SCALING UP EXCLUSIVE -*HII*

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A dissertation submitted to the
Graduate School—New Brunswick
Rutgers, The State University of New Jersey
in partial fulfillment of the requirements
for the degree of
Doctor of Philosophy
Graduate Program in Linguistics

Written under the direction of
Veneeta Dayal and Kristen Syrett
and approved by

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New Brunswick, New Jersey

October, 2016

ABSTRACT OF THE DISSERTATION

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This dissertation explores the meaning of the Hindi particle -*hii*. The standard view is that -*hii* is equivalent to English *only* but has various other extraneous uses. I show that these varied uses can be unified as scalar meaning. This research provides the first set of empirical studies into the fine-grained scalar sensitivity of -*hii* and related particles. In Chapter 1, I introduce -*hii* by highlighting its similarities and differences with *only* and *even*. Chapters 2 through 6 are then devoted to exploring four aspects of the meaning of -*hii*. First I challenge the standard view of -*hii* by showing in Chapter 2 that speakers are sensitive to the felicity of -*hii* based on the scale in the context. In particular, -*hii* can select for the MAX of one scale type and MIN of another. Using Potts (2005), I assign these scalar meanings to the level of not-at-issue meaning, specifically as conventional implicature. I then show in Chapter 3 how -*hii*'s upper-bounding effect is achieved with entailment-based scales, using the case of numerals. I furthermore show how -*hii* combines with the particle *sirf*, which is the Hindi counterpart of English *only*. In Chapter 4, I introduce the issue of -*hii*'s interaction with negation, and use this to motivate a flexible meaning of -*hii* that can account for its uses in contexts where scalar orderings are absent. I discuss results of a judgment study showing that both a scalar and non-scalar reading are accessible to speakers when -*hii* interacts with negation, a problem first observed by Bhatt (1994). In Chapter 5, I discuss uses of -*hii* that reflect speaker certainty and degree intensification, by introducing data with adjectives and adverbs. I show how these cases are similar to polysemous intensifying particles in other

languages – Italian and Washo, (Beltrama & Bochnak (2015)), Marathi -*c* (Deo (2014)) and Russian *sam* (Goncharov (2012)). I demonstrate how these uses of -*hii* relate to a general association with scalar endpoints. I conclude in Chapter 6 and propose topics for continued investigation within this line of research.

Acknowledgments

Veneeta Dayal has been my adviser since the inception of this project, and she provided the original inspiration for it. I was taking a course with her on genericity, and ultimately decided to write my term paper on the addition of *-hii* to bare nouns in Hindi. I wrote a terrible paper, but it got me interested in focus markers. Veneeta has always been a very patient adviser to me, and I'm grateful for her help over the years in developing this work.

Kristen Syrett also got involved in this project with me early on, first as committee member, and then as co-chair with Veneeta. Kristen had a lot of enthusiasm about the work from the very first time I proposed it in QPW. She provided tremendous help in putting together the experimental portion of this work, which is a large contribution of this dissertation. I am grateful to be a co-author with her in some published work too.

Mark Baker was my third committee member, and lived up to his promise to me of providing "continued nagging on the syntax side." Rajesh Bhatt of UMass was my external committee member, whose unpublished manuscript during his own graduate career inspired the original thoughts about this project.

I also must extend thanks to former Rutgers faculty member Shigeto Kawahara, who served on my first QP committee. Shigeto encouraged me to present a small project I did (on bilingual puns) at a public workshop. Shigeto was extremely supportive of me, and his gentle nature was very helpful to me in learning various tools of the trade in doing experimental work.

Some of the other graduate students in the department were very instrumental in my getting to this point, and I have forged lasting friendships with them. Teresa Torres Bustamante and I had great conversations over our vegetarian meals and late afternoon cups of tea. Jimmy Bruno was one of the most laid-back and lighthearted people I have ever met at Rutgers, and I'm proud to say that someone once said I'm "like a female Jimmy!" Matt Barros was quite generous with his time in providing me feedback and conversation

about my work whenever I needed it. Hope McManus was incredibly supportive and always provided a healthy perspective and sense of humor to difficult situations.

I had the great pleasure of getting to know folks over in the Cognitive Psychology department early on. One person was Janani Prabhakar, my classmate in the RUCCS Proseminar in Cognitive Science course. With her I could talk about everything from study design to *rasam*. Asya Achimova and Marta Suarez were incredibly talented grad students I got to interact with during my collaboration with the Rutgers Psycholinguistics Lab in my second year, and I thank them for their warmth and help in my quest to learn how to run experiments.

This work was financially made possible in part by fellowships awarded by the Graduate School of New Brunswick, teaching assistantships given by the School of Arts and Sciences, a travel award from the Rutgers Office for the Promotion of Women in Science, startup funds given to Kristen Syrett, and a summer grant from the Andrew W. Mellon Foundation.

Highland Park, New Jersey
June, 2016

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Chapter 1

Introduction

This dissertation is about the meaning of the Hindi enclitic *-hii*.

-Hii is used very commonly in Hindi, but this particle has received little attention by formal linguists. Most existing research has centered on assuming this particle means 'only', with this used as the basic gloss when examining the aspects of morphology, syntax, or prosody that may arise with *-hii* or other focus particles. The meaning contribution has rarely been questioned beyond this assumption, or, if it has, it has been simply briefly noted that there is a complexity to its meaning, without more word on the matter. This approach is insufficient, as it misses other important aspects of *-hii*'s meaning that speakers are sensitive to.

This dissertation explores the use of *-hii* in various discourse contexts with the goal of establishing its lexical meaning. I start by appealing to Alternative Semantics (Rooth 1985, 1992, 1996) to represent the interpretation of focus, which always occurs in *-hii* sentences, using the similarity of *-hii* with *only* and *even* to drive the discussion. As we will see, suggestions by previous authors about an *even*-like interpretation of *-hii* are the starting point for a new in-depth investigation of this particle.

By examining various contexts of use of *-hii*, I aim to bring out a clearer and better understanding of *-hii* and the taxonomy of discourse particles in Hindi. At the same time, this work contributes crosslinguistic insights to issues of exclusivity, scalar meaning, and the semantics of polysemous particles.

In the rest of the chapter, I will introduce existing views about the semantics of *-hii* and show how they are challenged by a series of topics to be addressed in the thesis. In 1.1, I outline the morphological and syntactic assumptions used for understanding *-hii*. In 1.2, I motivate three crucial pieces of *-hii*'s meaning that arise from a combination of suggestions in the literature. In 1.3, I then lay out my assumptions about focus, discourse particles,

and alternatives for the foundation of the analysis. I also give an overview of the previous proposals for *-hii*. Finally in 1.4 I end with the questions that will be discussed in the body of the thesis.

To start, there is a broad range of ways that Hindi speakers use *-hii*, and an equally broad range of translations that can be given for it. A selection is in (1)[1], from McGregor's *Outline of Hindi Grammar*.[2] The translations given in (1) are McGregor's original translations. For these sentences I indicate *-hii* in boldface.

(1) a. banaaras ke log hindi-**hii** bolte haiN.
Banaras GEN people Hindi-HII speak-HAB.PL be-PRES.3.PL
'The people of Banaras of course speak Hindi.' (McGregor 1972:142)

b. Sahar paas-**hii** hai.
city near-HII be-PRES.3.SG
'The city is quite near, very near.' (ibid.)

c. aap-ne jo intajaam kiyaa hai, vah bahut-**hii** accha hai.
you-ERG whatever arrangements do.PRF be-PRES.3.SG, PRON very-HII good-M.SG be-PRES.3.SG
'The arrangements you've made are excellent.' (ibid.)

d. us kaam ke liye tiin-**hii** aadmi kam hoNge.
that work GEN for three-HII man less be-FUT.3.PL
'Three men, only three men, will be too few for that job.' (ibid.)

e. maiN aate-**hii** kaam karne lagaa.
I come-IMPERF-HII work do.INF ECV.PRF
'I started work as soon as I arrived.' (ibid.:144)

f. vah apni-**hii** kitaab laayaa.
he REFL-HII book bring.PERF.3.SG
'He brought his own book.' (ibid.:142)

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[1]Following standard practice in the Indo-Aryan syntax/semantics literature, I use the following Roman characters to simplify transcribing Hindi sounds, instead of using the IPA representation: 'T' for the retroflex voiceless stop, 'D' for retroflex voiced stop, 'N' for nasalization on the preceding vowel, 'S' for the alveopalatal voiceless fricative, 'c' for the voiceless alveopalatal affricate, 'j' for the voiced alveopalatal affricate, 'R' for the retroflex flap, 'y' for the alveopalatal glide, and 'h' for aspiration on the preceding consonant. I apply this system consistently across all data points, even those taken from other sources. If an item in the original datum is an English loanword, I simply include it in English, in italics.

[2]Since data in this thesis comes from a variety of sources, I will employ a single format for glossing that may differ from that used by the original author. Whenever I believe the gloss of a lexical item should be changed to more accurately reflect the morphemic breakdown, I include an edited version from consultation with native speaker informants. Similarly whenever a gloss line is entirely missing from the datum, as is the case with almost all sentences from Verma and McGregor, I add in a gloss.

g. vah man-**hii**-man socne lagaa ki...
he mind-HII-mind think.INF ECV COMP
'The thought occurred to him (started to think in his heart) that...' (ibid.)

h. maiN aap-se jo kah rahaa huuN, use samajh-**hii**
I you.HON.INSTR which say PROG be-PRES that.DAT understand-HII
gaye hoNge.
go.PRF be
'You'll certainly have understood what I'm saying to you.' (ibid.)

i. aap un**hiiN** pustakoN-ko paRhie.
you.HON those-HII book-PL-ACC read-HON.IMP
'Please read those same books, those very books.' (ibid.:143)

Observe that -*hii* can occur after a noun ((1a)), an adjective ((1b)), an adverb ((1c)), a numeral ((1d)), a verb ((1e), (1h)), a pronoun ((1f),(1i)), and in between a reduplicated noun ((1g)). More perplexing than the range of syntactic association is the variety of translations McGregor gives for sentences with this particle. This project attempts to unify many of these uses by probing three main meaning components – exclusivity, scalarity, and intensification.

1.1 Clitic status and syntax

Let us first ask what is the placement of -*hii* in the phrase structure of Hindi, -*hii* appears quite regularly to the right of the focused phrase it associates with. McGregor (1972), Imai (1981), and Sharma (1999, 2003) argue that the particle cliticizes to the constituent it occurs with as it cannot stand on its own. Furthermore, Mohanan (1994a) and Butt & Holloway King (2004) both present arguments for why case markers in Hindi are clitics as opposed to affixes, and Sharma extends these arguments to claim that -*hii* is also a clitic. These arguments deal with the interaction of -*hii* with coordinate structures and the facts about stress placement.

There are several pieces of evidence that -*hii* is a host-adjoining clitic rather than a morphological affix.[3] First, -*hii* and other discourse markers can take phrasal scope over conjoined elements, as shown in (2) from Sharma, where -*hii* associates with the unit

[3]As discussed by Otoguro (2003), since -*hii* cannot stand alone it cannot be that -*hii* is an independent word, despite the fact that it appears this way in the Hindi orthography.

comprised of the dog and the horse together, and not just the horse. This is in contrast to (3), where -*e*, the Hindi oblique affix, cannot scope over the conjunction.

(2) [kutte aur ghoRe]-hii
dog-OBL and horse-OBL-HII
(the dog and horse)-hii (Sharma (2003):63)

(3) * [kutt- aur ghoR]-e
dog and horse-OBL
(the dog and horse)-oblique (ibid.)

Secondly, evidence emerges about the clitic status of -*hii* from differences in prosody. Mohanan (1994a) provides the following argument for treating case markings in Hindi as clitics. She indicates that a pause may intervene between nominals and their case markings or postpositions. A pause may intervene between 'Madras and Haiderabad' and -*se* in (4).

(4) madraas aur haiderabaad-se
Madras and Hyderabad-PREP
'from Madras and Hyderabad' (Mohanan 1994a:60)

The -*se* in (4) exhibits scope over the entire coordinated nominal, leading to the conclusion that such case markings concatenate with the noun phrasally rather than lexically. As such, Mohanan deems -*se* and other markers to be case clitics rather than case affixes.

Pauses may intervene between nominals and discourse markers as well, according to Sharma. Sharma extends Mohanan's conclusion above about nominals and case markers to the relationship between nominals and discourse markers like -*hii*. Compare this to the fact that it is not possible to insert a pause, for example, between *kutt* and -*e*, its affix, in a construction like (2). Sharma refers to this as the quality of "phonological independence" of -*hii*. See (5), showing the different placement of pauses between the nominal 'dog' and the oblique affix -*e* and the -*hii*. I use '/' to indicate where pauses are inserted into the phrase, following the notation for intonational phrase boundaries in Ladd (1981).

(5) a. kutte-hii

b. * kutt/e-hii

c. kutte/-hii

Thirdly, evidence from Butt & Holloway King (2004) shows that affixes affect the stress pattern of their nouns while discourse markers like -*hii* do not. Case markers, which are clitics, do not affect the placement of stress. In trisyllabic words, stress falls on the penultimate syllable, making the name *aaSa* one where stress is on the first syllable. With the addition of the case marker -*ko*, however, the stress remains on the first syllable in *aaSa-ko*, rather than shifting to the second syllable even though there are a total of three syllables (Butt & Holloway King (2004:17-18)). Thus, there is no effect of the placement of stress with the case marker. As Sharma observes, the addition of -*hii* to *aaSa* is similar in that the stress would still be on the first syllable in *aaSa-hii*.

Fourth, discourse particles can be mutually reordered with case clitics,[4] showing their similarity to one another. Bhatt's examples in (6) and (7) demonstrate this possibility, with -*hii* occurring either before or after the dative marker.

(6) raam-hii-ko *medal* milegaa.
Ram-HII-DAT medal get-FUT.3.SG
'Only Ram will get the medal.' (Bhatt 1994:5)

(7) raam-ko-hii *medal* milegaa.
Ram-DAT-HII medal get-FUT.3.SG
'Only Ram will get the medal.' (ibid.)

Similarly, in Imai's example in (8) and (9), -*hii* can be placed before or after -*ka*, the possessive marker.

(8) itne varSoN meN vah mere parivaar-hii-kaa aNg ban gayii.
many year-PL in she my family-HII-GEN part become go-PRF.3.F
'In so many years, she became part of my family.' (Imai 1981:50)

(9) itne varSoN meN vah mere parivaar-ka-hii aNg ban gayii.
many year-PL in she my family-GEN-HII part become go-PERF.3.F
'In so many years, she became part of my family.' (ibid.)

In contrast, -*hii* cannot be reordered with affixes, as shown by Butt & Holloway King (2004)'s examples in (10).

[4]Sharma does present one piece of data that there may be a slight semantic difference when -*hii* is used before versus after an instrumental case clitic.

(10) a. * kutt-hii-e
dog-HII-OBL
(Butt & Holloway King 2004:17)

b. * khel-hii-a
play-HII-M.PERF.SG
(ibid.)

For these reasons, Sharma concludes that -*hii* should be deemed a clitic rather than an affix.[5]

With regards to its place in the overall syntax, Sharma posits that -*hii* adjoins under its sister's category. This is following Butt & King's ideas about clitic placement as well as that of Mohanan (1994a). Sharma follows Butt & Holloway King (2004) in deeming case markers to be heads of a functional projection called KP (KaseP), but -*hii* and other discourse markers to be adjoined to the NP.[6] The KaseP is said by Butt & Holloway King (2004) to exist crosslinguistically. It captures the generalization that functional heads, but not lexical categories, can be clitics. Clitics can thus be the head of a KP, but bound morphemes cannot. Imai's proposal about the syntax is similar to Sharma's, though he places -*hii* in a sister node to its associate, which he labels 'Enc.' Regardless, the general structure that Sharma assigns to Hindi phrases with -*hii* is similar to Imai's in terms of the relative placement of -*hii* in the tree.

I will for now assume a general structure similar to these authors, where -*hii* is in a node that is sister to whatever constituent its associate is.[7] This is depicted in Figure 1.1. Equally possible would be the structure in Figure 1.2, using the KP projection. -*hii* and other discourse markers can adjoin to any part of the NP (Sharma (2003)).

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[5]For simplicity, I always connect -*hii* to its host and other markers using '-' rather than, for example, '=' which may be more precise and less ambiguous. Sharma (2003) and Deo (2014) use '-' for lexical or affixal information, and '=' for cliticization; I am using '-' for both instances.

[6]See Otoguro (2003) for a slightly modified version of Sharma's proposed structure, whereby these particles are taken to instead be inflectional suffixes at the phrasal level.

[7]See Imai (1981) and Sharma (1999, 2003) for suggestions about how to explain how -*hii* can exhibit incorporation into the NP for certain lexical items and how -*hii* may exhibit alternative orderings with the other case markers.

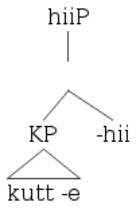

Figure 1.1: Possible tree structure for -*hii*.

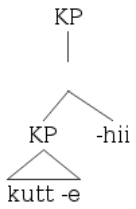

Figure 1.2: Second possible tree structure for -*hii*.

As a host-adjoining clitic, -*hii* could possibly exist far down in the tree, depending on what particular constituent is in focus. For the purposes of interpretation, this may necessitate some sort of covert movement of -*hii* to give it propositional scope. I will assume there is an available projection in the left periphery that serves as the landing site for -*hii* when it moves at LF for the purposes of interpretation.

1.2 Three components for -*hii*

With the variety of meanings I presented in (1), it may be puzzling how three attributes comprise the core functions of -*hii*. This section motivates these attributes, in preparation for showing how they give rise to puzzling but commonly-observed phenomena with -*hii*, an analysis of which I undertake in the coming chapters.

1.2.1 Exclusivity

-*Hii* has qualities in common with *only*. This shows up readily in instances of proper names associated with -*hii*. For example, (11) and (12) both entail (13).

(11) Only John ate dessert.

(12) jon-ne-hii miThaii khaayii.
John-ERG-HII sweets eat-PRF.F

(13) Out of the people who could eat dessert, John ate dessert, and nobody else ate dessert.

The meaning in (13) demonstrates a function of *only* and *-hii* requiring evaluating truth of John's dessert-eating, as well as reference to others eating dessert or not.

Only can be treated as a propositional-level operator, as shown by Rooth (1985, 1992, 1996). Rooth gives *only* the meaning in (14). In this definition, the operator takes scope over p, the proposition it combines with (referred to as the *prejacent*), and requires the set of possible alternative propositions C and the world of evaluation w.

(14) *only* (C,p,w)

Presupposes: p (Rooth 1996:277)

Asserts: $\forall \mathrm{p}' \; [(\mathrm{p}' \in \mathrm{C} \wedge \mathrm{p}'(w)) \rightarrow \mathrm{p}' = \mathrm{p}]$

According to (14), *only*(p) will assume that the prejacent is already true, and will be evaluated as true so long as there is no distinct alternative proposition that is also true. In other words, *only* has what is referred to as an *exclusive* function. The exclusive meaning forces the prejacent to be the sole true alternative.

Different positions have been taken with regards to the status of the prejacent of *only*. In (14), Rooth, like Horn (1969) before him, assumes that the prejacent of *only* is presupposed to be true. For (12), this means that *John ate dessert* is already taken for granted, and *Only John ate dessert* is true if all others did not eat dessert. Horn (1969) uses the infelicitous question-answer pair in (15) as the evidence for this presupposition.

(15) A: Did only Muriel vote for Hubert?

B: #She didn't. (Horn 1969:99)

The fact that B's response is inappropriate is what Horn uses to justify that Muriel voting for Hubert (the content of the prejacent) must be presupposed to be true.

Other than this view of the prejacent as presupposed, there are several alternative proposals. Geurts & van der Sandt (2004) espouse that the presupposition is one of a weak existential (that is, instead of (11) presupposing the prejacent that John ate dessert, we presuppose more generally that somebody ate dessert). Atlas (1991, 1993, 1996) proposes that there is an entailment of the prejacent, without it occurring as a presupposition. That

is, *Only a is B* will have the assertion that *a is B and nobody else is B*, and this entails *a is B*. Yet another view is that the truth of the prejacent is obtained by conversational implicature. That is, *Only John and Peter smoke* will conversationally implicate that *John and Peter smoke* by exhaustive interpretation of the sentence (van Rooij & Schulz (2007)). These different proposals are summarized in Ippolito (2008). Ippolito also puts forth that the prejacent of a sentence of the form *Only A is B* is a conversational implicature, and in addition there is a conditional presupposition that *if someone is B, A is B*. That is, for (11) we presuppose *If someone ate dessert, John ate dessert.*

Returning to *-hii*, this attribute of exclusivity that exists for *only* can be justified for *-hii* as well, as shown by the salient translation of (16), from Bhatt (1994).

(16) raam-ne-hii siitaa-ko dekhaa.
Ram-ERG-HII Sita-ACC see.PRF.3.SG
'Only Ram saw Sita.' (Bhatt 1994:1)

Evaluating (16) in the two possible situations in (17) leads to the intuitions that (16) is true in (17a) but false in (17b).

(17) a. Situation 1: Ram saw Sita, Laxman didn't see Sita.

b. Situation 2: Both Ram and Laxman saw Sita.

This is the same patterning of truth conditions as for English *only* in the sentence *Only Ram saw Sita.* Secondly, as with *only*, we cannot follow up (16) with adding that somebody else had seen Sita as well, as shown in (18).

(18) raam-ne-hii siitaa-ko dekhaa, #aur lakSman-ne-bhii dekhaa.
Ram-ERG-HII Sita-ACC see.PRF.3.SG and Laxman-ERG-also see-PRF.3.SG
'Only Ram saw Sita, #and Laxman did too.'

While these tests give clear evidence that *-hii* has an exclusive function, there is reason to suspect that *-hii* has more core properties than just that of exclusivity. This is hinted at by the variety of *-hii* sentences at the beginning of the chapter. For example, an exclusive function is not apparent in a sentence like (1a), repeated in (19) below.

(19) banaaras ke log hindi-hii bolte haiN.
Banaras GEN people Hindi-HII speak.HAB.PL be-PRES.3.PL
'The people of Banaras of course speak Hindi.' (McGregor 1972:142)

McGregor's translation of (19) does not seem to boil down merely to exclusivity, as hinted at by the use of 'of course.' If the speaker intended to convey that the people of Banaras speak Hindi and not other languages, *only* or another similar exclusive would be used in the translation. It is unlikely that this is the intended meaning, as this would be most likely false. Secondly, even in cases translated with the English word *only*, there is potential for *-hii* to give rise to additional meanings. Take (20), where Varma (2006) indicates that this sentence can be used in a situation where poetry is seen as low on some salient scale of literary value.

(20) ve kavitaa-hii likhate haiN.
they poetry-HII write.HAB.PL be-PRES.3.PL
'They only write POETRY.' (Varma 2006:97)

One might think that there is something about (20) such that we get these types of scale-sensitive interpretations, but not with (19). However, returning to (16), we have reason to suspect that an ordering condition on proper name alternatives exists also. Preceding the sentence with an overt question asking who Sita was seen by makes this more apparent.

Take a context where Sue lives with her husband Ron. There can be a difference in felicity depending on background assumptions related to the NP associated with *-hii*, as shown in (21).

(21) Sue was bathing, and the lock of the bathroom unlatched and swung open, so there may have been someone who saw her. Who saw her?

a. Situation: Larry saw Sue, Ron didn't see Sue.

#leri-ne-hii suu-ko dekhaa.
Larry-ERG-HII Sue-ACC see.PRF.3.SG
→ Larry saw Sue, and nobody else saw Sue.

b. Situation: Ron saw Sue, Larry didn't see Sue.

ron-ne-hii suu-ko dekhaa.
Ron-ERG-HII Sue-ACC see.PRF.3.SG
→ Ron saw Sue, nobody else saw Sue.

There seems to be a difference between using *-hii* with one individual as opposed to another,

as (21b) is acceptable but (21a) is not.[8] Regardless of the exclusive nature being satisfied in both cases, there is this difference in acceptability based on which individual in the context is paired with -*hii*. Ron, the husband of Sue, can be asserted with -*hii*, but not another individual.

Thus, there is reason to believe that -*hii*'s meaning is not equivalent to those given for *only*. Through this we can conclude that a standard view of exclusivity cannot be the full account of -*hii*.

1.2.2 Scalarity

With the example translating -*hii* as 'of course', and the discourse in (21), we see that -*hii* has attributes that have to do with the expectations of the speaker. In particular, there is a direct opposition to the role of the well-studied English *even*, shown in (22) and (23).

(22) Even John ate dessert.

(23) jon-ne-hii miThaii khaayii.
John-ERG-HII sweets eat.PRF.F

(24) Out of all the people who could have eaten desserts, the speaker had low expectations of John eating dessert.

(25) Out of all the people who could have eaten desserts, the speaker had high expectations of John eating dessert.

(22) gives rise to the inference in (24) (Karttunen & Peters (1979)). (23) on the other hand gives rise to the inference in (25)[9]. What is notable about these inferences is the reference to relative levels of speaker expectations about the alternatives. *Even* and -*hii* are both what we call *scalar* particles, since the determination of whether they are acceptable or not needs to reference propositions in the discourse, placed in an order to form a scale. Specifically, the scale for *even* and other similar particles is based on likelihood or expectedness of the prejacent proposition.

Rooth (1996) shows that *even*, like *only*, can be treated as a propositional-level operator. He gives *even* the lexical meaning in (26).

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[8] I reported this observation in Bajaj (2014).

[9] I reported this in Bajaj (2014)

(26) *even* (C,p,w)

Presupposes:

a. $\exists p' \, [p' \in C \wedge p \neq p' \wedge p'(w)]$

b. $\forall p' \, [(p' \in C \wedge p \neq p') \rightarrow p' \succ_{likely} p]$

Asserts: p (Rooth 1996:272)

Even, by the definition in (26), is truth-conditionally vacuous but has two presuppositions. The first requires that there be a proposition distinct from the prejacent that is true. The second requires that each proposition distinct from the prejacent is more likely than it. For example, in (27), *even*'s existence presupposition requires that John introduced someone other than Bill to Sue, and the likelihood presupposition requires that the speaker find John introducing Bill to Sue less likely than him introducing anybody else to Sue.

(27) John even introduced Bill_F to Sue. (Rooth 1996:272)

Thus we see the crucial role of the $\succ_{likely}$ operator in the lexical entry for *even*, for representing the likelihood piece of its meaning contribution.[10]

It is worth noting that the meaning for *even* provided in (26) is not uncontroversial. von Stechow (1991) has contested the existence presupposition using (28), where *even* is able to combine with *only*.

(28) Bill even danced only with $[\text{Sue}]_F$. (von Stechow 1991:817)

If (28) is acceptable, Sue is the sole person Bill danced with, and there cannot be a condition that he should have danced with someone else.

Furthermore, the nature of the scalar ordering requirement of *even* has been contested. Some authors have argued that the "least likely" condition should instead be recast in terms of informativity (Kay (1990)), unexpectedness (Fillmore (1965)), or noteworthiness (Herburger (2000)).

Secondly, the quantificational strength of this requirement has been debated, with some authors (Karttunen & Peters (1979)) following (26) in saying that there is universal force, with the prejacent less likely than all other alternatives. Others have claimed instead that

[10]Rooth (1985):120 used unlikely'(p) to indicate the likelihood relation.

the presupposition should only be an existential requirement (Bennett (1982), Kay (1990), Crnič (2011)), where the prejacent can be less likely than just one proposition for the *even* sentence to be felicitous. Yet others (Francescotti (1995)) claim instead that 'most' of the propositions should be more likely than the prejacent.

Along a third dimension of difference, many of these works differ in terms of whether these requirements are conventional implicatures or presuppositions, with some of them not making a clear commitment between the two inference types.

-Hii does not have the existence presupposition of *even*, as its exclusive component that we saw in the last section would indicate. That is, if Bill ate desserts, (23) would be rendered false. But we have evidence that the likelihood-based ordering requirement for *even* can map to *-hii*'s meaning as well. If we take the example of the context of use in (21), the inference of Ram seeing Sita bathing as being the expected outcome of events compared to others seeing her bathing is something that can be modeled by a propositional ordering of likelihood. This can be seen by making explicit background assumptions for the sentence in (16), repeated here in (29). Let us take the background contexts in (30), two possible scalar orderings.

(29) ron-ne-hii suu-ko dekhaa.
Ron-ERG-HII Sue-ACC see.PRF.3.SG
'Only Ron saw Sue.'

(30) a. Ron is the most likely to see Sue bathing, Larry is the second most likely to see Sue bathing, followed by ...

b. Larry is the most likely to see Sue bathing, Ron is the second most likely to see Sue bathing, followed by ...

The contextual assumptions in (30a) would yield a scale of likelihood for the speaker in Figure 1.3 while (30b) would yield Figure 1.4.

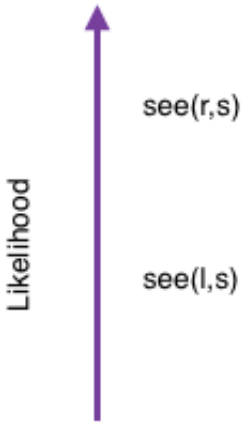

Figure 1.3: Likelihood scale when Ron is more likely.

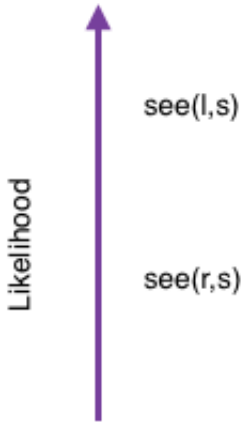

Figure 1.4: Likelihood scale when Ron is not most likely.

As alluded to in the previous section, the sentence will be felicitous with the likelihood scale in Figure 1.3.

However, simply assigning *-hii* the 'opposite' likelihood presupposition to *even* does not cover all our needs.[11] First, cases like (20), repeated below in (31), show that *-hii* may associate with a position that is lower than expectations, rather than meeting the expectations.

(31) ve kavitaa-hii likhate haiN.
they poetry-HII write-PROG.PL be-PRES.3.PL
'They only write POETRY.' (Varma 2006:97)

[11] Another problem is that there could be a pure exclusive, non-scalar reading of *-hii*. I attempt to answer this question in Chapter 4.

This under-expectation scalar requirement has been shown to arise for English *only*. Krifka (1993) gives the example in (32) that shows that when *only* associates with a common noun indefinite, this scalar reading is salient if the entire NP is in focus.

