Polarity particles: an ellipsis account*

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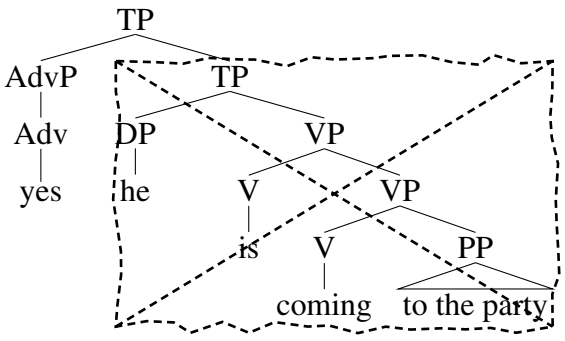
1. Introduction

In this paper we provide a unified solution to two puzzles about answer particles like *yes* and *no*. The first puzzle concerns the relationship between answer particles appearing in isolation (see (1B)), and those appearing with a full sentential response (see (1B′)).

(1) A: Is Alfonso coming to the party?
B: Yes. / No.
B′: Yes, he is coming to the party. / No, he isn't coming to the party.

When they are alone, answer particles appear to stand in syntactically for an entire sentence and to represent a proposition. Attached to a full response, an answer particle appears to act syntactically like an adjunct, and semantically, to mark that sentence as a positive or negative response. There are two solutions we will consider, inspired by the literature on "fragment" answers to constituent questions. The first possibility (and the one we will argue for) is that isolated polarity particles are the remnant of ellipsis. (cf. Morgan 1973, Merchant 2004 etc. on "fragment" answers to other kinds of questions).

(2)



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The second possibility is that isolated polarity particles are a complete, non-sentential constituent (cf. Barton 1990, Stainton 1993, 1995, 2004, etc).[1]

(3) AdvP
|
Adv
|
yes

The second puzzle is much more peculiar, and to the best of our knowledge, not previously discussed in the literature. In the context of positive polar questions, solitary "yes" and "no" indicate positive and negative answers respectively (see (1)). In the context of a negative question involving inner negation, though, their meaning collapses.

(4) A: Is Alfonso not coming to the party?
B: Yes. (= he isn't coming)
B′: No. (= he isn't coming)

This behavior is unexpected under standard theories of the semantics of polar questions. On most accounts, e.g. Groenendijk and Stokhof's 1984 account, the denotations of (1A) and (4A) would be the same.[2] For instance, on Hamblin's 1973 account, the denotations of (4 and a corresponding positive variant would both be an alternative set consisting of two propositions: $\{\lambda w\,.\,\text{A. is coming in } w, \lambda w\,.\,\text{A. is not coming in } w\}$. Given that the meanings of questions correspond to their possible answers (Hamblin 1958, 1973), we might expect *yes* and *no* to correspondingly have the same use in each case. Alternatively, we might expect the functions of *yes* and *no* to swap in response to a negative question– *yes* would mark the answer that has clausal negation (like the original question), and *no*, the answer without. For their functions to neutralize is entirely surprising. We will refer to this effect as **negative neutralization**.

Our proposal for the first puzzle (developed in §2) is that solitary *yes* and *no* actually involve elided structure (following proposals about answer particles by Laka 1990 and van Craenenbroeck 2004) – they are something like fragment answers under the ellipsis analysis of Merchant 2004. This leads directly to an explanation of the second puzzle that would not be available on a non-elliptical account. When an isolated answer particle follows a negative polar question, the identity condition on ellipsis forces negation inside the ellipsis site. This provides an elegent unification of the two puzzles, and we do not see how they could be unified in this way without ellipsis.

In §3 we provide further evidence for this account from the interaction of ellipsis and particles/adverbs such as *maybe*, *possibly*, *definitely*, etc., and other cases of ellipsis that don't involve any kind of particle. The prediction of an ellipsis analysis (but not competing analyses, as far as we can see) is that negative neutralization will appear in

[1]There is a third, related, possibility that we will not consider. This is that isolated polarity particles have category TP or CP, rather than the category they have when adjoined, and have accordingly a different meaning. We take our arguments against a non-elliptical approach to apply equally to both alternatives.

[2]There are several accounts that do differentiate positive and negative polar questions; see Büring and Gunlogson 2000, van Rooy and Safarova 2003. For more discussion of these theories, see §4.3.

all such contexts, and this prediction is entirely borne out, providing strong support for the ellipsis account.

