Wondering hopefully/fearfully: How do desires and inquisitive attitudes interact?

Ciyang Qing, Deniz Özyıldız, Maribel Romero
& Wataru Uegaki

SALT 35 @ Harvard · May 20–22, 2025

School of Philosophy, Psychology,
and Language Sciences
University of Edinburgh
`c.qing@ed.ac.uk`
`w.uegaki@ed.ac.uk`

Institute for Linguistics
University of Stuttgart
`deniz.ozyildiz@ling.uni-stuttgart.de`

Department of Linguistics
University of Konstanz
`maribel.romero@uni-konstanz.de`

1 Questions and interpretive (a)symmetries

- We look at polar questions embedded by **wonder hopefully/fearfully**, inquisitive attitudes modified by a positive/negative preference.

  (1) **Novel empirical contribution**

    a. Leah wonders hopefully: "Is it raining?"

       She wants it to rain.

       # She doesn't want it to rain.

    b. Molly wonders fearfully: "Is it raining?"

       She doesn't want it to rain.

       She wants it to rain.

  Hopefully and *fearfully* give rise to a contrast conditioned by the valency of the adverb. We substantiate and explain this pattern.

  – *x wonders hopefully ?p*[1] is asymmetric, implying *x wants p*,

  – *x wonders fearfully ?p* is symmetric, compatible with *x wants p* and *x wants not p*.

    [1] *?p*: any polar question with radical *p*

- **Background**

  Polar questions are sometimes given symmetric resolution conditions: Both $?p$ and $?\bar{p}$ are resolved by the propositions $\{p, \bar{p}\}$.[2]

    [2] Hamblin (1976); We use the bar symbol to emphasize that a complement prejacent may but need not feature overt negation.

  (2) a. Is Billy left-handed?   ($p = $ **right-handed**(**b**))
      b. Is Billy right-handed?   ($\bar{p} = $ **left-handed**(**b**))

  Difficult for this view is when p or $\bar{p}$ are privileged in discourse, or $?p$ and $?\bar{p}$ are not interchangeable.[3]

    [3] Bolinger (1978), and, recently, van Rooij & Šafářová (2003); AnderBois (2011); Biezma & Rawlins (2012); Tabatowski (2022)

  (3) Offer

    a.   Do you like beer?

    b.   # Do you not like beer?

  (4) Request

    a.   Do you have sparkling water?

    b.   # Do you not have sparkling water?

  (5) Request

    a.   Will you (please) not bother me while I'm working?

    b.   # Will you (please) bother me while I'm working?

  The focus so far has been on root polar questions. We'll look at (a)symmetries in polar questions under inquisitive predicates.

- Tabatowski's attitudinal and goal-directed analysis of polar questions, is one that implements asymmetry: Root polar questions involve a preferential attitude directed at the prejacent.

  (6)   (3*a*)   If you like beer, I want to know that you like beer.

  This is the starting point of our analysis, and relevant because of the preferential adverbs *hopefully/fearfully* in our data.

- **Bigger picture consequences**

  – *Hoping p̄* and *fearing p* are not equivalent,[4] which is what we'll rely on in deriving the pattern in (1).

  – The question of whether or not polar questions are understood as symmetric is informed by the speaker's attitudes and their goals in asking them (more pragmatics).

  – The modal properties of an attitudinal event (*wonder ?p*) can be constrained by those of its modifiers (*hopefully/fearfully*).[5]

- **Outline**

  §2 The novel puzzle concerning *wonder hopefully/fearfully ?p*

  §3 Solution ingredient 1: Tabatowski's (2022) goal-based analysis of matrix polar questions

  §4 Solution ingredient 2: differences between *hope(fully)* and *fear(fully)* in terms of their relations to goals

  §5 Further discussion

2   *Wonder hopefully (fearfully) ?p:* Interpretive Asymmetry (or the lack thereof)

The following context (7) attributes to Des a <u>desire</u> for Joe to be dead and to Ali, a desire for Joe to be <u>alive</u>.[6]

  (7)   **Context**
        Des, a hitman, severely injures Joe, the star witness of a criminal case, but has to flee the scene before confirming his death, as he sees Ali, the prosecutor, arrive with a rescue team. While it's clear that Joe is seriously injured, Des isn't sure whether he's dead.