(32) John only ate [an apple]$_F$. (Krifka 1993:273)

In (32), we may infer that an apple is 'less' in some respect than other foods. Whether this means that an apple is less substantial or less harmful to health, would be up to the prior context (Riester (2006)), but the point is that there is a salient ordering inferred. Beaver & Clark (2008) and Coppock & Beaver (2014) analyze such instances of *only* as presupposing that "at least" the prejacent is true and asserting that "at most" the prejacent is true. Further, the non-scalar interpretations of *only* discussed in the previous section can be accounted for under this view as well by conceiving of them as scalar. The propositional alternatives in this case would be based on a boolean lattice of individuals. That is, *Only JOHN ate dessert* would have alternatives *John ate dessert*, *John and Bill ate dessert*, etc. Such alternatives then do have an ordering, based on entailment relations between individuals and their sums.

This leaves us with the difficult task of trying to simultaneously allow *-hii* to target under-expectation interpretations like scalar *only* and right-at-expectation interpretations for the likelihood cases.

Additionally, there is another wrinkle. The scalar inference may simply not arise in certain instances involving negation. Thus, (33) does not give rise to an inference about the probability of John's eating dessert.

(33) jon-ne-hii miThaii nahiiN khaayii.
John-ERG-HII sweets NEG eat.PRF.3.F
'Only John didn't eat desserts.'

→ John is the only one who didn't eat desserts.

↛ John was likely to eat desserts.

Trying to reconcile (33), which does not give rise to a scalar inference, with the under-expectation instances of *-hii* and the highest-likely instances of *-hii* yield three different types of *-hii*. Thus, there is reason to believe that *-hii* is not a simple combination of *only* and *even*.

1.2.3 Intensification

Looking beyond nominals, we see slightly different interpretations for -*hii*. These readings are ones that show similarity to different types of intensifying lexical items, like degree intensifiers and emphatic reflexives.

In contexts where -*hii* occurs with adverbs, -*hii* has a salient interpretation corresponding to multiple instances of *very*. Kennedy & McNally (2005) propose that the degree adverb *very* can be treated as having a standard-raising effect, as shown by the lexical meaning in (34) (cf. Barker (2002)).

(34) $[\![\text{very}]\!]^c = \lambda G \lambda x.\exists d[\textbf{standard}(d)(G)(\lambda y.[\![\text{POS}(G)(y)]\!]^c) \wedge G(d)(x)]$

(Kennedy & McNally 2005:370)

very, by the definition in (34), takes a gradable adjective G and an individual x and returns true if there is a degree d such that: (i) the standard relation exists between d, G, and the comparison class of individuals that are POS-G; and (ii) x has the property G to degree d.[12]

Adding -*hii* seems to give the sense of (36) for (35), where the standard is boosted even further.

(35) jon bahut-hii lambaa hai.
John very-HII tall be-PRES.3.SG

(36) John is extremely tall.

While the meaning in (34) will work fine for cases of -*hii* with adverbs like in (35), such a lexical meaning will not work for the cases of proper names modified with -*hii* that we described earlier since there is no gradable predicate involved with proper names. Furthermore, more broadly, these scales are different from those described in the previous section. They are not tied to the expectations of the speaker of the utterance, but rather to a norm based on the contextual standard of comparison for the scale that is associated with the predicate. Thus, including reference to degree leads us only to a partial solution for a general lexical meaning of -*hii*.

[12]The **standard** relation takes a degree, an adjective, and a comparison class and returns true if the degree exceeds the norm for the adjective based on the comparison class. The POS in turn takes a gradable adjective G and an individual x and returns true if there is a degree d such that the **standard** relation holds for d, G, and C and the x has the property G to degree d (Kennedy & McNally (2005:350)).

The intensificational kind of meaning does actually seem to exist for proper names, when we examine other contexts. *-Hii* has qualities in common with emphatic *-self* forms. This shows up readily in NPs modified with *-hii* that occur with prior discourse that makes clear the type of 'entourage' or hierarchy that might make the NP in the proposition central compared to alternative individuals. Thus, (37) and the German sentence using *selbst* in (38) both license the inference in (39), beyond conveying that the king must have worn a crown. We know that a king usually is the most central person of a royal court.

(37) raajaa-ne-hii taaj pahnaa thaa.
king-ERG-HII crown wear.INF be-PAST.3.SG
'The king himself wore a crown.'

(38) Der Konig selbst trug eine Krone.
the king SELBST wore a crown
'The king himself wore a crown.' (Eckardt 2001:376)

(39) The king is a central figure in a government hierarchy.

What makes this case different from the previous examples is that there is not necessarily any surprise that the king wore a crown, unlike the under-expectation case and the *very*-like case. Further, there is no inference about the king being at the endpoint of a scale. In fact, the reading makes clear that there is a centrality to the king compared to other individuals.

Eckardt proposes that uses of *selbst* like (38), where there is no speaker surprise involved, be analyzed simply as the identity function. While this would make sense for *-hii* in these cases, it would again take us to a situation where we gain an account of one phenomenon with *-hii* while unfortunately losing an account for another phenomenon. If *-hii* is an identity function, we would not be able to account for the standard-raising effect in the *very*-like cases with adjectives.

Taking stock, we see that there are exclusive, scalar, and intensifying aspects of *-hii*'s core meaning. A naive approach would be to say that there are at least three different lexical entries for *-hii* representing these different meanings. However, there is sufficient overlap in some of these cases to give us reason to suspect that there is a unified semantic and pragmatic core to this particle that further inquiry can uncover.

With these attributes of *-hii* spelled out, the next section looks at the basic theoretical assumptions employed in this thesis as we examine the problems that fall out of the

discussion.

1.3 Background

First I will define the semantic and syntactic assumptions that will be used for proceeding with developing the analysis of *-hii*. In this section I present some preliminary notions about focus and alternatives that are relevant to the study of discourse particles.

1.3.1 Focus and Alternatives

Rooth (1985, 1992) developed a theory of focus interpretation referred to as Alternative Semantics. According to Rooth, lexical items like *only* and *even* occur with focused constituents that are F-marked in the syntax. The basic tenet of this theory is that focus evokes alternatives. Under this view, the semantics of any expression involving focus actually generates two components of meaning, as the *ordinary semantic value* is supplemented with the *focus semantic value*.

Alternatives are propositions that have the same form as the uttered string but have context-appropriate substitutions into the F-marked constituent. C is the set of these relevant alternatives to the focused item. Rooth also introduces into the syntax a $\sim$ operator, which is a focus interpretation operator, as in (40).

(40) Where ϕ is a syntactic phrase and C is a syntactically covert semantic variable, $\phi \sim C$ introduces the presupposition that C is a subset of $[\![\phi]\!]^f$ containing $[\![\phi]\!]^o$ and at least one other element. (Rooth 1996:279)

Given (40), the ordinary semantic value for the sentence in (41) will be (41a). It will be true if Mary came and false otherwise. The focus semantic value, on the other hand, is a set containing all the propositions of the form came(x), where x is in the set of relevant individuals in the context. Notice that the ordinary semantic value, came(m), is an element of the focused semantic value.

(41) Mary_F came to the party.

a. $[\![\text{Mary}_F \text{ came}]\!]^o = \text{came(m)}$

b. $[\![\text{Mary}_F \text{ came}]\!]^f = \{\text{came(m)}, \text{came(b)}, \text{came(j)}, \dots\}$

The alternative set C is taken to be presupposed in the discourse, and $\sim$ correctly fills the set C with the alternatives appropriate for whatever entity in the string is F-marked. As given by (40), C is restricted to be a subset of the focus semantic value, and the focus semantic value must include the ordinary semantic value and at least another alternative.

Rooth defines the composition of focus semantic values in (42).

(42) a. The focus semantic value of a focused phrase of semantic type τ is the set of possible denotations of type τ.

b. The focus semantic value of a non-focused lexical item is the unit set of its ordinary semantic value.

c. Let α be a non-focused complex phrase with component phrases $\alpha_1,\ldots,\alpha_k$, and let ϕ be the semantic rule for α, e.g. function application. The focus semantic value of α is the set of things obtainable as $\phi(\mathrm{x}_1,\ldots,\mathrm{x}_k)$, where $\mathrm{x}_1 \in [\![\alpha_1]\!]^f \wedge \ldots \wedge \mathrm{x}_k \in [\![\alpha_k]\!]^f$. (Rooth 1996:282)

Thus, by (42a), the focus semantic value of $Mary_F$ would be a set of individuals since *Mary* denotes an individual. For a non-focused item, the focus semantic value would be the set containing the singleton of the ordinary semantic value given by (42b). Thus for unfocused *Mary* it would be {m}. Lastly, clause (42c) gives us information on how to determine the meaning of a complex phrase that as a whole is not F-marked but may include F-marking within it. Each component of the complex phrase is interpreted by function application on its focus semantic value.

Rooth's system for focus interpretation maps well to question-answer paradigms, and Beaver & Clark (2008) extend this approach to focus interpretation to include sensitivity to the importance of the Question Under Discussion (QUD) in discourse structure. This system includes the following additional elements. The QUD is a question that drives the discourse that the interlocutors have the goal of answering. Beaver & Clark refer to this as the Current Question (CQ). They adapt Roberts (1996)'s model via the principles in (43) (Beaver & Clark (2008:37)).

(43) a. Discourse Principle: Utterances should be maximally relevant to the CQ.

b. Focus Principle: Some part of a declarative utterance should evoke a set of

alternatives containing all the Rooth-Hamblin alternatives of the CQ.

The idea of relevance as it relates to the Discourse Principle in (43a) is that it must address the CQ in some way. The term 'Rooth-Hamblin alternatives' in the Focus Principle in (43b) refers to the modification of Rooth's alternative semantics to include the semantics for questions from Hamblin (1973), in which propositions define a set of possible answers to a question. Thus, Beaver & Clark's method of interpreting the semantics of focus crucially relies on both alternatives and a salient question in the discourse.

With a theory for focus interpretation, it is helpful to keep in mind some of the unique features of focus and other related discourse configurations in Hindi. Butt & Holloway King (1996, 2004) have studied focus and information structure in Hindi and Urdu extensively and provide insight into the particular positions of topic and focus in these languages.[13] The first element of a sentence is interpreted as the topic[14]. See the examples in (44) (Butt & Holloway King (1996:2-3)).

(44) a. hassan-ko naadyaa-ne Tofii dii.
Hassan-DAT Nadya-ERG toffee.F give-PRF.F.SG
'To Hassan, Nadya gave toffee.'

b. anju-ne dekhaa ki hassan-ko naadyaa-ne Tofii dii.
Anju-ERG see-PRF.M.SG COMP Hassan-DAT Nadya-ERG toffee.F give-PRF.F.SG
'Anju saw that to Hassan Nadya gave toffee.'

(44a) shows the clause-initial position of a topic in a matrix clauses and (44b) shows the clause-initial position of a topic in a complementizer clause. With regards to the positioning of focus, if there is one focused constituent in a sentence, it typically appears immediately preverbally, as in (45).

(45) naadyaa-ne hassan-ko Tofii$_F$ dii.
Nadya-ERG Hassan-DAT toffee.F give-PERF.F.SG
'Nadya gave TOFFEE to Hassan.' (Butt & Holloway King 1996:3):3

[13]Butt and King's claims are about Urdu, but I take the position that Hindi and Urdu are really instances of one in their spoken form, represented by two different writing systems, as assumed in Butt (1993:89). As such, it would be most correct to be referencing both languages as 'Hindi-Urdu.' See, for example, Shapiro (1989) and Masica (1993) on the term 'Hindustani', McGregor (1972) on the terms 'Hindi-Urdu' and 'Modern Hindi', and Wardhaugh & Fuller (2014:30) on the sociolinguistic dialect continuum that defines Hindi and Urdu, and Everaert (2010) on the history of the descriptive grammars on Hindi and Urdu that make this issue of determining the status of these languages so complicated.

[14]However, scrambling is a freely available option.

As indicated by Sharma (2003), the use of discourse markers means that word order need not necessarily be altered to indicate focus, as shown by the use of *-hii* in (46).

(46) a. alka-ne mohan-ko-hii dekhaa.
Alka-ERG Mohan-ACC-HII see-PERF.M.SG
'Alka saw (only) *Mohan.*' (Sharma 2003:66)

b. alka-ne-hii mohan-ko dekhaa.
Alka-ERG-HII Mohan-ACC see-PERF.M.SG
'(Only) *Alka* saw Mohan.' (ibid.)

As seen in (46b) *Alka* is in focus, but is not in the immediate preverbal position.

Cases of multiple foci in Hindi allow for *in-situ* focus as well. In (47), the focus on *Hassan* is allowed in contexts where Hassan is contrasted with another recipient.

(47) (adnan-ke-liye nahiiN) nadyaa-ne [hassan-ke-liye]$_F$ Tofii$_F$ khariidi.
Adnan-PREP-for NEG Nadya-ERG Hassan-GEN-for toffee buy-PERF.F.SG
'Nadya bought TOFFEE for HASSAN (not for Adnan).'

(Butt & Holloway King 1996:3)

While we know that *-hii* occurs with focus, one interesting issue that (47) raises is about the possibility of multiple occurrences of *-hii*. It turns out that multiple occurrences of *-hii* within a clause is generally considered ungrammatical. I discuss this issue in Chapter 5.

We now have seen the various starting assumptions at our disposal for examining the meaning of *-hii*. The next section presents the complicated picture of *-hii* that arises from the previous work on the subject. I will show that drawing on the existing focus semantics literature will help to make further progress in understanding *-hii*.

1.3.2 Approaches to *-hii*

To date, much of the work about *-hii* has primarily been descriptive in nature. The literature falls into three different categories about *-hii*: (i) those that assume that *-hii* does not itself contribute to the semantics; (ii) those that assume that *-hii* means 'only'; and (iii) those that aggregate various translations of *-hii*'s use, across a wide spectrum of data, but do not commit to a unified meaning for the particle.

Verma (1971) is of the first type, proposing that *-hii* has no semantic contribution of its own, and is instead as a "discontinuous part" of *only* in Hindi. Verma claims that *-hii*

always occurs with a phonologically silent *only* form, and "occur[s] following the noun to indicate that the scope of. . . [*only*] is the complete NP.. . . The really useful function of -*hii* is to mark the scope of. . . [*only*] unambiguously" (Verma (1971):86-87). Under this view, there is no meaning contribution of -*hii*, however Verma indicates that there is some sort of emphatic role of -*hii* that he judges to be more salient when a sentence with -*hii* marking an NP is negated. See Verma's examples in (48) and (49).

(48) mere manaa karne par bhii unho-ne *TV*-hii khariid lii.
I.GEN refusal do PREP even they-ERG TV buy take
'If you are so keen (on a TV), go ahead and buy a TV itself.' (Verma 1971:92)

(49) wyaakhyaataa-hii nahiiN aaye, sabha kaise hotii!
speaker-HII NEG come-PRF.M.SG meeting how happen-IMPERF.F
'The speaker – he did not show up; how could the meeting be held?' (ibid.)

McGregor, whose grammar the data at the beginning of this chapter is taken from, generalizes over these and other varied constructions by saying that -*hii* is an emphatic marker with "restrictive force," such that it "stress[es] the importance of the word or syntactic group immediately preceding [it] in sentences" (McGregor (1972):27). It is not clear whether this account would equate 'restrictive' with exhaustive or exclusive function, but the role of "stressing importance" appears to suggest a relationship between -*hii* and the focus structure.

Perhaps the first clear attempt in formalizing Verma's observation about a salient emphatic reading in the presence of negation is work by Bhatt. Bhatt (1994) proposed that -*hii* means 'only' outside the scope of negation, but 'even' inside the scope of negation. Furthermore, he states that " -*hii* can only modify elements that have been evoked in the preceding discourse and whose identity is known to the speaker" (Bhatt (1994):3). Bhatt also brings up a case where -*hii* occurs with a degree adverb and another case where it associates with a verb of knowing, shown in (50) and (51).

(50) to us meN mere pati-kaa yogdaan bahut-hii jyaadaa hai.
so that in my husband-GEN contribution very-HII great be-PRES
'so my husband's contribution is very great in that.' (Bhatt 1994:4)

(51) to aap-ko pataa-hii hai maiN kal dilli meN thii.
so you-ACC know-HII PRES I yesterday Delhi in be-PAST
'So you (of course) know I was in Delhi yesterday.' (ibid.)

He concludes that there is something intensificational and speaker-oriented in these uses of *-hii*, but beyond these observations he does not attempt to unite these attributes with the others in the basic data.

Bhatt's work shows how useful it can be to expand the data set examining *-hii*. Further complications enter the picture when taking into account an even larger body of data, compiled in the more recent works of Montaut and Varma. Montaut (2004) presents some data that agrees with the general view of a salient 'only' interpretation of *-hii* (Montaut (2004):288) as well as other data describing *-hii* as a "marker of salience." In cases of certain copular constructions, like (52)[15], *-hii* lends the meaning of 'same' (Montaut (2004):289).

(52) vahii laRkaa hai jo kal aayaa.
that-HII boy PRES that yesterday came
'It is the same boy who came yesterday' (Montaut 2004:289)

Montaut's generalizations become hard to maintain when considering further data. "With time or space adverbials, *-hii* adds exactitude to the delimitation of location," as in (53)[16]. "In between two reduplicated terms (nouns or adjectives), *-hii* identifies the notion as absolute and seems to mark the high degree, a superlative meaning.. . . " (p.290), as in (54).

(53) usii din
that-HII day
'on that very day' (Montaut 2004:290)

(54) andheraa-hii-andheraa
darkness-HII-darkness
'absolute obscurity' (ibid.)

This final point however is contradicted by one of Montaut's conclusion about *-hii* overall: "*-hii*. . . highlights the limit or the core of a stabilized notion" and "requires a fixed value to be attached to its scope; *-hii* can therefore never acquire a scalar meaning" (pp.294-95). Given the acknowledgment of a superlative-like meaning with *-hii*, it is difficult to square this with saying that *-hii* is not scalar.

Varma (2006) presents a variety of data demonstrating different meanings of *-hii*. Varma concluded that the focus and exclusive senses of *-hii* has the meanings in Table 1.1. Varma

[15]This example is a case of *-hii* morphologically incorporating into the demonstrative pronoun.

[16]This example is a case of *-hii* morphologically incorporating into the demonstrative pronoun.

classifies the meanings in this table as those having to do with focus, which is just one of the classes of senses that Varma associates with *-hii*.[17]

Type of focus	**Alternatives excluded**	**Approximate equivalent in English**
Contrast information focus	Discourse-old	Clefts
Exclusive focus	Any in addition	*Only*
Scalar exclusive focus	Any higher on the scale	*Only*
Scalar, central, extreme focus	Any less central, extreme	Emphatic reflexive, *the very*, *even*
Assertion of identity focus	Any alternative	*The same*
Verum focus	The opposite polarity, Other tense or aspects	Auxiliary stress
Aspect focus	Later phase, Negative phase	(Varies with the aspect involved)

Table 1.1: Range of focus types of *-hii*, according to Varma (2006):112.

The second meaning type of *-hii* that Varma discusses is one that she refers to as 'preclusion'; "*-hii* marks the proposition as precluding some other state of affairs which is discourse-old or discourse-inferable" (p.113). However Varma does not seem to define this as a hard requirement on all uses of *-hii*. The last use that Varma describes is with certain modal verbs, where it appears that *-hii* selects for "a high degree"; with epistemic verbs, a "high degree of certainty," and with deontic verbs, a "high degree of necessity" (p.116). This seems very much like we could tie this to the scalar exclusive focus use in the third entry in Varma's generalizations in Table 1.1.

Taking stock, we can see that there are various suggestions in these works about formal components of *-hii*, but they all remain non-unified in the existing body of literature. See Table 1.2, which contains a summary of key points we take away from these works.

[17]Verum focus is that which involves the truth values of the proposition in question. The aspect focus refers to *-hii* used within the verbal complex, where *-hii* changes the time reference to that which is immediately before or after the time.

Author	**View of *-hii***
Verma (1971)	No semantic contribution; emphatic when NEG present
McGregor (1972)	emphatic
Bhatt (1994)	*even* inside the scope of NEG, otherwise *only*; discourse-grounding required; intensifying
Montaut (2004)	*only*; *same* in copular constructions; high-degree for reduplicated N's and Adj's; non-scalar
Varma (2006)	See Table 1.1; marker of old information as precluded; high degree with modals

Table 1.2: Previous views of *-hii*

I will show how these claims, combined with new empirical studies, can be brought together to provide a new analysis of *-hii*, which converges with other similar particles. Bhatt's suggestion that there is something intensificational and speaker-oriented may lead us to the conclusion that there is a component of conventional implicature in the meaning of *-hii* because conventional implicatures are typically speaker commitments. This is something we will start by exploring in Chapter 2. The similarity we saw in the modal verb cases brought up by Varma and the high-degree reading in other predicates suggests a uniform analysis appealing to speaker expectations, which we will explore in Chapter 5. Finally the emphatic sense or *even*-like meaning in the presence of negation noticed by Verma and Bhatt suggest that there may be a relationship between these cases and the non-negated exclusive cases, which we explore in Chapter 4.

1.4 Questions for Study

The proposal in this thesis, in short, involves formalizing *-hii*'s reference to speaker expectations in the context. This allows us to unify the apparent multiple meanings of *-hii* into one lexical form. With gradable predicates, *-hii* can be seen to clearly reference endpoints of scales. In negative environments the meaning of *-hii* results in a split of the scalar meaning from the exclusive assertive component. We will see that we can explain this split by altering the representation of the scalar meaning of *-hii* that we start with.

The first topic I explore is the contextual effects on the various *scale types* that *-hii* can occur with. We know from the above section that the literature agrees that *-hii* is an exclusive particle. However what is not certain is whether *-hii*'s exclusivity can occur with

a scalar meaning in the same construction. As shown in (55)-(56), there is the possibility of having a high likelihood reading and an under-expectation reading.

(55) raam-ne-hii siitaa-ko dekhaa.
Ram-ERG-HII Sita-ACC see.PRF.3.SG
→ Ram was more likely to see Sita than others were.

(56) ve kavitaa-hii likhate haiN.
they poetry-HII write.HAB.PL be-PRES.3.PL
→ Poetry is low on a scale of literary value.

The problem this data presents for the analysis of Bhatt (1994) is that the scalar meaning does not arise due to negation, as there is no negation present in (55)-(56). As we have seen in this chapter, the intuitions regarding *-hii* are not always clear and entirely agreed on. One of the foundational issues I hammer out is what type of empirical data exists for *-hii*. I do this by presenting the results of two new judgment studies, in Chapters 2 and 4. In Chapter 2 I present results of an experiment to confirm the type of data hypothesized in (55) and (56), showing the need to account for scalarity in the account of *-hii*. I show that there is, apart from exclusivity, a dimension of the meaning of *-hii*, one that introduces a felicity condition that *-hii* is either maximally likely or minimally desirable. I present arguments using tests from Potts (2005) to show that this disjunctive requirement is a conventional implicature, and then discuss the ramifications of a particle possessing this sort of requirement on the crosslinguistic taxonomy of exclusives.

The second question I explore is how to expand the analysis to account for *-hii*'s use with numerals and other types of scales that are entailment-based. I show in Chapter 3 these cases can be maintained within the existing analysis of the scalar meaning component, without any clash with the likelihood requirement. This topic also leads us to accounting for *-hii* combined with *sirf*, a particle that corresponds to English *only*, where *-hii*'s role as a marker of speaker surprise becomes clear.

The third topic I discuss is *-hii* in the context of negation, showing that *-hii*'s scalar meaning can be teased apart from its exclusive meaning when negation is introduced. Bhatt (1994) claimed that two readings are available in this kind of construction, as in (57).

(57) raam-ke-paas-hii banduuk nahiiN hai.
Ram-GEN-side-HII gun NEG be-PRES.3.SG
'Only Ram doesn't have a gun.' (*-hii* > NEG)

'Even Ram doesn't have a gun.' (NEG > *-hii*) (Bhatt 1994:8)

This is what leads Bhatt to the conclusion that the canonical *only* meaning of *-hii* somehow becomes *even* inside the scope of negation.

The construction in (57) seemingly poses a problem for what we encounter through Chapter 2 because the *-hii* > NEG interpretation demands a non-scalar form of *-hii*. In Chapter 4, I first show results from a judgment study that demonstrate that Hindi speakers can indeed access these two readings. Moreover, this is possible regardless of the syntactic position of *-hii*, making this not an issue of the syntactic configuration giving rise to the ambiguity, as had been claimed by Bhatt (1994).

The two readings arising from the interaction of *-hii* with negation will be addressed in Chapter 4. I show how both these readings can arise by an appeal to lexical ambiguity, but then argue that we can rescue the original unified analysis of *-hii* by appealing to other approaches. I first consider how far we can get by appealing to the not-at-issue/at-issue distinction in the discourse, and then show that we can instead solve the problem by altering the representation of the scalar meaning of *-hii*.

The fourth point of discussion is the broader range of intensifying or emphatic constructions that can be used with *-hii*. As shown in (58)-(60), there are uses of *-hii* where it can result in meanings akin to English *-self*, *of course*, and *very*.

(58) *NT*-kii kamii aisii khaalii jaise khaane meN namak-hii gaayab ho
NT-GEN lack-F such-F empty as food in salt-M-HII disappear be
gayaa ho.
go-PERF-M.SG be-SUBJ
'The absence of the NT [Navbharat Times] feels as if the SALT itself is missing from the food.'

(Varma 2006:102)

(59) banaaras ke log hindi-hii bolte haiN.
Banaras GEN people Hindi-HII speak-HAB.PL be-PRES.3.PL
'The people of Banaras of course speak Hindi.' (McGregor 1972:142)

(60) Sahar paas-hii hai.
city near-HII be-PRES.3.SG
'The city is quite near, very near.' (ibid.)

In Chapter 5, I show that taking data like (58)-(60) together with data in Chapter 2

shows that a common scalar sensitivity involves speaker certainty. I present accounts of polysemous particles in other languages demonstrating a similar association with speaker certainty or doubt removal, and then show how examining the modal aspect of meaning can give a unified scalar meaning to -*hii*.

This chapter has served to lay out the main groundwork for proceeding with the body of the dissertation. As I have shown, there are three main aspects of -*hii* we will explore – scalarity, exclusivity, and intensification. Many of the questions arise from the way these three aspects interact with each other, making -*hii* something that traditional theories of similar particles in English cannot directly account for.

In these explorations, we will be able to traverse the recent theoretical literature on exclusives (including new work by Coppock & Beaver (2014) about English exclusives), scalar particles, intensifiers and other polysemous emphatic particles (including work by Beltrama & Bochnak (2015) and Deo (2014)). In doing so, I will include discussion of data not only from Hindi and English, but other languages as well, to show how this work relates to new crosslinguistic insights into the study of scalar meaning.

Chapter 2

The Scales of Likelihood and Desirability

There are several different scale types that various scalar particles are sensitive to. We saw in Chapter 1 that there is reason to believe that Hindi -*hii*'s major meaning components are scalarity, exclusivity, and intensification. This chapter focuses on the interaction of the exclusive meaning with scales in the discourse.

We begin our study of -*hii* by returning to basic sentences with proper names, like those in (61) from Bhatt (1994) and (62) from Varma (2006).

(61) raam-ne-hii siitaa-ko dekhaa.
Ram-ERG-HII Sita-ACC see.PRF.3.SG
'Only Ram saw Sita.' (Bhatt 1994:1)

(62) ve kavitaa-hii likhate haiN.
they poetry-HII write.HAB.PL be-PRES.3.PL
'They only write poetry.' (Varma 2006:97)

It seems to be agreed upon that (61) and (62) are true so long as in (61), nobody other than Ram saw Sita, and in (62), they write nothing else but poetry. Recall that additionally, based on a subset of claims in the prior literature, we have reason to believe that in (61) Ram is the most likely individual to have seen Sita, according to some scale, and in (62), poetry is considered lower on some scale compared to other things that could have been written. This set of requirements is what I call the *scalar* aspect of the meaning of -*hii*.

Two things jump out immediately from the observations about data like (61)-(62). One is that the alleged scales are very different from each other. Secondly, the prejacent proposition is at a different point on the scale for (61) than it is for (62), though they both appear to be endpoints. We submit that a judgment study is needed to first affirm whether -*hii* can actually have this flexibility. Moreover, we will show that both of the scale types have a common reference to the expectations of the speaker. In doing so, we will see that an

exclusive particle can have a flexible scalar meaning component, contrary to the well-known scalar item *even*.

In this chapter, we will examine in detail the nature of the scalar meaning component of *-hii*. I will first walk through an overview of scales. Then I will present results of a new judgment study that probes the particular scale types associated with *-hii*. These results highlight *-hii*'s ability to variably select the endpoint of the scale, based on the dimension of ordering for the scale.

In 2.1, I provide background about the various types of scales and scalar endpoints that can be inferred from statements with *-hii*. In 2.2, I present an experiment designed to test the hypothesis that *-hii* is felicitous with either a maximally likely or minimally desirable proposition. In 2.3, I show how this type of meaning can be modeled with a conditional form of conventional implicature. I then discuss in 2.4 the effect of these conclusions about *-hii* on the space of related particles in Hindi as well as on the broader taxonomy of exclusives across languages. In 2.5, I detail further consequences and extensions of the scalar meaning proposal of *-hii*. In 2.6, I then sum up the chapter's findings.

2.1 Scales and Endpoints

I begin by detailing some background about scales in general. Seminal work on scales has been done by Fauconnier (1975), Cresswell (1977), Hirschberg (1985), Bierwisch (1989), Horn (1989), Kennedy & McNally (2005), Kennedy (2007), and von Stechow (2009).[1] As Traugott (2006) summarizes in (63), there are different types of words that are described as 'scalar.' Indeed, scalar requirements of the form we have been referencing can at first be confused with scalar implicature.

(63) From (Traugott 2006:341):

a. Some scales are "semantic" and "logical" in that they form lexical sets which involve logical entailment between expressions ordered by degrees of informativeness/strength, e.g. $\langle all, some\rangle$, $\langle must, may\rangle$, $\langle hot, warm\rangle$. *All* entails *some*, but not vice versa, etc. These are widely known as "Horn scales" (e.g. Horn

[1] See Schwenter (1999), Traugott (2006), and Solt (2015) for useful literature review.

(1989)). They are inherently scalar, like degree modifiers.[2]

b. Some scales are non-logical, pragmatic scales invoked by, among other things, (a) connectives, e.g. *in fact*, which rhetorically marks what follows as a better or more specific instance (cf. *bad, in fact terrible*); (b) temporals, e.g. *still* in *She is still talking about the party*; (c) part-whole, e.g. finger–hand–arm (see Fauconnier (1975); Hirschberg (1985); Kay (1990)); and (d) focus modifiers. Here there are not logical entailments, but implicatures derived from speaker-addressee expectations about the world. These are not inherently scalar, but evoke scales.

c. Some scales are "argumentative"; utterances are presented as ranked with respect to the strength or force for a conclusion.

