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-hii: Modality Meets Exclusivity

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Abstract

This work examines the meaning of the Hindi particle '-hii' and sheds new light on the link between modality and words like 'only.' Our two new judgment studies reveal that '-hii' indicates exclusivity (like 'only,' and other similar lexical items) and also can associate with either the MIN or MAX of a scale of propositional alternatives. More specifically, the alternatives are ordered based on speaker conceptions of likelihood or of desirability, and which endpoint is felicitous with '-hii' depends on which scale is made salient by the discourse context. Since existing analyses of 'only' and 'even' are insufficient for capturing the presuppositions of '-hii' that are revealed by the experimental data, we draw on the recent theoretical literature on modality to map these ranking types of '-hii' to epistemic, bouletic, and teleological modality types that form its core scalar felicity condition. Besides helping to formalize the varied types of speaker expectations needed by '-hii', this move helps to explain some differences between the likelihood and desirability contexts' patterning of data in our experimental results.

-hii: Modality Meets Exclusivity

Vandana Bajaj and Kristen Syrett[*]

1 Introduction

The focus of this paper is the interpretation of Hindi sentences using the enclitic *-hii*. Examples of the use of *-hii* are in the sentences in (1). These illustrate the diverse set of interpretations that have been given to *-hii* by various authors for simple sentences.

(1) a. LaRke-**hii** aa rahe haiN.
         boys-PL-HII come PROG.PL be-PRS.3.PL
         'It's the boys who are coming.'   Verma (1971)
     b. Banaras-ke log Hindi-**hii** bolte haiN.
         Banaras-GEN people Hindi-HII talk-PROG.PL be-PRS.3.PL
         'The people of Banaras of course speak Hindi.'   McGregor (1972)
     c. Ram-ne-**hii** Sita-ko dekha.
         Ram-ERG-HII Sita-ACC see-PST.SG
         'Only Ram saw Sita.'   Bhatt (1994)
     d. Vah kavita-**hii** likhate haiN.
         they poetry-HII write.PROG be-PRS.3.PL
         'They only write poetry (as opposed to more extensive literature).' Varma (2006)

These sentences show different contributions of *-hii* to the translation of the Hindi sentence. (1a) translates as an *it*-cleft, (1b) includes *of course*, and (1b)-(1c) translate as *only*.

Furthermore, Bhatt (1994) observed that with a negated *-hii* sentence like (2), an 'only not' reading arises (Ram doesn't have a gun, but everybody else does), as in (2a), as well as an 'even not' meaning, as in (2b).

(2) Ram-ke-paas-hii banduuk nahiiN hai.
     Ram-GEN-side-HII gun   NEG   be-PRS.3.SG
     a. 'Only Ram doesn't have a gun.'
     b. 'Even Ram doesn't have a gun.'

Here *-hii* modifies the subject. Bhatt claimed that there is a subject-object asymmetry with regards to whether the ambiguity is available or not. If *-hii* is marked on the subject, as in (2), both readings are available. If *-hii* is marked on the object, he says that the only reading available is the *even*-like reading.

Observe that taking the data in (2) together with that in (1) leads to conflicting information about what *-hii*'s semantic contribution is. Our goal in this paper is to determine a unified lexical meaning for *-hii* for the varied meanings of it in both non-negated and negated sentences.

The translations in the range of data above show that the critical components of *-hii* involve exclusive (*only*) and scalar (*even*) meaning. As such, an analysis will necessarily have to appeal to these meanings, in part. Section 2 describes existing accounts, and shows data that present various problems for these accounts of *-hii*. Section 3 presents new hypotheses about the meaning of *-hii* based on the extra data presented in Section 2, and Section 4 details two new empirical studies to test the data. Our results show that *-hii* has scalar sensitivity in both negated and non-negated constructions, with different endpoints selected based on the scale type. Section 5 then seeks to explain the range of experimental results by appealing to modality, and this allows us to provide a new analysis for the felicity conditions of *-hii*.

2 Background

Bhatt explains the subject-object asymmetry he posited for *-hii* by making the assumptions about the syntax listed in (3), drawing from Kitagawa (1986), Sportiche (1988), and Mahajan (1990).

(3) a. Arguments can be interpreted at either their D-structure or S-structure positions.
     b. Arguments are generated VP-internally.
     c. At S-structure, the subject raises to Spec IP.
     d. Negation has scope only over VP.
     e. Objects either remain in situ or within the scope of negation.