  (8)   a. Ali wonders fearfully: "Is Joe (still) alive?"   TRUE
        b. Ali wonders fearfully: "Is Joe dead?"   TRUE
        c. Ali wonders hopefully: "Is Joe (still) alive?"   TRUE
        d. Ali wonders hopefully: "Is Joe dead?"   FALSE

  (9)   a. Des wonders fearfully: "Is Joe (still) alive?"   TRUE
        b. Des wonders fearfully: "Is Joe dead?"   TRUE
        c. Des wonders hopefully: "Is Joe (still) alive?"   FALSE
        d. Des wonders hopefully: "Is Joe dead?"   TRUE

[4] cf. Palmqvist (2023)

[5] cf. Alonso-Ovalle & Menéndez-Benito (2018); Alonso-Ovalle et al. (2024)

[6] We checked the pattern reported in (8) and (9) with 5 native speakers of English and an audience in Edinburgh. We use quotes to make a connection with root polar questions but note that different speakers have different reactions here to quotation vs. the choice of *whether* or *if.*

Puzzle: Interpretive (A-)symmetry interacts with the modifying adverb (10).

(10)   a.   Symmetric interpretation for *wonder fearfully ?p*: compatible with the attitude holder fearing that p as well as fearing that $\bar{p}$.[7]

       b.   Asymmetric interpretation for *wonder hopefully ?p*: compatible with the attitude holder hoping that p and incompatible with the attitude holder hoping that $\bar{p}$.

Why should the evaluative valence of a modifying adverb affect the (a-)symmetry of an inquisitive attitude?

- The question arises regardless of whether polar question denotations are bipolar (e.g. Hamblin, 1976) or monopolar (e.g., Biezma & Rawlins, 2012):

  The *hopefully* case is difficult for bipolar, and the *fearfully* case, for monopolar analyses.[8]

3   Tabatowski's (2022) analysis of root polar questions

Ingredient #1

Our account makes use of Tabatowski's (2022) attitudinal and goal-based analysis of root polar questions: $?p$ expresses a desire to learn p if p is true.

Questions like (11) receive the informal paraphrases given.

(11)   a.   Do you like beer?
          If you like beer, I want to know that you like beer.

       b.   # Do you not like beer?
          If you don't like beer, I want to know that you don't like beer.[9]

Formally, $?p$ has the following expressive content (12)[10]:

$$(12) \quad w \quad \mathrm{Dox}_x^{w,t} : p(w) \quad \begin{array}{c} \mathrm{Sim}^w(\ v.\mathbf{ctb}^{v,t}(p)(x)) \\ <_{\mathrm{Goals}^w(x)} \\ \mathrm{Sim}^w(\ v.\neg\mathbf{ctb}^{v,t}(p)(x)) \end{array}$$

where $\mathbf{ctb}^{v,t}(p)(x)$ is true iff x comes to believe p in v at t.

- In words, when x asks $?p$, every p-world w in their doxastic state must satisfy the following condition:

  The minimally different worlds to w where x comes to believe p are better (with respect to x's goals at w) than the minimally different worlds to w where x does not come to believe p.

- The ordering $<_{\mathrm{Goals}^w(x)}$ is derived based on which of x's goals and subgoals are met in each w in Dox.

  Subgoals are what the agent takes to be necessary to achieve their ultimate goal(s), but we'll collapse the two notions.

[7] Some speakers may have a preference for the former, i.e., they might prefer (8b) and (9a). We will return to this issue later.