The scales that are of the relevant type for the particle *-hii* appear to be the ones of type (63b), that are not based on entailment and are instead pragmatic in nature. Though we will see that there are instances of numerical scales and scales of degree of the type in (63a) that are relevant as well, the vast majority of the basic cases of *-hii* have to do with a pragmatic form of scalar sensitivity where expectations give rise to certain inferences.

In addition to different scales, languages can encode sensitivity to different kinds of *endpoints* of those scales. Polarity items can be used to reference endpoints of semantic scales, such as in (64) with *least of all*.

(64) Nobody understands me, least of all my father.

(Hoeksema & Rullmann 2001:129)

The choice of the scalar alternatives in this context is influenced by whoever is a relevant individual potentially able to understand the speaker – perhaps all the family members of the speaker. Here, *my father* is at MIN, the minimal endpoint of the scale of individuals. Alternatively, we can conceive of the scale as ordered by unlikelihood of understanding the speaker, making *my father* at MAX. *Most of all* or *above all* could be used to also reference scalar endpoints.

[2]Traugott's explanation here may be slightly confusing, but what seems to be intended is that the logically-based Horn scales are inherently scalar, in a similar way that degree modifiers (like *very*) are inherently scalar.

Similarly, in the Horn scale pairings referenced in (63a), there is one endpoint term that is the weakest element (e.g. *some*) and another that is the strongest (e.g. *all*), providing a clear MIN and MAX. Superlative expressions also can refer to ends of scales, as in (65)[3] and (66).

(65) Tommy will not eat the most delicious food. (Fauconnier 1975:353)

(66) The faintest noise bothers my uncle. (ibid.:361)

In (65) the MAX endpoint of the deliciousness scale is referenced and in (66) the MAX endpoint of a scale of sound volume is referenced.

Minimizers and maximizers are another class of expressions that can be used to reference scalar endpoints, as in (67) and (68).

(67) Fred did not understand one iota of what I said.

(Hoeksema & Rullmann 2001:133)

(68) He would not work there for all the tea in China.

(ibid.:135)

In (67), *one iota* is the lowest point of the scale, and this indicates the minimal degree to which someone can understand something. In (68), by contrast, *all the tea in China* refers to a maximal amount so that the sentence indicates that he couldn't be convinced to work there.

It is possible, however, to have scales that are not totally ordered, or which possess more than one maximal or minimal element. Hirschberg (1985) shows how formalizing the notion of scales as partially-ordered sets (posets) helps to capture this flexibility. Ultimately, then, scales do not have to appear 'linear' and can instead have a lattice-like structure, depending on the type of ordering and how many endpoints there are.

From what we have seen in Chapter 1, there is reason to believe that *-hii* similarly has sensitivity to scales and endpoints. In the next section, I detail an experiment run to determine whether speakers infer different scale types used with *-hii*. Given what we have observed, I hypothesize that *-hii* sentences like (69) have the scalar endpoint requirement in (69a) or (69b).

[3]Some judgments reveal that this becomes more acceptable with the addition of *even*.

(69) A sentence of the form

jon-hii aaya.
John-HII come-PAST

a. Requires: John was the one the speaker thought most likely to come. OR

b. Requires: John was the one the speaker least wanted to come.

Thus the question that drove the study was: When *-hii* marks an NP in a sentence, do speakers access a maximally likely or minimally desirable alternative, dependent on the ranking type made salient in the context?

2.2 Experiment 1

The focus of this experiment was the scalar component of *-hii*. This judgment study sought to determine whether there are multiple scale types that *-hii* can felicitously occur with, and whether there is a difference in the endpoint that is selected for each of these scales.

2.2.1 Participants

Nine on-campus participants were paid $7 to complete the survey in the lab, while 35 participants took the survey online. Participants were recruited via mailing lists at Rutgers University, posts to online social media (Facebook and Twitter), and a mailing list available through the LinguistList. Subjects were either native or near-native[4] speakers of Hindi, and ranged between the ages of 25 and 67 ($M = 31$). Speakers were used from both inside and outside Rutgers University, with some of the online respondents currently residing in South Asia. Data from six participants were discarded because they missed more than one-fifth of the filler items. This left 38 participants for data analysis.

2.2.2 Design

The design was 2x3, all within-subject, with the factor of scale type (Likelihood vs. Desirability) crossed with scale position (MIN, unranked, MAX). Exclusivity was made not-at-issue

[4]Because many Indians do not consider themselves 'native' if their heritage language is something other than Hindi, we judged someone's native-speaking ability on the region of South Asia they grew up in. If they were from North or Central India, where Hindi is a lingua franca, they were sufficiently qualified for this study. We collected demographic information at the end of the survey to determine this.

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, on the other hand, were created by making explicit that all alternatives had equal probability, thereby holding probability constant and manipulating instead the speaker's level of desirability for each outcome. This way, we could ensure making salient the scalar ordering metric intended.

2.2.3 Materials

Items were presented through paper or online. Subjects who completed the experiment in the laboratory received the printed survey, and were asked to write answers directly on to the survey packet. Participants who completed the online survey did so through SurveyMonkey using a publicly available hyperlink. Each session lasted 30 minutes on average.

Participants who took the paper survey handwrote 'yes' or 'no' in the appropriate space for each answer. Participants who took the online survey clicked on the radio buttons corresponding to 'yes' or 'no'.

Stimuli consisted of items with first a background context, followed by three situation-sentence pairs to be evaluated against the background context. Each item had situations following the same ordered form: the first situation presented a maximal endpoint proposition as true, the second situation presented a nonranked proposition as true, while the third situation presented a minimal endpoint proposition as true. Each of these had *-hii* placed after the intended focused item. This order (MAX, unranked, MIN) was maintained for each item. A complete list of the test items is included here in the Appendix (see A.1).

The experiment began with two training items without *-hii* (see the Appendix A.3), after which the participant had to evaluate a total of 20 items. A total of 10 test items were included (5 for the likelihood condition, and 5 for the desirability condition). In addition, 10 fillers were included as well in order to ensure that the participant's knowledge of Hindi was strong enough to provide these judgments. The filler items did not include any instances of *-hii*.

Fillers were designed to distract participants from the test items, and also serve to filter

out those participants whose Hindi knowledge was not strong enough to be considered part of the target population of the study. To keep with the design of testing for pragmatic felicity, the fillers, which did not include any instance of *-hii*, all had lexical items triggering presuppositions or scalar (quantity) implicature. A complete list of filler items is included in the Appendix (see A.2). Within each trial, there were three responses expected (one for each scalar alternative asserted as true with *-hii*).

The sentences each highlighted one proposition out of three alternatives as true, and within these three alternatives, there were three scalar values, based on the preceding context – MAX, MIN, and unranked. Thus, within each test trial, the favored responses were always one 'yes' and two 'no.'

All the stimuli were presented in Devanagari, the script used to write Hindi, and subjects responded in Devanagari as well. After the experimental session, the participant was asked to fill in answers to an optional demographic data form.

2.2.4 Procedure

Each trial started with a background context that made salient either a Likelihood or Desirability scale. A sample Likelihood trial and Desirability trial are indicated in (70) and (71).[5] The bracketed text following the question is the anticipated response.

(70) 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	Rohini says...	Can this be said?
Bina attends.	"Bina-hii came to tea."	[YES]
Tara attends.	"Tara-hii came to tea."	[NO]
Preeti attends.	"Preeti-hii came to tea."	[NO]

(71) Amit's wife Meghna is pregnant, and she is craving fruit. Amit goes to store, but he isn't sure what fruit will be available that day, because different fruits are available

[5]See Appendix A for the original Hindi target sentences.

each day at the store. Meghna loves mango and hopes that Amit will find mango. Meghna doesn't like bananas at all, and she feels disgusted by even looking at bananas. It might be that the store has lychee, but Meghna has never tried lychee so she doesn't know whether she will like lychee or not.

Situation	Meghna says...	Can this be said?
Amit gets mango.	"Amit bought mango-hii."	[NO]
Amit gets lychee.	"Amit bought lychee-hii."	[NO]
Amit gets banana.	"Amit bought banana-hii."	[YES]

In (71), note that Meghna has no sense of the likelihood of each fruit being available at the grocery that day, thus making the likelihood not the relevant ordering metric. This is the crucial difference between this condition and the Likelihood condition.

2.2.5 Predictions

For the Likelihood trials, we predicted that participants would select '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*. This is because of the intuition that *raam-ne-hii sita-ko dekhaa* ('Ram-hii saw Sita') has an inference that Ram is the most likely to have seen Sita. For the Desirability trials, we predicted subjects would select 'yes' for MIN-ranked alternatives marked with *-hii* and 'no' for unranked and MAX-ranked alternatives marked with *-hii*. Varma (2006)'s inference about poetry being low on a scale of value for *ve kavitaa-hii likhate haiN* ('They write poetry-hii') leads us to hypothesize that this corresponds to minimal desirability.

2.2.6 Results

The dependent measure was the percentage of 'yes' responses. The results are presented in Figure 2.1. Error bars represent standard error.

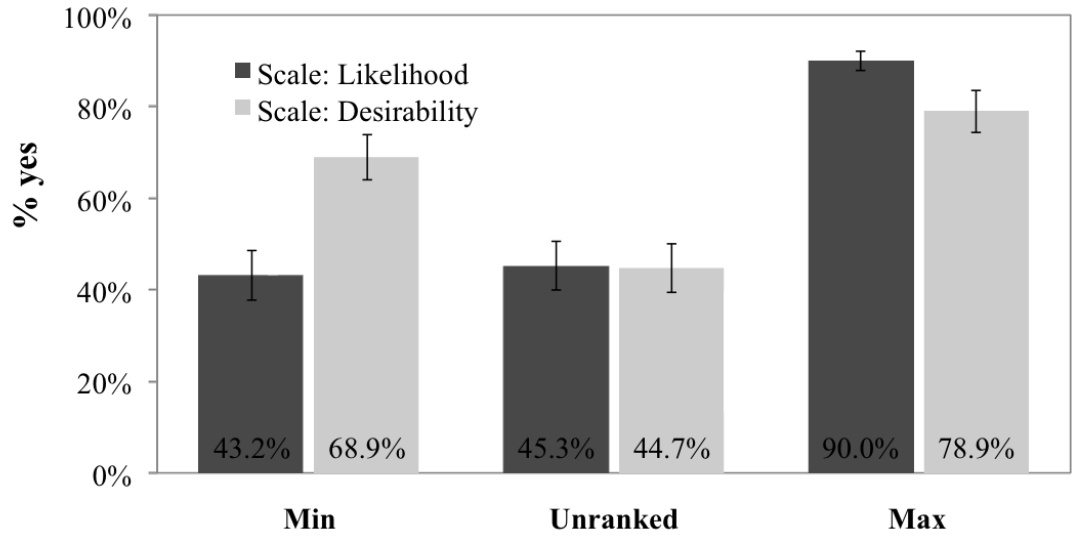

Figure 2.1: Mean acceptances in Experiment 1.

One-way ANOVA's with Tukey HSD (honest significance difference) 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, and within the responses for individual participants, interesting patterns emerged. We divided participants into groups based on 60 percent or greater acceptance of the scale position(s) in question. We found that participants' responses for all target items generally fell into three categories of 'yes' response. Table 2.1 shows the number of participants out of the total that fell into each category. A Chi-square test (degrees of freedom = 7) revealed significance with $p < 0.0001$ (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 2.1: Acceptance of target value 60% or more in Experiment 1.

2.2.7 Discussion

Recall that our predictions drawn from the intuitions about *-hii* were that *-hii* would be felicitous with either the maximally likely or minimally desirable alternative. The results of the Likelihood condition show that speakers prefer to use *-hii* with the MAX-ranked alternative, in line with predictions. The results of the Desirability condition show that participants selected 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, as with the Likelihood scale.

Acceptance of the MAX value of the Desirability condition was actually near ceiling, which we had not hypothesized. However, this may be due to the fact that participants may be able to project a Likelihood scale on to the context; while Desirability may be indicated, it is possible that one can impose a scale based on real-world knowledge about Likelihood. For example, it might be well-known or commonly thought that money is the most likely gift given at weddings in a South Asian context for the Desirability item in (72).[6]

(72) Leela just got married, and she is opening a guest's gift. She and her husband don't know what that guest would have given to them, but they really hope for money because they really need money right now. They definitely do not want cookware because they both always eat out. They know there is also the possibility they might be given a suitcase, but they don't know if they will travel and use a suitcase or not.

Situation	Leela says...	Can this be said?
The gift is money.	"He gave money-hii."	[NO]
The gift is a suitcase.	"He gave a suitcase-hii."	[NO]
The gift is cookware.	"He gave cookware-hii."	[YES]

In a trial like (72), then, the participant may select 'yes' for the MIN option because it

[6]See Appendix A for the original Hindi target sentences.

is minimally desirable, but then also accept the MAX option because it is, in their mind, maximally likely according to cultural norms.

The numbers in Table 2.1 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 not only for the endpoint alternatives, but also for the unranked alternative. This may indicate that there is a portion of the speaker population that allows for an exclusive non-scalar meaning.

With the empirical generalizations captured, the next section will move to the theoretical representation of the scalar meaning component of *-hii*.

2.3 Representing Scalarity

From the judgment study we are able to see that *-hii* either requires a maximally likely proposition or a minimally desirable proposition. One step to capturing the representation of this scalar meaning requirement is to first consider whether this sort of felicity condition is a presupposition, conversational implicature, or a conventional implicature.

Potts (2005) contains extensive discussion of conventional implicatures and their distinction from presuppositions. The major features of conventional implicatures are in (73) (Potts 2005:11).

(73) a. Conventional implicatures are part of the conventional meaning of words.

b. Conventional implicatures are commitments, and thus give rise to entailments.

c. These commitments are made by the speaker of the utterance 'by virtue of the meaning of' the word he chooses.

d. Conventional implicatures are logically and compositionally independent of what is '*said* (in the favored sense)', i.e. independent of the at-issue entailments.

The reference to "what is 'said'" in (73d) references original statements about conventional implicatures from Grice (1975:41). The *at-issue* content refers to the "regular asserted content" (Potts 2005:6); for example, in *Even John came*, the at-issue content is *John came*.

Potts distinguishes between conventional implicatures and conversational implicatures,

and between conventional implicatures and presuppositions in the following way. The difference between conversational implicature and conventional implicature is that conversational implicatures arise from extra-linguistic processes based on maxims of cooperative conversation. The implicature does not arise from a specific feature in the utterance itself (Potts 2005:26-27).

Saying that Vijay is the most likely individual to come in *Vijay-hii aayaa* ('Vijay-hii came') is inferred by the speaker through Gricean quantity implicature might be appealing, but this would not work, because the basic test for conversational implicature does not apply. This inference cannot be suspended, just as with the scalar requirement of *even*, as shown in (74).

(74) a. Even Vijay didn't come #but he wasn't predicted to come anyway.

b. vijay-hii nahiiN aaya, #lekin kisi-ko-bhii uske aane-ki
Vijay-hii NEG come.PERF.3.SG but anybody-ACC-even his arrival-GEN
aaSa nahiiN thii.
expectation NEG be.PAST.F
'Vijay-hii didn't come, #but nobody planned on him coming anyways.'

To be able to argue that *-hii*'s scalar requirement is a conversational implicature, we would have to explain (74b). Furthermore, we would need to explain how Gricean principles are at play with the use of *-hii*, to complete the argument by motivating that there is a conversational strategy employed when speakers use this particle. That is, there would have to be some sort of explanation based on the maxims of cooperative conversation to explain why speakers choose to use *-hii* rather than leave it out. Thirdly, we would have to explain why *even*'s likelihood requirement is not a conversational implicature, while *-hii*'s is, even though they seem parallel except for the selection of endpoint.

Neither the likelihood nor the desirability requirements is cancellable. Returning to the examples at the beginning of the chapter, we cannot follow up with the statements with denials of the likelihood or desirability of the proposition, as shown in (75).

(75) a. raam-ne-hii siitaa-ko dekhaa. #vaastav meN, raam-kaa siitaa-ko
Ram-ERG-HII Sita-ACC see.PRF.3.SG reality in Ram-of Sita-ACC
dekhne-ki sabse adhik sambhaavna nahiiN thii.
seeing-of of.all most expected NEG was
'Ram-hii saw Sita. #In fact, he wasn't the most likely to see her.'

b. ve kavitaa-hii likhate haiN. #vaastav meN kavitaa likhnaa
they poetry-HII write.HAB.PL be-PRES.3.PL reality in poetry writing
sabse burii chiij nahiiN hai.
of.all bad thing NEG is
'They write poetry-hii. #In fact, writing poetry isn't the worst thing.'

The speaker cannot felicitously deny the high likelihood of Ram coming in (75a) nor the low desirability of writing poetry in (75b), so these requirements are not instances of conversational implicature.

We are left with determining whether the likelihood and desirability requirements are conventional implicature or presupposition. This is a more fine-grained distinction to make, but Potts provides some tests that help to distinguish these two types of meanings, using the English appositive. First, the truth of the at-issue content is not dependent on the truth of the conventional implicature. For example, we are able to evaluate the fact that Lance Armstrong won the 2003 Tour de France in (76) as true despite it not being true that he is from Arkansas.

(76) Lance Armstrong, an Arkansan, has won the 2003 Tour de France!

(Potts 2005:32)

In the case of a presupposition, if the presupposed component is false, the matrix sentence is infelicitous.

Similarly, note that we are able to evaluate the truth of (77) regardless of whether the scale in the context has poetry lowly ranked, as shown in the cases of (78)-(79).

(77) ve kavitaa-hii likhate haiN.
they poetry-HII write.HAB.PL be-PRES.3.PL
'They only write poetry.' (Varma 2006:97)

(78) The speaker has the following scale in mind for literary value, from lowest to highest:
⟨they write poetry, they write short stories, they write novels⟩
Situation: They don't write poetry.
(77) is false, despite poetry properly low-ranked

(79) The speaker has the following scale in mind for literary value, from lowest to highest:
⟨they write novels, they write short stories, they write poetry⟩

Situation: They write poetry.

(77) is true, despite poetry improperly highly-ranked.

Potts further posits that conventional implicatures are subject to 'anti-backgrounding,' meaning that preceding the sentence containing the implicature with an explicit utterance conveying the content of the implicature, results in infelicity, as shown by the example in (80). This is another way that conventional implicatures stand out from conversational implicatures and presuppositions.

(80) Lance Armstrong survived cancer. #When reporters interview Lance, a cancer survivor, he often talks about the disease. (Potts 2005:34)

This infelicity occurs with *-hii* as well, as using *-hii* to reinforce the fact that Ram was the most likely to see Sita can sound repetitive, as shown in (81).

(81) a. raam-kaa siitaa-ko dekhne ki sabse adhik sambhaavna thii.
Ram-of Sita-ACC seeing GEN of.all most likely be.PAST.SG
#vaastav meN, raam-ne-hii siitaa-ko dekhaa.
actually in Ram-ERG-HII Sita-ACC saw
'Ram was the most likely to see Sita. #In fact, Ram-hii saw Sita.'

b. raam-kaa siitaa-ko dekhne ki sabse adhik sambhaavna thii. #kyaa
Ram-of Sita-ACC seeing GEN of.all most likely be.PAST.SG Q
tumhe maalum hai ki raam-ne-hii siitaa-ko dekhaa?
you know be that Ram-ERG-HII Sita-ACC saw
Ram was the most likely to see Sita. #Did you know that Ram-hii saw Sita?

In (81), the type of redundancy we see in (80) emerges, showing that *-hii* also has the anti-backgrounding feature. It should be noted, however, that some speakers find discourses like (81) felicitous. As such the anti-backgrounding test is perhaps not definitive.[7]

Another distinguishing attribute of conventional implicatures is that they can pass through intervening constructions that are plugs for presuppositions. If we consider verbs of saying to be plugs, then trying to explicitly deny the content of a conventional implicature is not possible, as in (82).

[7]For example, Rajesh Bhatt (p.c.) finds the following felicitous: *sab-ko lagtaa thaa ki yeh prize raam-ko milega, aur phir prize raam-ko-hii milaa.* (Everyone thought that Ram would win this prize, and then Ram-hii won the prize.) Also Veneeta Dayal (p.c.) finds (81a) completely acceptable with *aur* ('and') as the connective instead of *vaastav meN*.

(82) Ed says that, as Sue predicted, it is raining. #But in fact Sue didn't predict rain.
(Potts 2005:36)

This is in contrast to what happens when embedding a presupposition inside a verb of saying, as in (83), where explicitly denying the presupposition is possible.[8]

(83) Ed said that Harry insulted the present king of France. But in fact there is no present king of France.

In (82), the *as*-parenthetical is entailed at the sentence level and cannot be felicitously denied, making it a conventional implicature. If we attempt similar followups for *-hii*, we also find infelicity.

(84) a. jon-ne kahaa ki raam-ne-hii siitaa-ko dekhaa thaa. #lekin vaastav
John-ERG said that Ram-ERG-HII Sita-ACC saw did but actually
meN raam-ka siitaa-ko dekhne-ki jyaada aaSa nahiiN thii.
in Ram-GEN Sita-ACC seeing-GEN more expectation NEG was
'John said that Ram-hii saw Sita. #But in fact Ram was not the most expected to see Sita.'

b. jon-ne kahaa ki vo log kavitaa-hii likhate haiN. #lekin vaastav
John-ERG said that those people poetry-HII write do but actually
meN kavitaa likhna koi burii chiij nahiiN hai.
in poetry writing any bad thing NEG be.
'John said that they write poetry-hii. #But in fact writing poetry is not lowly.'

Given that Pott's criteria for conventional implicature seem to suit *-hii*, we can reasonably conclude that the MAX-likely and MIN-desirable requirements are conventional implicatures.

We have now determined that the likelihood / desirability component of *-hii*'s meaning is neither a conversational implicature nor a presupposition. Also, we see that these felicity conditions are crucially speaker-oriented. Now, we must add these requirements to the lexical meaning of *-hii*. Given the difference between the two conditions of the implicature in the type of scale and the type of endpoint, we must determine how to represent this formally. There seem to be several ways we can handle this. One way is to use a simple disjunctive statement, like in (85).

[8]This example is adapted from that in Karttunen (1973). See there for more discussion of plugs, holes, and filters of presuppositions, and discussion of 'leaky' plugs.

(85) -*hii*(C,p,w) (FIRST VERSION)

Conventionally implicates:

$(\forall p' [(p' \in C \wedge p \neq p') \rightarrow p \succ_{likely} p']) \vee (\forall p' [(p' \in C \wedge p \neq p') \rightarrow p' \succ_{desirable} p])$

Asserts: $\forall p' [(p' \in C \wedge p'(w)) \rightarrow p' = p]$

The condition in (85) states that the other propositions in the alternative set should all be less likely than the prejacent, or they should all be more desirable. Notice that I am using both the $\succ_{likely}$ ordering relation that was referenced for the meaning of *even*, as well as providing a '$\succ_{desirable}$' relation to represent the desirability ranking.[9]

Another possible way to represent the meaning falls out of considering the following. In the desirability condition, this part of -*hii* is functioning very similarly to the English *only* and other such lexical items that use an evaluative scale, as analyzed by Coppock & Beaver (2014). These particles presuppose that 'at least' the prejacent is true and assert that 'at most' the prejacent is true. Similarly, in the minimal desirability cases of -*hii*, there is a desire for something higher than the prejacent, and what is asserted is the prejacent as the upper bound on the scale. Applying the 'at least'/'at most' analysis to -*hii* for the desirability component would give us the meaning in (86).

(86) -*hii*(C,p,w) (TO BE REVISED)

Conventionally implicates: $\forall p' [(p' \in C \wedge p \neq p') \rightarrow p \succ_{likely} p']$

Asserts: $\forall p' [(p' \in C \wedge p'(w)) \rightarrow p' = p]$

OR

Presupposes: MIN(p)

Asserts: MAX(p)

The representation in (86) essentially breaks off the minimal desirability ranking as a separate meaning with a different assertion. This seems less preferable than (85) because it looks to be equivalent to positing two lexical entries. Secondly, since -*hii*'s inferences arise through conventional implicature, it seems to be a step in the wrong direction to make the desirability portion of meaning a presupposition, due to the patterns we observed with

[9] We saw in the experimental results that some speakers accepted the MAX, MIN, and unranked alternative. For these speakers, I propose that they somehow, regardless of the salience of the ordering in the background context, came up with rankings of the alternatives where they were all ranked equally together.

reinforceability and projection.

Yet another way of simplifying the representation is to start with (85), and then use noteworthiness as the scalar ordering relation instead of likelihood. This is done by Herburger (2000) and others for *even*. Using this idea, if we view -*hii* as presupposing that the prejacent is minimally noteworthy, we can perhaps recast this formulation of the conventional implicature with the general '$\succ$' operator, and eliminate one of the two conjuncts, as in (87).

(87) -*hii*(C,p,w) (TO BE REVISED)

Conventionally implicates:

$\forall p' \, [(p' \in C \wedge p \neq p') \rightarrow p' \succ p]$

Asserts: $\forall p' \, [(p' \in C \wedge p'(w)) \rightarrow p' = p]$

While (87) is a cleaner representation than (85), it is slightly misleading. A general '$\succ$' operator not specified for the ordering metric implies that a wide range of orderings are possible. For now, though, the experimental data we obtained in this experiment supports two scalar ordering metrics, Likelihood and Desirability. For this reason, it is preferable to keep the definition in (85) for now. We will revise this further in the coming chapters.

2.3.1 Speaker-orientedness

If we examine -*hii* in the presence of verbs of knowing and saying, we find further evidence of the conventional implicature status of the scalar requirement of -*hii*. In the above discussion, -*hii* is unembedded, as it is attached to the verb at the matrix level. Embedding -*hii* brings out another reason to see its scalar requirement as a conventional implicature instead of as a presupposition. If the scalar requirement for -*hii* were a presupposition, the verb of knowing or saying would be a plug to the embedded presupposition, and we would not be able to derive the 'even'-like meaning at the matrix level of the sentence.

We can evaluate this aspect of -*hii* by embedding -*hii* to an NP inside sentences that include verbs like *say* or *think*. As it turns out, we find that there is the ability to shift perspective to the subject of the attitude in the sentence in (88).

(88) *sue* bolii, "*mary*-ne {socaa/bolii} ki jon-hii aayaa."
Sue said Mary-ERG thought/said that John-HII came

'Sue said, "Mary {thought/said} that John-hii came."'

Speaker intuitions reveal that the scalar requirement about John for (88) is actually not tied to the speaker Sue, but rather to Mary. Mary is the one who is committed to a certain scalar ranking of John, even though Sue is the speaker.

This judgment might seem to contradict the inherent speaker-oriented quality of *-hii*, but there is evidence that this also occurs in other conventional implicature phenomena. Recent literature (Amaral, Roberts & Smith (2007), Harris & Potts (2009)) has brought into question whether speaker orientation is a hard requirement for all conventional implicatures. The use of the adverb *thoughtfully* in (89), for example, is anchored to Joan, rather than the speaker.

(89) Joan is crazy. She's hallucinating that some geniuses in Silicon Valley have invented a new brain chip that's been installed in her left temporal lobe and permits her to speak any of a number of languages she's never studied. She believes that, thoughtfully, they installed a USB port behind her left ear, so the chip can be updated as new languages are available. Amaral et al. (2007):735

Harris & Potts (2009) also present experimental evidence supporting the fact that appositives are not necessarily speaker-oriented either, though claimed to be so by Potts (2005). They suggest that one way to account for this in the semantics is to leave the speaker-oriented/non-speaker-oriented nature of the construction underspecified, and include a free variable in the semantics that determines the appositive's epistemic anchor or judge (like the judge parameter used by Lasersohn (2005) for personal taste predicates) for a particular interpretation and context. The use of an underspecified representation of the speaker-orientedness parameter seems appropriate for *-hii* as well to account for cases like (88).

2.3.2 Likelihood as Modality

To this point, we have motivated the role of likelihood in one potential part of the meaning of *-hii*. One natural question is what exactly is meant by likelihood, and how it connects to the overall concept of expectations.

We can ask this question of *even* as well, which obviously has a likelihood component. Guerzoni (2003) suggests that there is a modal meaning component for *even*, by virtue of

the fact that its felicity requirement references likelihood. Consider her statement to this effect below in (90).

(90) "the notion of *likelihood* obviously involves modality. Extending von Fintel (2001)'s analyses of counterfactuals, we can assume that sentences involving *even*, in virtue of the modal aspect of this particle, are interpreted with respect to an admissible Modal Horizon (MH). An admissible MH is a function, which generates, for each possible world a set of possible worlds that are most accessible to it with respect to the relevant ordering source (i.e. *a well-behaved Lewis sphere around the evaluation world*, von Fintel (1999) p.141 and von Fintel (2001)). If we intend likelihood in terms of speaker's expectations, the ordering source has to be one that ranks worlds with respect to how close they are to the speaker's expectations in the actual world, which, in turn, depend on what the speaker actually believes."

(Guerzoni 2003:109-10)

The observation in (90) becomes useful in Guerzoni's solution to a modified version of the sentence with *even* we had raised in Chapter 2 from Kay (1990). See (91).

(91) Not only did Mary win the first round match, she even won the semi-finals, but of course she didn't win the finals. (Guerzoni 2003:109)

Recall that for the sentence without the final clause we can ensure felicity by assuming a restricted domain where *Mary won the finals* is not in the alternative set, allowing *Mary won the semi-finals* to be the least likely. Here in (91), though, the existence of the final clause does not allow for that solution to work. The modal horizon that Guerzoni offers as a solution is a form of modal base that can dynamically shift the set of alternatives based on the updated context. In this case, it is updated between the conjuncts to include *Mary won the finals*. Before the second conjunct, *Mary won the finals* is too far from the speaker's expectations. The ordering source ensures that there is a ranking of worlds by how close they are to expectations.

While Guerzoni's suggestion in (90) shows reasons for a modal meaning component for *even*, she does not flesh this out formally. However, importantly, this is a key observation for understanding that the notion of likelihood that underlies the meaning of *even* is anchored

to the speaker's ordering source and the relevant modal base. Similarly, for *-hii* we see that the inherent speaker-oriented quality of the particle inherently references a modal base and ordering source.

Just as speaker-anchored modality exists for *even*, it also has been argued to exist for *only*. Recall from Chapter 1 that Ippolito (2008) argues for a conditional presupposition for *only A is B*. Yabushita (2014) reinterprets this analysis for *only* as one that expects a most-likely alternative to occur with *only*. That is, Ippolito's statement of the presupposition ((92a)) would be reworked as (92b) by Yabushita.

(92) Only John ate dessert.

a. Presupposes: If someone ate dessert, John ate dessert.

b. Presupposes: John is the most likely to have eaten dessert.