Finally, in §4 we attend to some semantic and pragmatic considerations. We spell out our assumptions about the meanings of answers particles, following Bruce and Farkas 2007, and we discuss a variety of particle that marks reversal, and isn't so obviously found in English. Finally, in this section, we spell out a competing pragmatic account based on weak biases in polar questions (Büring and Gunlogson 2000, van Rooy and Safarova 2003) that could be used to analyze negative neutralization in answer particles without ellipsis. This account unfortunately cannot explain the full range of negative neutralization facts. We conclude that, rather than one explaining the other, it is more plausible that both weak bias in polar questions and negative neutralization have a shared cause – the appearance or lack of appearance of (inner) negation in polar questions.

2. An elliptical account of solitary answer particles

Solitary *yes* and *no* can apparently stand in for entire sentences/propositions, despite their somewhat minor syntactic and semantic role when adjoined to a clause. The situation resembles fragment answers to constituent questions, where sub-sentential constituents of other types can also stand in for entire sentences/propositions (Morgan 1973, Barton 1990, Stainton 1993, 1995, 2004, Merchant 2004 a.o.):

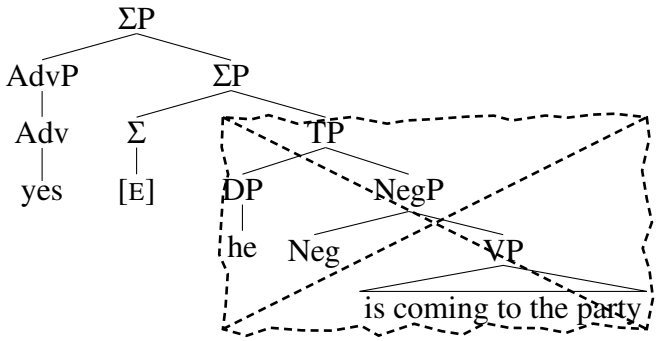
(5) A: Who is Alfonso talking to?
B: Joanna. (= he is talking to Joanna.)

Our proposal is that the resemblance between solitary answer particles and fragment answers is explained by a formal similarity. Following Merchant 2004, we assume that fragment answers involve TP ellipsis licensed by a feature E (a feature potentially general to the full range of types of ellipsis; see Merchant 2001). Many cases of ellipsis involve the E feature appearing on a high Σ head (see Laka 1990, Ladusaw 1992 for more about Σ, and Merchant 2003, 2006 for discussion of this type of ellipsis; examples will appear in later sections). To give a quick summary of the analysis, here we propose that *yes* and *no* adjoin to ΣP, and that when they co-occur with E, ellipsis of TP is licensed. The idea that they involve TP ellipsis is due to Laka 1990; a related proposal (that answer particles involve ellipsis of Agr_sP) is made by van Craenenbroeck 2004 to account for the appearance of agreement morphology and subject clitics on bare answer particles in certain Dutch dialects.[3]

For a *yes* answer to a positive question, we thus have the tree in (6) (lower Neg is empty in this tree, and need not actually be assumed to be present).

(6) **Positive question, positive answer**
Is Alfonso coming to the party?

[3]This data provides extremely strong evidence that at least in those dialects, answer particles involve ellipsis.



The E feature on Σ licenses the ellipsis of TP (the complement of Σ). The answer particle *yes* is not elided since it is adjoined to SigmaP and thus higher than Σ.

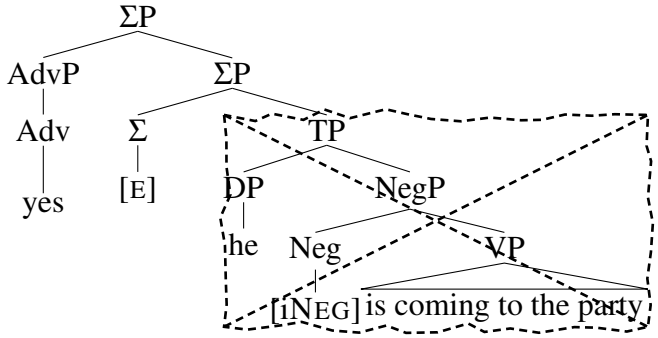
This proposal can easily explain negative neutralization, but first it is necessary to mention a third puzzle about negative answer particles. This is simply that they can co-occur with clausal negation without leading to a double negative meaning:

(1) B″: No, he isn't coming to the party.