[8] There is also a challenge for van Rooij & Šafářová's (2003) utility based analysis of polar questions.

[9] The '#' indicates that this question is not a good way of offering beer.

[10] Expressive, because we don't want polar questions to denote propositions.

Let us now see why a. but not b. is a good way of offering beer.

(13)   Offer   (repeated from (3))
     a.   Do you like beer?
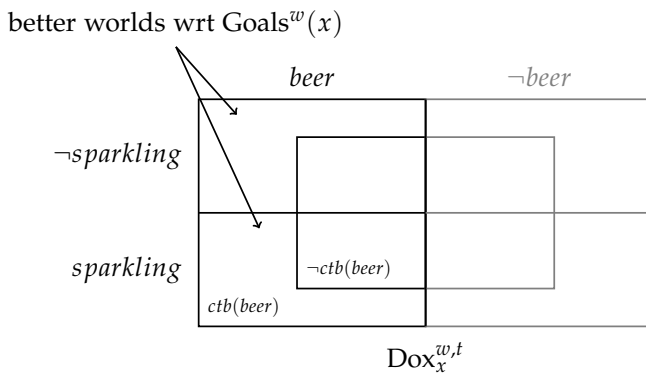   b.   # Do you not like beer?

We assume:

- There are only two relevant drinks: Beer and sparkling water.

  The speaker x considers it possible that the addressee likes both, only one, or neither.

  $\text{Dox}_x^{w,t} = \{w_{beer\ sparkling}, w_{beer\ \neg sparkling}, w_{\neg beer\ sparkling}, w_{\neg beer\ \neg sparkling}\}$

- For the first three types of worlds, x also serves the addressee what they like.

- $\text{Goals}^w(x) = \{G_0 :\ x$ serves the addressee something they like,
               $G_1 :\ x$ knows something that the addressee likes$\}$

Deriving the felicity of (13a): (13a) satisfies (12)

  Do [you like beer]$_p$?

- Consider any w in the speaker x's doxastic state where the radical p is true, i.e., the addressee likes beer.

  Now compare worlds minimally different to w where x comes to believe p to one where she doesn't with respect to G_0 and G_1.

- G_0 (x serves the addressee something they like) does not distinguish between the two types of worlds.

  G_1 (x knows something that the addressee likes) is met only in come to believe p worlds.

- The requirement (12) is met! Therefore, (13a) is felicitous.

better worlds wrt $\text{Goals}^w(x)$

Deriving the infelicity of (13b): (13b) doesn't satisfy (12)

  Do [you not like beer]$_{\neg p}$?

- Consider a world w in the speaker's doxastic state, where the addressee likes sparkling water but not beer.

  Now compare worlds minimally different to w where x comes to believe p to one where she doesn't with respect to G_0 and G_1.

- G_0 (x serves the addressee something they like) is met in both types of worlds and does not distinguish between the two.

  G_1 (x knows something that the addressee likes) is met in neither type of worlds, and does not distinguish between the two either.

- Worlds where x learns that the adressee doesn't like beer are no better with respect to x's goals than worlds where she doesn't learn this. Therefore, (13b) is infelicitous as an offer.

these worlds are no better
wrt $\text{Goals}^w(x)$ than each other
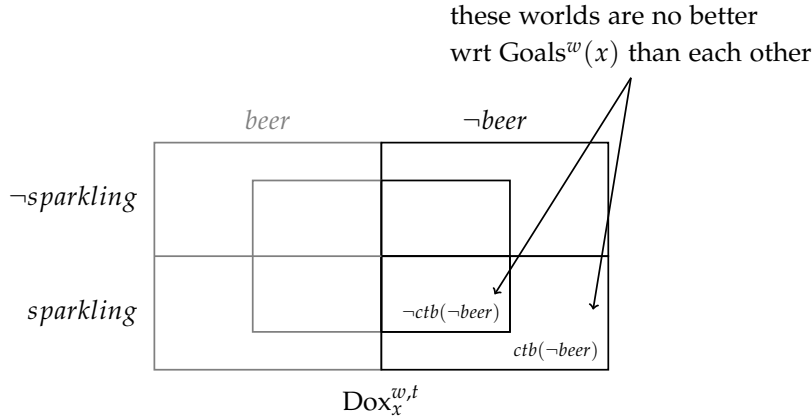
$$\text{Dox}_x^{w,t}$$

4 *Hopefully/fearfully* and the goals of the modified events

We now apply Tabatowski's analysis to embedded polar questions.

