previous discourse.

Let us unpack both predictions made by this account before proceeding any further. First, concerning NAQs' ban in discourse-initial position, this hypothesis suggests that this restriction is linked to that fact that they necessary have focus on the polarity, a constraint that typically makes interrogative clauses infelicitous in the beginning of a conversation. But CAQs, contrary to NAQs, spell out two fully distinct propositions, as opposed to a proposition and its negated counterpart. As such, following the generalizations that all alternative questions necessarily have focus on the disjuncts, they have focus on such two propositions, and not on polarity, as illustrated below. If focus on the polarity is what determines Part 1 of cornering, it follows that NAQs should not be felicitous discourse-initial, while CAQs should be immune to this restriction.

(23) a. Is it a boy_F or a girl_F? Focus on the property

b. Is it a boy (yes$_F$) or not$_F$? Focus on the polarity

Second, concerning the necessarily discourse-final status of NAQs, the current hypothesis suggests that the infelicity of PQs as a follow up to a NAQs is not due to the preceding NAQ per se; rather, it stems from the infelicity of repeating the PQ again, after it had been used in the beginning of the exchange. On this view, we expect that, *independently* of what we see for Part 1, both NAQs and CAQs should fail to license a follow-up question that was previously unsuccessful; and they should both be able to be followed by follow-up questions that hadn't been used yet.

3.2.3 Alternative hypothesis and info-seeking contexts

Table 3.2.3 compares the prediction of the two existing accounts and the alternative hypothesis with respect to info-seeking contexts.

Account	NAQ discourse-initially	NAQ followed by a question	CAQ discourse-initially	CAQ followed by a question
Biezma (2009)	#	#	#	#
Biezma & Rawlins	#	#	✓	✓
Our proposed alternative	#	✓/# depending on context	✓	✓/# depending on context

Table 3: Predicted distribution of NAQs and CAQs in info-seeking contexts

3.3 Interim summary

After presenting the empirical landscape of the distribution of PQs and NAQs and reviewing the proposals put forward to account for their different behavior, we introduced CAQs as a case study to assess such theories. We first considered the diverging predictions for the distribution of CAQs made by extant proposals; and we then outlined a further hypothesis on the restrictions in info-seeking contexts that differ from those outlined so far, explaining how such a proposal makes yet different predictions about the distribution of CAQs. We now turn to test these predictions by exploring and comparing the status of PQs, NAQs and CAQs in three separate empirical studies: the first study is concerned with non-canonical uses; the second study is concerned with info-seeking uses in discourse-initial contexts; and the third study is concerned with info-seeking uses in discourse-final position.

4 Experiment 1: non-canonical uses

In the first study, we compare the distribution of NAQs, CAQs and PQs in non-canonical contexts. The study has two goals. First, we intend to replicate in a quantitative study the introspective data from Bolinger (1978) and the subsequent literature, which suggested that NAQs are less felicitous than PQs in non-canonical contexts. Second, and most importantly,

we aim to compare the behavior of CAQs vs NAQs with respect to the predictions made by previous accounts of the distributional contrast between NAQs and PQs. As can be recalled from the discussion in Section 2, van Rooij and Šafàřovà (2003) and Biezma (2009)'s analyses predict that NAQs and CAQs should be equally infelicitous in non-canonical contexts; Biezma and Rawlins (2018), instead, predict that CAQs should pattern with PQs.

4.1 Methods

4.1.1 Design

Two factors were crossed in a 3x4 design. Each trial consisted of a dialogue, preceded by a short description that made clear what the illocutionary goal of the speaker was (**Factor 1**). Three possible illocutionary goals were manipulated: drawing an inference, making an invitation, and asking a rhetorical question that is biased towards a negative answer. At the end of the dialogue, one participant would ask a question (**Factor 2**), which came in four levels: PQ, NAQ, CAQ and a control, which was completely unrelated to the conversation topic, and thus served as a negative baseline for the conversational exchange. Below is an example of an item for each illocutionary goal.

(24) a. **Inference**

Context: Right before the beginning of spring break, George sees camping equipment all around Joe's house and wonders why it is there. Thinking that Joe might be going camping during the break, George thus asks him:

Are you going camping for spring break?	PQ
Are you going camping for spring break or not?	NAQ
Are you going camping for spring break or are you doing something else?	CAQ
Are you having a good day today?	Control

b. **Invite**

Context: It's very cold outside. Tom has an extra scarf in his backpack and wants to offer it to his friend Mark, who isn't wearing one. Tom thus turns to Mark and asks:

Hey, do you want a scarf?	PQ
Hey, do you want a scarf or not?	NAQ
Hey, do you want a scarf or are you ok?	CAQ
Hey, do you want a beer?	Control

c. **Rhetorical**

Context: A football player complains that the drills in practice are too hard and asks for a day off. The coach wants to remind him that going through difficulties is an essential part of becoming a good player and intends to deny the request. He thus asks:

Are you a child?	PQ
Are you a child or not?	NAQ
Are you a child or an adult?	CAQ
Is there any soda in the fridge?	Control

4.1.2 Procedure and Statistical analysis

Each subject saw 24 experimental items, 8 for each context type, together with 24 fillers.[2] The conditions were crossed in a Latin Square Design. 48 participants were recruited on Mechanical Turk and paid $1.50 for participation. At the end of each trial, participants were asked to answer the following question with a value between 1 and 7: "How natural does the question sound in light of the goal of the speaker?" "1" indicated a completely unnatural question; "7" indicated a perfectly natural question. All items were presented in written form on a screen. For statistical analysis, for each illocutionary context we ran separate mixed-effects models on the ratings with Question Type as the fixed effect and random intercepts for Subjects and Items. The models were run with the *lmertest* package (Kuznetsova et al. 2016). Given the theoretical motivation of the study, we are especially interested in the comparison between NAQ and CAQ within each illocutionary context. In light of this, we established NAQs as the reference level in the analysis, so as to verify.