This situation is not often found in Standard English but is familiar from examples of negative concord involving e.g. negative indefinites. We propose that *no*, Σ, and clausal negation participate in a negative concord relationship, triggered by *no*. In particular, we assume that the chain involves multiple NEG features, exactly one of which must be interpretable.[4]

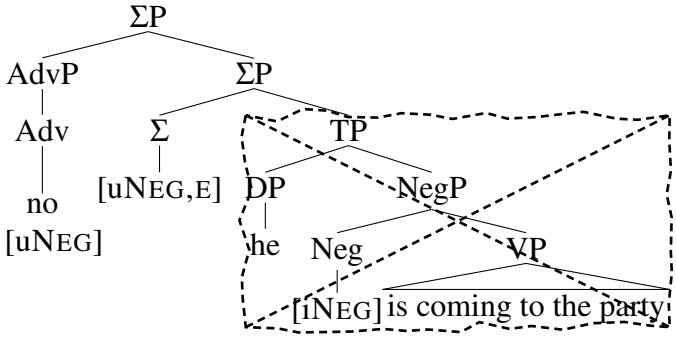
A component of Merchant's 2001 E feature is that it enforces semantic identity via the notion of E-givenness. In a nutshell, the meaning of an ellipsis site and its antecedent must mutually entail each other, up to existential closure over variables. This semantic identity requirement will interact with the concord system; a clausal negation in the antecedent will force an interpretable negative feature to appear inside the ellipsis site. For a negative answer to a polar question, this feature participates in the concord chain with *no*. The structures involved in positive and negative responses to negative questions (i.e., the negative neutralization cases) are illustrated below:

(7) **Negative question, positive answer**
Is Alfonso not coming to the party?



[4]We make very few assumptions about exactly how negative concord should be implemented aside from this; the multiple Agree account of negative concord in Zeijlstra 2004 would seem to be a good candidate. Alternate technical means for implementing the kind of agreement/concord relation might involve a feature sharing account along the lines of Pesetsky and Torrego 2007 or Frampton and Gutmann 2000.

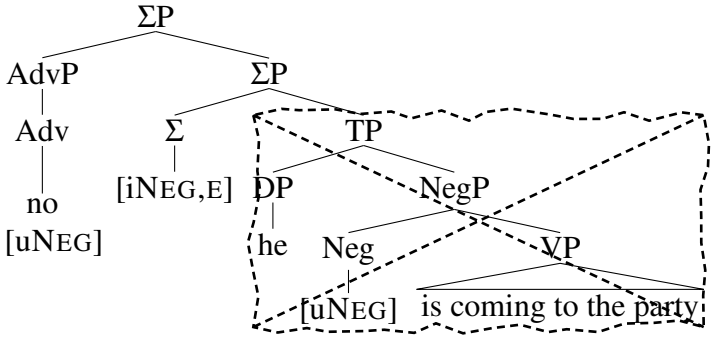
(8) **Negative question, negative answer**
Is Alfonso not coming to the party?



On this account, it is exactly because an inner negative polar question involves clausal negation that negative neutralization happens. Negative neutralization falls out from the interaction of the semantic identity condition on ellipsis and negative concord, and is thus correctly predicted to occur only when *yes* and *no* appear alone.

We must briefly revisit what might have seemed like a simple case, but now turns out not to be. A negative answer to a positive question needs to have a negative meaning (see 1B") – how does our system derive this? Any answer involving *no* must have a negative concord chain, and exactly one feature in the chain must be interpretable. In this case, the semantic identity condition will prevent the interpretable instance from appearing in the ellipsis site because the antecedent is not interpreted as negative. However, the interpretable instance will still need to appear so that *no* is licensed – it will be forced higher in the chain:[5]

(9) **Positive question, negative answer**
Is Alfonso coming to the party?



The interaction of negative concord and TP ellipsis therefore derives the full spectrum of solitary answer particle behavior.

In the introduction we mentioned the possibility of an alternative solution to the first puzzle – one not involving ellipsis ((Barton 1990, Stainton 1993, 1995, 2004, 2006),

[5]An additional assumption about this kind of negative concord: the interpretable negative feature must appear as low as possible. This is necessary so that the identity condition will be able to do any work in the first place – nothing would prevent the generation of sentences with the interpretabl negation feature in Σ. One might expect this fact to be derived from some more general principle; perhaps non-metalinguistic negation can never scope that high.

etc). Stainton proposes that fragment answers are genuinely non-sentential, and that speakers infer a sentential-type meaning via inferential processes along the lines of Sperber and Wilson 1986. Could such an account be applied to solitary *yes* and *no*, and still allow the unified analysis of negative neutralization we have proposed above? The answer seems to be no, or rather, not without some explicit semantic identity condition on the full inferred claim that has consequences for an LF-style representation – in fact, effectively a reconstructed notion of ellipsis. Consequently, if one is to adopt a non-sentential account of the syntax of answer particles, one must also adopt some other account of negative neutralization. We attend to this possibility in §4.3, sketching a pragmatic account of negative neutralization. First, however, we show that negative neutralization is genuinely a property of TP-ellipsis licensed by Σ, a fact that will provide significant difficulty to the pragmatic/non-sentential analysis.