(14) $e \, [\, (agent(e) = x \quad wonder(e) \quad content(e) =?p)$
  $w \quad \text{Dox}_x^w \, [p(w \,)$
  $(\text{Sim}^w (\quad v.\mathbf{ctb}^{v,t}(p)(x)) <_{\text{Goals}(e)} \text{Sim}^w (\quad v.\neg\mathbf{ctb}^{v,t}(p)(x))]]$

When *x wonders ?p* is further modified by *hopefully/fearfully*, we have the following truth conditions (15).

(15) a. $e \, [\, agent(e) = x \quad wonder(e) \quad content(e) =?p$
    $hopeful(e)$

  b. $e \, [\, agent(e) = x \quad wonder(e) \quad content(e) =?p$
    $fearful(e)$

Note that the interpretation of (15) is constrained by (14).

- In order to assess whether (14) holds, we need to first identify the relevant goal(s).

- What is the relation between the relevant hope/fear in the hopeful/fearful event and the goals(s) of the modified event?

Ingredient #2: A crucial difference between *hopefully* and *fearfully*.

- Only the former identifies the goal(s) of the event it modifies.

(16) a. Mary knocked hopefully on the door.
      She knocked in order to obtain what she hoped

    b. Mary knocked fearfully on the door.
Need not mean: She knocked on the door in order to avoid what she feared
Can mean: She knocked on the door (to achieve whatever goal she had), fearing an undesirable outcome.

4.1 Interpretive Asymmetry for *wonder hopefully ?p*

Below are contexts for (16a) showing that a hopeful event with ⬚ as its relevant hope can have ⬚ (17a) or B⬚ (17b) as its goal.

(17)   a. Goal= ⬚ : Mary forgot to bring her key. She thought that her roommate Bob might be home. She knocked on the door, hoping that Bob would let her in ( ).

     b. Goal= B⬚ : Mary just learned that there was an explosion at the gas station where her roommate Bob works. She remembered that Bob told her that he would take a sick leave today and stay in bed. So she knocked on Bob's door, hoping that he was home ( ).

We propose (18) as a general interpretation principle (at the descriptive level) that identifies the goal(s) of a hopeful event.

(18) $\forall e$ [(hopeful(e) $\wedge$ ($\exists e'$.(hope(e') $\wedge$ e' R e $\wedge$ $Ag(e')$ = $Ag(e)$ $\wedge$ $content(e')$ = ⬚)) $\rightarrow$ (⬚ $\in$ Goals(e) $\vee$ $B_{agent(e)}$(⬚) $\in$ Goals(e))]

(If e is a hopeful event and ⬚ is the content of its agent's relevant hoping event e', it is highly plausible/natural to infer that e has ⬚ or B⬚ as a/the goal.)

Now we are ready to derive Interpretive Asymmetry for *wonder hopefully ?p*, repeated from (10b).

(19)   *Wonder hopefully ?p* is compatible with the attitude holder hoping that p and incompatible with the attitude holder hoping that $\bar{p}$.

We start with the case where the attitude holder hopes that p.

- According to (18) the hopeful event can have Bp as its goal.