Yabushita argues that this kind of scalar presupposition in (92b) is warranted for *only*, and moreover that the presupposition references the speaker's expectations, rather than a common ground expectation of likelihood. The diagnostic for teasing these apart is in (93)-(94). The discourse in (93) is felicitous, but in (94), where the expectation is anchored to the speaker explicitly, the discourse is not felicitous.

(93) Mary is the least likely to be able to sing. But only Mary can sing.
(Yabushita 2014:331)

(94) Mary is the person who I'm least certain can sing. #But in fact only Mary/she can sing. (ibid.:332)

The solution is to use a modalized expectation to ensure reference to the speaker's expectation and not the common ground expectation. This will ensure that when the expectation is set, following up with *only* as in (94) is correctly rendered infelicitous. Thus, this restates the presupposition in (92b) as in (95).

(95) Only John ate dessert.
Presupposes: The speaker knows that John is the most likely to eat dessert, or John is the person the speaker is most certain eats dessert.

Thus, there is reason to posit *only* as referencing modal meaning.

Couched in a Structured Meanings approach (Krifka (1991), van Rooij & Schulz (2007)), Yabushita's presupposition for *only* is as in (96). The key to this representation is referencing the epistemic accessibility relation.

(96) $[\![\text{ONLY}(\langle F, B\rangle)]\!]^{M,w}$ is defined only if
$\forall v \in W : wRv[\exists x[[\![B]\!]^{M,v}(x) = 1] \rightarrow [\![F(B)]\!]^{M,v} = 1]$

The presupposition in (96) specifies that, as stated by Ippolito, if the background proposition is true for an individual, then the individual it is true of is the focused individual of that set. The difference in this analysis is that the reference is to the worlds epistemically accessible to the speaker.

In standard modal logic, an *accessibility relation* is a relation R on the set of all possible worlds. It maps for each world in W a set of accessible worlds. An epistemic accessibility relation, like the one of interest for (96), would be one that obtains a set of w''s where each w' is compatible with everything the speaker knows in w, as defined in (97).

(97) $\text{R}_{epis} = \{w' \mid w' \text{ is a world in which all of the facts known in } w \text{ hold}\}$

(Hacquard 2011:8)

Given this definition, the use of R in (96) ensures that we are only measuring relative likelihood between worlds that are based on the speaker's knowledge. Epistemic modals deal with possibilities that follow from the speaker's knowledge and are thus speaker oriented (Hacquard (2011:4)).

Applying these insights of modal meaning reference in *even* and *only* to *-hii*, we can see that like *even*, *-hii* also would require reference to a modal base and ordering source. In the case of a likelihood scale, the ordering source will rank worlds with respect to how close they are to the speaker's expectations in the actual world, just like Guerzoni suggests for *even*. In the case of a desirability scale, the ordering source will rank worlds with respect to how close they are to the speaker's desire in the actual world.

Secondly, just as we learn from the modal approach to *only*, we have seen already from Experiment 1 that the meaning of *-hii* is also speaker-oriented, rather than oriented toward the common ground expectation. We can borrow the representation from (97) and also use the following bouletic accessibility relation definition to fulfill our need for both a likelihood

and desirability scale type.

(98) $R_{bouletic} = \{w' \mid w'$ is a world in which all of the desires from w hold$\}$

Thus, just as Yabushita did for *only*, we ensure reference to the worlds either epistemically accessible or bouletically accessible, in the evaluation of the felicity of *-hii*.

2.4 Typology

We have seen up to this point that the scalar component of *-hii* is a conventional implicature. Also the exclusive meaning component is part of the truth-conditional assertive component of meaning. The last goal in this chapter is to situate *-hii* in the broader set of exclusives and scalars. I will show that while there are similarities between *-hii* and other known *even*- and *only*-like particles, the combinations of these attributes found in *-hii* is unique.

2.4.1 Hindi scalars and their bounding effects

Hindi appears to have two forms that function as *even* – *-bhii* and *-tak*, as shown in (99) and (100).

(99) riinaa-bhii *class*-meN aayii.
Reena-BHII class.F-in come-PRF.3.F
'Even Reena came to class.' (Schwenter & Vasishth 2001:226)

(100) riinaa-tak *class*-meN aayii.
Reena-TAK class.F-in come-PRF.3.F
'Even Reena came to class.' (ibid.)

Lahiri (1998) showed that (99) is possible with stress on *riinaa*. Without the stress, the purely additive (non-scalar) meaning of 'Reena came to class too' is in evidence.

Schwenter & Vasishth (2001) discuss differences in scalar meaning between *-bhii* and *-tak* in Hindi. They claim that intuitively *-tak* is more emphatic or stronger than *-bhii*, and *-tak* is endpoint-marking, whereas *-bhii* is not. This is following in the footsteps of Kay (1990) regarding English *even* as not an endpoint-marking particle. This is highlighted in (101)-(102). A contextual difference is that *-bhii* requires that the prejacent proposition be more informative than another alternative, like English *even*, but *-tak* does not require this.

(101) Who ate goat's eyes?

a. meri daadii-tak-ne khaayii.
my grandma-TAK-ERG ate-PRF.3.F
'My grandma-tak ate it.' (ibid.:227)

b. # meri daadii-ne-bhii khaayii.
my grandma-ERG-BHII ate-PRF.3.F

(102) Who ate goat's eyes?

maiN-ne khaayii, aur meri daadii-ne-bhii khaayii.
I-ERG ate and my grandma-ERG-BHII ate-PRF.3.F

'I ate it and my grandma-bhii ate it.' (ibid.)

-bhii is made felicitous in (102) by the addition of the preceding utterance highlighting the speaker's also having eaten the goat's eyes.[10]

Varma (2003) also draws similar distinctions between *-tak* and *-bhii*, making the same assumption about *-bhii* being ambiguous between a purely additive version and a scalar version. She also points out that *-tak* can mean either *-bhii* or *even*, or can mean something equivalent to "up to and no further." Take her example in (103).

(103) raaj *snails*-tak khaatii hai.
Raj snails-TAK eat.IMPERF.F be.PRES.3.SG
'Raj eats even snails' (i.e., Raj eats potato, chicken, and snails).

'Raj eats all the things up to snails' (i.e., Raj won't eat brains).

(Varma 2003:74)

To see the distinction between the two readings in (103), imagine first a context where there is a scale composed of things that people are likely and unlikely to eat. Say that the assumption is that eating potatoes is most expected, eating chicken is slightly less expected (because some people might be vegetarian and not eat any meat), and eating snails is even less expected (because it is such an exotic dish). In the first translation of (103), then, what is meant is that all these propositions are true. Imagine now a context where there is something less likely to be eaten than snails, e.g., brains. The second translation indicates that Raj will eat potato, chicken, and snails, but not brains.

[10] An informant indicates that (101) is bad with *-bhii* even if followed up with an explicit statement of the low likelihood of the proposition, like *# maiN-ne nahiiN soca thaa ki vah kisii-bhii haalat meN ise khaayegii.* (#'And I didn't think there was any way that she would.')

This observation about *tak* is similar to what I have said about *hii*, in that there can be a bounding effect on the scale. In *-hii*, the particle defines an upper bound, and we see this similar pattern with *-tak*.

However, if we choose something that is lower in likelihood than brains, like insects, then we see a different result. It turns out that native speakers find the followup to (103) in (104) acceptable.[11]

(104) vaastav meN mujhe yakkiiN hai ki vah kiRe-makoRe bhii khaataa hai!
actually in me sureness be that he insects also eat be
'. . . In fact, I'll bet he eats insects too!'

Since (104) shows that the bounding effect is actually deniable, this stands in contrast with *-hii*. The deniability shows that *-tak*'s bounding requirement is actually a conversational implicature.

In fact, we can imagine that this reading would be felicitous even when there are several items lower on the scale of likelihood than snails. Imagine that there are the following propositions: *Raj eats brains*, *Raj eats alligator*, and *Raj eats humans*. One way to look at this is to say that we do not want to impose any felicity conditions to rule out worlds, but rather have some "characteristic implications" (see Schwarz 2005) about these lower-ranked propositions.

Another possibility is that these cases are not even under consideration as alternatives. This sort of domain restriction is mentioned by Crnič (2011) for *even* in the case of (105).

(105) Not only did Mary win her first round match, she even made it to the semi-finals.
(Kay 1990:90)

Making it to the finals is more unlikely than making it to the semi-finals, rendering making it to the semi-finals not the most unlikely. However we could assume that *Mary made it to the finals* is not in C to begin with, due to the Maxim of Relevance. If it is not within the realm of possibility that Mary would win the finals, then this will not be a relevant alternative to include in the set of alternatives.

To close, we can see that there is an interesting space of scalar particles in Hindi. Both *-bhii* and *-tak* are scalar and additive, but *-bhii* is 'relative' in its endpoint marking

[11] Thanks to Kristen Syrett for suggesting this test to me.

while -*tak* is 'absolute' (see Schwenter & Vasishth (2001)). -*hii* on the other hand is scalar and exclusive, as we have seen from our experiment. Furthermore, we see that the upper bounding requirement is defeasible for -*tak* but not for -*hii*, showing that these two particles contribute different types of not-at-issue meaning to the sentences they occur with.

2.4.2 Exclusives, crosslinguistically

Within Hindi, -*hii* is not the only exclusive particle. Hindi has other, non-clitic lexical items that are direct correspondents of *only*, as listed in (106).

(106) sirf/bas/khaali/keval/maatr riitaa aayii.
only Rita come-PERF.F.S
'Only Rita came.' (Bhatia 2014:1)

A puzzling property of these forms of *only* in Hindi is that they can occur with -*hii* to double-mark a constituent (Verma 1971); this will be discussed in Chapter 3.

In English, there are many forms similar to *only*, and Coppock & Beaver (2014) aim to find a unified analysis of the various exclusives in English, while also outlining the parameters along which they differ. Their main claim is that all the exclusives have in common that they presuppose 'at least' the prejacent, and assert 'at most' the prejacent. These functions of 'at least' and 'at most' correspond to selection of MIN and MAX endpoints, in the way defined in (107). All alternatives are said to be associated by a strength-based ranking.

(107) a. MIN(π): There is some answer to the current question under discussion that is at least as strong as the prejacent π (the 'at least' component)

b. MAX(π): There is no answer to the current question under discussion that is stronger than the prejacent π (the 'at most' component)

The use of MIN and MAX requires that there is always a rank ordering of alternatives. This applies even in the situation of the non-scalar ("complement exclusion") reading of *only*.

Coppock & Beaver refer to readings like (108a) as the *complement exclusion* reading and (108b) as the *rank-order* reading. They provide a unified analysis of these two readings, choosing to cast both into a scale-based analysis of *only*, rather than casting both into a non-scale-based analysis.

(108) John only ate [an apple]$_F$. (Krifka 1993:273)

a. → John ate an apple, and not a banana, orange, etc.

b. → John ate an apple, but not a more filling meal.

Like Beaver (2004) and Riester (2006)), Coppock & Beaver take the complement-exclusion reading to be just a special case of the scalar interpretation of the exclusive. The data in (109) and (110) show that the sentences where complement exclusion is the most salient can be taken to have rank-order readings, but the opposite is not necessarily true.

(109) Mary invited only John and Mike.

→ Mary invited nobody other than John and Mike. (complement-exclusion OK)

→ Mary invited at most John and Mike. (rank-ordering OK)

(110) John is only a graduate student.

↛ John is nothing other than a graduate student. (complement-exclusion bad)

→ John is at most a graduate student (rank-ordering OK)

(109) would most saliently be assigned a complement-exclusion reading, where it has the first of the two inferences. But it can reasonably be given the second as well, showing how it has the ability to make reference to a scale. Contrast this with (110), which can give rise to a rank-ordered reading, but not a complement-exclusion reading (at least, that is not the salient reading[12]). Thus, such an interpretation necessarily relies on a strength ranking over the alternatives, so a unified analysis must make that part of the basic assumption about alternatives.

The complement-exclusion reading can thus be subsumed under the scalar reading by positing that, for cases like the complement exclusion reading of (109), there is a boolean lattice containing individuals and pluralities of individuals. This, then, establishes entailment relationships between the alternatives, which would be ordered by strength. Suppose this set is as in (111).

[12]It is possible to come up with a context where this reading is available. If there is a question about what occupations people have, and John is a graduate student and not also something else, then this could yield the complement exclusion reading. However, without extra contextual support, this probably wouldn't be the most salient reading.

(111) {Mary invited John and Mike and Frank,
Mary invited John and Mike,
Mary invited John and Frank,
Mary invited Mike and Frank,
Mary invited John,
Mary invited Mike,
Mary invited Frank.}

Without allowing for pluralities of individuals, there would be no strength relationship between the alternatives, but now with the set in (111) it is readily apparent that there are entailment relationships between some of these alternatives. For example, *Mary invited John and Mike and Frank* is stronger than *Mary invited John and Mike* and also stronger than *Mary invited Frank*, though there is no strength relationship based on entailment between, for example, *Mary invited Mike and Frank* and *Mary invited John*. Beaver & Clark follow Rooth (see Rooth (1992:83)) in their use of partially ordered sets to capture the relevant facts.

With this setup, the presupposition following (107) is that Mary invited at least John and Mike. Let us take two alternatives out of the set in our example, namely *Mary invited John and Mike* and *Mary invited John and Mike and Frank*. The truth-conditional component asserts that Mary invited at most John and Mike. With the set {Mary invited John and Mike, Mary invited John and Mike and Frank} the assertive component MAX(π) thus evaluates the first of these to TRUE and the second of these to FALSE, consistent with the intuitions about the sentence. It follows that the other propositions (*Mary invited John and Frank*, *Mary invited Mike and Frank*, *Mary invited John*, *Mary invited Mike*, and *Mary invited Frank*) will be infelicitous. This is depicted in Figure 2.2.

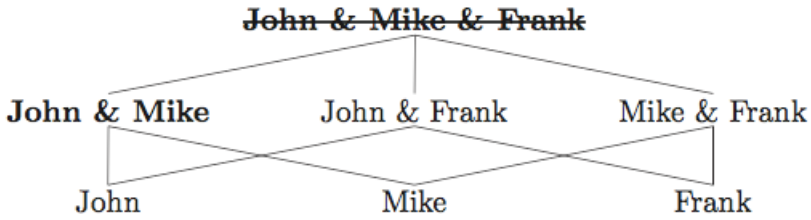

Figure 2.2: Ordering for *Mary invited only John and Mike.*, from (Coppock & Beaver 2014:11).

For (110), a similar analysis follows in a straightforward fashion. Take the alternatives to be the ones like in (112).

(112) {John is an undergraduate,
John is a grad student,
John is a postdoc}

Notice these alternatives are totally ordered based on the status of John in the hierarchy; *John is an undergrad* is weaker than, *John is a grad student*, which is weaker than *John is a postdoc*, according to some notion of hierarchy. This gives the rank ordering depicted in Figure 2.3. This total ordering is in contrast with the previous one, where there was a partial ordering over the propositional alternatives.

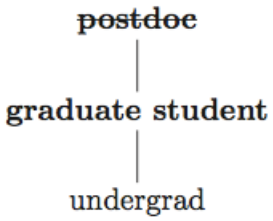

Figure 2.3: Ordering for *John is only a graduate student.*, from (Coppock & Beaver 2014:12).

The presupposition in (107) would ensure the felicity condition that John is at least a graduate student. Then only *John is a grad student* and *John is a postdoc* are felicitous alternatives (*John is an undergraduate* would be ruled out as infelicitous). The assertive component then asserts that John is at most a graduate student. Thus, *John is a postdoc* is FALSE while *John is a grad student* is TRUE, consistent with intuition.

Observe that creating a rank-ordering allows for a successful explanation of both the complement-exclusion and rank-order readings. Next, let us turn to the formal details of the MAX and MIN operators. MAX and MIN are defined in relation to the current QUD (Roberts (1996)), which Beaver & Clark (2008) and Coppock & Beaver (2014) call the Current Question (CQ). They are defined as in (113) and (114).

(113) $\textsc{min}(p) = \lambda w.\ \exists p' \in CQ\ [p'(w)\ \&\ p' \geq p]$

(114) $\textsc{max}(p) = \lambda w.\ \forall p' \in CQ\ [p'(w) \rightarrow p \geq p']$

Note here that MIN and MAX are not denoting propositions at the ends of the scales. They are functions that take propositions as arguments and return the set of worlds where another proposition that is ranked equally or higher is true in (113). In (114), it returns the set of worlds in which all the other true propositions are ranked lower.

With regards to the differences among exclusives, Coppock & Beaver spell these out as the parameters along which English exclusives differ: (i) semantic type, (ii) constraints on the CQ, and (iii) constraints on the type of ranking.

The 'type' is the semantic type that the particle modifies. They show that each exclusive has a type ending in p. The subsequent arguments are such that they can be fed in sequence to the first argument to form a proposition, by a sequence of Geach operations. That proposition that is ultimately formed is the prejacent. Jacobson (2011) defines the Geach rule as in (115).

(115) Consider any function f of type $\langle a, b\rangle$. There is a natural mapping of this to a function of type $<\langle c, a\rangle,\langle c, b\rangle>$ which – following the tradition in much of the Categorial Grammar literature – I will call the "Geach" operation and will notate as **g**. Thus **g**(f) is λX[λC[f(X(C))]] for X any function of type $\langle c, a\rangle$ and C a member of c. This is nothing more than a unary ("Curry'ed") version of the function composition operator; **g**(f)(h) = f $\circ$ h.

Geach operations for the various exclusives are applied to the $\langle p, p\rangle$ type of *only*, which is defined as in (116).

(116) $[\![only]\!]^S$ = λp. λw: MIN(p)(w) . MAX (p)(w)

Applying Geach on the general meaning of *only* in (116) allows Coppock & Beaver to provide a simple way of getting to the semantic types of other English exclusives. They could be simple p-modifiers like *only* above, $\langle e, p\rangle$ modifiers (*mere*), $<\langle e, p\rangle$,p> modifiers (NP-modiying *only*), or <e,$\langle e, p\rangle$> modifiers (certain uses of *sole* and *exclusive*).

Secondly, exclusives can differ by the constraints on the current question, and the specific form that the CQ should take for the exclusive to be felicitous. Lastly, the strength ranking parameter could differ amongst exclusives, i.e. whether the ranking is defined by entailment

or some other ordering type. The ranking parameters described are mostly those of entailment. However, Coppock & Beaver show that there can be orderings based on evaluative scales instead. This applies very well to *merely*. Such a scale ranks alternatives according to what the speaker considers good or bad. With *merely*, higher-ranked alternatives are better than lower-ranked alternatives. Coppock & Beaver use the predicate EVALUATIVE for this. What I have been referring to as Desirability as an ordering metric could be recast as an Evaluative scale.

All the other exclusives that are studied in this paper generally are ranked by an ENTAILMENT scale. Consider *mere*, however, in *the mere graduate student*. Notice that this construction does not allow for complement-exclusion readings, as *She is a mere child* does not mean that she is nothing other than a child.

One particle that does not fit the Coppock & Beaver paradigm for English is Polish *aż*. As Tomaszewicz (2012) shows, *aż* has the direct opposite meanings of rank-order *only*. It presupposes 'at most' the prejacent and asserts 'at least' the prejacent.

Some of Tomaszewicz's data may leave open the possibility that *aż*, like *even*, is sensitive to noteworthiness or likelihood. Consider the example in (117).

(117) Maria rozmawiała aż z menendżerem, ale nie rozmawiała z nikim innym.
Maria talked AŻ with manager but not talked with nobody else
'Maria talked to somebody so important as the manager, but she didn't talk to anybody else.'

(Tomaszewicz 2012:333)

The second clause in (117) shows that *aż* does not have an existence presupposition. This differs from *even* which presupposes that some alternative to the prejacent is true, though this is contested about *even* by Rullmann (1997)). The first clause shows that the manager is a noteworthy person to talk to. Similarly, Tomaszewicz concludes from (118) that the scalar dimension of *aż* cannot be entirely subsumed under likelihood in the way that it can for *even*. It seems possible that the statement can be felicitous if the prejacent is a maximally likely proposition.

(118) *Given that Janek wanted to spend his vacation in extreme conditions, I am not*

suprised that . . .

Janek pojechał aż / #nawet do Doliny Róz
Janek went AŻ / even to Death Valley

'Janek went to such a hot place as Death Valley.' (Tomaszewicz 2012:332)

Tomaszewicz suggests that the scalar dimension "depends both on the local context and on pragmatic factors." Her translation for (118) may very well be the most salient interpretation for speakers. But it seems possible that given the preceding discourse, *aż* might be felicitous because Janek going to Death Valley is entirely within expectations of the speaker, and could therefore be ranked as MAX on the set of scalar alternatives ranked by likelihood. If this is possible, then *aż*, may be sensitive to likelihood orderings in addition to other ordering types, as we have seen with *-hii*.

Returning to *-hii*, it can occur with both "contra-additive" (i.e. complement exclusion) readings and also simple "contrast" readings. These two types of readings are found with *only*, as in (119).

(119) Things have changed at the Miller family.

a. Tonight RONALD went shopping. (CONTRAST)

b. Tonight, only RONALD went shopping (CONTRA-ADDITIVE)

(Umbach 2004:165)

Varma (2006) demonstrates this to exist in Hindi with the example in (120).

(120) Context: Earlier a popular theory was quoted that vermilion was good for controlling a woman's electrical energy as it contains large amounts of important minerals such as lead which penetrate the soft area on the female head.

maiN umiid kartaa huuN ki aslii sinduur-ka-hii
I hope do-IMPF-M.SG be-AUX-PRES-M.SG that real-F.SG vermillion-GEN-HII
upyog kar rahii haiN.
use do stay-PERF-F be-PRES-3.PPL

a. 'I hope it's REAL vermilion that they are using.'

b. 'I hope they're only using REAL vermilion.'

(Varma 2006:100)

The reading in (120a) is that of the contrast interpretation, where the speaker is contrasting real vermilion with the dangerous lead vermilion. The reading in (120b) is that of the contra-additive interpretation where what is excluded is the alternative of real vermilion mixed with lead vermilion.

Contra-additive readings fit well into the types of interpretations discussed here with English *only* forms, but not with the instances of use where *-hii* involves alternatives that do not define intersecting sets of worlds. The surrounding context makes clear whether the alternatives are composed of pluralities of individuals, therefore giving rise to a complement-exclusion reading. Alternatively it can highlight purely contrasting alternatives, where there is no entailment relationship (e.g. JOHN-hii came, where the alternatives are 'John came' and 'Bill came,' and there is no alternative 'John + Bill came,' due to the context making it salient that only one person could have come).

This by itself does not pose a problem for us yet. Recall that in the *John is only a graduate student* example, alternatives did not entail each other, yet they could still be given a strength relationship based on salient orderings in the context that could be evaluative.

The experimental evidence that there is felicity with a low-ranked alternative for *-hii* in the Desirability condition fits well with the Coppock & Beaver view of *only* and *just*. Let us take a test item from Experiment 1 to examine this. Consider the background context given for one of the trials in (121).

(121) Leela just got married and she is opening a guest's gift. She and her husband don't know what this guest would give to them, but they really hope for money because they really need money right now. They definitely do not want cookware because they both always eat out. They know there is also a possibility they might be given a suitcase, but they don't know if they will travel and use a suitcase or not.

In (121), the alternatives are that they got money, they got cookware, or that they got a suitcase. The strength ranking over these alternatives, following Coppock & Beaver's idea of there being an EVALUATIVE ranking, would posit that the ranking of the propositions would be in this order: *I got money* stronger than *I got cookware*, since money is better according to the speaker (Leela), and *I got a suitcase* unranked with respect to the others. By the

presupposition and assertion that Coppock & Beaver specify, the felicitous *I got cookware-hii* would presuppose 'I got something at least as good as cookware.' This is correct, because it is a disappointment to Leela that she received cookware; we could translate this as 'I received merely cookware.' The assertive component then is 'I got something at most as good as cookware,' which corresponds to the intuition that the gift was 'nothing better than' cookware. Thus, for the cases of *-hii* in desirability contexts, Coppock & Beaver's generalization about English exclusives presupposing MIN and asserting MAX seems appropriate.

A potentially ill-fitting case arises with *-hii* in likelihood (probability) cases. When alternatives are ranked by likelihood (as with the case of English *even*), it is difficult to see how it can correspond to the notion of strength. Presumably the scale has as the MAX the highest probable alternative and the MIN as the lowest probable alternative. We can try to see what this amounts to for Coppock & Beaver's analysis. Take the trial from the experiment given in (122).

(122) Professor Mehta is giving an exam to his students Aatish, Vijay, and Deepak. Any time before that there was an exam given, Aatish always passed but Deepak always failed. Professor Mehta doesn't know anything about whether Vijay would pass or fail, since he is a new student. In the end, one student passed and two failed.

If we apply Coppock & Beaver's logic, then, for the felicitous *Aatish-hii passed*, the presupposition would be 'Someone at least as probable as Aatish passed' and the assertion would be 'Nobody more probable than Aatish passed.' However, this does not correspond to the intuitions described. What is taken for granted is simply that Aatish is the most likely to pass, therefore all that is presupposed is that *Aatish passed* is at the high end of the scale. Said another way, the presupposition that becomes apparent is one that merely marks as felicitous particular orderings of the alternatives. It marks certain scales themselves as felicitous, rather than marking particular alternatives along those scales as felicitous or not. Thus, the MIN is not the presupposition for probability-associating *-hii*, and it is unclear whether the concept of strength is at all appropriate for dealing with this case.

Notice also in the case of (122), having an assertive component of 'Nobody more probable than Aatish passed' is not reflective of the meaning. In this scenario, *-hii* does not have an

exclusivizing truth condition, as the context already makes it clear that only one individual passed. Returning to the two types of readings allowed for *-hii* described at the beginning of this section, this is a case of contrast *-hii* instead of contra-additive *-hii*. The assertion in the likelihood condition is the contribution of the prejacent, in this case, *Aatish passed*. Thus, this leaves an open question.

Notice that these two available readings for *-hii* are also what are allowed for English cases using focus alone. Such cases include a covert exhaustifying effect of *only*, but based on the surrounding discourse, they can easily be cases of pure contrastive focus as well. This raises the possibility that perhaps *-hii* is not an exclusive particle itself, but merely asserts truth of the prejacent, with the optional exhaustive meaning arising from a covert operator, like covert O_C (Chierchia 2006). Such an approach would be similar to what Verma (1971) suggested – that *-hii* itself does not carry any meaning, and will either occur with an overt or silent *only*. We will return to this in Chapter 3.

2.5 Further Thoughts on the Scalarity of *-hii*

We have seen in this chapter that *-hii* has a scalar meaning component that is a conventional implicature. This section will explore further questions that fall out of the scalar meaning of *-hii* that we see evidence for now. These issues have to do with the ability of *-hii* to receive focal stress and the construction of the contextually salient scales.

2.5.1 Focus and prosody effects

While I have been indicating that *-hii* obligatorily occurs with focal stress on the constituent immediately to its left, there are some exceptions to this. There are actually cases where there are prosodic restrictions that lead to *-hii* receiving the focal stress. Consider (123).

(123) a. ?? raam-ko-hii baccoN-ko samhaalna paRaa.
Ram-DAT-HII child-PL-ACC take.care-NF fall-PERF
'Only Ram / Ram himself had to take care of the children.'

b. raam-ko HII baccoN-ko samhaalna paRaa.
Ram-DAT HII child-PL-ACC take.care-NF fall-PERF
'Ram had to take care of the children.'

(Mohanan 1994b:206)

In (123b), -*hii* is itself stressed and made to be part of a separate phonological word. Recall from Chapter 1 Sharma's description of this ability of -*hii* as its phonological independence. Mohanan uses the above contrast to demonstrate why these prosodic constraints exist to allow or disallow certain obligatory case constructions. In this sentence, the stress on -*hii* is necessary for the grammaticality of the sentence. (123a) is unacceptable because it violates a constraint in Hindi against two instances of the case marker -*ko* in adjacent phonological words (see (Mohanan 1994b:204)).[13] While judgments may actually vary, what is important here for the present purposes is that -*hii* may itself receive stress.

Thus, we see that -*hii* can be focused. Furthermore -*hii* can be felicitous with the maximal endpoint of a desirability scale in situations where the focal stress is shifted from the associate of -*hii* to -*hii* itself. Given the above one possible extension to Experiment 1 would be to have a condition in which the items are given, with explicit focal stress shifted to -*hii*. This might allow us to see whether this is a factor in determining whether one gets a minimal desirability reading or a maximal desirability reading. An informant has indicated to me that (124), with the focal stress on -*hii*, yields a reading where the proposition meets prior expectations.

(124) ham log caahte the ki paisaa mile, aur paisaa-HII milaa.
we people wanted PAST that money receive and money-HII received
'We wanted money and we DID get money.'

The speaker's expectation was for money instead of other possible things, and that expectation was met. If the stress is kept on the associated constituent (*paisaa*), this reading cannot be obtained. This is similar to the cases we will look at later on, in which there is reference to something in the common ground, which the speaker refers back to when using stressed -*hii*. In this case, the initial mention of 'money' makes it old information, when referred back to in the second clause.

[13]The analysis, as Mohanan shows, is actually a little more complicated than this, as *raam-ko raat-ko baccoN-ko samhaalna paRaa* 'Ram had to take care of the children at night' is acceptable. See Section 4.5 of Mohanan (1994b) for more details on this and related issues.

2.5.2 Two Scales in the Context

Recall that based on the distribution of the Desirability data in Experiment 1, I explored the possibility that participants may have imposed their own Likelihood scale on the alternatives, even though the one made salient in the experimental background context provided was a Desirability ranking. If this is what was happening, we can see that there can be both a Desirability scale and a Likelihood scale for *-hii* in a single context of utterance. One question that arises from this is which scale wins out in such a situation. We could study this further by designing a followup study where both a Likelihood scale and a Desirability scale are made explicit in the background context.

This can even be illustrated in the case of (124) from the previous section, in which the focal stress is on *-hii* itself and the maximally desirable proposition is felicitous. This may be a case where we see maximal desirability occurring with minimal likelihood. The facts of the world may be such that getting money is the most desirable thing but also the least likely event. For example, this sentence could be uttered if there is a raffle or contest with different levels of winnings, where there will be five people randomly selected to get vacations, and just one selected to get a large sum of cash money. Clearly there is least likelihood of winning the cash money prize, but that is the most desired prize. This issue merits further empirical investigation.

2.5.3 Conceiving of the Scales as Unified

A final issue I want to bring up is whether we can conceive of the scales as unified. One advantage of this is that conceiving of *-hii*'s sensitivity as for a single scale type would give a more parsimonious analysis.[14] One way we could do this is to stick with a scale of noteworthiness.

As already mentioned in Chapter 1, noteworthiness and informativeness have been used for representing the scalarity of *even* instead of the traditional notion of likelihood. Kay (1990) uses the example in (125) to show why informativeness should be the scalar ordering metric for *even*.