3. Further evidence

3.1 Outer negative polar questions

It is well-known that outer or preposed negative polar questions (see (10)) have a different interpretation than inner negative polar questions (Ladd 1981, Romero and Han 2004, Romero 2006 a.o.).

(10) A: Isn't Alfonso coming to the party?

The preposed negative morpheme is conventionalized to carry some additional meaning (for Romero and Han, this is the VERUM operator of Höhle 1992). Let us suppose (perhaps simplifying) that this means preposed negation is interpreted high, close to its surface position.[6] This leads immediately to a prediction – answers to such a question should act like answers to a regular positive polar question. This prediction is confirmed:

(10) A: Isn't Alfonso coming to the party?
B: Yes. (= he is coming)
B′: No. (= he isn't coming)

The answers in (10) are exactly the same as those in (1). This behavior is just what we'd expect on the ellipsis account.[7]

[6]Why wouldn't a lower copy be interpreted? One possibility is that, following Zwicky and Pullum 1983, negation is generated as part of the auxiliary and moves with it – there would be no lower copy of negation. A more extreme position is that there isn't a true negation at all in these examples. For Reese 2007, at least in some readings, the only negative operator present in the structure is metalinguistic negation. This would be a further aspect of the conventionalization of preposed negation.

[7]The situation is somewhat more complex. Tacitly, we have been addressing questions that are "checking p", i.e. the speaker is using the question to double-check a prior belief that the positive content is true. Analyses that involve negation consistently do scope negation high in checking p readings. However, in some contexts such questions also have a reading checking $\neg p$, similar to the reading involved in an inner negative polar question (see Romero and Han 2004, Reese 2007 for discussion of these readings; one way to force a checking $\neg p$ reading is to put an NPI in the question, as in *Aren't there any vegetarian restaurants*

3.2 More particles

A strong prediction made by our analysis is that negative neutralization should be independent of *yes* and *no*. Specifically, it should occur anywhere there is the right kind of ellipsis. If this is right, it provides very strong support for an ellipsis account. A non-ellipsis account would have to treat the phenomena separately, and miss an important generalization. In this section and the next we will see a range of ways in which this prediction is confirmed.

Many instances of the type of ellipsis in question involve an overt expression of Σ, taking the form of *so* or *not*. There is a class of adverbs that have a very similar distribution to *yes* and *no* as sentence adverbs, but can also appear with these overt Σs. These are adverbs like *maybe*, *perhaps*, *certainly*, *definitely*, and so on. With a positive polar question, we see an unsurprising pattern that involves no neutralization:

(11) A: Did Alfonso go to the party?
B: Maybe (so). (= Maybe he did.)
B′: Maybe not. (= Maybe he didn't.)
} No neutralization

With a negative polar question, we see negative neutralization:

(12) A: Did Alfonso not go to the party?
B: Maybe (so). (= Maybe he didn't.)
B′: Maybe not. (= Maybe he didn't.)
} Neutralization

Once again, this pattern is what the ellipsis account predicts.

A difference is that particles like *maybe* license overt Σ, where as *yes* and *no* do not. We will not be specific here about how to derive this. One conceivable possibility is that *yes* and *no* are in fact Σ heads. But this seems problematic for several reasons. First, they do not morphologically resemble the other instances of Σ, and don't really pattern with them distributionally (e.g. in some of the data discussed below). Second, they appear to have adverbial-like distribution in that they can be re-ordered with respect to other adverbials that also appear high (e.g. clausal adjuncts, *frankly*-type adverbs, etc.). A more plausible alternative is that *maybe*-type particles do not agree with Σ, leading to independent spellout of features, whereas answer particles do.[8]

around here?). For Ladd 1981, this reading involves negation scoping inside the question. For Romero and Han 2004, negation simply scopes under the VERUM operator in this reading. As far as we can tell (we do not speak dialects where all of the examples in the literature are acceptable, and have not done the necessary fieldwork) answer particles behave the same regardless of which reading is involved. R&H do assume that in all outer negative polar questions negation scopes outside IP (see their ex. 65b and 68b), and this would lead to the right prediction for answer particles – but it isn't clear that this is a necessary assumption for them. The answer particle data could therefore be taken to mean that this assumption on their part is correct. Romero 2006 also tacitly makes the assumption that negation scopes outside the IP, in order to deal with the answer pattern (see §5; the primary concern in that section is why VERUM does not affect the meanings of *yes*/*no* answers.) Reese 2007 suggests that negation in checking $\neg p$ readings is low, which is not useful for our purposes. However, his argument is not empirical, but rather based on a lack of justification on Romero's part. We take answer particles to provide this justification.