- When Bp is the goal, it is easy to check that Tabatowski's requirement (14) is indeed met (critical part repeated below):

$$\text{Sim}^w(\ \lambda v.\mathbf{ctb}^{v,t}(p)(x)) <_{\text{Goals}(e)} \text{Sim}^w(\ \lambda v.\neg\mathbf{ctb}^{v,t}(p)(x))$$

- This means that we can readily identify a plausible goal (i.e., Bp) that satisfies Tabatowski's requirement. Therefore, *x wonders hopefully ?p* is compatible with x hoping p.

Now we turn to the case where the attitude holder hopes that $\bar{p}$.

- According to (18) the hopeful event can have $\bar{p}$ or $B\bar{p}$ as its goal.

- Regardless of which goal(s) we choose, we can check that Taba-towski's requirement (14) is not met (critical part below):

$$\text{Sim}^w(\ v.\mathbf{ctb}^{v,t}(p)(x)) <_{\text{Goals}(e)} \text{Sim}^w(\ v.\neg\mathbf{ctb}^{v,t}(p)(x))$$

  – The worlds on both sides of $<_{\text{Goals}(e)}$ are p-worlds, and therefore Goal $\bar{p}$ is not satisfied on either side.

  – Worlds on the left hand side are (Bp)-worlds, and therefore Goal $B\bar{p}$ will not prefer such worlds.[11]

- This means that we cannot (easily) identify a plausible goal that satisfies Tabatowski's requirement. Therefore, *x wonder hopefully ?p* is incompatible with *x hoping $\bar{p}$*.

The discussion above shows how the Interpretive Asymmetry for *wonder hopefully ?p* can be derived from the general relation between the goal(s) of a hopeful event and its relevant hope (18).

- Why should (18) hold in the first place?

We suggest that (18) follows from the close conceptual connection between the bouletic ordering source of *hope(ful)* and the goals of the modified event:

- OS_{Boul}: things the agent desires (regardless of whether they can act upon it or not).

- *Goals*: the agent's *effective preference* (in the sense of Condoravdi & Lauer, 2011) that structures their choices of behavior.

- Consequently, when interpreting $hopefully_{[Dox(e\ ),OS_{\text{Boul}}(e\ )]}\ VP_{Goals(e)}$, it is possible and indeed most natural (given the relevance of e to e) to assume that $Goals(e)\quad OS_{\text{Boul}}(e\ )$.

- Finally, our hopes about what to believe/learn are typically in line with our hopes.

- Therefore, if   is the relevant hope in e , it is natural to assume that   or B is a/the goal of e.

4.2   Symmetric truth conditions for *wonder fearfully ?p*

How is *fear(fully)* different from *hope(fully)*?
First, we note that *fear p*⌐ = *hope ¬p*.

(20)   Context: I spend a dollar to participate in a lottery. My goal is to win the prize, and I know that it is highly likely that I will lose and get nothing, but I am perfectly fine with losing just a dollar.
   a.   I hope that I will not get nothing.   (T)
   b.   I fear that I will get nothing   (F)

Let   be the proposition that I will get nothing. The contrast above shows that when *hope ¬*   is true, *fear*   can still be false.

[11] Given that *wonder* entails ignorance, assuming negative introspection, worlds on the right do not satisfy Goal $B\bar{p}$, either. That is, Goal $B\bar{p}$ is not satisfied on either side.

- A desire/goal/preference for $\neg\phi$ need not count as a fear for ϕ

- *Fear* ϕ requires that ϕ be a bad enough prospect (which we may call **threats**) (see also Palmqvist, 2023)

Formally, we assume that *fear* is associated with an *anti-bouletic* ordering source:

- $OS_{\text{Anti-Boul}}$: things the agent considers bad enough and is averse to (regardless of whether they can act upon it or not).

- When interpreting *fearfully*$_{[Dox(e'),OS_{\text{Anti-Boul}}(e')]}$ $VP_{Goals(e)}$, clearly $Goals(e)$ cannot be a subset of $OS_{\text{Anti-Boul}}(e')$. Therefore, we need to find the goal(s) elsewhere and we now have a wider range of possibilities to consider.