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[14]Thanks to Rajesh Bhatt for providing me with this alternative idea.

(125) A: It looks as if Mary is doing well at Consolidated Widget. George [the second vice president] likes her work.
B: That's nothing. Even Bill [the president] likes her work. (Kay 1990:84)

It is possible that there may be assumptions generally that it is less likely for a president to like an employee's work as opposed to a second vice president. However, Kay indicates that B's response could be uttered in a situation where there is no assumption about the relative likelihood of George liking Mary's work versus that of Bill liking Mary's work. Thus, Kay proposes that the relevant scalar ordering metric for the felicity of *even* here is actually based on the level of success for each of the individuals liking Mary's work. That is, there is a higher level of success if Bill likes Mary's work. Thus, such an alternative (*Bill likes Mary's work*) is more informative than *George likes Mary's work*. Herburger (2000) recasts this scalar requirement into one based on noteworthiness; that is *Bill likes Mary's work* is more noteworthy than *George likes Mary's work*.

For *-hii*, we could recast the scalar ordering metric to noteworthiness as well, with the potential added benefit of being able to collapse the two scales of Likelihood and Desirability into a single scale type. Something that is the least desirable would be the most noteworthy. For example, in the poetry sentence from earlier in the chapter, repeated below in (126), the requirement of minimal desirability of writing poetry could be seen instead as maximal noteworthiness. It is more informative or noteworthy that they write poetry, because that indicates something contrary to the expectations of them writing something else.

(126) ve kavitaa-hii likhate haiN.
they poetry-HII write.HAB.PL be-PRES.3.PL
'They only write poetry.' (Varma 2006:97)

Conversely, something that is the most likely would be the least noteworthy. If someone is most expected to come, then it is unsurprising, or minimally noteworthy, that they came.

In this way, we could see *-hii* as being felicitous for either the maximal or minimal endpoint of a Noteworthiness scale.

2.6 Summary

We see in our examination of the empirical data regarding -*hii* alongside the range of use documented for English *only* that the two lexical items are similar. Both are exclusive particles that have a scalar meaning component. Both the non-scalar and scalar versions of *only* can be perceived as two versions of one particle, the scalar *only*. What is different about the two is the element of likelihood. -*Hii* is felicitous with the maximally likely proposition. English *only* does not associate with likelihood, but there are accounts (Zeevat (2009) and Beaver & Clark (2008)) that indicate that there is a critical mirative (surprise) meaning component to *only*, as we will see in Chapter 5.

This chapter has shown that -*hii* is a unique combination of scalar and exclusive meaning. -*Hii* has a scalar meaning, as evidenced by the experimental data described in this chapter. Furthermore, we also saw that -*hii* can associate with either the MAX on a likelihood scale or a MIN on a desirability scale. In addition, as demonstrated by the construction of the background contexts in Experiment 1, -*hii* is compatible with cases where exclusivity is already established in the prior discourse.

The likelihood requirement of -*hii* is for the opposite endpoint as that of English *even*. -*hii* is unlike the other scalar particles in Hindi, -*tak* and -*bhii*, in its exclusivity but also its variable selection of endpoint, and all three have distinct roles in the grammar.

Finally, I showed that any of the conclusions about the scalar sensitivity of -*hii* from the judgment study pave the way for answering further questions about the nature of -*hii*.

Chapter 3

Scalar Meaning in the Presence of Logical Strength

As we saw have seen up to this point, the flexible nature of *-hii*'s felicity requirements make it unique among forms of *only* and *even* across languages. In Chapter 2 I motivated representing this aspect of *-hii*'s meaning by a disjunctive statement of conventional implicature, instead of a presupposition, using tests from Potts (2005). I presented evidence that *-hii* expects a scale in the context and is felicitous with the minimal endpoint alternative if the ordering metric is one based on desirability, or the maximal endpoint if the ordering metric is instead one based on the likelihood. In both these instances, the ranking of alternative propositions is based on the likelihood or desirability, cued to the speaker of the utterance.

In this chapter, I turn now to another class of phenomena with *-hii* – specifically, *-hii*'s occurrence with numerals. Numerical scales, and other entailment-based ranking of alternatives, raise two new problems for the role of *-hii*, dealing with the construction of the scale and the combination with the Hindi analogs of *only*.

As can be seen in the case of (127), *-hii* can associate with a numerical determiner.

(127) tiin-hii laRke aaye.
three-HII boy.PL come-PRF.3.M.PL
'Only three boys came.' (Verma 1971:95)

(127) can be uttered just in case the number of boys that came equals three. Furthermore there is an inference that there must have been a prior expectation that the number of boys that would come would be greater than three.

We can see this more clearly in (128) containing two instances of numerals with *-hii* (emphasis my own) plus the expectations made explicit. This is a hit from the the Center for Indian Language Technology (CFILT) Lab Hindi Corpus.[1]

[1]The search tool to browse through the corpus is located at (http://www.cfilt.iitb.ac.in/∼corpus/hindi/). In all cases, the corpus contents only display the original Hindi text, without any information about the

(128) acchaa vah aaTaa **tiin-hii** boraa kyoN hai? usne to paaNc
okay that flour three-HII sack why be-PRES she-ERG TOP five
boraa-ke-liye kahaa thaa. ghii-bhii **paaNc-hii** *canister* hai. usne to
sack-GEN-for say PAST ghee-BHII five-HII canister be-PRES she-ERG TOP
das *canister* maNgvaae the. isi tarah Saak-bhaaji, Sakkar, dahi
ten canister ordered be.PAST this-HII way vegetable-vegetable sugar yogurt
aadi meN bhii kami kii gayii hogii. kisne uske hukma-meN
half in also less do go.PRF.F become.PRF.F who-ERG her order-in
hastakSep kiya?
interference did
'Okay, why are there only three sacks of flour? She had asked for five sacks. Also there are only five canisters of ghee. She had ordered ten canisters. Similarly the vegetables, sugar, and yogurt have also been cut in half. Who interfered with her order?'

Observe that in (128), *-hii* is used with a number of sacks of flour (three) that is less than the requested (five). It is also used with the number of canisters of ghee (five) that is less than the expectation (ten).

Note that in saying "greater than three" for the expectation in (127) we are readily drawing on an ordered scale, without having to make such alternatives explicit. Seemingly the scale arises from simply invoking the numeral, with the scale in this case being one composed of the natural numbers, i.e. $\langle 1, 2, 3, 4, 5, \dots \rangle$. We will see that the scale construction is more complex than this. Importantly, we arrive at this same sort of under-expectation condition for the English translation with *only*.

Cases like (127) are different from what we have seen prior. Recall that scales can be pragmatic or simply based on logical strength. Now I will focus on *-hii*'s use with these latter scale types, using numerals as the point of inquiry. First, observe that the assertive component and inference of '*n*-hii' are equivalent to that of *only n*. Secondly, notice that there is an entailment relationship between the members of the set of alternative propositions. Any world where *three boys came* is true must also be a world where *two boys came* holds; *three boys came* entails *two boys came*, which entails *one boy came*. Two Experiment 1 items in Chapter 2 had numerals involved, but the propositions were defining disjoint sets of worlds, as seen in contexts for the items (129) and (130), taken from Experiment 1. In

source, and without glossing or translations. Glossing inserted here has been checked with an informant.

such cases, the lexical items are not denoting actual numeric values connected by strength, but are instead referencing unique entities. These cases were thus not referencing scales of logical strength.

(129) Chitra's mother Jaya is buying Chitra a gold necklace. Chitra doesn't know how much gold's worth of a necklace her mother will buy, but Chitra hopes for an 18k gold necklace. If Jaya buys her a 10k gold necklace, Chitra will immediately tell her mother to take it back, because she thinks such a necklace would be low-quality. If Jaya gives her a 14k gold necklace, Chitra is unsure whether she would keep it or give it to somebody else.

(130) 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.

In (130), rolling a 6 does not entail Kartik has rolled 5, 4, 3, 2, and 1. In (129), Chitra having an 18-karat gold necklace does not entail she has a 17-karat gold necklace, nor a 16-karat gold necklace, and so on. The numbers used were not denoting numerical values of the type we see in (127). In fact, there is only one necklace that Chitra has, and one roll that Kartik made. The numerals in (129) and (130) do not express quantities in relation to each other, as (127) does.

Attempting to square cases like (127) with the speaker-oriented cases of *-hii* we saw in the previous chapter might lead us to posit a form of *-hii* in the lexicon that is an equivalent of English *only*. Beyond the undesirable lack of parsimony for such a move, there is a separate phenomenon that can arise from these types of logical scales of alternatives. The Hindi lexical items for 'only' (*sirf*, *keval*, *bas*)[2] and *-hii* may commonly co-occur on the same focused constituent, as in (131) from (Verma 1971:87).

(131) sirf tiin-hii laRke aaye.
only three-HII boy.PL come-PRF.3.M.PL

The acceptability of a construction like (131) raises the question of what the precise contribution of *-hii* is in this sentence, or if there is any semantic contribution at all. If *n-hii* is

[2]There are a few other forms of *only* in Hindi, as discussed by Bhatia (2014), but these are the commonly-used lexical items for expressing exclusivity.

equivalent to 'only n', and *sirf* n is equivalent to 'only n' then it is a puzzle how *sirf* *n-hii* is an acceptable construction.

Thus, we begin with the question of how numerals can combine with *-hii*, as well as how numeral scales make it possible for *-hii* to combine with analogs of *only*, using *sirf* for demonstration. The leading question that we will seek to answer about numerals is: How can *-hii* combine with entailment-ranked alternatives in the numeral scales. Secondly, if *-hii* behaves equivalent to *only* in these instances, what is the contribution of *-hii* to the meaning and inference of the sentence, if any? I will argue that an endpoint-selection analysis as already described for *-hii* with pragmatic scales can be maintained with entailment-based numerical scales. Furthermore I will show that a scalar endpoint is again at play when *-hii* and *sirf* combine.

This chapter is organized in the following way. In 3.1 I present background about the semantics of number expressions and the construction of numerical scales. In 3.2, I show how we can update the existing analysis for *-hii* from Chapter 2 to account for numeral association with *-hii*. In 3.3 I then use the problem of *sirf* *n-hii* to explore the theory of Verma (1971) about *-hii* and its association with *sirf*. I clarify the empirical judgments regarding the combination of these particles. In 3.4 I present two possible analyses for the combination of *sirf* with *-hii*. The chapter closes with the summary in 3.5.

3.1 Background on Cardinal Numbers

We begin with a general background into the meaning of numerals. I will discuss the various readings available for number words, and how these meanings arise. There is a vast literature on this topic with many questions being debated, so I will remain neutral as to my position on a theory for numbers. For our purposes here, the choice between accounts is not critical.

3.1.1 Numerals and scales

The meaning of numbers has been the subject of a great amount of study over the last several decades (see Breheny (2008), Kennedy (2013); Spector (2013) and references therein). One point of concern has been the question of what sort of semantic-pragmatic division exists

in the meaning of numerals, as in, for example, the number *three* in (132a-b). While it might seem at first glance that *three* should simply ensure that the cardinality in question is equal to 3, this may eliminate other uses that are acceptable. In (132a), we get precisely this meaning, an 'exactly' interpretation on how many children we count that Fred has. But in (132b), what is salient is an 'at least' interpretation, where the speaker implies 3 or more problems should be solved. (132c) is an 'at most' interpretation of the numeral, as the speaker is saying that someone wouldn't qualify for tax exemptions if they have three or fewer children.

(132) a. Fred has three children.

b. In order to pass, Fred must have solved three problems.

c. If you have three children, you do not qualify for tax exemptions.

(Spector 2013:274)

(132a) would be odd if uttered in a scenario where Fred has more than three children, so assigning the numeral 'three' a general meaning whereby it is true so long as Fred has three or more children would not capture what is most likely intended by this basic sentence. On the other hand, an 'exactly n' interpretation would not help account for the salient interpretation for (132b), where surely Fred should be able to pass if he solves four or five problems.

Before addressing how this issue is dealt with by several researchers in the literature, recall from Chapter 2 the different types of scales that can be invoked, repeated below in (133).

(133) a. Some scales are "semantic" and "logical" in that they form lexical sets which involve logical entailment between expressions ordered by degrees of informativeness/strength, e.g. $\langle all, some \rangle$, $\langle must, may \rangle$, $\langle hot, warm \rangle$. *All* entails *some*, but not vice versa, etc.[3] These are widely known as "Horn scales" (e.g. Horn (1989)). They are inherently scalar, like degree modifiers.

b. Some scales are non-logical, pragmatic scales invoked by, among other things, (a) connectives, e.g. *in fact*, which rhetorically marks what follows as a better

[3]Here the stronger element is placed to the left within the brackets. Some authors place the stronger element to the right.

or more specific instance (cf. *bad, in fact terrible*); (b) temporals, e.g. *still* in *She is still talking about the party*; (c) part-whole, e.g. finger–hand–arm (see Fauconnier (1975); Hirschberg (1985); Kay (1990)); and (d) focus modifiers. Here there are not logical entailments, but implicatures derived from speaker-addressee expectations about the world. These are not inherently scalar, but evoke scales.

c. Some scales are "argumentative"; utterances are presented as ranked with respect to the strength or force for a conclusion.

(Traugott 2006:341)

Numeral scales give rise to the type of scale involved in (133a). These types of orderings gives rise to *scalar implicatures*, which are defined in (134).

(134) *Scalar implicatures*:

Given any scale of the form $\langle e_1, e_2, e_3, \dots \rangle$ where e_1 through e_n are scalar expressions, if a speaker asserts $A(e_n)$, then he implicates $\neg A(e_{n+1})$, where A is a sentential frame and $A(e_x)$ is a well-formed sentence.

(cf. Levinson (1983:133))

More specifically, the construction of the scale in (134) has an epistemic component. If the speaker asserts a weaker element on the scale, then he or she doesn't believe that the stronger element holds.

It is important to understand the distinction between scalar implicatures and other types of meaning that could be relevant to our study here. The scalar implicature of (134) has the two qualities listed in (135). Given an ordering based on entailments, it arises from assumptions about speakers engaged in cooperative conversation.

(135) a. It is a *conversational implicature* in the sense that it is not a logical entailment, but an inference based on a reasoning about speakers' goals.

b. It is scalar in the sense that it is triggered by a specific lexical item (numerals, 'or', 'some', etc.), which belongs to a *scale*, i.e. a set of expressions that can be thought of as natural alternatives to each other and are ordered in terms of logical strength. (Spector 2013:276)

Several different approaches exist to explaining the different scalar readings available with numerals. Chierchia (2004), Chierchia (2006), Fox (2007), and others appeal to grammatical "strengthening" to explain scalar implicatures. Breheny (2008) and Kennedy (2013) instead take the position that the 'at most' interpretation of numerals arises from the semantics itself, instead of through a conversational implicature.

While the mechanism through which the 'at most' reading is generated is subject to debate, I want to follow the view that numerals unambiguously have an 'at least' meaning, with the 'exactly' meaning arising as an implicature. Whether the pragmatic or the grammatical approach is used to account for the implicature is not a critical decision for our goals. I will provide here some background on the strengthening approach, which grammaticizes the pragmatics by adding a covert operator into the logical form.

Chierchia (2013) motivates the existence of covert *only* by the examples in (136). In both (136a) and (136b), there is an exhaustified reading, even though an overt form of *only* is not present.

(136) a. I went to the party, greeted everybody, hugged Paul and Sue and left.

(Chierchia 2013:23)

b. A: Mary likes the kids.
B: Not really, she likes PAUL and SUE.

(ibid.:161)

In (136a), one can infer that the speaker only hugged Paul and Sue, and nobody else at the party. In (136b), one infers from B's response to A that Mary only likes Paul and Sue, and no other kids.

By the Strengthening account, readings where these kinds of implicatures are obtained are ones in which covert exhaustivity is grammatically incorporated into the semantics of the interpreted string. Chierchia introduces the operator O_C as defined in (137) that functions in this role of providing a more restricted interpretation to the sentence.

(137) $[\![O_C[q]]\!] = q \wedge \forall p[(p \in C \wedge p) \rightarrow q \subseteq p]$ (Chierchia 2006:546)

Not all cases involving lexical triggers for scalar implicature actually give rise to the implicature at the sentential level. To account for how only certain types of environments

give rise to a scalar implicature, Chierchia proposes that the inference cannot be obtained unless it strengthens the meaning of the sentence, as indicated by the principle in (138).

(138) Maximize Strength:

Don't add an implicature if it leads to weakening, unless you have to.

(Chierchia 2013:46)

If we take a simple example of the quantity implicature triggered by the word *some*, we derive through (138) the reason why the implicature is added to give the meaning *some but not all*, for (139). The relevant scale of lexical alternatives is ⟨some, all⟩.

(139) John read some books.

⇢ John read some but not all books.

To see how this is accounted for, take the set of worlds in (140), where there are two books that John could have read.

(140) w_1: *read*(john, book1), ¬*read*(john, book2)

w_2: ¬*read*(john, book1), *read*(john, book2)

w_3: ¬*read*(john, book1), ¬*read*(john, book2)

w_4: *read*(john, book1), *read*(john, book2)

The non-strengthened meaning of *John read some books* is true in w_1, w_2, and w_4. The strengthened reading, where *some* is taken to mean *some but not all* is true only in w_1 and w_2. Thus adding the implicature takes us to a smaller set of worlds for which (139) is true, and by (138) we can retrieve the scalar inference. Thus, the covert exhaustivity operator is included in the parse for (139).

To see how the Maximize Strength Principle steps in to prevent an implicature from arising despite the presence of the appropriate lexical item, take the sentence in (141). Assuming we are going with the scoping of negation outside of *some*, we might ask why we do not get the interpretation *It is not the case that John read some but not all books.*

(141) John didn't read some books.

(NO IMPLICATURE)

For the reading of (141) where negation scopes outside of *some*, the non-strengthened reading is true only in w_3, where John read no books at all. But adding the implicature for the

strengthened reading means that *John read some books* is true just so long as he read either book1 or book2 but not both (w_1 and w_2). Then adding negation makes (141) true in w_3 and w_4. Thus, we get truth in a larger set of worlds than we did with the non-strengthened reading. By (138) the implicature cannot be added, since we get a weakened meaning. This is the correct prediction for (141), so the sentence should not be exhaustified with O_C.

With this background about strengthening, we can now examine how numerals are interpreted in this grammatical approach. Spector (2013) shows how (142) gives rise to an 'exactly 3' interpretation when reasoning about the speaker's goals, explained in (143).

(142) Three girls went to the party. (Spector 2013:275)

(143) a. The author of (142) must believe that three or more than three girls went to the party. This follows from the assumption that a cooperative speaker only says things that she believes – Grice's maxim of *quality*.

b. Had she furthermore believed that more than three girls came to the party, it would have been better for her to say 'four girls came to the party'. This is due to the fact that (a) numerals are natural 'alternatives' of each other (they form a 'scale' in neo-Gricean parlance) and (b) a cooperative speaker, when choosing between different alternative sentences, picks the one that provides as much relevant information as possible compatible with her beliefs – and the proposition that four or more girls came to the party asymmetrically entails the proposition that three or more girls came to the party, hence is strictly more informative.

c. Hence, the speaker does not have the belief that more than three girls came to the party.

d. Assuming that the speaker is knowledgeable, she must in fact believe that 'exactly' three girls came to the party.

(Spector 2013:275-76)

This works to capture the 'exactly n' interpretation for (142). If the speaker had information that four girls came, that would been uttered instead of the weaker *three girls came*. Thus, we exhaustify '3 girls came.' This grammaticalization approach does not however capture

the following case with negation. With (144) it is an 'exactly' reading of *ten* that is salient.

(144) Peter didn't solve 10 problems. (Spector 2013:278)

As Spector argues, the 'exactly 10' reading is available, without any special intonation, which goes against the traditional assumptions of the strengthening approach. Furthermore, (145) with *or* in B's response is infelicitous unless the first occurrence of *or* is stressed. (Here the alternative of *or* is *and*.) In contrast, (146) is considered acceptable.

(145) A: Fred solved the first or second problem. What about Peter?
B: #I don't know, but I don't think he solved the first or second problem. He either solved both or neither, but not just one. (ibid.)

(146) A: Fred solved 10 problems. How many problems did Peter solve?
B: I don't know, but I don't think he solved 10 problems. He may have solved fewer than 10 or more than 10 problems, but not just 10. (ibid.)

Thus, Spector promotes an ambiguity view of numerals, where numerals are ambiguous between an 'at least' and 'exactly' interpretation. His account involves an appeal to the covert exhaustivity operator described previously. Thus for (147) the set C contains all sentences of the form 'n men came in.'

(147) Three men came in. (Spector 2013:288)

Without exhaustifying, we get an 'at least n' interpretation, but with exhaustification we get the 'exactly n' interpretation, as in (148).[4]

(148) '*exh*(Three men came in)' is true if and only if 'Three men came in' is the most informative true sentence among the sentences of the form 'n men came in'. (ibid.)

The interested reader is directed to Carston (1998), Breheny (2008), and Kennedy (2013) to see how these readings for numerals are dealt with in other accounts, including views about the 'at most n' interpretation.

[4]Spector and some others (Crnič (2011), for example) use the name *exh* to refer to the covert exhaustivity, instead of O_C as Chierchia.

3.2 Accounting for -*Hii* with Numerals

With the background information about numerals and the various readings arising from them, we can now try to account for -*hii* and numerals. First, Hindi numerals are like English numerals, in that with a number like 'four', the 'at least' reading can be obtained by explicitly suspending the implicature of 'exactly 4'. See (149a) and (150a).

(149) Sam ate four cupcakes.

a. ...and in fact he ate five.

(150) jon-ne caar miThaii khaayii.
John-ERG four sweets eat-PRF.3.SG.F
'John ate four sweetmeats.'

a. ...aur *actually* us-ne paaNc khaayii.
and actually he-ERG five eat-PRF.3.SG.F
'...and actually he ate five.'

The first question is how the scale of numerals itself is composed. Notice in these cases that the ordering does not rely on the speaker's own orderings, unlike the cases in Experiment 1. -*Hii*, like *only*, requires the numerical value to be less than (i.e. the proposition to be weaker than) the expectation. If the scale is one of natural numbers, then another unique quality with numerals is that the scale we are dealing with appears to not be bounded on one of the ends, as the set of natural numbers starts at 1 and continues to positive infinity.

In trying to determine how we can account for this data, let us try to modify the current analysis, which is repeated in (151) from Chapter 2.

(151) -*hii*(C,p,w) (FIRST VERSION)

Conventionally Implicates:

$(\forall p' [(p' \in C \wedge p \neq p') \rightarrow p \succ_{likely} p']) \vee (\forall p' [(p' \in C \wedge p \neq p') \rightarrow p' \succ_{desirable} p])$

Asserts: $\forall p' [(p' \in C \wedge p'(w)) \rightarrow p' = p]$

The implicature in (151) is that the other propositions within the alternative set should all be less likely than the prejacent, or they should all be more desirable than the prejacent. Now we would like to add to this statement that -*hii* might actually assert an upper bound

on a numerical scale. One way we can do this is to make the second disjunct in (151) more general. If the scale of numerals is one containing just natural numbers, we always get a scale that has a lower bound of *1*, and thus whatever we assert with *-hii* may not actually be the minimal endpoint. That is, for *tiin-hii* ('three-hii'), if we mandate that *three* is the minimal endpoint, a sentence with this expression will always be infelicitous no matter what, given the scale $\langle 1,2,3,\ldots \rangle$ for a set of natural numbers.

Assuming a set of natural numbers seems reasonable, but *-hii* can easily associate with fractional amounts as well. Take for example the sentence in (152), where *-hii* associates with *aadhaa* ('half').

(152) caai-meN aadhaa cammac hii Sakkar Daalaa. isiliye kam meeThaa lag rahaa
tea-in half spoon HII sugar put why less sweet feel PROG
hai.
be-PRES
'There is only half a spoon of sugar in the tea. That is why it is less sweet.'

As Krifka (2002) and Cummins, Sauerland & Solt (2012) show, different *granularities* may exist for numerical scales in this way depending on the amount of precision required by the discourse context. Thus, we can perfectly well imagine that instead of whole numbers, a scale can include fractional numbers as well. Even further, there are reasons to suppose that the scale may not be one that has discrete members at all, or even has a positive value as the minimum. Fox & Hackl (2006) show that a scale of discrete natural numbers cannot be assumed, and instead there are *dense* scales, in which there are an infinite number of elements between any two scalar items. These are all issues of the construction of numerical scales in general.

Returning to *-hii*, we cannot explain the interpretation of numerals with *-hii* in terms of adding an exact specification reading. For example, it is not the case that we have *caar* mean four or more in (150), and then that the addition of *-hii* would make it exhaustified to an 'exactly 4' reading. Keep in mind that there is the similarity to *only* for *-hii* with numerals described at the beginning of the chapter, and *only* is not *exactly*. Numerals with *-hii* appear to have the equivalent purpose as using numerals with *only*. Beaver & Clark (2008:252) write about the use of *only* that a critical component to its meaning is the presence of an expectation of something stronger being true. See their examples in

(153)-(154), where switching the number and the expectation result in infelicity.

(153) a. London police expected a turnout of 100,000 but only 15,000 showed up. What happened?

b. # London police expected a turnout of 15,000 but only 100,000 showed up. What happened?

(154) a. On the other hand, seven people expected a negative result but only two received one.

b. # On the other hand, two people expected a negative result but only seven received one.

As can be seen by these pairs of examples, *only* can be used with numbers that are lower than expected. The same effect can be seen in Hindi with the forms that are the direct equivalent of *only*, shown in (155)-(156).

(155) a. *london police*-ko 100,000 *protester*-ki sambhaavna thii par
London police-ACC 100,000 protesters-GEN possibility be.PAST.3.SG.F but
sirf/bas/keval 15,000 protester aaye.
only 15,000 protester come-PRF.3.PL
'London police expected 100,000 protesters but only 15,000 came.'

b. # *london police*-ko 15,000 *protester*-ki sambhaavna thii par
London police-ACC 15,000 protesters-GEN possibility be-PAST.3.SG.F but
sirf/bas/keval 100,000 *protester* aaye.
only 100,000 protester come-PRF.3.PL
'London police expected 15,000 protesters but only 100,000 came.'

(156) a. saat logoN-ke parikSaa meN *fail* hone ki sambhaavna
seven people-GEN exam in fail be.INF.PL GEN possibility
thii, par sirf/bas/keval do log *fail* hue.
be.PAST.3.SG.F but only two people fail be.PRF.PL
'Seven people expected to fail the exam but only two people failed.'

b. # do logoN-ko parikSaa meN *fail* hone ki sambhaavna
two people-ACC exam in fail be.INF.PL GEN possibility
thi, par sirf/bas/keval saat log *fail* hue.
be.PAST.3.SG.F but only seven people fail be.PRF.PL
'Two people expected to fail the exam but only seven people failed.'

The same patterning of restriction exists for *-hii* as well. Consider (153)-(154).

(157) a. *london police*-ko 100,000 *protester*-ki sambhaavna thii par
London police-ACC 100,000 protesters-GEN possibility be-PAST.3.SG.F but
15,000 protester-hii aaye.
15,000 protester-HII come-PRF.3.PL
'London police expected 100,000 protesters but only 15,000 came.'

b. # *london police*-ko 15,000 *protester*-ki sambhaavna thii par
London police-ACC 15,000 protesters-GEN possibility be-PAST.3.SG.F but
100,000 *protester*-hii aaye.
100,000 protester-HII come-PRF.3.PL
'London police expected 15,000 protesters but only 100,000 came.'

(158) a. saat logoN-ko parikSaa meN *fail* hone ki sambhaavna
seven people-ACC exam in fail be.INF.PL GEN possibility
thii, par do-hii log *fail* hue.
be.PAST.3.SG.F but two-HII people fail be.PRF.PL
'Seven people expected to fail the exam but only two people failed.'

b. # do logoN-ko parikSaa meN *fail* hone ki sambhaavna
two people-ACC exam in fail be.INF.PL GEN possibility
thii, par saat-hii log *fail* hue.
be.PAST.3.SG.F but seven-HII people fail be.PRF.PL
'Two people expected to fail the exam but only seven people failed.'

Seemingly, then, with numerals there is no discernible difference between the use of *only* (*sirf*/*bas*/*keval*) and the use of *-hii*, but we need to square this with the previous observations about *-hii* used with pragmatic scales. Verma (1971) had used numerals in his original outlining of data that led to his conclusion that there is no difference between the sentences with *-hii* and the sentences with *sirf* 'only'. Note that this is in stark contrast to the MAX-likely requirement that we posited for *-hii* in Chapter 2. By definition, if something is under expectation, then it cannot be maximally likely. Furthermore, the scale is not composed of elements based on the speaker's ranking of desirability, but rather a logical scale based on numerical ordering. What I will try to do in the next few pages is explain how the endpoint requirement of *n-hii* is derived.

One way to approach this issue is to simply define a boundary for where *-hii* cannot occur for numerals. Specifically, this would be to prevent it from associating with anything that is higher than the expectation, i.e., allowing felicity with a numeral that is less than or equal to the expectation.[5] There are advantages to this kind of solution. Firstly, this means that

[5]I thank Veneeta Dayal for suggesting this option to me.

for a given numerical scale and a given context, multiple numerals can be asserted with *-hii* felicitously. That is, for an expectation of ten boys coming, we can assert *das-hii* ('ten-hii'), *nau-hii* ('nine-hii'), *aaTh-hii* ('eight-hii'), etc. This is a result that we want. Compare this to the pragmatic scales we had examined before in Chapter 2. For a given scale in a given context, only one alternative (namely, the MAX on likelihood and the MIN on desirability) could be felicitous with *-hii*.

This bounding method may be a good option to go with, but there are several issues. The first is that it does not correspond with the endpoint-marking analysis for *-hii* that we have seen to hold so far. Ideally, an analysis for *-hii* for entailment-based scales should be in line with that for pragmatic scales. Secondly, it does not capture the fact that an equal-expectation reading requires special prosody. Out of the blue, asserting 'n-hii' will give the inference that the expectation was strictly greater than n. The equal-expectation reading requires focal stress on *-hii* itself, as described at the end of Chapter 2.

I see two possible ways to deal with the need to have a numeral with *-hii* select for the minimal endpoint of the scale, in keeping with the current endpoint type of analysis for *-hii*. I want to illustrate this with a simplified view of the scale, where it includes discrete natural numbers. Suppose that this numerical scale, which is bounded only at the low end, is actually *truncated* due to relevance. That is, perhaps some alternatives are not in C at all due to the discourse context because of a form of domain restriction on the set of propositional alternatives. How much of the entire set of natural numbers is included in the set of alternatives for a particular utterance is determined by the particular context of use. Through this context-driven paring down of alternatives, there is then a definitive MAX and MIN.