Along with these points, Bhatt posits that inside a VP, *-hii* yields an *even* interpretation, but outside a VP yields an *only* interpretation. Thus, taking this point with (3e), a *-hii*-marked object will receive the *even* interpretation and no other. However, given that a subject is generated inside the VP and then moves out to a higher Spec position, from (3b) and (3c), this change in position allows for either an *only* or *even* interpretation to hold for *-hii* when it is marked on a subject, given (3a).

   However, there is reason to suspect that this apparent *even*-like meaning differs from the reading that arises from regular English *even* in the presence of negation. These facts are revealed when we examine constructions involving an exclamative (4) or rhetorical question (5).

(4) Wyaakhyaata-hii nahiiN aaye,   sabha   kaise hoti!
     speaker-HII   NEG   come-PST.M.SG meeting how   happen-F
     'The speaker – he did not show up, how could the meeting be held?'   Verma (1971)

(5) Yah kaisi   jiit   hai,   jab jiitanevaala$_F$-hii nahiiN rahaa?
     this what.kind victory be-PRS.3.SG when winner-HII   NEG   remain-PERF-M.SG
     'What kind of victory is this when the VICTOR himself is dead?'   Varma (2006)

In (4), the speaker showing up is the most important thing for being able to conduct a meeting, and this is similarly the case in (5), where the most important thing for calling something a victory is that the victor has to live. Thus, it appears that this scalar reading of *-hii* is one where there is a backgrounded condition of necessity of something to be true in order to accomplish a goal. More specifically, the associate of *-hii* in these constructions is what does not fulfill some property (in (4), the speaker has not come though others might have, and in (5), the victor did not live though others might have), and this is what leads to not being able to carry out some task. Given this as the constraint on obtaining this 'even not' reading, we can see that this is likely the reason that the rhetorical question speech act makes this reading most salient.

   While the clauses in question above may at first seem similar to the English sentences in (6), notice that English *even* does not have the same requirements for scalar meaning stated above that *-hii* does in the scope of negation.

(6) a. Even the speaker didn't show up.
     b. Even the victor didn't survive.

For the sentences in (6), there is no alteration of the speech act necessary to infer that in (a), the speaker was the most likely to come, and in (b), the victor was the most likely to survive. *even* in English induces scalar meaning without requiring a salient goal in the context.

   This crucial role of the context likely exists in non-negated constructions with *-hii* as well, though for different types of scales. While a sentence like in (1c) shows a simple exclusive reading (Ram kissed Sita, and nobody else did), the acceptability of such a sentence might depend on how alternative propositions are ranked in the discourse context. Bajaj (2014) made this claim about the case in (7).

(7) <u>Context</u>: Aatish and Upasana are a couple.
     Aatish-/#Vijay-/#Deepak-ne-hii Upasana-ko   kiss kiya.
     Aatish-/Vijay-/Deepak-ERG-HII Upasana-ACC kiss do-PST.SG
     'Only Aatish/#Vijay/#Deepak kissed Upasana.'

Assuming a context where Aatish and Upasana are a couple, the most likely individual to kiss Upasana would be Aatish. The judgment about the sentence with -*hii* in (7) is that Aatish is the only felicitous individual to assert with -*hii* because the context makes him the most likely kisser. Merely asserting 'X-hii kissed Upasana' cannot be done with any individual as X, even if the situation makes 'X kissed Upasana' true. Thus, -*hii* cannot be just an equivalent to English *only* in the basic case. It associates with a scale of alternatives (in (7), one where alternatives are of the form 'X kissed Upasana') and is felicitous with the alternative ranked as maximally likely.

Note how this differs from *even*. Karttunen and Peters (1979) and others show that English *even* has a requirement that the asserted proposition must be minimally likely with respect to other alternatives. Thus a sentence like (8) requires that John be the least likely compared to other individuals to have kissed Mary.

(8) Even John kissed Mary.

This maximal-likelihood requirement of -*hii* is in contrast to its use in Varma (2006)'s example in (1d), where there appears to be a minimal-endpoint scalar reading for -*hii*. This use is similar to certain uses of English *only*, like with (9) from Krifka (1993).

(9) John only ate [an apple]$_F$.