[8] A complicating factor is that on our proposal positive Σs are unmarked, and effectively featureless.

3.3 More Σ-licensed TP ellipsis

This section examines two more cases of TP ellipsis licensed by Σ; in each of them we find negative neutralization, but here there is no answer particle of any kind. They both involve what might be called negative stripping (after Merchant 2003, 2006). The first is where Σ-licensed ellipsis appears in an *if*-clause:

(13) A: Is Alfonso going to the party?
B: If so, it will be fun. (= If he is...)
B′: If not, it will be fun. (= If he isn't...)
} No neutralization

(14) A: Is Alfonso not going to the party?
B: If so, it will be fun. (= If he isn't...)
B′: If not, it will be fun. (= If he isn't...)
} Neutralization

The second involves Σ-licensed ellipsis in a *why*-question. Here there is not even an interrogative antecedent.

(15) A: Alfonso is going to the party.
B: Why? (= why is he?)
B′: # Why not?

(16) A: Alfonso isn't going to the party.
B: Why? (= why isn't he?)
B′: Why not? (= why isn't he?)
} Neutralization

Note that the infelicity of (15B′) is also not a surprise under an ellipsis account of this data. The question *why not* requires a negative interpretation – in this case, something like *why is Alfonso not going to the party?*. However, the original speaker has just asserted that Alfonso is, in fact, going to the party.

Overall, in each of these cases, the negative neutralization effect follows from the fact that the antecedent of ellipsis involves clausal negation; the existence of such cases is exactly what our analysis of negative neutralization in answer systems would lead one to expect.

4. Semantic and pragmatic considerations

In this section we address three concerns: the meaning of answer particles, the case where *no* coincides with an intonational peak on the first auxiliary, and the interaction of answer particles and negative neutralization with question bias.

4.1 On the meaning of answer particles

No interacts with the meaning of a sentence that it appears in by forcing a concord chain. This will lead to a negative meaning, even if *no* doesn't carry that meaning directly. On the

account presented here, *yes* is unmarked, and doesn't carry any polarity features. However, this can't be the whole story about the meaning of *yes* and *no*. For one thing, we have to ensure that they appear only in response to polar questions (i.e. not alternative questions, and not constituent questions).

(17) A: Who is coming to the party?
B: # Yes.

For another, we have to capture that such particles explicitly mark an assertion as a response to some previous discourse commitment or proposal. To account for these we adopt Bruce and Farkas's 2007 proposal that polarity particles mark an assertion as a "responding assertion":

(18) An assertion move is responding iff:
(i) There is a single salient discourse topic with propositional content p (simplified from B&F).
(ii) The assertive move commits its author to p or $\neg p$.

If these conditions aren't satisfied, an utterance carrying *yes* or *no* won't be felicitous in discourse. (These conditions also seem to apply also to the *maybe*-class discussed above.) We depart from Bruce and Farkas in not building the polarity meaning directly into the answer particle.

4.2 Reversing particles

Many languages have a "reversing" particle that can be used in response to certain kinds of polar questions, such as German *doch*, French *si*, and Romanian *ba da* (Pope 1972, Bruce and Farkas 2007). While we do not have space here to discuss the full range of possibilities (and it is far from clear that our analysis of English can be imported directly into answer systems in these languages), we do want to note a case that occurs in English that is similar. (See Romero and Han 2004, Romero 2006 for a very different approach to these kinds of facts.) An overt sister to *no* can be positive in response to a negative polar question. Such an answer is not acceptable without an intonational peak on the auxiliary:

(19) A: Did Alfonso not go to the party?
B: No, he DID go.