4.2 Results

The results are plotted in Figure 1 below.

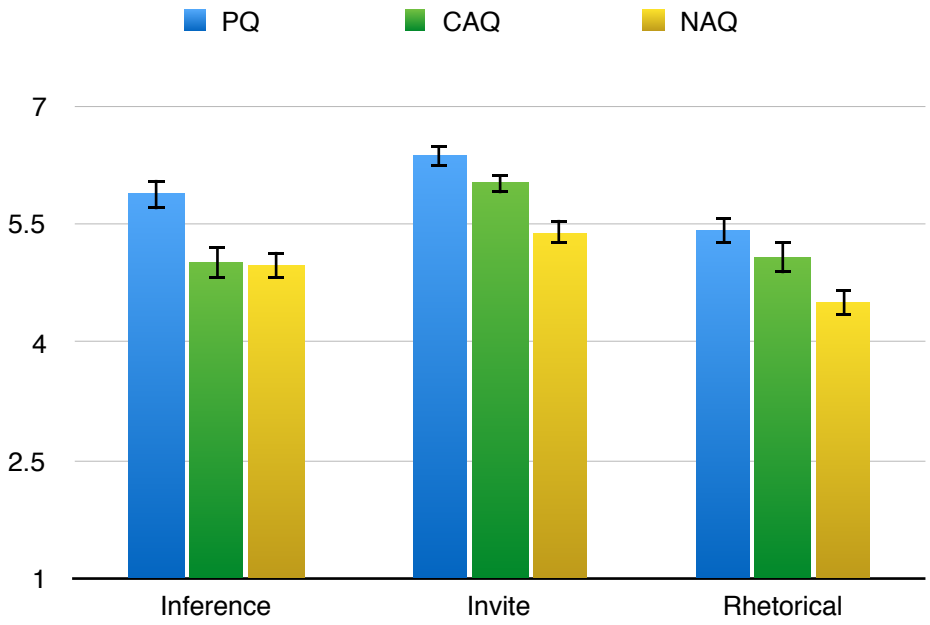

Figure 1: Average naturalness ratings for Experiment 1. Error bars represent standard error.

As predicted, the control condition turned out to be highly infelicitous across the board. We therefore removed it from the analysis. As for the other conditions, the models showed that PQs were significantly better than NAQs within each illocutionary context (Inference: β=0.88, SE= 0.28, $p < .01$; Invite: β=0.91, SE= 0.23, $p <.01$; Rhetorical: β=0.92, SE= 0.23, $p < .01$). Remarkably, CAQs and NAQs patterned differently across illocutionary contexts.

[2]The fillers contained dialogues with either pragmatically savvy or pragmatically odd polar questions, where felicity is exclusively grounded in the relevance of the question to the previous conversation.

In Inference, CAQs and NAQs did not differ from one another (β=0.03, SE= 0.24, p >.1). In Invites and Rhetorical, however, CAQs were rated higher than NAQs (Invites: β=0.56, SE= 0.23, $p < .05$; Rhetorical: β=0.56, SE= 0.25, $p < .05$).

4.3 Discussion

The study had two goals: replicating the introspective judgments provided in the literature, which reported that PQs had better status than NAQs in non-canonical contexts; and testing the hypothesis that NAQs and CAQs have the same distribution, as predicted by two of the three accounts outlined above. Concerning the former goal, the study does confirm that PQs are the highest rated choice and that they are significantly better than NAQs across all the tested non-canonical uses. The observations discussed in the literature are thus supported in a large-scale study. Concerning the latter goal, we observe that NAQs and CAQs do not pattern together across the tested uses. In particular, they feature equal (un)naturalness only in Inferences; in Invites and Rhetorical, instead, CAQs are rated more natural than NAQs. Since NAQs and CAQs both present logically opposite alternatives and pronounce both disjuncts, their different distribution suggests that that the divergence of PQs and NAQs cannot be solely explained in terms of pragmatic highlighting, or in terms of the opposite denotations of the disjuncts. In sum, these results support Biezma and Rawlins mixed account, which derives the constraints on NAQs by combining logical factors with the effect of bundling discourse around p.

We now turn to the comparison of NAQs and CAQs in info-seeking contexts.

5 Experiment 2: CAQs and NAQs in discourse-initial position

We now turn to compare PQs, NAQs and CAQs in info-seeking contexts. In this study, we explore the naturalness of these moves in discourse-initial position. Our goal is to assess the predictions of our three hypothesis concerning the source of Part 1 of the Cornering Effect, that is, the infelicitous status of NAQs at the beginning of a conversation. As can be recalled, the three possibilities outlined above make the following prediction with respect to this restriction: Biezma (2009) predicts that both NAQs and CAQs, by virtue of logically exhausting the possibility space, should be infelicitous discourse-initially; Biezma and Rawlins' bundling account and out alternative hypothesis both predict that only NAQs should be infelicitous in this context, while CAQs should sound natural.

5.1 Methods

5.1.1 Design

Two factors were crossed in a 2x3 design. Each trial consisted of a dialogue, at the end of which one participant would ask a question. The first factor manipulated the moment of the dialogue in which the question is asked, with two levels: ask for the first time, in which the question is asked discourse-initially; and ask-again, in which the question is asked

for the third time, after the first two attempts failed to elicit a response. The second factor manipulated the type of question and came in four levels: PQ, NAQ, and CAQ, and a control, which was completely unrelated to the conversation topic. Below is an example of an item set.