For example, if John's mother thinks that he is too thin and should be eating more than he currently is, then she might have a scale in mind where eating an apple is not as good as eating something more filling. This would render (9) felicitous on the scalar interpretation of *only*. We could specifically refer to this type of scale for exclusives like *only* as one based on speaker desirability, where the rank-ordering between the alternatives is defined by whatever the particular speaker of the utterance has in mind as 'better' than other possibilities. This means that *only* on its scalar interpretation requires that the proposition be minimally desirable.

In a similar vein, -*hii* in sentences like (1d) also seems to pick the minimally desirable proposition. This sentence makes sense in a context where it is more desirable for novels and longer works to be written than poetry.

3 Current Research

Based on the discussion in the previous section, we make the observations about -*hii* sentences shown in (10) and (11).

(10) A sentence *John-hii came*:

    a. Presupposes: John was the one I thought most likely OR the one I least wanted to come.
    b. Asserts: Only John came.

(11) A sentence *John-hii didn't come*:
    Asserts: John is the only one that didn't come. OR

    a. Presupposes: There is some goal that cannot be accomplished unless John comes.
    b. Asserts: John didn't come.

Our two experiments, described in the next section, test these observations by answering the questions in (12).

(12) a. When a sentence includes both an NP marked with -*hii* and NEG, do speakers accept both a complement exclusion ('only not') interpretation, and a reading similar to 'even not', selecting for the maximally necessary alternative for a contextually-salient goal?
    b. When -*hii* marks an NP in a sentence without NEG, do speakers access a maximally likely / minimally desirable alternative, dependent on the ranking type made salient in the context?

4 Experiments

4.1 Experiment 1

This study examined *-hii*-marked NP's with sentential negation, in order to determine whether both an exclusive and scalar interpretation are available.

4.1.1 Participants

Participants were recruited by advertisements posted to LinguistList and Twitter. All subjects self-identified as native speakers of Hindi, and ranged between the ages of 24 and 58 ($M = 31$). 40 participants were included in total.

4.1.2 Design

20 participants received a survey probing for the 'only not' (narrow scope of negation) reading, while the other 20 respondents took a survey probing for the goal-oriented 'even not' (wide scope of negation) reading. The survey took approximately 30 minutes for each participant to complete. Participation was unpaid, and the survey was administered through SurveyMonkey online. Thus, scopal relation was a between-subject factor. To determine whether *-hii*'s scalar meaning is subject to syntactic constraints, we also had one within-subject condition varying whether *-hii* was associating with the subject or the object of the predicate. This tests the claim of Bhatt (1994) described in Section 2, positing that there is a subject-object asymmetry with regards to whether the 'only not' / 'even not' ambiguity holds.

Stimuli consisted of 12 test items and 10 fillers, randomized. The stimuli were preceded by 2 training items. There were 2 presentation orders for each survey. Within each test condition, there were 3 test items that favored a 'yes' response and 3 test items that favored a 'no' response.[1]

5 of the filler items expected a 'yes' response and the other 5 expected a 'no' response. All the filler items were constructed similarly as the test items, except the target construction included *-hii* without a NEG word.

4.1.3 Procedure

Each item had the same structure. It began with a brief context describing a situation. In the 'even not' survey was a salient scale, and in the 'only not' survey, there was no salient scale between the alternatives in the context. In the 'even not' survey the target sentence was a rhetorical question of the form 'How can we do X, if not Y?' In the 'only not' survey, the target sentence was an assertion of someone not possessing a property. Participants were instructed to judge the acceptability of the part of the sentence highlighted in blue, which contained the *-hii* and NEG marker. Participants answered 'yes' or 'no' for acceptability of the portion of the utterance with *-hii* by clicking on the corresponding radio button for 'yes' or 'no'.

All the stimuli were presented in Hindi script (Devanagari), and subjects responded in Devanagari. One translated sample item is below in (13), and others are placed in Appendix A.

(13) Lakshmi is getting married and needs to have a sari, jewelry, and shoes. Her mother feels that a sari is the most integral piece of dress for a bride, so she feels that a wedding cannot take place unless Lakshmi has a sari. Shoes would have to be removed before entering the temple, so her mother feels that shoes are not important for the ceremony.
Situation: Lakshmi has jewelry and shoes, and not a sari.
Lakshmi's mother says: "How can we have a wedding, when <u>Lakshmi doesn't have a **sari**-hii</u>?" Can this be said? [YES]

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[1]The one exception to this is in the only-not subject condition, where there were created 4 test items favoring a 'yes' response and 2 test items favoring a 'no' response. One of these 'yes' items was thus eliminated from the analysis.