There are two puzzles about this example. First, the meaning involved can't surface with a solitary *no* (compare 4B$''$). Second, our analysis raises the question of why clausal negation doesn't show up – there should be a concord chain here. We suggest that the *no* here is not actually a negative *no*. Rather, it is a "reversing" particle of the type encoded as a separate lexical item in the languages mentioned above. It contributes, instead of a uNEG feature, a uREV feature that forces an interpretable reversing feature into the clause. This feature surfaces as an intonational contour on an auxiliary, rather than as an independent or distinct reverse particle. The meaning involves directly denying a previous claim, rather than making a positive or negative assertion that is in response to a previous claim. It is

unsurprising that this can't surface on a solitary *no*, because the antecedent wouldn't match, and there would be no way to realize the intonational contour.[9]

4.3 A pragmatic alternative

Any account of the negative neutralization facts is going to have to build off of some difference between positive and negative polar interrogatives/questions. We have done this here by keying on the presence or absence of clausal negation, which leads to a local meaning difference in the antecedent constituent for ellipsis. This is independent of whether there is any overall meaning difference between the two kinds of questions. Could some overall meaning difference instead be used to derive the different behavior?

We noted in the introduction that standard theories of polar questions predict the same meaning for positive and negative questions. Even setting aside preposed negative questions, this isn't the correct approach. Büring and Gunlogson 2000 and van Rooy and Safarova 2003 have noted that positive and negative polar questions differ in bias – positive ones have a weak positive bias, and (inner) negative ones have a weak negative bias. For Buring and Gunlogson, the bias distinction is stated in terms of what kind of prior evidence such questions are compatible with – positive questions are compatible with positive and not negative prior evidence, and the reverse for negative polar questions. For simplicity, we will assume here that question bias refers to this kind of contextual bias, even though this isn't settled in the literature.

This suggests an alternative account of negative neutralization that does not rely on ellipsis. *Yes*, instead of marking positive responses, could instead be conceived of as agreeing with the bias of the question it responds to. *No* will have to be the complicated case on such an analysis; let us suppose that it still marks the negative answer, and what the negative answer is is the same for both positive and negative polar questions.[10] This is an appealing account in its simplicity. It would also allow us to avoid the somewhat controversial assumption that fragment answers involve ellipsis – the pragmatic account would not rely on the syntax at all.

However, it is exactly because it does not involve ellipsis that this account does not generalize. There is no prediction about any of the data discussed in section 3, where ellipsis is clearly involved. This pragmatic alternative would not capture the crucial generalization that negative neutralization is involved in all these cases, and therefore we take it that it is not a plausible account.

[9]Reverse particles in other languages, on the other hand, can surface without an overt clause. This is rather puzzling on our account, since we would expect antecedents to never match. A full analysis will have to wait for another day, and would need more empirical investigation into the answer systems in such languages. One potential solution has been suggested to us by Patrick Grosz (p.c.): such particles involve a negative meaning, **and** force a negative concord chain, leading to double negation. The problem with solitary reversal in English might actually be that there is no way to spell out the intonational contour. Of course we would also need to integrate the semantics of such a particle with Romero and Han's 2004 treatment of this intonational pattern as indicating VERUM focus.

[10]It is not exactly obvious how this might be implemented, but we assume that it is possible in principle.

A more promising line of investigation would be to derive the direction of bias in polar questions from the presence or absence of negation.[11] This would mean that weak bias in polar questions would follow from the same property that negative neutralization follows from, giving the two phenomena a shared explanation (rather than trying to use one to explain the other). Each would follow from which alternative the speaker chose to mention.

5. Conclusions

In this paper we have provided an account of the syntax of solitary answer particles that also explains the negative neutralization pattern in English. Crucially, the proposal is that solitary *yes* and *no* involve an elided TP. We have also seen that an account of negative neutralization in answers to polar questions that does not involve ellipsis would miss a significant generalization – negative neutralization occurs in a range of similar (more obvious) ellipsis contexts, none of which involve *yes* or *no*, and most don't even involve any kind of answer particle. This provides strong support to an elliptical analysis. More generally, the necessity of an ellipsis analysis for answer particles provides support to Merchant's 2004 general program of deriving fragment answers via ellipsis.

An important question is whether this pattern consistently recurs in other languages; our analysis might lead one to expect this. Preliminary investigation of languages like French which involve different polarity systems and also reverse particles suggests that it does not, exactly. In French, the answer systems for negative an positive questions do not overlap so much, and a reverse answer particle is used in place of a positive answer particle for negative questions. An exploration of this pattern is our next step.

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[11] Deriving that they are biased at all, i.e. distinguishing them from (unbiased) alternative questions, is going to need something more, since alternative questions lack negation altogether. But they also involve explicit mention of each alternative, unlike any polar question.

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