(25) a. **Ask first-time**

Context:Mary runs into Greg on the street. It's been one year since they last saw each other, so they want to catch up:
Greg: Hey, what's new?
Mary: I just got a puppy!
Greg:

Oh, is it a male?	PQ
Oh, is it a male or not?	NAQ
Oh, is it a male or a female?	CAQ
Oh! Do you like baseball?	Control

b. **Ask-again**

Context: Mark checks in at a hotel. After the receptionist hands him the keys, the following exchange ensues:
Receptionist: Sir, would you like to have breakfast directly served in your room?
Mark: Is there a charge for it?
Receptionist: It's a great service. Our customers love it.
Mark: Ok, but is there a charge for it?
Receptionist: You can also order food from the special menu.
Mark:

Is there a charge for it?	PQ
Is there a charge for it or not?	NAQ
Is there a charge for it or is it free?	CAQ
Is there cable tv in the room?	Control

5.1.2 Procedure and Statistical analysis

Each subject saw 24 experimental items, 12 for the ask-first-time context and 12 for the ask-again context, plus 24 fillers. The conditions were crossed in a Latin Square Design. 48 participants were recruited on Mechanical Turk and paid $1.50 for participation. 2 participants were excluded as they failed to complete the task. At the end of each trial, participants were asked to answer the following question with a value between 1 and 7: "How natural does the question sound in light of the goal of the speaker? "1" indicated a completely unnatural question; "7" indicated a perfectly natural question. All items were presented in written form on a screen. As in the first experiment, we ran separate mixed-effects models on the ratings of questions asked for the first time and asked again, with Question Type as the fixed effect and random intercepts for Subjects and Items. Again, the models were ran with the *lmertest* package. Given the theoretical motivation of the study, we are especially interested in the comparison between NAQ and CAQ for each moment of the dialogue in which the question was asked. In light of this, we opted to establish NAQs as the reference level.

5.2 Results

The results are plotted in Figure 2 below.

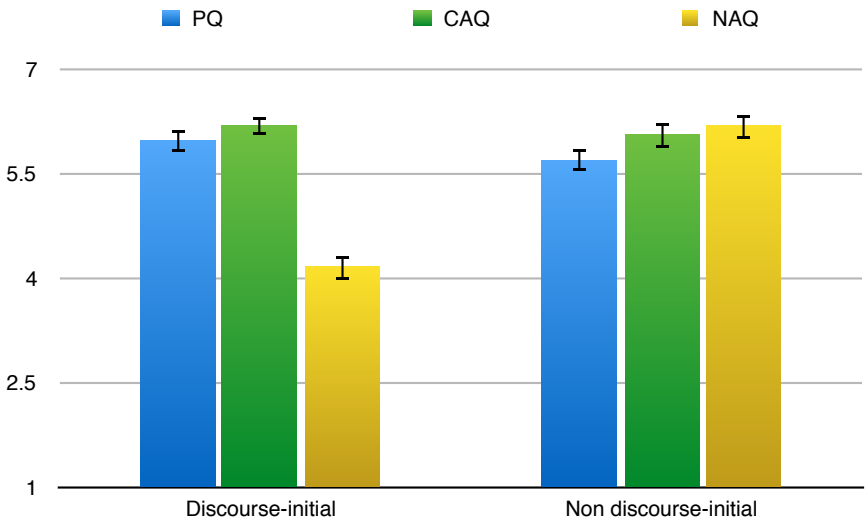

Figure 2: Average naturalness ratings for Experiment 2.

As predicted, the control condition turned out to be highly infelicitous across the board. We therefore removed it from the analysis. Remarkably, CAQs and NAQs patterned differently across these two contexts. When the question was asked for the first time, CAQs were rated higher than NAQs (β=2.01, SE= 0.28, p <.0001); when the question was asked again, instead, no difference emerged between NAQs and CAQs (β=-.18, SE= 0.14, p =.2). Concerning the contrast between PQs and NAQs, we observe that PQs were significantly better than NAQs when the question was asked for the first time (β=1.78, SE= 0.32, p <.0001); by contrast, NAQs were better than PQs when the question was being asked again (β=.48, SE= 0.17, p <.01).

5.3 Discussion

In Experiment 2, we compared the distribution PQs, NAQs and CAQs discourse-initially. Replicating Biezma's observations, NAQs appear to be felicitous only when used to ask a question again, while they are infelicitous discourse-initially. By contrast, CAQs show remarkable flexibility across discourse-initial and non-discourse-initial uses, featuring equal naturalness in both contexts. Similarly to what we observed for Experiment 1, these findings do not support the predictions of Biezma (2009) – that is, that CAQs, by virtue of posing logically opposite alternatives, should also induce cornering. However, the questions remain open as to whether the observed restrictions on NAQs are tied to their distinctive bundling effects, as per Biezma and Rawlins; or by the combined effect of information structure in interrogative clauses and the *Repeat pragmatic principle, as per our alternative hypothesis. To tease apart these two possibilities, we now proceed to compare NAQs and CAQs in discourse-final contexts.

6 Experiment 3

Biezma and Rawlins (2018) predicted that NAQs, by bundling all discourse options around p or the negation thereof, should feature both parts of cornering, and thus have necessarily discorse-final status; CAQs, by adopting a completely different bundling strategy, should feature neither part of cornering, and thus be able to license follow up moves. By contrast, Hypothesis 3 predicted that the seemingly necessary discourse-final status of NAQs is an epiphenomenon of a pragmatic constraint penalizing repeated uses of a discourse strategy that didn't work. As such, NAQs and CAQs should pattern together with respect to Part 2 of cornering: both should be able to license follow up questions when the subsequent move has not been used before; but neither should be able to license follow up questions when the subsequent move has already been used in previous discourse. Experiment 3 aims to cast light on these two alternative possibilities.