The anticipated response is placed in brackets. In this item from the 'even not' survey, a scale is made salient, and the object is what is asserted with *-hii*. Specifically, this sentence includes the MAX-ranked alternative (as the sari is ranked higher on a scale of necessity than the jewelry and shoes, according to Lakshmi's mother). For items in the subject condition as opposed to the object condition, *-hii* is marked on the subject of the predicate.

4.1.4 Predictions

For the 'only not' condition, we predicted that subjects would answer 'yes' to the sentence where all alternatives have the property in question except for one. For the wide scope of negation condition, where a salient scale was included, we predicted that subjects would accept the sentence containing the MAX-ranked alternative and reject the sentences with the MIN-ranked alternative.

4.1.5 Results

The dependent measure was the percentage of 'yes' responses. The results are presented in Figure 1.

(a) *-hii* > NEG condition
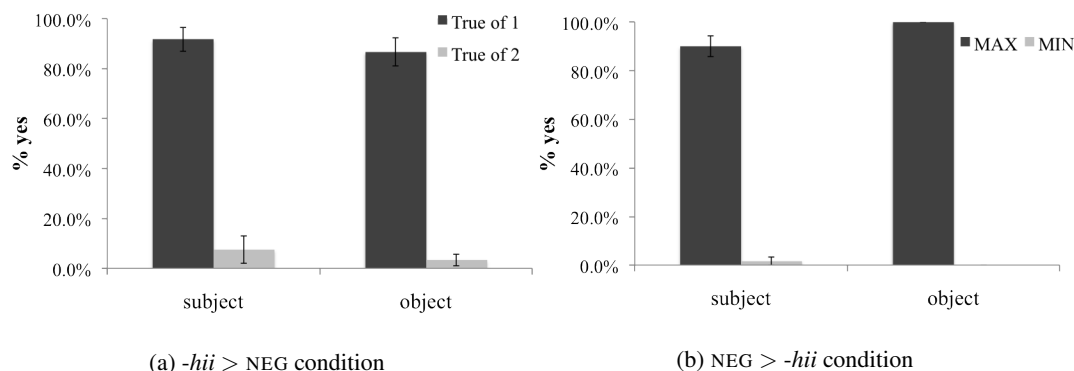
(b) NEG > *-hii* condition

Figure 1: Results for two conditions in Experiment 1.

The subjects were more likely to choose the true-for-one alternative in the narrow scope of negation condition ($t(38) = 2.02, p < 0.0001$) and the MAX-ranked alternative in the wide scope of negation condition ($t(38) = 2.02, p < 0.0001$). No significant difference was found between the subject and object conditions within each of the 'only-not' and 'even-not' conditions.[2]

4.1.6 Discussion

The results show that speakers are able to access both 'only not' and 'even not' readings when *-hii* is in the presence of negation. Furthermore, the 'even not' results show that speakers are sensitive to the particular endpoint asserted with *-hii*. As predicted, 'X-hii didn't come' is felicitous on the 'even not' interpretation if X is maximally necessary for a goal.

4.2 Experiment 2

This study examined *-hii*-marked NP's in basic non-negated sentences, in order to determine whether there are multiple scale types that can associate with *-hii* (Likelihood and Desirability, as described in Section 2), and furthermore whether there is a difference in the endpoint that is selected for each of these scales.

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[2]It was brought to our attention that the forms we used in this experiment were actually unaccusatives and therefore did not reflect direct objects with *-hii*-marking. If this is so, then the same critique can be made of the sentences in Bhatt (1994), which served as our model.

4.2.1 Participants

9 on-campus participants were paid $7 to complete a paper survey in the lab, while 35 online participants took the survey via SurveyMonkey. Participants were recruited via mailing lists at Rutgers University, online social media (Facebook and Twitter), and a mailing list available through the LinguistList. All subjects self-identified as native speakers of Hindi, and ranged between the ages of 25 and 67 ($M = 31$). Data from six participants were discarded because they missed more than one-fifth of the filler items. This left 38 participants that we factored into the analysis.