This method of *scale truncation* is presented by Chierchia (2004) and by Chierchia (2013) in regards to NPI's and related constructions. This method allows the lexical item to associate with the endpoint of the scale in situations where the necessary alternative may not otherwise be at the endpoint. In (159), there is association of *many* with a scalar endpoint, even though we would imagine the scale to be ⟨some, many, every⟩, where *some* is the MIN instead of *many*.

(159) I typically don't have many students with any background in linguistics.

(Chierchia 2004:85)

Chierchia proposes that the scale with *many* can be truncated in the negated sentence so that the scalar endpoint is *many*. That is, the scale is ⟨many, every⟩.

Gajewski (2011) extends the truncation analysis of Chierchia to account for negative scales with *few*. Consider (160).

(160) Typically, few students in my class take an interest in semantics.

(Gajewski 2011:130)

For (160), instead of the scale being the Horn scale *few* is associated with (⟨no, few, not every⟩), it is truncated such that *few* is the MIN – ⟨few, not every⟩.

Furthermore, under the generalization that NPI's associate with low values on a scale, Chierchia (2013) shows that having the adverbial *all that much* associate with ends of the scale seems to be a counterexample, as in the sentences in (161).

(161) a. I don't have much time.

b. There aren't ever many happy customers. (Chierchia 2013:234)

Uttering (161a) will imply that I don't have any time at all, in the same way that the use of a minimizer like *I don't have an ounce of time* would accomplish. Similarly (161b) indicates that there are few happy customers. "The idea is that low quantities in certain contexts may not reach a threshold of significance. Having too little time is like having no time at all; having too few customers is like having none" (Chierchia (2013:235)).

The scale for *much* is truncated such that it is the lowest ranked alternative – ⟨much,most,all⟩. Normally, *much* would not be the endpoint of the scale, as we would otherwise imagine that something even less in quantity would be the lowest-ranked value. Just as with the behavior of minimizers, *much* can behave like an NPI, making (162a) ungrammatical but (162b) acceptable, where it occurs with negation.

(162) a. * John smokes much.

b. John doesn't smoke much.

Borrowing on this idea of scale truncation, it may well be that for a sentence like (127), repeated in (163) below, the alternatives do not include all the numbers starting at 1.

Suppose that we have a context where we expected five boys to come, and it is in our range of possibility that three to seven boys could have come.

(163) tiin-hii laRke aaye.
three-HII boys come-PRF.PL
'Only three boys came.'

With the sort of scale depicted in Figure 3.1, (163) is felicitous. Notice that *-hii* is selecting for the MIN, consistent with its behavior in pragmatically-formed scalar orderings based on speaker desirability in Chapter 2.

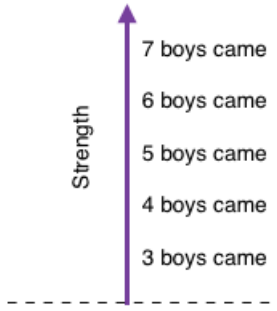

Figure 3.1: Truncated scale for numerals in (163).

Observe that the speaker-oriented nature of *-hii* still enters the picture here, even though the scale for numerals appears to be fixed before truncation. While we will always have a scale invoked by a numeral that starts at 1 and goes to infinity, observe that, based on relevance, truncation can ensure that there is actually a smaller, bounded scale.

Thus, we could assume scale truncation plays a role for alternatives involving numerals, and adjust our statement of the conventional implicature of *-hii* to reference a more general statement of the selection of a MIN endpoint. Note the second conjunct of (164), which is underlined.

(164) *-hii*(C,p,w) (SECOND VERSION)

Conventionally implicates:

$(\forall p' [(p' \in C \wedge p \neq p') \rightarrow p \succ_{likely} p']) \vee \underline{(\forall p' [(p' \in C \wedge p \neq p') \rightarrow p' \succ p])}$

Asserts: $\forall p' [(p' \in C \wedge p'(w)) \rightarrow p' = p]$

Such a statement would indicate that if the speaker's ranking of likelihood comes into play, *-hii* should be felicitous with the MAX endpoint. In other cases (desirability scales, or scales

based on numerals that have logical entailments), there should be felicity if the alternative is the minimal endpoint. What this lexical meaning is now saying is that -*hii* can occur with a variety of scale types. Whether that scale comes from a speaker-oriented scale, or comes for 'free' from a quantity-inducing item like a numeral, -*hii* wants the endpoint of that scale and defines an upper bound.

A natural next question is how the other scale type – likelihood – can be folded into this schema to make the inference about endpoint selection more general, and whether there is any motivation to do so. Crnič (2011) shows that for *even* an axiom holds regarding the relationship between scalarity and entailment, stated in (165). By (165), the ordering of alternatives on a scale of likelihood has to respect logical entailments. This is drawn from Kolmogorov (1933)'s third axiom, indicating that the probability of the union of mutually exclusive propositions equals the sum of the individual propositions' probabilities ((166)).

(165) Scalarity and Entailment:

If a proposition p entails a proposition q, q cannot be less likely than p.

(Crnič 2011:15)

(166) if p_1, p_2, ... are mutually exclusive, $\Pr(p_1 \cup p_2 \cup \dots) = \sum_i \Pr(p_i)$

(ibid.)

Using this relationship between probability and set entailment, we find that there is an inverse correspondence between the directionality of strength based on entailment, and likelihood, as shown in Figure 3.2.

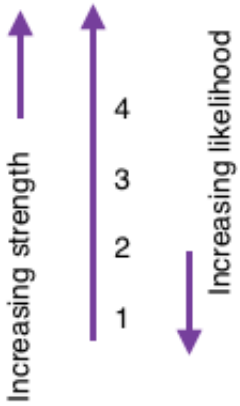

Figure 3.2: Strength and likelihood directionality for numerical scales.

This seems to be a fortunate result that is consistent with what we have already defined. If 1 is the weakest (its set of worlds is the superset of all the other numeral-defined sets in the set of natural numbers), it is the MAX of a likelihood scale. This means there is no contradiction between the disjuncts of the felicity condition in (164), one of which expects a MAX-likely proposition, and the other of which expects a MIN-ranked proposition.

Nevertheless, the fact that a lower number is asserted with *-hii* (or *only*) gives a clear idea that it is unexpected, or a surprise. This has been discussed for *only* as the mirative sense of *only* (Zeevat (2009), Al Khatib (2013), Beaver & Clark (2008)), which I will discuss further in Chapter 5. What is striking about *-hii* is that the likelihood/probability that arises out of entailment relationships can be at odds with the sense of likelihood according to the speaker. I will show how likelihoods can play a role in desirability scales, making them critically intertwined. But for the moment I highlight this as one of the defining properties of *-hii* with entailments.

To sum up this section, we see evidence that: (i) *-hii* systematically associates with an endpoint; (ii) a scale that is unbounded on one end, like the one associated with numerals, is truncated (trimmed) so as to have a endpoint, and this is ensured by *-hii*; (iii) while we don't immediately see a speaker-based likelihood ordering for numerals, it invariably arises from the particular discourse; (iv) *-hii* is different from *only* in having the flexibility to associate with rank-orderings of likelihood that do not fall out of entailments, as we saw in the previous chapters.

3.3 *Sirf* and *-Hii* Together

We have seen up to this point that *-hii* exhibits certain behavior with numerals, where its function seems to converge with that of *only*. The next question is how it is that *-hii* and *sirf* ('only') can combine to associate with the same numeral expression. Verma (1971) had indicated that *-hii* does not carry any semantic contribution and the exclusive meaning comes about because of being in the presence of either an overt or covert 'only' form. I will now specifically critique Verma's idea by looking at the co-occurrence of *sirf* and *-hii*. Verma indicates that the combination of *sirf* and *-hii* yields a meaning not any different from the use of *sirf* alone ((167)).

(167) sirf tiin-hii laRke aaye.
only three-HII boys come-PRF.PL
'Only three boys came.' (Verma 1971:87)

Importantly, we can only find the double-marking of *sirf* and *-hii* on the same constituent in cases of numerals and other NP's, not with adjectives or adverbs. In probing this issue of *-hii* and *sirf* together, I will confine myself to numerals.

From the perspective of principles of cooperative conversation, it is difficult to see how (167) squares with the Maxim of Manner, which mandates that interlocutors be perspicious (see Grice (1975:27)). If *sirf* and *-hii* have the same function, it should sound redundant to have them together, and therefore be a violation of Gricean principles. It should be dispreferred to use *sirf* with *-hii* if there is no added value of *-hii* when the scale is composed of numerals. Nevertheless, since speakers commonly flout maxims, the problem is much more fundamental than this. Specifically, are the readings of *sirf n-hii* and *n-hii* actually truly equivalent?

There is reason to suspect that in actuality there is not a complete equivalence in these interpretations. First, anecdotally, judgments from informants suggest that when *sirf*, *bas*, or *keval* are combined with *-hii*, the result is more intensificational than just using the *only* form alone, without *-hii*. That is, the interpretation of (167) is more indicative of a translation with extra stress on 'three'. This is an observation I start with.

Some naturally occurring examples of the use of *sirf n* with *-hii* are in (168)[6] and (169)[7].

(168) Sanivaar-ko chattiis joRe-ko bulaayaa gayaa thaa. halaanki **keval**
Saturday-ACC thirty-six couples-ACC invited go.PRF PAST but only
baarah-hii aaye.
twelve-hii come-PERF.3.PL
'On Saturday, thirty-six couples were invited. But only twelve came.'

(169) phir jab *mexico*-se ek puraani naav par savaar bayaasi logoN-ke
then when Mexico-from one old boat on passenger eighty-two people-of
saath *castro* swadeS mukti-ke-liye calaa to samudra-meN-hii
with Castro homeland liberation-GEN-for go then sea-in-HII
jalplaavan-kii naubat aa gaye the. **keval baarah-hii** bac gaye the.
submergence-of outcome come go.PRF PAST only twelve-HII save go.PRF PAST

[6]From www.amarujala.com/uttar-pradesh/bareilly/Bareilly-87565-120; emphasis my own

[7]From www.livehindustan.com/news/article/article1; emphasis my own

'Then when an old boat carrying eighty-two passengers with Castro left from Mexico for the liberation of the homeland, it was almost submerged right into the sea. Only twelve survived.'

We can see in (168), that the number of couples expected by the speaker is eighty-two, and the actual number that came was twelve. In (169), the number expected to survive is eighty-two passengers, and the actual number that survived is much lower – twelve.

While the above examples show that yet again, *-hii* associates with a numeral that is lower than the expected number, the claim I want to make is that the use of *sirf* and *-hii* together is to assert that the number is significantly lower than what the particular speaker would expect. This is essentially, then, the intensified meaning of *-hii*. Thus there is still a speaker-oriented aspect to the use of *-hii* here. It is more than the meaning of *sirf n*, which by itself will not contribute this inference. Furthermore, (170) reveals that *sirf* and *-hii* may only combine if *n* is strictly less than the expectation, and not equal to the expectation.

(170) a. maiN-ne socaa thaa ki caar aayeNge lekin sirf do-hii
I-ERG thought PAST that four come.3.M.PL.FUT but only two-HII
aaye.
come-PRF.3.PL
'I thought that four would come but only two came.'

b. * maiN-ne socaa thaa ki caar aayeNge aur sirf caar-hii
I-ERG thought PAST that four come.3.M.PL.FUT and only four-HII
aaye.
come-PRF.3.PL
'I thought that four would come and only four came.'

c. maiN-ne socaa thaa ki caar aayeNge aur caar-HII
I-ERG thought PAST that four come.3.M.PL.FUT and four-HII
aaye.
come-PRF.3.PL
'I thought that four would come and four (did) come.'

(Veneeta Dayal, p.c.)

What we observe from the above is that *-hii* and *sirf* have distinct contributions, even though they are compatible with each other. Thus, the proposal of Verma (1971), claiming that *-hii* and 'only *n*-hii' are equivalent, is not correct.

More specifically, the generalization we are able to draw from the use of *sirf* and *-hii*

is that they can combine with numerals so long as the cardinality of the expected number is strictly greater than that of the one asserted. This means that in the cases of equal-to-expectation n, the only one that can be used is 'n-hii.' But for a lower-than-expected n, there is the choice of using either *sirf n*, *n-hii*, or *sirf n-hii*. Based on the data in (168)-(169) speakers may prefer to use *sirf n-hii* when intending to show that the amount of difference between n and the cardinality of the expectation is larger than expected. This is where the intensificational component of *-hii* plays a role, which I mentioned in Chapter 1 and will elaborate on in Chapter 5.

A more systematic judgment study would be needed to confirm these observations, but for now I will explore two possible solutions to how *-hii* and *sirf* may combine.

3.4 A Possible Solution for 'sirf n-hii'

One possible solution for the problem of how *sirf* and *-hii* combine is to posit that there is an additional scale generated in the context when they both occur together. This scale would be one based on the degree of speaker surprise. That is, for (169), twelve people surviving is so low a number with regards to expectation that it is at the end of a scale of surprise. We will see in Chapter 5 how this relates to a meaning component of speaker surprise in Italian *-issimo*, as discussed by Beltrama & Bochnak (2015). *-Issimo* is shown to have expressive content, as shown by Potts (2005) to exist for epithets in English and Japanese honorifics.

Here I will explore a different approach – one that has some initial appeal but will ultimately prove unsatisfactory. We could consider *-hii* to be a pragmatic slack regulator, as has been proposed for Marathi *-c* by Deo (2014). For a slack regulation analysis, we would suggest that a *sirf n-hii* phrase in Hindi can occur in contexts where the speaker intends a more restrictive meaning than the one conveyed by *sirf n* alone. This is something akin to what we see with "speaking loosely" constructions. Lasersohn (1999)[8] analyzes the contributions of words like *exactly* and *all*, or what are called *slack regulators*. For example, suppose that we need to keep track of what time people have arrived at a place. In most circumstances, we are not concerned with milliseconds, so one could truthfully say that Mary

[8]See also Dowty et al. (1986) and Brisson (1998).

arrived at 3 o'clock, even though she arrived at 03:00:15. Thus, we need to differentiate between (171) and (172).

(171) Mary arrived at three o'clock. (Lasersohn 1999:522)

(172) Mary arrived at exactly three o'clock. (ibid.)

The difference between (171) and (172) is that (171) allows for *slack* of the kind described above. The word *exactly* is key to this difference, as it regulates how much slack is allowed for. Specifically, it ensures that only a very narrow set of situations can be described by the sentence. If we are waiting for Mary to arrive to a doctor's appointment, then her arrival at 03:00:40 is perfectly fine for (171) to be true. For (172) however, we might want to ensure that she arrives no later than 03:00:10 to consider her having arrived at 'exactly 3 o'clock.' On the other hand, this loose talk scenario does not arise in every kind of context. If we want to record the exact time Mary crossed the finish line of a marathon, there would be no difference between (171) and (172). Mary would have to have crossed the finish line at 03:00:00 for these statements to be true. There is unlikely to be any leeway.

Similarly, the word *all* can have a slack regulation effect. See (173) and compare this to (174), where *all* is inserted. These examples are originally from Kroch (1974).

(173) The townspeople are asleep. (ibid.)

(174) All the townspeople are asleep. (Lasersohn 1999:523)

Suppose we are in a context where we are trying to determine whether the town's population is asleep so that we may go ahead and attack the town. If it is the case that a few individuals are insomniacs and awake in their beds at home, that won't matter for our purposes. That is a negligible case, and we would consider it true to say (173); for our purposes all the people who should be counted as representing the townspeople as being asleep are indeed sleeping. If on the other hand, the few who are not asleep yet are the guards or nightwatchmen, then (173) cannot be uttered truthfully. For (174), there is no difference; both the cases render this sentence false. There is no slack available with this sentence, because *all* eliminates it.

Lasersohn's way of modeling the difference between these sentences is by establishing that there is a *pragmatic halo* around the proposition in (171) and (173). In general, the halo is a set associated with the denotation of an expression, potentially with its elements

ordered by the degree of closeness to the true value of the expression. The role of slack regulators like *exactly* in (172) and *all* in (174) is to readjust that halo in some way. That is, they 'tighten' the halo to include only the values that are going to be allowed under a more precise and restrictive meaning. This is defined formally in (175).

(175) Relative to a given context C, each basic expression α is assigned a partially ordered set $\langle H_C(\alpha), \leq_{\alpha,C} \rangle$, the halo of α. $H_C(\alpha)$ is understood to be a set of objects which differ from $[\![\alpha]\!]^{M,C}$. We require that $[\![\alpha]\!]^{M,C} \in H_C(\alpha)$. (That is, the denotation of an expression is always included in its halo.) In addition, all elements of $H_C(\alpha)$ must be of the same logical type as $[\![\alpha]\!]^{M,C}$. Furthermore, we require that $[\![\alpha]\!]^{M,C}$ be the unique element y such that for all $x \in H_C(\alpha)$, $y \leq_{\alpha,C} x$. (The denotation of an expression is the centerpoint of the halo.) (Lasersohn 1999:548)

As defined in (175), H will necessarily include the denotation of the expression α and a similar set of objects. Ordered by $\leq$, the denotation of α is the top-ranked item of the set. Other objects are placed in the set by their 'distance' to y.

The meanings of *exactly* and *all* in the sentences above are given in (176).

(176) a. $[\![exactly]\!]^{M,C} = f : f(t) = t$, for all times t in M

b. $[\![all]\!]^{M,C} = f : f(g) = g$, for all groups of individuals g in M

(176a) and (176b) show that *exactly* in *exactly 3 o'clock* serves as an identity function on times, and *all* in *all the townspeople* serves as an identity function on groups of individuals.

Let us see if this account of *exactly* and *all* can hep explain the contribution of *-hii* in *sirf n-hii* contexts. Deo (2014), in fact, has analyzed the Marathi particle *-c* in precisely these terms, and I will return to this further in Chapter 5. Importantly, for now, *-c* is similar to *-hii* in many respects, but there is an important respect in which these two particles part ways, shown by the contrasting data in (177).[9]

(177) a. Question: The train was to arrive at three. When did it arrive?

gaaDi tiin vajtaa-c aali.
car three o'clock-C come-PERF.F.SG

'The train came exactly at three o'clock.' (Deo 2014:12)

[9]Thanks to Kristen Syrett for suggesting exploring this point.

b. Question: The train was to arrive at three. When did it arrive?

relgaaRi tiin baje-hii aayii.
traincar precise three o'clock-HII come-PERF.F.SG

#'The train came exactly at three o'clock.'

c. Question: The train was to arrive at three. When did it arrive?

relgaaRi Thiik tiin baje-hii aayii.
traincar precise three o'clock-HII come-PERF.F.SG

'The train came exactly at three o'clock.'

An *exactly* reading does exist for Marathi -*c* with times, in (177a). We can get this in Hindi, but need to use *Thiik* in addition, as in (177c). This reading does not obtain if -*hii* occurs without *Thiik*, as in (177b).[10]

This contrast suggests that -*hii* cannot be analyzed as a slack regulator. The same is seen in (178), where -*hii* does not appear to lend a meaning of *perfectly* when occurring with *spherical*, unlike the use of slack-regulating *perfectly* with *spherical* in English. See (178) from CFILT (emphasis my own).

(178) pahali manjil par baari-baari-se golakaar tikoni naaliyaaN (dhaariyaaN)
first floor on thin-thin-of spherical triangular drains (stripes)
haiN. dusri manjil-ki naaliyaaN **golakaar-hii** haiN jabki tiisri manjil-ki
be other floor-GEN drains spherical-HII be whereas third floor-GEN
tikoni hai.
triangular be-PRES

'On the first floor there are very thin spherical and triangular drains (in stripes). On the second floor the drains are spherical whereas on the third floor the drains are triangular.'

The discourse in (178) shows that the use of -*hii* with *spherical* is not to indicate that the drains are perfectly spherical instead of not quite spherical, but rather that all the drains are of a spherical shape, instead of some being the triangular shape that exists on other floors.

Let me end by noting some corpus examples of -*hii* that relate to the cases we have been discussing. These examples show that Hindi -*hii* does not exhibit an *exactly* reading with

[10] An informant indicates to me that for a sentence like *das baje hii aanaa haiN* ('We have to arrive at ten o'clock-hii.'), there is an 'exactly' reading on the time required for arrival. What is different about this case from the above, though, is that there is interaction with a necessity modal.

times. Instead, *-hii* is felicitous with a time if the time is strictly earlier than expected, as shown in (179) and (180), both found in the CFILT Corpus (emphasis my own).

(179) lekhaa-ke pitaaji-ko maiN-ne kuc jaldi aane-ke-liye kahaa thaa. vah
Lekha-GEN father.HON-ACC I-ERG some early coming-GEN-for say PAST he
aaTh baje *library* band karvaakar aate haiN, parantu vah Saam **saaRhe**
eight o'clock library close do come be but he evening half
chah baje-hii aa gaye the.
six o'clock-HII come go.PRF PAST
'I told Lekha's father to come a little early. Usually he comes eight o'clock after he closing the library but that evening he was already there at six thirty.'

(180) ham tiinoN (Sankarpaal, piitam, aur maiN) sahpaaThi chuTTi-ke din
we three.PL Shankarpal Peetam and I classmate holiday-GEN day
praayah aaTh baje kharaai cale jaate the aur dopahar-ke-baad tiin-caar
often eight o'clock Kharai leave go be.PAST and noon-GEN-after three-four
baje-tak ankganit-ke savaal haal kiyaa karte the. kaamtaprasaad
o'clock-until arithmetic-GEN problem solve do do be.PAST Kamtaprasad
hamaari sahaayataa savaal nikalvaane meN bahut kiyaa karte the. lambi
our helper solve doer in very did do PAST long.F
praSanavaali hoti thii, to ham praatah lagbhag **saat**
questionnaire did be.PAST.3.SG.F so we morning approximately seven
baje-hii kharaai cale jaate the.
o'clock-HII Kharai leave go be.PAST
'At eight o'clock we three classmates (Shankarpal, Peetam, and I) would go to Kharai on the weekend and up until around three or four o'clock we would solve arithmetic problems. Kamtaprasad helped us out a lot in solving these problems. When there were a lot of problems to solve, then we would go to Kharai at seven o'clock.'

In the case of (179), the expected time of Lekha's father's arrival is eight o'clock but he arrived early, at six-thirty. In the case of (180), the speaker indicates that in a certain situation, he and the others go somewhere one hour earlier than the usual eight o'clock. Thus, we can see from these examples that *-hii* is not used when the time is equal to that expected, but rather earlier than the expected.

Thus, we do not see a use of *-hii* here as performing slack regulation. We conclude that a better analysis would appeal to the intensificational aspect of *-hii*.

Finally, for completeness, I add some examples to show the semantic distinctions with the class of particles that translate as *only* in Hindi. It has been noted briefly that there

are subtle differences between the various forms of *only* in Hindi in other respects, as shown in (181) and (182).

(181) agar aap-ki itni khwahiS hai to bas/??sirf/??keval *TV* khariid
if you-GEN this.much wish be.PRES then only TV buy
lijie.
take.IMP.2.HON
'If you are so keen (on a TV), go ahead and buy a TV itself.' (Verma 1971:89)

(182) Context: Priya has asked her son Anil to buy some bitter gourd but he really dislikes it.

anil karelaa le aayegaa bas/??sirf. khaayegaa nahiiN.
Anil bitter.gourd take come.FUT.M.S only eat.FUT.M.S NEG

'Anil will only BRING the bitter gourd. He won't eat it.' (Bhatia 2014:11)

3.5 Summary

This chapter brought to light data with *-hii* involving combinations with *sirf* and entailment-based scales. We saw that *-hii* and *sirf* have compatible but distinct contributions. This is highlighted when we examine them alone and also in combination with each other.

Using numerals to drive the analysis, we saw that the speaker-oriented nature that we have already witnessed in Chapter 2 did not suddenly disappear with numerals. I showed that there is still a role of the speaker's own expectations in truncating the scale of numerals, unbounded on one end, to whatever subset of numbers is relevant for the discourse context. This buys us an analysis of *-hii* with numerals and entailment-based scales that is in keeping with the endpoint analysis established in Chapter 2 for the felicity of *-hii*.

To explain how *-hii* can double-mark a constituent with *sirf*, I clarified two possible analyses and their limitations. Using Lasersohn (1999)'s pragmatic halos, I explored the precisification function of *-hii* that we see suggested by *sirf n-hii* cases. The combination of these particles is different from what is possible with scalar and exclusive particles in English. I also mentioned the possibility of having multiple scales in the context, where there is an additional scale that is based on speaker surprise. The pragmatic slack analysis, while appealing, exhibits certain limitations, and examining corpus data of *-hii* with times revealed this.

Chapter 4

Scalar Interaction with Negation

Up to this point, I have shown that a core meaning component of *-hii* is scalarity. Specifically, depending on the context, a hearer will infer that the proposition marked with *-hii* is the *most likely* or the *least desirable* amongst the propositions in the alternative set under consideration by the speaker. Furthermore, *-hii* can combine with numerals and other entailment-based orderings of alternatives, while still maintaining speaker orientation. In this chapter, we will focus on a new pragmatic scale type – those scales with alternatives ordered by necessity towards a goal.

With many particles that have a wide distribution, an important question is whether there is a lexical ambiguity. This is important in order to ensure that we have a theory that can adequately explain how such particles are acquired and are processed in real time. This issue has existed for *only* in regards to whether there is a rank-order and quantificational form (see Chapter 2; Riester (2006), Coppock & Beaver (2014) cf. Ippolito (2008)), and for *even* in regards to whether there is an NPI form or whether there is scopal interaction with the NEG marker (Rooth (1992) cf. Wilkinson (1996) and others). We will see in this chapter that there are ways we can avoid positing multiple lexical entries for *-hii*. This becomes clear when we observe the interaction of *-hii* with negation.

The current chapter takes up one of the major puzzles described in Chapter 1 – that of teasing apart *-hii*'s exclusive and scalar functions. In doing so, I provide a new set of empirical judgment data showing that speakers can indeed access these two, distinct interpretations, when the discourse is set up correctly to probe for these readings. I discuss the possibility of having a lexical ambiguity as well as an alternative approach that appeals to the question under discussion (QUD). I show that the QUD, while intuitively a useful discourse component for expressing differences in the discourse context between the two readings, does not fare as well as simply altering the statement of the scalar requirement.

The chapter is laid out in the following way. In 4.1, I describe the core data that can give rise to the ambiguity that is observed when -*hii* interacts with negation. In 4.2, I present an experiment that was designed to elicit judgments about sentences in which -*hii* and negation co-occur. The results show that speakers have the ability to access both a negated 'only' interpretation as well as a negated 'even' interpretation of these constructions. In 4.3, I explain how the two different readings arise, by appealing to at-issueness and an altered statement of the scalar conventional implicature. I also show how other possible approaches to the ambiguity issue are problematic. In 4.4, I explore whether there is a pure exclusive -*hii* without negation. In 4.5, I then raise the issue of a possible alternative reading that is available within the scope of negation. In 4.6, I review the literature on scalar particle interaction with negation, spanning discussion of *even* forms in both Hindi and English, and show how the results on -*hii* bear on this work. In 4.7, I raise a final issue dealing with the modal flavor arising in the presence of negation, and in 4.8, I conclude and sum up the chapter.

4.1 Two Possible Interpretations

Bhatt (1994) argues that speakers are able to get two different readings of sentences in which -*hii* interacts with a NEG marker. These readings are highlighted in (183).

(183) raam-ke-paas-hii banduuk nahiiN hai.
Ram-GEN-side-HII gun NEG be-PRES.3.SG

a. 'Only Ram doesn't have a gun.'

b. 'Even Ram doesn't have a gun.' (Bhatt 1994:8)

From here onwards for convenience I will refer to the type of interpretation in (183a) as the 'only not' reading and the type of interpretation in (183b) as the 'even not' reading.

On the surface, the translations seem to show that the meaning of -*hii* is equivalent to either *even* or *only*, and this is what Bhatt assumed. However the interpretation of (183b) is not the same as what would be given by the Hindi equivalent to *even*, -*bhii*, or -*tak*. The Hindi sentences with -*bhii* and -*tak*, shown in (184)-(186), can have the scalar reading as long as there is a likelihood ordering. With -*bhii*, this reading arises as long as there is focus on the NP (see Lahiri (1998)). As we will see, the interpretation in (183b) requires special

discourse support.

(184) raam-tak nahiiN aayaa.
Ram-TAK NEG come.PRF.M.SG
'Even Ram didn't come.' (Vasishth 1998:217)

(185) raam-bhii nahiiN aayaa.
Ram-BHII NEG come.PRF.M.SG
'Ram also didn't come.' (ibid.)

(186) raam$_F$-bhii nahiiN aayaa.
Ram-BHII NEG come.PRF.M.SG
'Even Ram didn't come.'

Even more puzzling is the possibility of (183a), which appears to not have a likelihood/desirability requirement. In light of the data we examined in Chapter 2, this is a surprising interpretation. Therefore the puzzle is determining how to derive these two distinct meanings for *-hii*, if one interpretation ((183a)) turns out to be apparently non-scalar.

Before trying to explain how the data above is accounted for, our first task is to determine whether there is truly an ambiguity as stated by Bhatt (1994) for *-hii*-marked NP's in negated sentences. This would allow us to determine whether there is the ability for the exclusive component to seemingly divorce itself from the scalar component of *-hii* in the presence of negation. This will affect our proposal for the meaning of *-hii*. If there is evidence of speakers accessing a non-scalar, negated exclusive reading, then the ambiguity question becomes a relevant issue.

The 'only not' reading is seen in examples from the literature like in (187).

(187) a. (sirf) laRke-hii nahiiN aayeNge (laRkiyaaN to aayeNgi-hii).
only boys-hii NEG come.FUT.3.PL girls TOP come-FUT.3.F.PL-hii
'It's only the boys who won't come (the girls will come anyway).'
(Verma 1971:93)

b. raam-ke-paas-hii banduuk nahiiN hai.
Ram-GEN-side-hii gun NEG be-PRES.3.SG
'Only Ram doesn't have a gun.' (Bhatt 1994:8)

(187a) is compatible with a situation where among a set of boys and a set of girls that have RSVP'ed for a party, the boys have responded that they will not come, but all the girls have indicated that they will indeed attend. In this sentence, *sirf* ('only') is shown

to be optional. If it is included, it gives the same interpretation, whereby the boys are the sole group not holding the property of coming. (187b) could describe a context where Ram, Laxman, and Bharat comprise an army, and in tallying up who already has guns and who does not, it is found that Laxman and Bharat each have a gun, while Ram does not. The immediate question is whether these latter interpretations, lacking scalar inference, are truly available.

Secondly, there is reason to suspect that the 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, like (188), or a rhetorical question ((189)-(190)).