6.1 Methods

6.1.1 Design

Two factors were crossed in a 2x2 design. Each trial consisted of a dialogue in which one of the speakers would ask three question, the first of which was always Polar Question. Factor 1 manipulated the type of second question, with NAQ and CAQ as levels; Factor 2 manipulated the type of the third question, with two levels: a question identical to the first PQ (i.e., "match", abbreviated "M"); and a question different from the first PQ (i.e., "non-match", abbreviated "NM"). Specifically, we ran two different sub-experiments, which were identical, except for the way in which the non-matching question was constructed. In Expt 3A the non-matching question was a PQ asked with emphatic tone (i.e., all caps); in Expt 3B the non-matching question was a Wh-Question. The item below illustrates the whole paradigm across the two sub-experiments. Moreover, in each sub-experiment we had a control sequence with a Wh-Question as the first question, a PQ as the second, and a NAQ as the third question. This sequence was predicted to be felicitous (see Biezma 2009).

(26) **Expt3A**
Herb and Kelly are about to play chess. There are only two possible colors: black or white.
Herb: "I'm so excited!"
Kelly: "Do you want black?" **Q1: PQ**
Herb: "Well, iI can't wait to play"
Kelly: "Ok, but do you want black {or not? / or white?} **Q2: {NAQ/CAQ}**
Henry: "I want to win!"
Kelly: "{Do you want black?/DO YOU WANT BLACK?"} **Q3: {M/NM}**

(27) **Expt3B**
Herb and Kelly are about to play chess. There are only two possible colors: black or white.
Herb: "I'm so excited!"

Kelly: "Do you want black?" **Q1: PQ**
Herb: "Well, iI can't wait to play"
Kelly: "Ok, but do you want black {or not? / or white?} **Q2: {NAQ/CAQ}**
Henry: "I want to win!"
Kelly: "{Do you want black?/What color do you want?"} **Q3: {M/NM}**

(28) **Control: same across Expt 3A and 3B**
Herb and Kelly are about to play chess. There are only two possible colors: black or white.
Herb: "I'm so excited!"
Kelly: "What color do you want?" **Q1: WhQ**
Herb: "Well, iI can't wait to play"
Kelly: "Ok, but do you want black? **Q2: {PQ}**
Henry: "I want to win!"
Kelly: "Do you want black or not?" **Q3: {NAQ}**

6.1.2 Procedure and Statistical analysis

Each subject saw 12 experimental items, 3 for each condition, plus 10 control items. The conditions were crossed in a Latin Square Design. 48 native speakers of English were recruited in each sub-experiment via Mechanical Turk and paid $1.50 for participation. At the end of each trial, participants were asked to answer the following question with a value between 1 and 7: "How natural does the last question of the conversation sound in light of the goal of the speaker? "1" indicated a completely unnatural question; "7" indicated a perfectly natural question. All items were presented in written form on a screen. As in the first experiment, we ran separate mixed-effects models on the ratings of questions, with Q2 type and Match as the main effects, and random slopes for Subjects and Items. Again, the models were ran with the *lmertest* package. To better understand the effects, we then followed up with posthoc comparisons, performing t-tests with a Bonferroni correction for multiple comparisons.

6.2 Results

The results for Expt3A and Expt3B are plotted in Figure 3 and 4 below.

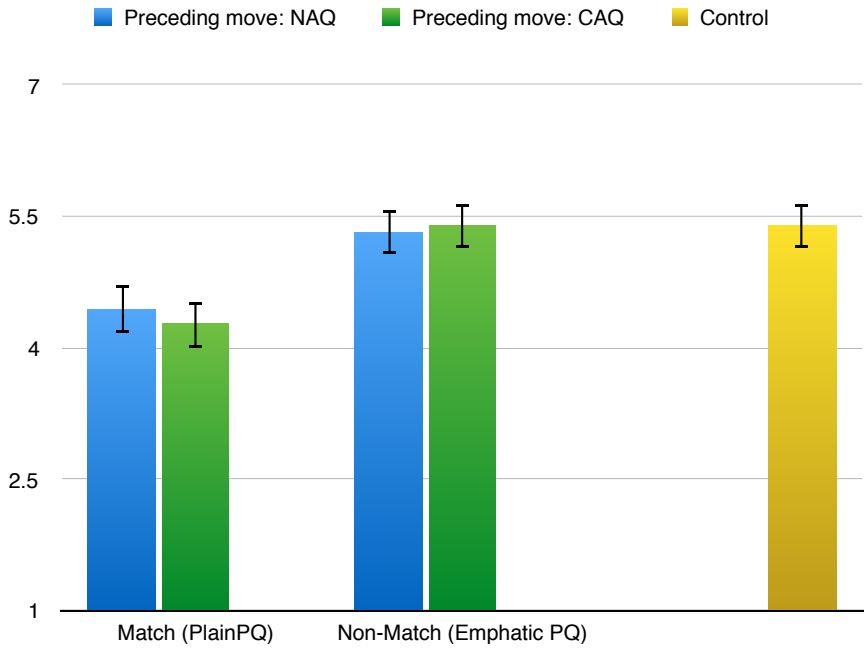

Figure 3: Average naturalness ratings for Experiment 2A.