4.2.2 Design

The focus of this experiment was the scalar component of *-hii*. The design was 2x3, all within-subject, with the factor of scale type (Likelihood vs. Desirability) crossed with scale position (MIN, unranked, MAX). Each trial started with a background context that made salient either a Likelihood or Desirability scale. Exclusivity was made not-at-issue in these items, by ensuring that each context made clear that the turnout of the situation was that the property was true for strictly one individual.

Likelihood scales were made salient by showing that the speaker of the utterance had a ranking of the alternatives based on relative probability of occurrence. Desirability scales were created by making explicit that all alternatives had equal probability and manipulating instead just the speaker's level of desirability of each outcome.

Stimuli consisted of 5 test trials per scale type and 10 filler trials, and there were 2 presentation orders. Within each trial, there were three responses expected (one for each scalar alternative asserted as true with *-hii*). Within each test trial, the favored responses were always one 'yes' and two 'no.'

The experiment began with two training items without *-hii*, after which the participant had to evaluate a total of 20 items. The survey took approximately 30 minutes to complete.

4.2.3 Procedure

All the stimuli were presented in Hindi script (Devanagari) and subjects responded in Devanagari. A sample Likelihood trial and Desirability trial are indicated in (14) and (15). The bracketed text following the question is the anticipated response.

(14)   Rohini invited Bina, Tara, and Preeti over for tea. Rohini is aware that whenever Bina is invited, she will come. Rohini also knows that Preeti always makes excuses whenever she is invited, because she is shy. Rohini doesn't know whether Tara will come or not because they only recently met each other. In the end one friend came, and two didn't.
Situation: Bina attends. Sentence: "Bina-hii came to tea." Can this be said? [YES]
Situation: Tara attends. Sentence: "Tara-hii came to tea." Can this be said? [NO]
Situation: Preeti attends. Sentence: "Preeti-hii came to tea." Can this be said? [NO]

(15)   Kartik is rolling dice while playing a game with his friends. To win immediately, he must roll a 12. If he rolls a 2, he will immediately lose. If he gets at least a 6, he will remain in the game.
Situation: Kartik rolls a 12. Sentence: "I got a 12-hii." Can this be said? [NO]
Situation: Kartik rolls a 6. Sentence: "I got a 6-hii." Can this be said? [NO]
Situation: Kartik rolls a 2. Sentence: "I got a 2-hii." Can this be said? [YES]

For each trial, participants read a brief context and then answered 'yes' or 'no' about whether each of three sentences could be said. The sentences each highlighted one proposition out of 3 alternatives as true, and within these 3 alternatives, there were three scalar values, based on the preceding context – MAX, MIN, and unranked.

4.2.4 Predictions

In the Likelihood trials, we predicted that participants would mark 'yes' for the sentence with the MAX-ranked alternative marked with *-hii*, and 'no' for the sentences with the unranked and the MIN-ranked alternative marked with *-hii*. For the Desirability trials, we predicted subjects would mark 'yes' to MIN-ranked alternatives marked with *-hii* and 'no' to unranked and MAX-ranked alternatives marked with *-hii*.

4.2.5 Results

The dependent measure was the percentage of 'yes' responses. The results are presented in Figure 2.
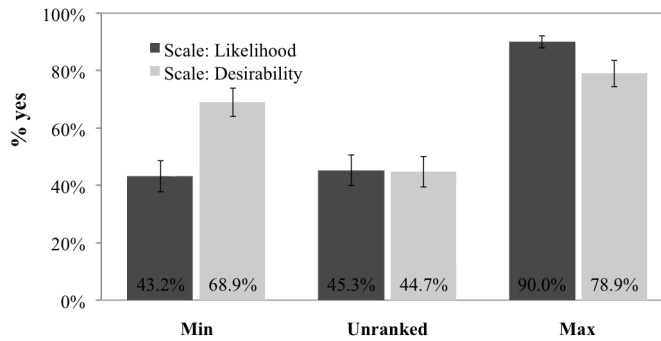

Figure 2: Mean acceptances in Experiment 2. Error bars represent standard error.

One-way ANOVA's with Tukey HSD post-hoc comparisons revealed significant differences among acceptances within each scale and a main effect of scalar value. In the Likelihood condition, participants were more likely to accept MAX than any other ($F(2, 37) = 48, p < 0.0001$). For Desirability participants were more likely to accept the MAX alternative than the Unranked ($F(2, 37) = 13.38, p < 0.0001$), but all other post-hoc pairwise comparisons were non-significant. Participants were more likely to accept the MAX for the scale of Likelihood than for Desirability ($t(37) = 2.42, p = 0.02$) and more likely to accept the MIN for the scale of Desirability than for Likelihood ($t(37) = 4.84, p < 0.001$).