(188) wyaakhyaataa-hii nahiiN aaye, sabhaa kaise hoti!
speaker-HII NEG come-PRF.M.SG meeting how happen-IMPERF.F
'The speaker – he did not show up; how could the meeting be held?'

(Verma 1971:92)

(189) yah kaisi jiit hai, jab jiitnevaalaa$_F$-hii nahiiN
this what.kind victory be-PRES.3.SG when winner-HII NEG
rahaa?
remain-PERF-M.SG
'What kind of victory is this when the VICTOR himself is dead?'

(Varma 2006:102)

(190) agar laRke-hii nahiiN aaye, to kyaa maza aayegaa.
if boys-HII NEG come.PERF.PL then what fun come.FUT.3.F.SG
'If the boys – they do not come, then what fun will we have?'

(Verma 1971:92)

(188) might be uttered in a context where there is a meeting that was supposed to be held, with a potentially unknown number of attendees, plus one person who is presenting. The presenter therefore is fully expected to show up, since the meeting requires his presence, to begin with. The speaker does not show up, and the meeting cannot take place at all, regardless of whether anybody else came. Crucially, the inference obtained by (188) is that the speaker showing up is the most important thing for being able to conduct a meeting.

This inference about maximal importance of the individual is similarly the case in (189), where the most important thing for calling something a victory is that the victor has to

live. In (190), it can be inferred that the boys coming is needed for the speaker to enjoy herself. Thus, it appears that this scalar reading of -*hii* is one where there is a conventional implicature regarding the maximal necessity of something to be true in order to accomplish a salient goal in the discourse context. Indeed, given the intuitions, these sentences would better be translated as in (191).

(191) a. If the speaker himself didn't show up, how could the meeting be held?

b. What kind of victory is this, when even the winner isn't alive?

c. If the boys won't come, then what fun will we have?

I will refer to the types of scales that arise in the scope of negation as scales of *goal-oriented necessity*. In (188), the speaker, victor, and boys are at the MAX of such scales, respectively. If however we alter the above cases to (192)-(194), the salient interpretations shift. Out of the blue, as standard assertions, the most salient interpretation is the negated exclusive reading.

(192) wyaakhyaataa-hii nahiiN aayaa.
speaker-HII NEG come-PRF.M.SG
'Only the speaker did not show up.' (other attendees did)

(193) jiitnevaalaa-hii nahiiN rahaa.
winner-HII NEG remain-PERF-M.SG
'Only the victor isn't alive.' (everyone else survived)

(194) laRke-hii nahiiN aaye.
boys-HII NEG come.PERF.M.PL
'Only the boys did not come.' (the girls came)

The experiment I describe in the next section details the empirical judgment task designed to determine whether these readings are obtained. Recall that the design of Experiment 1 (Chapter 2) did not probe the exclusive meaning potential of -*hii*. All the experiment items were set up so that exclusivity was established in the background contexts of the -*hii* target sentences that participants had to evaluate. In Experiment 2 we will actually see -*hii*'s exclusive assertion become apparent. A second difference with what we test is the scale type used for the scalar interpretations. As I have motivated above, the scalar ordering metric appears to be unlike likelihood or desirability, but rather one based on goal-oriented necessity.

4.2 Experiment 2

This study examined -*hii*-marked NP's with sentential negation, in order to determine whether both an exclusive and scalar interpretation are available. The main question that motivated running this judgment study was the following: 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?

4.2.1 Participants

All subjects self-identified as speakers of Hindi, and ranged between the ages of 24 and 58 ($M = 31$). 40 participants were included in total. Subjects were either native or near-native speakers.[1]

Participants were recruited by advertisements posted to LinguistList and Twitter, and they were not compensated. Since two survey versions were active at any given time (corresponding to the two between-subject experimental conditions), the posted study advertisement instructed respondents to click one survey link if their birthday was on an odd-numbered day and click the other survey link if their birthday was on an even-numbered day.

4.2.2 Design

Scopal relation was a between-subject factor.[2] 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. To determine whether -*hii*'s scalar meaning is subject to syntactic constraints, we also included a within-subject condition varying whether -*hii* was associating with the subject or the object of the predicate. This manipulation tested a claim from Bhatt (1994)'s account,

[1] See the Participants section of the Experiment 1 section of Chapter 2 for information on why we chose in our studies to allow near-native speakers of Hindi.

[2] The reason for choosing a between-subject instead of a within-subject design for this factor was because the experimental items were asking the participants to access different scopal relations and different speech acts, so this ensured that each subject only had to consistently interpret one type of speech act and scopal relation in the test items.

stating 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 two practice items that included feedback (see the Appendix B.3). There were two presentation orders for each survey. Within each test condition, there were three test items that favored a 'yes' response and three test items that favored a 'no' response.[3] Five of the filler items expected a 'yes' response and the other five expected a 'no' response. All the filler items were constructed in a parallel fashion as the test items, except the target construction included -*hii* without a NEG word.

4.2.3 Materials

Items were all presented through SurveyMonkey. Participants accessed the survey on their own time using a publically-accessible hyperlink from any computer browser. Each experiment item had the same structure. It began with a brief context describing a situation. In the 'even not' survey there was a salient scale in the context, and in the 'only not' survey, there was no salient scale between the alternatives in the context. Followed by the background context was the target sentence.

In the 'even not' survey, the target sentence was a rhetorical question of the form 'How can we do X, if not Y?' Specifically, this was referencing a goal, X, that could not be accomplished without Y holding. In the 'only not' survey, the target sentence was an assertion of someone not possessing a property. In the 'even not' survey, the associate of -*hii* was also put in bolded text, with the idea that to further facilitate getting the reading, a special prosodic contour would help. Participants were instructed to judge the acceptability of the part of the sentence highlighted[4], which contained -*hii* and NEG. 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'.

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[3]The one exception to this is in the 'only not' subject condition. Due to experimenter error, there were created four test items favoring a 'yes' response and two test items favoring a 'no' response, instead of a balanced three 'yes' and three 'no' like in the other conditions. One of these 'yes' items was thus eliminated from the final analysis.

[4]In the experiment, this was done by making the text color blue, since underlining did not work well for Devanagari script.

A complete list of the test and filler items is in Appendix B.

4.2.4 Procedure

The survey took approximately 30 minutes for each participant to complete. All the stimuli were presented in Hindi script (Devanagari), and subjects responded in Devanagari. One translated sample item is below in (195), from the object condition.[5] The anticipated response is placed in brackets.

(195) 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 Lakshmi doesn't have a **sari**-hii?"

Can this be said? [YES]

In (195), an item from the 'even not' survey, a scale is made salient in the context, and the object of the predicate is what is marked with -*hii* in the target sentence. The target sentence includes a MAX-ranked alternative since the sari is described in the context to be the maximally necessary according to the speaker, Lakshmi's mother.[6]

For items in the subject condition as opposed to the object condition, -*hii* is marked on the subject of the predicate, as in (196) from the 'only not' survey.[7]

(196) Professor Shah is taking Kunal, Niraj, and Pavan on a trip to conduct an archaeological excavation. If Kunal doesn't have a shovel, Professor Shah feels that it will not be possible to proceed with the excavation, because he is the one who will

[5]See Appendix B for the original Hindi target sentence.

[6]It turns out that the forms used for the object-marked condition in this experiment were actually unaccusatives and therefore did not reflect true direct objects with -*hii*-marking. This comment is credited to an anonymous NELS 45 reviewer. However, the same critique can be made of the sentences in Bhatt (1994), which served as the model for forming these target sentences, as seen by (183).

[7]See Appendix B for the original Hindi target sentence.

be doing the digging. If Pavan doesn't have a shovel, Professor 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]

4.2.5 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 (the exclusive reading). 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. Furthermore, based on Bhatt (1994), we predicted that subjects should accept the MAX-ranked alternative with *-hii* is marked on the object, and they should accept both the 'true of one' and MAX-ranked alternative when *-hii* is marked on the subject.

4.2.6 Results

The dependent measure was the percentage of 'yes' responses. The results are presented in Figures 4.1 and 4.2. Error bars represent standard error.

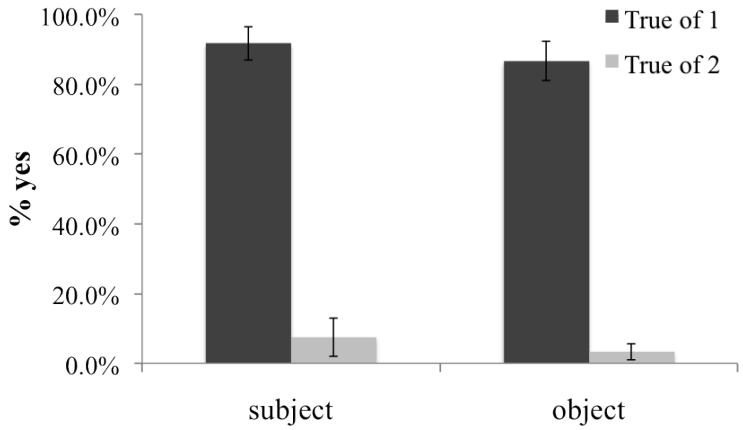

Figure 4.1: Mean acceptances in Experiment 2, *-hii* > NEG condition.

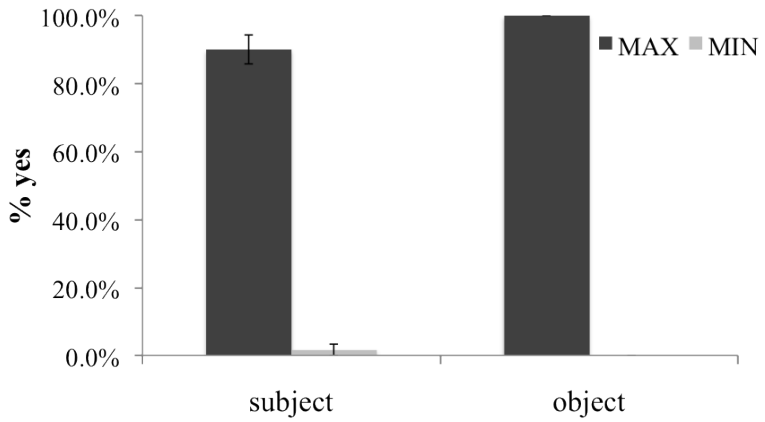

Figure 4.2: Mean acceptances in Experiment 2, NEG > -*hii* condition.

In the narrow scope of negation condition, participants were more likely to choose the alternative where the predicate was true for one individual as opposed to more than one individual ($t(38) = 2.02, p < 0.0001$). They were more like to choose 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.

4.2.7 Discussion

The results show that speakers are able to access both 'only not' (-*hii* > NEG) and 'even not' (NEG > -*hii*) readings when -*hii* is in the presence of negation. Furthermore, the 'even not' results show that speakers are sensitive to the particular endpoint indicated with -*hii*. As predicted, 'X-hii didn't come' is felicitous on the 'even not' interpretation if X is maximally necessary. As described at the beginning of the chapter, this is different from the likelihood and desirability scales we saw in Chapter 2. Propositional alternatives are seemingly ranked by their necessity for achieving some kind of a known goal.

Thus, the experiment shows that -*hii* does indeed interact with negation. When -*hii* is in the presence of NEG, whether a speaker chooses an interpretation with narrow scope of negation ('only not') or wide scope of negation ('even not') 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.

4.3 Solving Bhatt's Puzzle

From Experiment 2 we can gather that an 'only not' and 'even not' interpretation can be obtained for *-hii* with negation, consistent with Bhatt (1994)'s observations. A surprising effect of this is that a reading like 'only not' can arise where a scalar inference seems to be absent. I propose to explain how *-hii* can give an apparent pure exclusive reading in the context of negation by altering the statement of the scalar requirement.

4.3.1 Against a Syntactic Solution

As described earlier in the chapter, Bhatt (1994) had claimed that a *-hii* associated with the subject can give rise to two possible readings with negation. Bhatt says that if *-hii* is marked instead on the object *banduuk*, the only reading available is the *even*-like reading, as shown in (197). He views this as a crucial subject-object asymmetry in *-hii*'s exclusive and scalar meaning.

(197) raam-ke-paas banduuk-hii nahiiN hai.
Ram-GEN-side gun-HII NEG be-PRES.3.SG

a. # 'The only thing that Ram doesn't have is a gun.'

b. 'Ram doesn't even have a gun.' (Bhatt 1994:7)

Bhatt explains this sort of distribution between the two readings by appealing to constraints in the syntax. Bhatt (1994) makes the assumptions listed in (198), drawing from Kitagawa (1986), Sportiche (1988), and Mahajan (1990).

(198) 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.

These points, together with his proposed semantics of *-hii*, give an explanation for the proposed ambiguity. Bhatt proposes that inside the scope of a VP, *-hii* yields an 'even' interpretation, but outside a VP yields an 'only' interpretation. Thus, by (198e), a *-hii*-marked object will receive the 'even' interpretation and no other. However, a subject is generated inside the VP and then moves out to a higher Spec position, from (198b) and (198c). This change in position allows for either an 'only' or 'even' interpretation to hold for *-hii*, given the options for interpretation allowed by (198a).

Since the object in (197) cannot escape the scope of negation, by (198e), there is no ability to get the 'only not' interpretation. However, Hindi allows scrambling of *banduuk*, the object, resulting in another word order. If the object is marked with *-hii* and is scrambled to outside the VP, Bhatt judges that the 'only not' reading becomes available, as in (199).

(199) [banduuk-hii]$_i$ [raam-ke-paas t_i nahiiN hai].
gun-HII Ram-GEN-side t NEG be.PRES.3.SG

a. 'Ram doesn't even have a gun.'

b. 'The only thing Ram doesn't have is a gun.' (Bhatt 1994:9)

(199) is supposed to provide further support to Bhatt's suggested analysis, as the VP-external position of the object has the same interpretive options as a subject.

Such a syntax-based analysis might be desirable, if we want to keep our analysis for *-hii* in line with analyses of other particles that show fluctuation between scalar and non-scalar interpretation. Liu (2015) shows that with the exclusive and scalar *jiu* in Mandarin in (200), there is a syntax placement difference. Like *-hii*, *jiu* shows both an 'only'-like meaning and a scalar meaning.

(200) a. jiu Yuehan hui shuo fayu.
JIU John can speak French
'Only John can speak French.' (#Bill also can)

b. Yuehan jiu hui shuo fayu.
John JIU can speak French
'John, who is easy to get hold of, can speak French.' (Bill also can.)

(Liu 2015:17)

Specifically for *jiu*, the scalarity has to do with a scale of individuals that are ranked by ease of accessibility. Crucially, there is no exclusivity of John speaking French in (200b), so Liu

notes that if *jiu* is to the left of its associate, there is an exclusive reading, but if it is to the right of its associate, there is no exclusivity. The surface-level difference in the positioning of *jiu* in these sentences seems to mandate a solution that appeals to the syntax.

Since we saw by the results in Experiment 2 that (197a) is actually a reading that speakers get, this seems to argue against having a syntactic based account of the 'only not' reading for *-hii*.

Rajesh Bhatt (p.c.) brings up (201). If reflective of more refined empirical judgments on the issue, these sentences may show some attributes that may argue for a syntactic solution.

(201) a. raam-ne gaanaa-hii nahiiN gaayaa.
Ram-ERG song-HII NEG sing-PFV
'Ram didn't even/?only sing a song.'

b. raam-ne mehnat-hii nahiiN kii.
Ram-ERG effort-HII NEG do-PFV
'Ram didn't even/#only put in the effort.'

Bhatt's suggestion is that the less specific or referential the object, the more difficult it may be to get the object out of the scope of negation. *Gaanaa* ('song') in (201a) lacks specificity and *mehnat* ('effort') is not referential in (201b). If the syntax-based account posits that such difficulty prevents the 'only not' interpretation, then doing a systematic judgment study of constructions like (201) would help in rescuing a syntactic solution.

4.3.2 Against Lexical Ambiguity

I will now present an alternative analysis of *-hii*'s apparent ambiguity with negation and then show why this approach cannot be adopted. This approach involves positing two lexical entries of *-hii*, (202) and (203). (Here, I am simplifying the representation of *-hii*'s scalar requirement. As we have seen in the previous chapters, there is a disjunction between a form that selects for the maximal endpoint and one that selects for the minimal endpoint of other scale types. Now we are dealing with a maximal endpoint of a goal-oriented necessity scale.)

(202) $\textit{-hii}_{excl}$ (C,p,w)

ASSERTS: $\mathrm{p} \wedge \forall \mathrm{p}' \, [(\mathrm{p}' \in \mathrm{C} \wedge \mathrm{p}'(w)) \rightarrow \mathrm{p}' = \mathrm{p}]$

(203) -*hii*$_{excl+scal}$ (C,p,w)

ASSERTS: $p \wedge \forall p' [(p' \in C \wedge p'(w)) \rightarrow p' = p]$

CONVENTIONALLY IMPLICATES: $\forall p' [(p' \in C \wedge p \neq p') \rightarrow p \succ p']$

Thus, a given instance of -*hii* will actually be either -*hii*$_{excl}$ or -*hii*$_{excl+scal}$. These are two related but distinct forms of -*hii* in the lexicon. These two forms together will generate the two different interpretations we are looking for with -*hii* and negation.

Notice that in (188), (189), and (190), repeated below in (204), the 'even not' reading is brought about by speech acts that are different from the regular assertions that gave rise to the 'only not' reading in the previous section. None of these questions are actually information-seeking questions, despite the presence of *wh*-questioning words. This construct will play a role in accounting for the wide scope of negation being viable for both -*hii*$_{excl}$ and -*hii*$_{excl+scal}$.

(204) a. wyaakhyaataa-hii nahiiN aaye, sabhaa kaise hoti!
speaker-HII NEG come-PRF.M.SG meeting how happen-IMPERF.F
'The speaker – he did not show up; how could the meeting be held?'

(Verma 1971:92)

b. yah kaisi jiit hai, jab jiitnevaalaa$_F$-hii nahiiN
this what.kind victory be-PRES.3.SG when winner-HII NEG
rahaa?
remain-PERF-M.SG
'What kind of victory is this when the VICTOR himself is dead?'

(Varma 2006:102)

c. agar laRke-hii nahiiN aaye, to kyaa maza aayegaa.
if boys-HII NEG come.PERF.PL then what fun come.FUT.3.SG
'If the boys – they did not come, then what fun will we have?'

(Verma 1971:92)

These rhetorical questions are needed to make salient the interpretation of the wide scope of negation over -*hii*. Given the current analysis, however, where -*hii* has both a non-scalar and scalar meaning, we need to figure out why the non-scalar version would be viable in these constructions. After all, the readings seem to mandate that a scale be present.

To start, consider the fact that the -*hii* sentences revealing an 'even not' interpretation are parallel to cases of emphatic focus from Krifka (1994, 1995). The examples in (205)

show that there is an indication that the speaker finds the proposition very unlikely, despite the lack of an overt *even* or a related expression.

(205) a. Mary knows every place on earth. She has (even) been to BORneo!

b. People expected that John would win the election, followed by Bill, with Mary as a distant third. But then the election was won by MAry (out of all persons)!

c. John would distrust Albert SCHWEITzer!

(Krifka 1995:15)

Constructions that exhibit an emphatic focus prosody are those that give rise to a speech act that is not a regular assertion, but rather what Krifka terms an *emphatic assertion*. Emphatic focus, under this view, is used when the speaker has a belief that the proposition is rather unlikely. Krifka defines Emph.Assert as in (206). Krifka's analysis is couched in terms of a Background-Foreground Structure, in which the triplet $\langle B, F, A\rangle$ represents the background (B), the foreground (F), which is the item in focus, and the set of alternatives (A) to F. Emph.Assert takes as arguments this triplet as well as the set of propositions in the common ground, c. Observe that the function of Emph.Assert is similar to that of *even*:

(206) **Emph.Assert**$(\langle B, F, A\rangle)$(c) = c$\cap$B(F) iff

a. $\forall$F$'\in$A [c$\cap$B(F) $\prec_c$ c$\cap$B(F$'$)]

b. c$\cap$B(F) $\prec_c \bigcap\{$c$\cap$B(F$'$) | F$'\in$A$\}$

(206) defines two felicity conditions on the speech act of emphatic assertion. (206a) says that the asserted proposition, c$\cap$B(F), is less likely than any other proposition in A, c$\cap$B(F$'$). This is something that we find with most approaches to overt *even*. (206b) imposes a further likelihood requirement – that the asserted proposition is less likely than the conjunction of all the alternative assertions in A. Thus, the proposition in the emphatic assertion is stronger than the sum total of the alternatives.

Emph.Assert does well for explaining the distribution of stressed negative polarity items in English, like in (207). The stress on *any* indicates that Mary did not get any gifts at all – not even a minor, insignificant kind of gift.

(207) Mary didn't get ANYthing for her birthday. (Krifka 1994:203)

a. The proposition that Mary didn't get a *thing* is not only as strong as, but stronger than, any proposition that Mary didn't get some non-minor P, P $\subset$ *thing*.

b. The proposition that Mary didn't get a *thing* is stronger than the conjunction of the propositions that Mary didn't get some non-minor P, P $\subset$ *thing*.

The sentence in (207) is a case of using *any* with stress, which is the 'strong' (rather than 'weak') form of *any*. Suppose we have a common ground assumption that the likelihood that Mary didn't get something including minor things is less likely than Mary didn't get something excluding minor things. Emph.Assert with (207) imposes the two felicity conditions in (207a) and (207b). Krifka claims that strong NPI's like stressed *any* must obligatorily occur in emphatic assertion speech acts, and therefore will always include Emph.Assert.

Returning to -*hii*, we can try to use these insights to better understand its behavior when negation is present. Note that even though Emph.Assert has a scalar reading similar to -$hii_{excl+scal}$, we cannot do away with scalarity in the lexical meaning of -*hii* as the scalarity is seen in non-emphatic contexts. Here we will show how Emph.Assert provides a key tool for representing the role of the speech act in the interpretation. We will do this, allowing for both possibilities in the parse – *hii* and -$hii_{excl+scal}$. Considering that our cases of -*hii* with negation include a special speech act, and also a specialized emphatic prosody, Emph.Assert may provide a key tool for understanding the ambiguity evident in negated structures with -*hii*.

Thus, we can use the account for stressed NPI's to explain how -*hii* used with the rhetorical question contexts obligatorily occur in the emphatic assertion speech acts. Krifka says that the mere fact that strong NPI's are stronger than the sum of everything else is something that a regular assertion does not account for, and therefore they rightfully can only occur with emphatic assertions. Thus, just as stressing the associate of -*hii* demands Emph.Assert, we can argue that using -*hii* in an emphatic context would require it as well. Going down this path would require us to assume that there is some extra focal stress in these instances of -*hii* beyond what we find.

I will show now how Emph.Assert can be used to derive the key data of this section. First, I will recast the definition of Emph.Assert to a simplified statement in line with the

current form of my theory, that does not use the Background-Foreground Structure, but instead relies on Rooth (1992)'s Alternative Semantics. This is given in (208), where I give it a scalar meaning like that of English *even*.

(208) Emph.Assert (C,p,w)

PRESUPPOSES: $\forall p' [(p' \in C \wedge p \neq p') \rightarrow p' \succ_{likely} p]$

ASSERTS: p

Notice how Emph.Assert in (208) functions like a covert *even* form. It presupposes that the proposition in its scope to be less likely than alternative propositions. With the use of both Emph.Assert and -*hii* in these environments, we will thus see both a minimal likelihood as well as maximal necessity requirement surface. The contribution of the scalar endpoint requirement from the Emph.Assert is different from the contribution of the scalar endpoint requirement from -*hii* for these negated constructions.

For the case of (209), then we get the following LF's in (210). We will see that giving Emph.Assert the widest scope allows for the proper felicity condition to surface. Inside the scope of Emph.Assert is negation, followed by either of the forms of -*hii*.

(209) yah kaisi jiit hai, jab jiitnevaalaa-hii nahiiN
this what.kind victory be.PRES.3.SG when winner-hii NEG
rahaa?
remain-PERF.M.SG
'What kind of victory is this when the VICTOR himself is dead?'

(210) a. Emph.Assert[NEG[-hii$_{excl}$[the victor lives]]]

b. Emph.Assert[NEG[-hii$_{excl+scal}$[the victor lives]]]

Given that there are three scope-taking operators (-*hii*, negation, and Emph.Assert), there are six scopal relationships possible for -*hii*$_{excl}$ and -*hii*$_{excl+scal}$. However, since we are interested in those where negation takes wide scope over -*hii*, the possibilities are listed in (211), which are then narrowed down to just (211a), since Emph.Assert must take widest scope of all.

(211) a. Emph.Assert[NEG[-hii[the victor lives]]]

b. NEG[Emph.Assert[-hii[the victor lives]]]

c. NEG[-hii[Emph.Assert[the victor lives]]]

The difference between the LF's in (211) is in the placement of Emph.Assert. Emph.Assert must take the widest scope, as in (211a), because it is a speech act operator.

Imagine that the alternative to 'the victor' in (189) is 'the loser.' The derivation of (210a) then is in (212).

(212) [*victor-hii not lives*]

a. the victor lives

ASSERTS: lives(v)

b. -hii$_{excl}$[the victor lives]

ASSERTS: lives(v) $\wedge$ $\forall$p$'$[(p$'$ $\in$ C & p$'$(w)) $\rightarrow$ p$'$ = lives(v)]

for C = {lives(v), lives(l)}

c. NEG[hii$_{excl}$[the victor lives]]

ASSERTS: $\neg$lives(v) $\vee$ $\exists$p$'$ [(p$'$ $\in$ C $\wedge$ p$'$(w)) $\wedge$ p$'$ $\neq$ lives(v)]

d. Emph.Assert[NEG[hii$_{excl}$[the victor lives]]]

PRESUPPOSES: $\forall$p$'$ [(p$'$ $\in$ C $\wedge$ $\neg$lives(v) $\neq$ p$'$) $\rightarrow$ $\neg$lives(v) $\prec$ p$'$]

ASSERTS: $\neg$lives(v) $\vee$ $\exists$p$'$ [(p$'$ $\in$ C $\wedge$ p$'$(w)) $\wedge$ p$'$ $\neq$ lives(v)]

(212c) can be true under one of the two conditions. Either the victor does not live or there is someone else that lives. In (212d), the assertive requirement is maintained from (212c), and the presupposition of the victor dying being unlikely is added by the addition of Emph.Assert. Note that this requirement is added by Emph.Assert, and not by -*hii* because we are employing the -*hii*$_{excl}$ lexical form. Among others, the result in (212) supports the right conditions under which to utter the sentence in (189) – where the victor does not live, and the victor was less likely to not live (that is, he was less likely to die) than the loser. The minimal likelihood requirement is contributed by the presupposition of Emph.Assert.

Now we may ask what would happen if -*hii*$_{excl+scal}$ were included in the parse instead of -*hii*$_{excl}$; the derivation for (210b) is in (213).

(213) *victor-hii*$_{excl+scal}$ *not lives*

a. the victor lives

ASSERTS: lives(v)

b. -hii$_{excl+scal}$[the victor lives]

CONVENTIONALLY IMPLICATES: $\forall p'\ [(p' \in C \wedge lives(v) \neq p') \rightarrow lives(v) \succ p']$

ASSERTS: $lives(v) \wedge \forall p'[(p' \in C \wedge p'(w)) \rightarrow p' = lives(v)]$

c. NEG[hii$_{excl+scal}$[the victor lives]]

ASSERTS: $\neg lives(v) \vee \exists p'\ [(p' \in C \wedge p'(w)) \wedge p' \neq lives(v)]$

d. Emph.Assert[NEG[hii$_{excl+scal}$[the victor lives]]]

PRESUPPOSES: $\forall p'\ [(p' \in C \wedge \neg lives(v) \neq p') \rightarrow \neg lives(v) \prec p']$

ASSERTS: $\neg lives(v) \vee \exists p'\ [(p' \in C\ \&\ p'(w)) \wedge p' \neq lives(v)]$

The result of (213) is that a sentence with *-hii* is felicitous and true so long as in the world of evaluation, someone had lived, the victor is more needed to live than the loser, the victor was less likely not to live than the loser, and the victor did not live.

Notice in (213) that the conventional implicature contributed by *-hii*$_{excl+scal}$ in (213b) – that the victor living was more necessary for achieving the goal than the loser living – is different from the presupposition contributed by Emph.Assert – that the victor was less likely not to live than the loser. Thus, we have both a likelihood requirement as well as a goal-oriented necessity requirement.

Nevertheless, this use of the Emph.Assert when the speech act and type of focus calls for it may help to also explain why a negated sentence with *-hii* that Montaut (2004) finds unacceptable can be rendered acceptable when there is appropriate emphatic focus. Montaut says that for (214), under the common background assumption that a scholar would be the most likely to solve a hard problem, using *-hii* with *scholar* is infelicitous.

(214) savaal baRaa muSkil thaa. panDit #hii use hal nahiiN kar paae.
question big difficult be.PAST scholar hii it.OBL solve NEG do could
'The question was very tough. #Even the scholar could not solve it.'

(Montaut 2004:296)

(214) is felicitous only when we make different assumptions about the placement of a scholar on the ranking of who is likely to solve a hard problem. However, with the right emphatic intonation and surrounding discourse, one can get the relevant inference with *-hii*, by employing the same rhetorical question speech act for the previous examples. Compare (214) with the constructed variant in (215), which is felicitous.

(215) savaal baRaa muSkil thaa. pandit$_F$-hii use hal nahiiN kar paae! to aur
question big difficult be.PAST scholar-HII it.OBL solve NEG do could so else
kaun kar saktaa thaa?
who do could be.PAST
'The question was very difficult. Even *the scholar* couldn't solve it! So who else could have?'

With (215), Emph.Assert is required, and this does yield the right felicity conditions. With the LF Emph.Assert[NEG[-hii[the scholar could solve it]]], the use of Emph.Assert requires that the scholar not being able to solve the problem is less likely than any other alternative not solving the problem, which is exactly the expectations consistent for a speaker of (215). What expresses that Emph.Assert is required is the rhetorical question speech act that is included in (215). The incorporation of negation means that there are two possible conditions – one, where the scholar could not solve the problem, or two, where somebody else could solve the problem. That is, without the inclusion of Emph.Assert that the speech act in (215) calls for, we do not get the scalar *even*-like meaning with the use of *-hii* with *scholar*.

We have seen now that the 'even not' reading is accounted for by the lexical ambiguity view. Next, we will now look at how the narrow scope of negation reading is determined under this view. This interpretation is a standard assertion, and does not employ Emph.Assert, but the ambiguity theory I have posited for *-hii*, whereby scalarity is not required, is crucial here. As before, since we now have two lexical items associated with *-hii* we should be able to find either *-hii*$_{excl}$ or *-hii*$_{excl+scal}$ in the LF's representing these sentences. In other words, the 'only not' interpretation should be compatible with both non-scalar and scalar contexts, assuming the grammar can freely choose between these two forms.