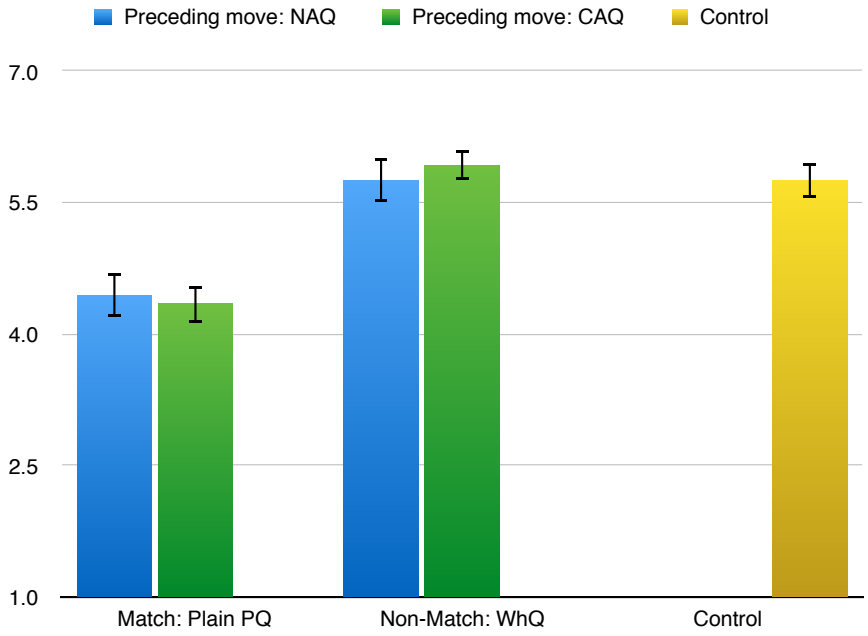

Figure 4: Average naturalness ratings for Experiment 2B.

As predicted, the control condition turned out to be felicitous in both studies, and was therefore removed from the analysis. Concerning the test conditions, we entered NAQs and Match as reference levels. The models showed a main effect of Match in both experiments (Expt 3A, Match: β=.90, SE= 0.23, p <.001; Expt 3B, Match: β=1.20, SE= 0.13, p <.001);

no effect of Q2 Type in either experiment (Expt 3A, Q2 Type: β=–.15, SE= 0.09, p =.09; Expt 3B, Q2 Type: β=–.12 SE= 0.16, p =.33.), and no interaction effect between Q2 Type and Match (Expt 3A, Q2 Type*Match: β=.22, SE= 0.13, p=.09; Expt 3B, Q2 Type*Match: β=–.30 SE= 0.12, p =.12.). In particular, within each type of Q2, the last question was rated as more felicitous when it did not match the PQ asked in the beginning of the conversation than when it did (Expt 3A, Q2-NAQ: p <.001; Expt 3A, Q2-CAQ: p <.001; Expt 3B, Q2-NAQ: p <.01; Expt 3B, Q2-CAQ: p <.001). In addition, in both experiments, no difference between CAQ and NAQ was found within Match. (Expt 3A, Match: p >.5; Expt 3A, Non-Match: p >.5 ;Expt 3B, Match: p >.5; Expt 3B, Non-Match: p >.5).

6.3 Discussion

These findings suggest that what determines the status of a follow-up question in a conversation is not whether the preceding move is a NAQ or a CAQ, but rather whether the question form used in the follow-up had been used before. In other words, contra Biezma and Rawlins' (2018) predictions, it is not the case that NAQs uniformly disallow and CAQs uniformly allow follow-ups. Rather, in consonance with our alternative hypothesis, PQs are are infelicitous follow-ups to a NAQ or CAQ when they had already been used and did not accomplish the intended goal. The emerging picture is one in which also Part 2 of Cornering can be explained by appealing to general pragmatic principles that apply beyond the domain of alternative questions.

7 General Discussion

In this section, we return to the broader picture and explore how the experimental results shed light on the different properties of PQs, NAQs and CAQs. Besides discussing how these findings provide evidence in support or against the available proposals in the literature, we outline an account of NAQs and CAQs that allow us to capture their different distribution in non-canonical and info-seeking contexts.

7.1 Assessing extant accounts

As discussed in Section 2, the three accounts put forward to capture the different behavior of PQs and NAQs make different predictions concerning the distribution of CAQs. In particular, van Rooij and Šafàřovà (2003) and Biezma (2009) predict that CAQs should pattern with NAQs by virtue of, respectively, pronouncing both disjuncts and presenting logically opposite alternatives. The results from Experiment 1 and 2, however, do not support these predictions. CAQs appear to be significantly more natural strategies than NAQs with invites and rhetorical questions; moreover, they appear to be significantly more natural than NAQs in info-seeking contexts at the beginning of discourse. This suggests that these two proposals, as they stand, are not sufficiently fine-grained.

By contrasts, the findings from the first two studies are consistent with the predictions made by Biezma and Rawlins (2018)'s bundling account. However, the fact that, as found

in Experiment 3, NAQs are not necessarily discourse final suggests that this proposal as well needs to be refined to be able to fully capture the patterns.

In the remainder of this section, we outline a proposal to capture the different behavior of CAQs and NAQs in both non-canonical and info-seeking contexts, combining ingredients from previous accounts with the two ingredients in our alternative hypothesis. We begin by considering info-seeking uses, and then move on to discuss non-canonical ones.

7.2 Info-seeking uses

Recall that restrictions on NAQs in info-seeking uses had been claimed to consist of two parts: infelicity in discourse-initial contexts (Part 1); and infelicity when followed by a further question (Part 2).

We start with Part 1 of cornering. Experiment 2 showed that NAQs' ban in discourse-initial position is not featured by CAQs, ruling out the possibility that this restriction results from the logical exhaustivity/exclusivity of the alternatives. Furthermore, based on the results of Experiment 3, we suggested that this restriction is likely not driven by bundling either: since bundling does not make the right predictions concerning Part 2 of cornering, requiring an independent explanation for it, it might be more appropriate to explain Part 1 independently as well. In this regard, we observed earlier that NAQs are not the only type of question that is infelicitous discourse-initially. More generally, this restriction applies to questions that have focus on the polarity, including PQs like (29):

(29) **Speaker A**: Jane had a baby!