The data showed a high degree of variability across the entire set of participants, but within the responses for individual participants, patterns emerged regarding how they answered across all test items. We found that participants' distribution of responses generally fell into three categories of 'yes' response. Table 1, showing the number of participants out of the total that fell into each category (χ^2: $p < 0.0001$).

Scale	Max only	Max and Min only	Max, Min, and Unranked
Likelihood	19	3	12
Desirability	9	15	9

Table 1: Acceptance of target value 60% or more in Experiment 2.

4.2.6 Discussion

The Likelihood results show that speakers prefer to use *-hii* with the MAX-ranked alternative, concurring with predictions.

The Desirability results show selection for both MAX and MIN. This means that there is a preference for the minimally-desirable alternative, as predicted, but also for the maximally-desirable alternative.

The numbers in Table 1 indicate that while some participants appeared to access a scalar component, by selecting one endpoint for test items, or selecting either endpoint, there was a set of participants that seemed to find *-hii* felicitous with not only the endpoint alternatives, but also the unranked alternative. This may indicate that there is a portion of the speaker population that allows for an exclusive non-scalar meaning of *-hii* in non-negated constructions.

5 Conclusions and General Discussion

The experimental data shows that *-hii* does indeed interact with sentential negation, and there is empirical evidence for *-hii* associating with multiple scales and with either MAX or MIN depending on the type of ordering made salient by the preceding context.

Experiment 1 showed that when *-hii* is in the presence of NEG, whether a speaker chooses a narrow scope of negation ('only not') or wide scope of negation ('even not') interpretation depends on whether there is a salient scale present in the discourse. If there is no rank-ordering of alternatives, a pure exclusive interpretation will be used to evaluate the truth of the sentence. With the 'even not'-like reading, speakers are sensitive to a particular endpoint. They find *-hii* felicitous with the maximally-ranked alternative for a scale of necessity for a goal.

In Experiment 2, core scalar properties were revealed to exist for *-hii* in the basic, non-negated, positive declarative sentence. This is new information about *-hii* that disputes claims made by Verma (1971) and Bhatt (1994) that the meaning contribution of *-hii* is akin to *only* in non-negated constructions. Our experimental data showed that participants will infer that the speaker has ranked the proposition asserted with *-hii* as either a MAX-likely, MIN-desirable, or MAX-desirable. This latter finding about desirability being felicitous with either endpoint of the scale was unexpected, given our hypotheses.

To ensure a unified formalization for *-hii*, we can try to see if there is a way to conceive of the likelihood and desirability scales as arising from a single source. One motivation for doing so would be to simply eliminate the need of positing multiple entries in the lexicon for *-hii*. Secondly, the patterning of results in Experiment 2 seems to demand this as well. If participants were willing to choose MAX as felicitous with *-hii* when the context was a desirability one, then perhaps there is a likelihood component that plays a role.

First observe that the scales used with *-hii* appear to be modally defined. Likelihood and desirability rankings are based on epistemic and bouletic modality types, respectively. Also, the goal-oriented necessity rankings that arose in the wide scope of negation cases appear to be cases of teleological modality. While many cases of modality in language involve overt lexical items (like English *will*, *might*, and other auxiliaries for epistemic modality, or *wish*, *want* and other verbs for bouletic modality), what we propose here is that the role of modality is merely to provide the basis of a speaker's propositional ordering, presupposed as part of *-hii*'s use.

For these purposes, we turn to Lassiter (2014)'s theory of graded modality. Under this view, judgments about sentences that involve modal meaning crucially rely on probability measures. Propositions are assigned probability measures between 0 and 1, in accordance with the probability calculus as defined in (16).

(16)   A *probability space* is a pair $\langle W, \mu \rangle$, where W is a set of possible worlds and $\mu: \wp(W) \rightarrow$ [0,1] is a function from subsets of W to real numbers between 0 and 1 which satisfy the following conditions:

   a. $\mu(W) = 1$
   b. If $P \cap Q = \varnothing$, then $\mu(P \cup Q) = \mu(P) + \mu(Q)$

Likelihood of a particular proposition can thus be compared directly by simple greater than or less than relationships between those probability measures.