- One plausible goal is for the agent to avoid what they fear, but there can be other contextually plausible goals, especially when such goals are generally associated with the event (21).

(21)   Mary forgot to bring her key. Her roommate Bob was home, but it was early in the morning, so he was still asleep. Mary knew that Bob could get very grumpy after waking up, but she was running late and really needed her key, so she had no choice. She knocked on the door, fearing that <u>Bob would scold her for waking him up so early</u> (ϕ).

- Here, the goal of knocking on the door is not for Mary to avoid being scolded by Bob. Rather, the goal is simply for her to be let in, which is a goal generally associated with an event of knocking on a door.

Now, we can analyze *wonder*$_{Goals(e)}$ *fearfully*$_{[Dox(e'),OS_{\text{Anti-Boul}}(e')]}$ $?p$ in the same way.

- The goal(s) of the wondering event e cannot come from the anti-bouletic ordering source of the relevant fearing event, and so we need to look for other possibilities.

- One natural candidate is a neutral epistemic goal $K?p$ (i.e., to know/find out whether p is the case), since this is a goal generally associated with wondering about a polar question.

When $K?p$ is the goal, it is easy to check that Tabatowski's requirement (14) is indeed met (critical part repeated below):
$$\text{Sim}^w(\lambda v.\textbf{ctb}^{v,t}(p)(x)) <_{Goals(e)} \text{Sim}^w(\lambda v.\neg\textbf{ctb}^{v,t}(p)(x))$$

- Goal $K?p$ is satisfied on the left but not on the right

- Crucially, this holds regardless of whether the attitude holder fears p or $\bar{p}$

- Therefore, *x wonders fearfully ?p* is in principle compatible with x fearing p as well as fearing $\bar{p}$. That is, we correctly predict its symmetric truth conditions.

Why is there a (slight) preference for using *x wonders fearfully ?p* when *x* fears *p*, e.g., (9a) seems better than (9b)?

(22)   a. Des (the assassin) wonders fearfully whether Joe (the witness) is still alive.   (=9a)

        b. Des (the assassin) wonders fearfully whether Joe (the witness) is dead.   (=9b)

- Note that *fearfully* also requires the wondering event that it modifies be a fearful one.

- The radical *p* of a polar question ?*p* is the more salient, easily accessible alternative than its negation (Roelofsen & Farkas, 2015; Theiler, 2021)

- Therefore, we suggest that *x wonders fearfully ?p* may sound better when *x* fears *p* because it is easier to construe the event as fearful if the more salient alternative *p* is what the attitude holder fears.

5 Hopefully *revisited: Cases where goals do not come from the relevant hope*

There are exceptions to the principle (18) about the interpretation of *hopefully VP*[12]:

(23)   Context: After a job interview, Al was told that she left a good impression, although the final decision would not be made until a few weeks later.

        a. Al sat hopefully on the bench outside the department (?to rest her feet).

        b. ??%Al hopefully took a taxi to the airport (to fly back home).

- The acceptability of these sentences varies among speakers.

- To the extent that they are acceptable, the goal of the modified event does not come from Al's relevant hope.

- Still, the modified event needs to be related to the hope in some way (though the precise detail remains to be worked out).

In light of such data, it is natural to expect that there may be cases of *x wonders hopefully ?p* where *x* hopes $\bar{p}$.

- The goal of the wondering event can be the neutral *K*?*p* similar to the *fearful* cases.

- But we also expect such cases to be rare and require a lot of contextual support.

The results from our preliminary investigation seem to be in line with these expectations.

[12] We thank Dan Lassiter for bringing such examples to our attention.

(24) **Context**: Some miners are trapped underground, several days have passed, the experts estimate based on the available evidence that the miners are dead by now, and the company wants to shut down the search. Jane is in charge of the operations and needs to make the final decision. Jane gets a call from her colleague, who tells her how he had a case where the miners, against the prognosis of the experts, managed to survive.

   a. #Jane wondered hopefully whether there was enough evidence that the miners were dead.

   b. ?%Jane wondered hopefully whether there really was enough evidence that the miners were dead.