a. **Speaker B**: #IS$_F$ it a boy? Focus on the polarity

b. **Speaker B**: # Is it a boy (yes$_F$) or not$_F$? Focus on the polarity

If, as advocated by our alternative hypothesis, the observed infelicity of discourse-initial NAQs is indeed related to polarity focus, we would expect that contexts licensing narrow polarity focus will make not just PQs like (29-a) but also NAQ like (29-b) acceptable as ask-first questions. What does it take to licence narrow polarity focus in a sentence? Following Schwarzschild (1999), in a sentence of the form [Pol$_{Focus}$ IP$_{<s,t>}$], the following condition needs to be satisfied: that there is a polarity function in the set of alternatives {λp.p, λp.$\neg$p} that, applied to the proposition $[\![$IP$]\!]$, yields a proposition that is given in the context. This is modeled in (30), which in our previous examples corresponds to the requirement that (31) be discourse-given:

(30) λw. $\exists$ X$_{<st,st>}$[X($[\![$IP$]\!]$)(w)]

(31) λw. $\exists$ X$_{<st,st>}$[X(λw'.the baby be a boy at w')(w)]

Goodhue (2017) provides sample contexts that meet such requirements for PQs with polarity focus. In (32), the proposition 'that Jill is a member' has already been mentioned in the previous discourse and hence it is given. This makes the ask-first use of the underlined question in (32) felicitous. In (33), the proposition 'that this place is open 24 hours' has already been expressed (under the scope of the modal *might* and the attitude verb *think*), and so it is given. Again, this makes the ask-first use of the underlined question in (33) appropriate. This contrasts with the infelicitous discourse-initial use in (29-a).

(32) S wants to know whether Jill will be at the meeting for members. But S lakcs an opinion about whether Jill is a member.
S: Will Jill be at the meeting?
A: If she's a member, she will.
S: $\underline{\text{IS}_F \text{ she a member}}$?

(33) C is visiting A and B in their new hometown. They are at dinner.
A (to C): I think this place might be open 24 hours.
C: I love 24 hour places.
A (to B): $\underline{\text{IS}_F \text{ it open 24 hours?}}$

One can construct parallel contexts for NAQs. In (34), the relevant proposition (35) is discourse-given and, in order not to bias the context towards the positive or the negative alternative, both propositions are depicted as having the same utility value in the context (cf. van Rooij and Šafàřovà 2003). Similarly, in (36), the corresponding proposition (37) is given and the two alternatives are balanced. Our alternative hypothesis predicts that, parallel to polarity focus PQs, NAQs will be licensed in these ask-first contexts. The prediction is borne out: The acceptability of the first-ask uses in (34)-(36) contrasts with the infelicitous discourse-initial use in (29-b).

(34) S: What will Jill be doing this afternoon?
A: If she finishes the report by 2pm, she'll start with an article for the magazine. If she doesn't finish it by 2pm, she'll prepare a presentation.
S (to C): What do you think? Will Jill finish the report by 2pm or not?

(35) λw. $\exists$ $X_{<st,st>}$[X(λw'.Jill finish the report by 2pm at w')(w)]

(36) A: I read in the newspaper that Sting may be coming to town on June 5. If he comes, I'd like to stay in town. But, from what the guy at the record store told me, Sting may not come after all. In that case, I'd rather go to the mountains that weekend.
S (to C): What do you think? Is he coming or not?

(37) λw. $\exists$ $X_{<st,st>}$[X(λw'.Sting come at w')(w)]

The parallel behavior of polarity-focus PQs and NAQs is not derived by the current bundling approach. According to Biezma and Rawlins (2018), there is no bundling or "flattening of alternatives" in a PQ. This means that, even if one could come up with a way of explaining the infelicity of the NAQ (29-b) and the felicity of the NACs (32)-(32) via bundling, it would not be applicable to their PQs counterparts (29-a) and (34)-(36). Thus, a unified bundling-based analysis of the PQ and NAQ data above does not seem viable. In contrast, the parallelism between PQs and NAQs follows straightforwardly if the (in)felicity of their (completely) discourse-initial use (29-a)-(29-b) and their ask-first uses (32)-(33) and (35)-(37) is due to polarity focus.

One question remains open. We saw that Schwarzschild (1999)'s approach requires the proposition (30) be discourse-given when focus falls on the polarity. This correctly rules out polarity focus sentences in discourse-initial contexts. By the same token, in sentences of the form [NP is P_{Focus}] with narrow focus on the predicative property, like (38-a)-(38-b), Schwarzschild (1999)'s approach requires that the proposition (39) be given, which in our

examples boils down to proposition (40). This requirement predicts that discourse-initial uses of property focus sentences should, in principle, be ruled out too. This is contrary to fact, as (38-a)-(38-b) are felicitous. Furthermore, the same contrast between property focus and polarity focus discourse-initially operates in declarative sentences, as illustrated in (41)-(42), which means that the roots of the contrast are more general and go beyond interrogatives:

(38) **Speaker A**: Jane had a baby!

a. **Speaker B**: Is it a BOY_F? Focus on the property

b. **Speaker B**: Is it a boy_F or a girl_F? Focus on the property

(39) λw. $\exists \text{X}_{<e,st>}[\text{X}([\![\text{NP}_{subject}]\!])(\text{w})]$

(40) λw. $\exists \text{X}_{<e,st>}[$the baby is X at w$]$

(41) S: # Guess what! The baby IS_F a boy. Focus on the polarity

(42) S: Guess what! The bay is a BOY_F. Focus on the property

Intuitively, it seems that the polarity-based proposition (31) and the property-based proposition (40) differ with respect to the easiness with which listeners can accommodate them. In particular, accommodating the existence of a property of a newly introduced object is a relatively routine task, which does not undermine the felicity of the question that presupposes this proposition. By contrast, accommodating an entire positive or negative proposition p about a newly introduced object is a much harder task, which goes through smoothly only if the issue {p, ¬p} has already been risen. Why exactly should that be so? While providing a detailed account of reason explaining this difference goes beyond the scope of the current paper, we observe that this constraint on polarity focus in discourse-initial position bears intuitive resemblance to a general Economy Principle that penalizes the use of meta-conversational moves out of the blue, when the issue has not been raised explicitly in the previous discourse (Romero and Han 2004).