Bouletic modality is a measure of goodness, but, as Lassiter shows, goodness importantly folds

into it the notion of probability. The calculation of expected value ((17)) is based on both a value measure (V) as well as conditional probability ((18)).

(17)   The *expected moral value* $\mathbb{E}_V(A)$ of a proposition A is a weighted average of the values V(w) for each w ∈ A, where the weight of each world is given by the *conditional probability* that it will be actual if A is true.

(18)   The *conditional probability* of a proposition A, given a proposition B, is a derived probability measure generated, in effect, by assigning measure 0 to the not-B portion of logical space and renormalizing by dividing by P(B).

$P(A|B) = \frac{P(A \wedge B)}{P(B)}$

(17) derives the formula for calculating expected value in (19). The particular expected value of a proposition is what can be compared against the expected value of another propositional alternative, to determine a relative ranking of goodness.

(19) $\mathbb{E}_V(A) = \sum_{w \in A} V(w) \times P(\{w\}|A)$

This leads us to posit the following two representations for the felicity conditions of *-hii* in the non-negated constructions ((20)) and the wide scope of negation construction ((21)).

(20) $\forall p'[(\mu(p) > \mu(p')) \vee (\mathbb{E}(p') > \mathbb{E}(p))]$ EPISTEMIC OR BOULETIC
(21) $\forall p'[\mathbb{E}(p) > \mathbb{E}(p')]$ TELEOLOGICAL

The forms in (20) and (21) account for the epistemic, bouletic, and teleological forms of modality that are implicit to the scalar meaning of *-hii*.

An advantage of applying this modal analysis to *-hii* is that since (19) requires probability to be calculated, this entails that speakers, even in desirability contexts, need to account for likelihood orderings over the alternatives. While we created the desirability contexts in Experiment 2 to attempt to make the probabilities equal for all alternatives (i.e., $\mu = 1/3$ for each alternative), it is possible that the experimental participants assigned their own varying probabilities to these alternatives, based on world knowledge, norms, etc. If the probabilities that a participant assigned to alternatives are unequal, this will lead to different calculations for expected value, potentially driving up acceptance of the MAX alternative.

In sum, the current judgment studies show that the scalar and exclusive particle *-hii* can be sensitive to multiple types of scalar orderings, but even for scales that are not based on likelihood, likelihood still may nonetheless play a crucial role for the acceptability of the particle.

6 Appendix A: Sample Stimuli from Experiment 1

The original stimuli presented to the subjects here and for Experiment 2 were in Hindi. Underlining corresponds to text that was in a different color font in the experiment. The bracketed text following the question is the anticipated response. One item per test cell of the design is given here. All the items in this sample are from those favoring a 'no' response.

6.1 Only Not: Subject-marked

Prof. Shah is taking Kunal, Niraj, and Pavan on a trip to conduct an archaeological excavation.
Situation: Kunal has a shovel, Niraj and Pavan don't have shovels.
Prof. Shah says: "We're almost ready to start the digging, Pavan-hii doesn't have a shovel." Can this be said? [NO]

6.2 Only Not: Object-marked

Arjun is going camping and needs to take his tent, boots, and food.
Situation: Arjun packed his tent, not his boots or food.
Arjun's friend says: "Arjun has almost everything for camping, he didn't pack his boots-hii."
Can this be said? [NO]

6.3 Even Not: Subject-marked

Prof. Shah is taking Kunal, Niraj, and Pavan on a trip to conduct an archaeological excavation. If Kunal doesn't have a shovel, Prof. Shah feels that it will not be possible to proceed with the excavation, because he is the one who will be doing the digging. If Pavan doesn't have a shovel, Prof. Shah won't mind, because he is designated to just collect the artifacts.
Situation: Niraj and Kunal have shovels, Pavan doesn't have a shovel.
Prof. Shah says: "How can we start the excavation when **Pavan**-hii doesn't have a shovel?"
Can this be said? [NO]

6.4 Even Not: Object-marked

Arjun is going camping and needs to take his tent, boots, and food. His friend hopes that Arjun took with him food, as without food, he will not survive. Arjun can always rent a tent at the campsite, so his friend feels that taking a tent is not important.
Situation: Arjun packed his boots and food, not his tent.
Arjun's friend says: "How can Arjun go to the wilderness, when he didn't pack his **tent**-hii?"
Can this be said? [NO]

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