(25) **Context**: The heavy rain caused floods in Alcàsser and many people are missing or found dead. Pedro and his wife lived there and Pedro hasn't seen his wife since the flood, so he fears the worst. He is heading to the police station to find out whether her body has been found or she is still missing. On his way there, a neighbor tells Pedro about many neighbors in their part of town that managed to survive. Pedro continues on his way to the police station.

??%Pedro asks the police hopefully whether his wife is on the list of found bodies.

Such cases may be harder to accept due to additional pragmatic constraints, e.g., Maxim of Manner.

- Multiple consultants reported that such sentences are confusing/misleading.

6 Conclusion

A novel puzzle concerning *wonder hopefully/fearfully ?p*

- Symmetric truth conditions for *wonder fearfully ?p*: compatible with the attitude holder fearing that p as well as fearing that $\bar{p}$.

- Asymmetric truth conditions for *wonder hopefully ?p*: compatible with the attitude holder hoping that p and incompatible with the attitude holder hoping that $\bar{p}$.

Our solution:

- Ingredient 1: Tabatowski's (2022) attitudinal and goal-oriented analysis of matrix polar questions

- Ingredient 2: differences between *hope(fully)* and *fear(fully)* in terms of their relation to goals

   – The goals of the modified event most naturally come from the bouletic ordering source of the relevant hoping event.

– The goals of the modified event are incompatible with the anti-bouletic ordering source of the relevant fearing event, and therefore a wider range of possible goals will be considered.

Main messages:

• New cases of modal properties of an attitudinal event (*wonder ?p*) being constrained by those of its modifiers (*hopefully/fearfully*)

• Antonymic relation between *hope* and *fear*: *fear p* = *hope p̄*

• The question of whether or not polar questions are understood as symmetric is informed by the speaker's attitudes and their goals in asking them (more pragmatics).

References

Alonso-Ovalle, L. & P. Menéndez-Benito. 2018. Projecting possibilities in the nominal domain: Spanish *uno cualquiera*. *Journal of Semantics* 35(1):1–41.

Alonso-Ovalle, L., P. Menéndez-Benito, & A. Rubinstein. 2024. Eventive modal projection: the case of spanish subjunctive relative clauses. *Natural Language Semantics* 32:135–176.

AnderBois, S. 2011. *Issues and Alternatives*. Ph.D. thesis, U.C. Santa Cruz.

Biezma, M. & K. Rawlins. 2012. Responding to alternative and polar questions. *Linguistics and Philosophy* 35:361–406.

Bolinger, D. 1978. Yes-no questions are not alternative questions. In H. Hiz, ed., *Questions*, 87–105. Dordrecht: Reidel.

Condoravdi, C. & S. Lauer. 2011. Performative verbs and performative acts. *Proceedings of Sinn und Bedeutung* 15:149—-164.

Hamblin, C. 1976. Questions in Montague English. *Foundations of Language* 10:41–53.

Palmqvist, C.-J. 2023. The mirror account of hope and fear. *Canadian Journal of Philosophy* 53(3):209–223.

Roelofsen, F. & D. F. Farkas. 2015. Polarity particle responses as a window onto the interpretation of questions and assertions. *Language* 91(2):359–414.

Tabatowski, M. 2022. *Preferring to learn: An attitudinal approach to polar questions*. Ph.D. thesis, University of Chicago.

Theiler, N. 2021. *Denn* as a highlighting-sensitive particle. *Linguistics and Philosophy* 44:323–362.

van Rooij, R. & M. Šafářová. 2003. On polar questions. In R. B. Young & Y. Zhou, eds., *Proceedings of Semantics and Linguistic Theory 13*, 292–309. Ithaca, NY: CLC Publications.