(43) *Principle of Economy*: Do not use a meta-conversational move unless necessary (to resolve epistemic conflict or to ensure Quality).

For example, the authors suggest that using a conversational epistemic adverb like *really* to express commitment to adding a proposition to the Common Ground provides a contribution that is already encoded in any assertion, hence potentially trivial; this contribution is felicitous only as long as the previous discourse explicitly called for the use of these expressions, for example raising the issue around *p*.

(44) a. #I *really* am going to eat outside tonight. Out of the blue

b. A: I don't believe you are going out tonight!
B: Yes! I *really* am going to eat outside tonight! Issue already risen

While polarity functions do not qualify as meta-conversational moves in the sense of *really*, they similarly run the risk of providing a redundant contribution. Since propositions inherently have a polarity value in their logical form, and since the alternative set of this value is trivially closed, focusing on such a value amounts to providing a redundant contribution, unless the development of the previous discourse calls for emphasis on it – for example, if

the issue around the polarity of the proposition has already been raised. The same does not hold for property focus. While it is arguably true that "boy" only has another element in its alternative set (i.e., "girl"), the speaker could have chosen among many other types of properties to fill that slot; as such, focusing on the property is felicitous also in situations in which the issue had not been raised in previous discourse.

In conclusion, Part 1 of cornering –i.e., the observed inability of NAQs to appear discourse-initially– can be derived on a par with the (in)felicity of other inquisitive strategies in similar contexts via the requirements imposed by polarity focus, and without appeal to bundling.

We turn now to Part 2 of cornering, that is, NAQs' observed inability to license follow up questions. We suggested that it can be seen as an artifact of a general pragmatic principle that penalizes the felicity of inquisitive strategies that were previously unsuccessful in discourse. This naturally applies regardless of whether such strategies were preceded by a NAQ or a CAQ. Supporting this claim is the observation that multiple strategies are available for the speaker to follow up to a NAQ/CAQ with another question, such as placing special emphasis on the question, or switching to a different question form. We labeled this principle *Repeat.

(45) *Repeat: When pursuing an issue, avoid re-using a strategy that previously didn't help solve the issue.

The upshot is that Part 2 of cornering is linked to the optimal strategies that the speaker should pursue to solve the QUD. As such, the infelicity of follow up PQs observed in the previous literature emerges as a side effect of NAQs' licensing conditions: since NAQs always need to come after a move that raised the issue – which in many cases happens to be a PQ, as in Experiment 1 – a follow up move of the identical type – e.g., another PQ – will automatically cause a violation of *Repeat, leading to infelicity. Once again, we believe that this principle applies beyond the domain of alternative questions. While more research would be needed to explore its implications in other realms, we observe that it also appears to be at work with imperatives as well. In the following context, for example, it seems natural for the speaker to resort to a different strategy to express a command, once the previous attempts failed. Keep using the same command, by contrast, appears to be an example of irrational linguistic behavior.

(46) A: Stop playing!
B: [Keeps playing]
A: Hey, can you stop playing?
B: [Keeps playing]
a. A: # Stop playing!
b. A': I told you to stop playing

7.3 Non-canonical uses

Let us now turn to non-canonical uses.

We start with NAQs, which are deviant in all the non-canonical uses tested. We argue that the ban on NAQs in this environment can be explained via the same line of analysis outlined above. Specifically, we propose that questions aiming at making invites, being used rhetorically or drawing inferences all fail to presuppose that the issue has already been raised

before, thus violating the crucial licensing condition for NAQs (as well as all other questions having focus on the polarity.) For different reasons, all these moves are most likely to be felicitous if the issue at stake is being raised for the first time. We will see each use in turn.

Let us first consider invites:

(47) **Invite making**:
Scenario: A wants to offer a drink to B.
a. A to B: ✓Do you want something to drink?
b. A to B: # Do you want something to drink or not?

Invite moves are meant to politely steer the interlocutor towards undertaking a course of action. An essential condition for their felicity is that the interlocutor is never strong muscled into accepting the offer, and is always given the option of turning it down. But this is crucially inconsistent with insisting: the more an invite is repeated, the more likely it is to lose its polite character, and hence its very status as an invite.

Let us consider now rhetorical questions:

(48) **Rhetorical questions**:
Scenario: B just did something very surprising. A intends to comment on that.
a. A: ✓Are you crazy?
b. A: #Are you crazy or not?

These moves, at the variety considered above, are meant to serve as remarks on some unexpected or deviant behavior on the part of the interlocutor. As such, their use is linked to the immediate reaction to what the speaker has just observed or learned; in other words, they are meant to be the first comment that is made on that particular issue. Using them after the issue has already been raised would undermine their rhetorical flavor (see Rett and Murray (2013) for a similar pragmatic restriction on the use of exclamatives, which they call Recency Restriction).

Finally, the same applies to inference-drawing questions:

(49) **Inference drawing**:
Scenario: B thought David was away, and wants to double check that he's back.
a. A: I just saw David.
B: ✓Is he back from Toronto?
b. A: I just saw David.
B: # Is he back from Toronto or not?

These moves are triggered when the speaker learns something that contradicts what they had believed until that point – e.g., that David is out of town. As such, they also have to be made immediately after the crucial piece of novel information has been learned. There moment that they are used after the issue has already been raised, they lose their inference-drawing flavor, and come across as simple info-seeking questions.

(50) **Inference drawing**:
Scenario: B thought David was away, and wants to double check that he's back.

a. A: I just saw David.
B: Oh, I thought he was still in Toronto.
A: He seemed to be fine.
B: # Is he back from Toronto? (as an inference-drawing move)

In sum, the idea that the information structure of NAQs restrict them to contexts in which an issue has already been raised can also help us explain why these moves are banned in non-canonical uses. Crucially, this idea is similar in spirit to what Biezma (2009) and Biezma and Rawlins (2018) proposed. In their account, they also explained this constraint by appealing to the fact that NAQs presupposed that the issue had already been raised. However, they linked this presupposition to the cornering effect, either explained in terms of presenting logically opposite alternatives (Biezma 2009) or bundling all options around p (Biezma and Rawlins 2018). But since these ingredients are not necessary to explain the behavior of NAQs in info-seeking contexts, it is not necessary to appeal to them in non-canonical contexts either.

We turn now to CAQs, which, according to our experimental results, are acceptable as invites and as rhetorical questions but not as inference-drawing questions. Since they do not involve polarity focus, the issue need not have been raised before and, thus, their focus structure will not preclude them from any of these uses. To see whether a difference can be drawn between invites and rhetorical uses on the one hand and inference questions on the other, we would like to briefly return to the Utility Value account (van Rooij and Šafàřovà 2003). First, let us report again the authors' definition of Utility.

(51) Given an agent's belief-desire state <P, U> -where P represents the agent's beliefs and U (roughly) her preferences–, a proposition has high expected utility if:
a. p being true would cause a wide revision of the agent's beliefs, or
b. p being true would bring the agent closer to her goals.

According to this account, the incongruent status of NAQs is grounded in a clash between the fact that they mention both alternatives, hence suggesting that they have equal utility, and the fact that non-canonical uses presuppose that the positive alternative has higher utility than the negative one. We have already seen that this analysis, however, is not supported by our data: since CAQs also mention both alternatives but are indeed felicitous with invites and rhetorical questions, Utility Value considerations alone cannot be the only explanation to the infelicity of NAQs. However, we would like to suggest that, if adequately refined, a Utility Value theory could still be a viable line of thought to model the distribution of NAQs and CAQs in non-canonical uses.

In particular, we observe that, for Invites and Rhetorical questions, the idea that p has a higher Utility Value than its complement alternative could not fully capture the subtleties of the message conveyed by these moves; rather, there is a sense in which both alternatives have equal Utility Value, though for different reasons. As far as invites are concerned, presenting the alternatives on a par could be a viable strategy for politeness reasons. Specifically, it would serve the purpose of making rejection of the invite look like a legitimate (or at least acceptable) option, thus making sure that the addressee does not feel compelled to accept the invitation. By fully pronouncing both alternatives, CAQs could be an effective strategy to convey the message that, for different reasons, both options have equal Utility – for

instance, the proposition corresponding to accepting something to drink would be useful by virtue of bringing the hearer closer to their well being, while the proposition corresponding to declining the invite would be useful by virtue of relieving the hearer from the burden of feeling compelled to accept the invite. Concerning Rhetorical Questions, van Rooij and Šafàřovà (2003) suggest that unexpected proposition – e.g., that the interlocutor is crazy – has much higher Utility Value than its complement alternative from an informational standpoint; adding it to our belief state would entail a substantive informational gain in comparison to adding the other alternative. But there is also a sense in which the other alternative – i.e. being sane – has actually high Utility: it is also the alternative that picks out the state of the world desired by the speaker, as shown by the fact that the very reason to ask a rhetorical question is to express disapproval towards the interlocutor's behavior. Similar to invites, CAQs, by presenting the options "on equal footing", would be a coherent strategy for a speaker that intends to convey that both of them equally have a high Utility Value.

Let us consider inferences finally. In such a context, p has clearly a higher utility value, since it is the alternative that would yield a viable explanation of the observed state of affairs. Any other proposition would be irrelevant in this regard, and thus be infelicitous if mentioned in the question, regardless of whether such an alternative surfaces via negation of p or via a different proposition. Hence, the infelicity of both NAQs and CAQs.

In sum, we have suggested that the inability of NAQs to occur in non-canonical contexts is linked to their inability to be used discourse-initially; this feature clashes with the fact that moves such as invites, rhetorical questions and inferences require that the issue at stake has not been raised yet. This idea is similar in spirit to the analysis proposed by Biezma (2009) and Biezma and Rawlins (2018), the difference being that, in our proposal, NAQs' ban in discourse-initial position is derived via general pragmatic restrictions on polarity focus. Concerning the fact that CAQs are instead felicitous in two of the three tested non-canonical contexts, we have suggested that their admissibility is predicted by the fact that they do not place focus on the polarity, and hence are exempt from the bar in discourse-initial position. Finally, we have suggested that CAQs' infelicity in inference-drawing scenarios could be captured by positing that only in this specific context all the Utility is on p, as claimed by van Rooij and Šafàřovà (2003); for invites and rhetorical questions, instead, each alternative can be seen as being equally useful, though for different reasons, licensing the use of a question strategy that presents both disjuncts on equal footing.

8 Conclusion

We have compared and contrasted the distribution of three types of questions: Polar Questions (PQs), Negative Alternative Questions (NAQs) and Complement Alternative Questions (CAQs). Our results indicate that each of these questions has independent conditions of use, leading us to posit two crucial ingredients to capture their licensing. A first ingredient is that the ban of NAQs in discourse-initial use (Part 1 of cornering) is due to polarity focus: No matter whether we have a PQs with focus on the polarity or a CAQ –where the polarity heads are inherently focus-marked– these questions require the remaining unfocused proposition to be discourse-given (à la Schwarzschild 1999) and, as such, impose demanding constraints on the previous discourse. The second ingredient is the pragmatic constraint **Repeat*, which

prohibits repetition of previously discarded moves after both NAQs and CAQs. We believe that the most notable advantage of appealing to these ingredients is that they are not specific to questions, let alone to a specific subtype thereof; rather, they reflect independent principles of meaning interpretation, which happen to be both relevant when it comes to licensing the types of questions investigated above.

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