To see how this works out, let us start by deriving the right felicity conditions for (187a), repeated below in (216).

(216) (sirf) laRke-hii nahiiN aayeNge (laRkiyaaN to aayeNgi-hii).
only boys-HII NEG come.FUT.3.M.PL girls TOP come-FUT.3.F.PL-HII
'It's only the boys who won't come (the girls will come anyway).'

(Verma 1971:93)

Take the possible set of worlds as in (217), for who RSVP'ed that they will come for the party and who indicated that they will not.

(217) a. $\underline{w_1}$: will.come(**B**), ¬will.come(**G**)

b. $\underline{w_2}$: ¬will.come(**B**), will.come(**G**)

c. $\underline{w_3}$: ¬will.come(**B**), ¬will.come(**G**)

d. $\underline{w_4}$: will.come(**B**), will.come(**G**)

We need an analysis in which the sentence is acceptable and true in w_2. The two LF's for the sentence are in (218).

(218) a. -hii$_{excl}$[NEG[the boys$_F$ will come]]

b. -hii$_{excl+scal}$[NEG[the boys$_F$ will come]]

The truth conditions of the LF in (218a) are derived as in (219).

(219) a. the boys$_F$ will come

ASSERTS: *will.come*(**B**)

b. NEG[the boys$_F$ will come]

ASSERTS: ¬(*will.come*(**B**))

c. -hii$_{excl}$[NEG[the boys$_F$ will come]]

ASSERTS: $\neg(\textit{will.come}(\mathbf{B}) \wedge \forall p' \; [(p' \in C \wedge p'(w)) \rightarrow p' = \neg(\textit{will.come}(\mathbf{B}))])$

For satisfying the proper presupposition in (219c), it is important to note that the set of alternatives in C is altered after (219b); negation is added to each proposition, since negation has a truth-conditional effect on the proposition. If we continue with the specific example context mentioned, where the alternative is *girls*, then before (219b), $C = \{\textit{will.come}(\mathbf{B}), \textit{will.come}(\mathbf{G})\}$, but after (219b) $C = \{\neg(\textit{will.come}(\mathbf{B})), \neg(\textit{will.come}(\mathbf{G}))\}$. Thus, (219) evaluates the sentence as felicitous and true in a situation so long as the boys won't come, and the girls will, which is exactly the situation in w_2.

Calculating the LF (218b), where -*hii*$_{excl+scal}$ is included, we derive (220).

(220) a. the boys$_F$ will come

ASSERTS: *will.come*(**B**)

b. NEG[the boys$_F$ will come]

ASSERTS: ¬(*will.come*(**B**))

c. -hii$_{excl+scal}$[NEG[the boys$_F$ will come]]

CONVENTIONALLY IMPLICATES: $\neg$will.come($\mathbf{B}$) $\succ$ $\neg$will.come($\mathbf{G}$)

ASSERTS: $\neg(\textit{will.come}(\mathbf{B})) \wedge \forall p'[(p' \in C \wedge p'(w)) \rightarrow p' = \neg(\textit{will.come}(\mathbf{B}))]$

(220) evaluates the sentence as felicitous and true so long as the boys won't come, the girls will come, and furthermore the boys not coming is more necessary for a goal than the girls not coming.

It may appear incorrect to allow for this interpretation, where a scalar requirement about goal-oriented necessity is included, in (220c), but this final clause with the scalar endpoint condition is actually compatible with the interpretation. To see why, suppose there are several more sets of worlds that are of the type of w_2, as given in (221). These are worlds where the speaker has some rankings for each group with regards to the goal, but the facts are that the boys did not come and the girls did.

(221) a. $\underline{w_{2a}}$: $\neg$will.come($\mathbf{B}$), will.come($\mathbf{G}$), $\neg$will.come($\mathbf{B}$) $\succ$ $\neg$will.come($\mathbf{G}$)

b. $\underline{w_{2b}}$: $\neg$will.come($\mathbf{B}$), will.come($\mathbf{G}$), $\neg$will.come($\mathbf{G}$) $\succ$ $\neg$will.come($\mathbf{B}$)

Both (221a) and (221b) should be evaluated as TRUE for the sentence, and they are, by using -*hii*$_{excl}$ rather than -*hii*$_{excl+scal}$. The derivation in (219) shows that without any presupposed goal-oriented necessity scale, no worlds will be ruled out. It happens to be the case that with the possibility of the derivation in (220), (221a) is accounted for as TRUE and felicitous by both -*hii*$_{excl}$ and -*hii*$_{excl+scal}$. Thus, -*hii*$_{excl}$ and -*hii*$_{excl+scal}$ correctly account for (187a). Since we are talking about sets of worlds the one in which the sentence is felicitous will include both the forms in (221). Under this view, a scale may exist, but it does not have to.

Thus, the ambiguity analysis allows us to account for the reading equivalent to the English 'only not' interpretation, though if we just had a single exclusive form of -*hii*, this would be accounted for as well. However, we cannot resort to that option, as seen by the basic cases in Chapter 2. Those cases were all standard assertions, not biased rhetorical questions, and yet still exhibited the potential for mandating the maximal endpoint of a likelihood scale or minimal endpoint of a desirability scale.

We can see that this analysis of lexical ambiguity does a decent job of accounting for the range of data in question. It not only provides a solution for why the 'only not' and 'even

not' readings are available, but also the account of -*hii* for the non-emphatic but scalar readings of -*hii* when there is no sentential negation present. However, there is an obvious drawback to this approach of positing more than one lexical form. It is not parsimonious to have two forms of -*hii* in the lexicon, plus a covert Emph.Assert operator in addition, in order to accomplish these functions. For this reason, it would be preferable to avoid this sort of analysis for -*hii* and look for an alternative.

4.3.3 The Role of the QUD

We have seen so far that a syntax-based account for -*hii*'s 'only not' and 'even not' interpretations has problems. Secondly, I have also shown that positing two lexical entries for -*hii* to account for the ambiguity in the presence of negation while viable is not optimal from the point of economy. I will present now a third solution, which makes slightly more progress towards resolving this issue but still exhibits some limitations. This approach relies on the notion of the Question under Discussion.

The discussion topic for a discourse is said to be implicitly encoded in the form of a question, referred to as the question under discussion by Roberts (1996). Interlocutors implicitly accept the QUD, and they commit themselves to finding the answer to it as the conversation unfolds. Because the goals of the conversation can change, the question can change depending on the utterances of the discourse participants. Multiple open questions can exist at one time, collected together on a QUD stack as they await responses by the conversational participants. Under this view, speakers only put forth utterances that further the goal of answering the overall question, and they make these attempts at resolving the question as early as possible in the conversation. These utterances can be in the form of assertions that directly entail an answer to the QUD, or by additional questions. The QUD may ultimately be answered by answers to these additional questions that entail partial answers to the overall QUD.

As has already been seen, the work of Beaver & Clark (2008) and Coppock & Beaver (2014) references the CQ, or current question. To clarify, the CQ is indeed very much related to the idea of the QUD. The CQ would be the equivalent of the topmost question

on the QUD stack.[8]

Given this assumption about the flow of discourse, one possible way of explaining *-hii*'s 'only not'/'even not' ambiguity, looking beyond the syntax/semantics of the sentence, is to consider that there may be a difference in the QUD that gives rise to the two readings. For example, consider the Experiment 2 item in (222)[9] from the survey that did not provide a scalar ordering to the participant (and therefore probed for the 'only not' interpretation).

(222) Prof. Bhatia is leading Tina, Bindu, and Ami through a new lab experiment.
Situation: Bindu and Ami have safety goggles, Tina does not.
Prof. Bhatia says: "We're almost ready to run the experiment, Tina-hii doesn't have safety goggles."
Can this be said?

Under the view that utterances are made to attempt to answer a QUD, one possible way that the assertion above could be made is as an answer to the QUD in (223).

(223) QUD: Does everyone have their safety goggles?

Professor Bhatia's response in (222) may not be providing a complete 'yes' or 'no' response to this question, but it is still relevant to answering the QUD.

However, consider the following. Professor Bhatia answers (223) not with a 'yes' or 'no,' but rather with a statement containing not-at-issue content about the scalar placement of Tina (i.e., that Tina is at the endpoint of a scale). Such a conversational move is similar to the case of the Simons et al. example in (224), where a negated sentence is used to indirectly answer a question.

(224) Context: My daughter Chloe is writing invitations to her birthday party to kids in her class. I notice that all of the invitations are to girls.
Mom: Are there any boys in your class?
Chloe: I don't like the boys in my class.
(Simons et al. 2011:320)

[8]Coppock & Beaver (2014) refer to the CQ as "the single most burning question" of the various QUD's.

[9]See Appendix B for the original Hindi target sentence.

Chloe's response is not one of 'Yes, there are boys in my class' or 'No, there aren't boys in my class.' However her response is indicating 'yes' along with an answer to why she has not invited them. The not-at-issue content – that there do exist boys in the class – projects.[10]

The at-issue/not-at-issue distinction draws on the definition of the QUD. Simons et al. (2011) define *at-issue content* and *not-at-issue content* as in (225).

(225) A proposition p is at-issue iff the speaker intends to address the QUD via $?p$.
An intention to address the QUD via $?p$ is felicitous only if:
a. $?p$ is relevant to the QUD, and
b. the speaker can reasonably expect the addressee to recognize this intention

$?p$ refers to the question of whether p holds, and this question partitions the space into p and $\neg p$. At-issue content does not project, while not-at-issue content does project. In the case of our sentences with *-hii*, the scalar requirements are part of the not-at-issue content because they are conventional implicatures. In (222), the not-at-issue content of Professor Bhatia's statement is that Tina having goggles is most necessary, and this should project to the matrix level.

Thus, there should be projection of the scalar inference for Professor Bhatia's utterance in (222), giving a scalar interpretation of *-hii*. Appealing to the QUD, then, does not explain everything for how the non-scalar interpretation should come about.

Let us consider for a moment the complementary experimental item of (222) in the survey probing for the 'even not' interpretation, reproduced below in (226)[11]. At first glance, it is likely that the target sentence in this example would felicitously address a different QUD than (223). In this item, Professor Bhatia's ranking is made clear in the background context.

(226) Prof. Bhatia is leading Tina, Bindu, and Ami through a new lab experiment. If Tina doesn't have safety goggles, then Prof. Bhatia feels that it will not be possible to proceed with conducting the experiment, because Tina was designated to mix the

[10]The purpose of having an answer like Chloe's, where more information is given than asked, according to Simons et al., is for a conversational participant to answer other implicit questions that are part of the discourse. Chloe is answering not only the polar question asked by her mother, but also the natural followup of *Why didn't you invite them?*.

[11]See Appendix B for the original Hindi target sentence

chemicals together. If Ami doesn't have safety goggles, Prof. Bhatia won't mind, because she is going to be the notetaker.

Situation: Bindu and Ami have safety goggles, Tina does not.

Prof. Bhatia says: "How can we do the experiment when **Tina**-hii doesn't have safety goggles?"

While, as we stated earlier, it may not necessarily make sense for a rhetorical question to induce a response, it may be a response to a different question. In the case of (226) it might be the response to (227).

(227) QUD: CAN WE START THE EXPERIMENT?

Again, here the answer is not directly saying 'yes' or 'no,' but the projected not-at-issue meaning, regarding the maximal necessity of Tina having safety goggles, preemptively answers a question about *Why not?*. However, (227) exhibits a separate, more critical problem about this analysis, which is that there could very well arise a different QUD than what I have indicated in (227).

The type of response that the 'even not' reading seems to give actually can be seen in some uses of *-hii* outlined by Varma (2006), where *-hii* is said to preclude a discourse-inferable state of affairs, in a way that forms of *even* do not. Compare (228) with (229).

(228) ghar-meN picchale ek maah se kaid madhu-ko bhaai-bhaabhii
house-in last one month since imprisoned Madhu-ACC brother-sisterinlaw
khaanaa-tak nahiiN dete the.
food-even NEG give-IMPF-M.PL be-PAST-3.PL
'Her brother and sister-in-law didn't even give any food to Madhu, who has been a prisoner in her home for a month now.' (Varma 2006:114)

(229) vah moTii kaise ho jaatii, usko khaanaa-hii nahiiN dete
she fat-F how be go-SUBJ-F he.ACC food-HII NEG give-IMPERF-M.PL
the.
be-PAST-3.PL
'How could she have become fat, they didn't even give her any FOOD.'
(ibid.)

In (229) with *-hii*, we see this similar 'even not' reading arising. The speaker has it in mind that the item most needed for weight gain is food. This reference to a prerequisite with

regards to what the at-issue content is addressing (i.e., Madhu being fat or not) is not seen with *-tak* ('even') in (228).

Thus, with these observations at hand, what we would like to say is that somehow if the scale does not directly have any usefulness for answering the QUD, it becomes backgrounded in some way to maintain the conversational goals. However, a missing piece of the analysis so far, is explaining how exactly the QUD is arrived at for each of the 'only not' and 'even not' contexts. In the cases described here, there is nothing stopping the QUD from taking on a different form than what I have claimed above.[12] Thus, while this analysis seems desirable, we need an alternative.

Let us revisit the difference between these two cases generating 'only not' and 'even not' readings, and consider then for a moment then that there may be a difference along the lines of the at-issue content of these sentences. In both cases of the context that favors the 'only not' interpretation and the context that favors the 'even not' interpretation, Professor Bhatia needs to determine whether the experiment can be run or not. While the preceding discourse for the 'even not' favoring context references this specifically in the rhetorical question, it is also the case that in the scenario in (222), there is a purpose implicit that an experiment should be run. Thus, it could very well be that *Can we start the experiment?* is the main QUD for either of these contexts.

What is different, however, is that in the context in (222), Professor Bhatia wants to make sure everyone has their goggles. Compare this to the context in (226), where instead Professor Bhatia looks for something slightly weaker. That is, what he needs is that at least everybody other than the notetaker has their goggles with them. Perhaps ideally it is best for everybody to have their goggles, which is the default case like in (222), but for (226), it is not the case that absolutely every individual has to have the relevant property. Thus, with this difference in the requirement of each context, the at-issue content of each sentence will necessarily be slightly different.

In the case of Professor Bhatia looking for everybody to have the relevant property (having goggles), the not-at-issue scalar component of meaning does not address this aspect of the QUD. Therefore, while the QUD itself cannot be the solution, I raise these issues

[12]Thanks to Kristen Syrett for pointing out this issue to me.

here to illustrate more broadly the role of the at-issue content to at least help codify the intuition that the preceding discourse has a role in making one reading salient over the other. Notice that in the scenarios where the requirements for the goal are that universality must hold for the relevant property, then the most salient reading is a (non-scalar) 'only not' interpretation. Despite the presence of *-hii* in the utterance, which comes with its own scalar requirement, the use in this kind of preceding context means that the 'even not' reading is less salient than the 'only not.'

Beyond the experimental items, then, we could extend this line of thinking to explain some of the cases if ambiguity found in the literature used to motivate these problems, which we described at the beginning of the chapter. Take for example from Verma (1971) the two possibilities in (230):

(230) a. (sirf) laRke-hii nahiiN aayeNge (laRkiyaaN to aayeNgi-hii).
only boys-HII NEG come.FUT.3.M.PL girls TOP come-FUT.3.PL-HII
'It's only the boys who won't come (the girls will come anyway).'

(Verma 1971:93)

b. agar laRke-hii nahiiN aaye, to kyaa maza aayegaa.
if boys-HII NEG come.PERF.PL then what fun come.FUT.3.F.SG
'If the boys – they do not come, then what fun will we have?'

(ibid:92)

While we are missing the preceding discourse for the sentences above, we can see now how the 'even not' reading is more salient in a construction like (230b) as opposed to (230a). Both (a) and (b) include *-hii*, which, as we have been saying, comes with the not-at-issue scalar component of meaning. However, in (230b), the latter clause indicates that what is at issue is whether we will have fun. We can check that this is the at-issue part of meaning since we can refute the assumption that there won't be fun:

(231) A: agar laRke-hii nahiiN aaye, to kyaa maza aayegaa.
if boys-HII NEG come.PERF.PL then what fun come.FUT.3.F.SG
'If the boys – they do not come, then what fun will we have?'

B: nahiiN, ham log ko maza aayegaa.
no we people ACC fun come.FUT.3.F.SG

'No, we'll have fun.'

This part of the sentence requires reference to the scalar ordering that comes about from *-hii*, which, in this case, ranks boys to girls. Without this clause, as in (230a), having fun or not having fun is not part of the at-issue content, and thus the 'even not' meaning is not salient.[13]

In sum, there is an appeal to using the QUD to explain how the 'only not' and 'even not' readings arise, because it intuitively captures how conversational goals and relevance may dictate one interpretation being salient over another. However, this approach alone does not explain how it is that a particular QUD is arrived at in the flow of discourse, and the usual assumptions about the projective behavior of conventional implicatures still leaves us with the question of how the non-scalar 'only not' reading can arise. What we learn from this exploration is that there there may be some ability to push this discourse account by appealing more broadly to the at-issue/not-at-issue distinctions instead of the QUD, but for now this route equivalently leaves the burden of explanation on how to derive the non-scalar interpretation.

In the next section, I will raise the issue of optional scalarity without negation, in an attempt to bring up another alternative that has more promise – that the statement of the scalar conventional implicature itself may be tweaked to allow for non-scalar contexts.

4.4 The Possibility of Optional Scalarity

Given what we saw in the last section with negated constructions with *-hii* in Experiment 2, a question that we may naturally ask is: Is it possible to have a pure exclusive *-hii* in a non-negated context? If so, how? Given what the prior literature says on the topic of *-hii* in general, which I outlined in Chapter 1, the general intuition is that *-hii* can be a pure exclusive *only*. Such cases of *-hii* would be ones where there is no scalar ranking made salient in the preceding discourse.

If we were to set up an experiment, with the following kind of test item, we can make the question more concrete. With a test item like (232), would participants by and large

[13]While it may seem that what I am saying here contradicts what I have said before – in that the scalar component of meaning is a conventional implicature, but yet has some way of becoming relevant to the QUD – there have been cases that question whether the not-at-issue content is always irrelevant to the QUD. Syrett & Koev (2015) present experimental evidence that appositives, which involve conventional implicature, may exhibit the not-at-issue content actually addressing the QUD.

select 'yes' or 'no', and moreover, what would that tell us?

(232) John is having a party, and he has invited Sam, Harry, and Bill. It turns out that Harry shows up, and Sam and Bill do not show up.
John says, "heri-hii aayaa." (Harry-hii came.)
Can this be said?

In (232), there is no mention at all of who is more likely to come, who is more wanted to come, etc., and therefore no scale provided to the participant. I predict that participants would actually accept the sentence and answer 'yes.'

We can now ask whether an answer of 'yes' here indicates that there is no scalarity at play, or whether there is, but the participant is imposing their own type of scale based on world knowledge. Both of these are possible. The participant may not need a scale and therefore only check that Harry came, and that nobody else came, and accept the sentence based on exclusivity. Such a participant, if she sat through Experiment 1, would be behaving like the participants that accepted all the scalar items, whether they were endpoints or midpoints. On the other hand, if it is the case that there is some way that the participant is accommodating the scalar requirement, then the answer will be 'yes,' but this will not mean that there is non-scalarity. That is, suppose that world knowledge has it that a party with just one person showing up is disappointing. Then the participant would see the attendance of solely Harry as low on John's scale of desirability, and, consistent with the requirement of the implicature, would render the sentence acceptable.

If we were to continue with the idea that the particular form of the QUD is responsible for whether the scale is relevant or not, taking the QUD for (232) to be (233), John's response would show that the scalar endpoint that Harry occupies, be it for likelihood or desirability, would not matter.

(233) QUD: Did everybody make it to the party?

Regardless of whether that endpoint is made salient by inferences through world knowledge or by something explicit in the previous discourse, would not matter for accepting the sentence in this scenario with (233).

The fact that many Experiment 1 participants, even in the presence of a salient scale in

the context, did not show sensitivity to the scalar portion demonstrates the ability to have an exclusive interpretation. They may be assigning a QUD to the context that does not make the scale relevant, and therefore any propositional alternative, regardless of whether it is at the endpoint or not, will be felicitous. We can further conclude that there may be differences in the population regarding whether QUD's they assign make the scale salient at all for -*hii*. However, we have the same problem as before regarding with -*hii* with negation, in that we need to explain how we can determine precisely what QUD is arrived at in the flow of the discourse.

However, there is an alternative method of looking at this case of pure exclusive -*hii* by changing the construal of the general scalar endpoint requirement. By the current requirement of -*hii*, in (234) repeated from Chapter 3, as requiring that the prejacent is an endpoint proposition of the scale, the sentence in (232) would be rendered infelicitous.

(234) -*hii*(C,p,w) (SECOND VERSION)

Conventionally implicates:

$(\forall p' [(p' \in C \wedge p \neq p') \rightarrow p \succ_{likely} p']) \vee (\forall p' [(p' \in C \wedge p \neq p') \rightarrow p' \succ p])$

Asserts: $\forall p' [(p' \in C \wedge p'(w)) \rightarrow p' = p]$

The prejacent would not come out as minimal or maximal by (234). An alternative statement of the endpoint requirement can circumvent this requirement, given in (235). Here, as before, I am simplifying the scalar representation for now to work only with the maximal necessary requirement that shows up in negated sentences.

(235) -*hii*(C,p,w) (TO BE REVISED)

Conventionally implicates:

$\neg\exists p' [p' \in C \wedge (p' \succ p)]$

Asserts: $p \wedge \forall p' [(p' \in C \wedge p'(w)) \rightarrow p' = p]$ (Veneeta Dayal, p.c.)

By the reworking of the felicity condition as in (235), we are able to account for cases like (232) where no scale is made explicit in the prior context. Since there is no salient ranking, there is no alternative proposition to *Harry came* that is more likely, and therefore the proposition is felicitous. If however there was a salient ranking given, this statement would force the prejacent to be at the endpoint. For example, if *Sam came* were ranked higher

in terms of likelihood, asserting *Harry-hii aayaa* would be infelicitous, because there would indeed an alternative proposition that is more likely than that which is asserted with *-hii*.

Let us see how the ambiguous construction in (236a)-(236b) we discussed earlier would work out with the formulation of the conventional implicature in (235).

(236) a. agar laRke-hii nahiiN aaye, to kyaa maza aayegaa.
if boys-HII NEG come.PERF.PL then what fun come.FUT.3.F.SG
'If the boys – they do not come, then what fun will we have?'

(Verma 1971:92)

b. (sirf) laRke-hii nahiiN aayeNge (laRkiyaaN to aayeNgi-hii).
only boys-hii NEG come.FUT.3.PL girls TOP come-FUT.3.F.PL-hii
'It's only the boys who won't come (the girls will come anyway).'

(ibid.:93)

Take again the possible set of worlds in (237), where the alternative to the group of boys to who could have come is the group of girls.

(237) a. $\underline{w_1}$: will.come(**B**), ¬will.come(**G**)

b. $\underline{w_2}$: ¬will.come(**B**), will.come(**G**)

c. $\underline{w_3}$: ¬will.come(**B**), ¬will.come(**G**)

d. $\underline{w_4}$: will.come(**B**), will.come(**G**)

The first derivation I work out is in (238) for the wide scope of negation reading, (236a).

(238) a. the boys will come

ASSERTS: will.come(**B**)

b. -hii[the boys will come]

CONVENTIONALLY IMPLICATES: $\neg\exists p'\ [p' \in C \wedge (p' \succ \text{will.come}(\mathbf{B})]$

ASSERTS: $\text{will.come}(\mathbf{B}) \wedge \forall p'[(p' \in C \wedge p'(w)) \rightarrow p' = \text{will.come}(\mathbf{B})]$

c. NEG[-hii[the boys will come]]

ASSERTS: $\neg\text{will.come}(\mathbf{B}) \vee \exists p'\ [(p' \in C \wedge p'(w)) \wedge p' \neq \text{will.come}(\mathbf{B})]$

The result of the derivation in (238) gives the truth condition that either the boys will not come or some group will come other than the boys, i.e. the girls will come, which is the case in worlds w_2, w_3, and w_4. As far as the scalar requirement, imagine the types of rank orderings exist as indicated in (239).

(239) a. *will.come*(**B**) $\succ$ *will.come*(**G**)

b. *will.come*(**G**) $\succ$ *will.come*(**B**)

c. *will.come*(**B**) and *will.come*(**G**) equally ranked

In the case of (238), the scalar requirement will yield the inference in (239a) but not that in (239b). However, it will also rule in the inference in (239c), where the propositions are not ranked with respect to each other. Thus, this formulation of the scalar requirement does allow for no ranking in the context for this form where negation takes wide scope. I will say more about this point shortly.

In the case of where negation takes narrow scope with respect to -*hii*, to yield the 'only not' non-scalar interpretation, we have the derivation in (240).

(240) a. the boys will come

ASSERTS: *will.come*(**B**)

b. NEG[the boys will come]

ASSERTS: $\neg$(*will.come*(**B**))

c. -hii[NEG[the boys will come]]

CONVENTIONALLY IMPLICATES: $\neg\exists p'\ [p' \in C \wedge (p' \succ \neg\text{will.come}(\mathbf{B})]$

ASSERTS: $\neg$(*will.come*(**B**)) $\wedge\ \forall p'[(p' \in C \wedge p'(w)) \rightarrow p' = \neg\text{will.come}(\mathbf{B})]$

The derivation in (240) has the resulting truth condition whereby the sentence is true in w_2, where the boys will not come, but the girls will. The scalar requirement on the other hand will operate on the scales in (241), where the propositions are negated.

(241) a. $\neg$*will.come*(**B**) $\succ$ $\neg$*will.come*(**G**)

b. $\neg$*will.come*(**G**) $\succ$ $\neg$*will.come*(**B**)

c. $\neg$*will.come*(**B**) and $\neg$*will.come*(**G**) equally ranked

With the possible scalar orderings in (241), the derivation in (240) would yield the inference in (241a) and (241c), but would not yield the inference in (241b).

Thus, what we can see with the above derivations is that the new statement of the conventional implicature in (235) makes progress towards solving the problem of the non-scalar -*hii* by allowing for no relative ranking between the prejacent proposition and the other alternatives. It does seemingly suffer the problem of allowing the non-scalar interpretation

when negation takes wide scope, but we will see in the next section that that is actually something we do need to leave room for.

Above we have examined the cases of ambiguity with negation, but we know from the discussion now that we need to account for non-scalar cases of *-hii* without negation, where likelihood or desirability scales may be present. Thus we would formulate the conventional implicature to be more general, as in (242).

(242) *-hii*(C,p,w) (FINAL VERSION)

Conventionally implicates:

$\neg\exists p' \, [p' \in C \wedge ((p' \succ_{likely/necessary} p) \vee (p' \prec_{desirable} p))]$

Asserts: $p \wedge \forall p' \, [(p' \in C \wedge p'(w)) \rightarrow p' = p]$ (Veneeta Dayal, p.c.)

To conclude, we see from this section and the previous that whether there is an explicit scalar ranking in the context or not will affect whether the salient interpretation of *-hii* with negation is an 'even not' or 'only not' interpretation. We cannot fully appeal to the QUD as an explanation for the non-scalar interpretations. For now we have shown that there is a way of modifying the statement of the conventional implicature to capture the pure exclusive *-hii* while maintaining the generalized account of scalar *-hii*.

4.5 The Wide Scope Denial Reading

So far we have looked at two possible readings deriving from the interaction between *-hii* and negation. These are two readings that we found evidence for in the judgment study of Section 2. There is actually a third reading that is claimed to exist, which I will discuss below for completeness, though it seems to be a much harder reading for speakers to get.

According to Verma (1971), a negative sentence with *-hii* like (243) can have a reading in which the NEG marker has scope over *-hii*, but where the exclusivity of the proposition is what is targeted by the negation.

(243) (sirf) laRke hii nahiiN aayeNge (laRkiyaaN bhii aayeNgi).
only boys hii NEG come.FUT3.M.PL, girls also come.FUT.3.F.PL
'Not only will the boys come (the girls will come too).' (Verma 1971:93)

We saw in Chapter 3 that *sirf* can combine with *-hii*, and when they combine in these kinds

of data, it brings out this sort of reading much more easily. We also see this in (244), where *sirf* and *-hii* are again used with negation.

(244) prem sirf bhaavna-hii nahiiN, daaNv-bhii aur *investment*-bhii hai.
love only feeling-HII NEG maneuver-also and investment-also be-PRES.3.SG
'Love is not only a simple matter of feeling, it is also a social strategy and investment too.' (Montaut 2004:289)

Notice that in (243), the statement is meant to correct or object to some previous assertion in the discourse. For example, it might be felicitous in a discourse where previously another speaker had claimed that the boys are the sole ones who will come to the party, and the speaker of (243) then claims that no, the girls will come in addition to the boys. See the discourse in (245).

(245) A: *party boring* hoga. Keval laRke hii aayeNge, koi aur nahiiN.
party boring be.FUT only boys HII come.FUT.3.M.PL, WH more NEG
'The party will be so boring. Only the boys will come; not anyone else.'

B: na, (sirf) laRke hii nahiiN aayeNge, laRkiyaan bhii aayeNgi.
no only boys HII NEG come.FUT.3.M.PL, girls also come.FUT.3.F.PL

'No, not only will the boys come (the girls will come too).'

This corrective interpretation is, as the translation shows, a case of negation taking wide scope over the exclusive interpretation of the particle.

From the interpretation in (243), we can see that this is another case of negation needing to take scope over the exclusivity induced by *-hii*. This case of denial does not have a rhetorical question-like emphatic sense to it, so under the lexical ambiguity view we would not incorporate Emph.Assert into the parse, as we had done earlier. The calculations I propose are in (246) and (247).

(246) NEG[hii$_{excl}$[boys will come]

a. boys will come

ASSERTS: *will.come*(**B**)

b. -hii$_{excl}$[boys will come]

ASSERTS: *will.come*(**B**) $\wedge$ $\forall$p$'$[(p$'$ $\in$ C $\wedge$ p$'$(w)) $\rightarrow$ p$'$ = *will.come*(**B**)]

c. NEG[hii$_{excl}$[boys will come]]

ASSERTS: $\neg$*will.come*(**B**) $\vee$ $\exists$p$'$ [(p$'$ $\in$ C $\wedge$ p$'(w)$) $\wedge$ p$'$ $\neq$ *will.come*(**B**)]

(247) NEG[hii$_{excl+scal}$[boys will come]]

a. boys will come

ASSERTS: *will.come*(**B**)

b. -hii$_{excl+scal}$[boys will come]

CONVENTIONALLY IMPLICATES: $\forall$p$'$ [(p$'$ $\in$ C $\wedge$ *will.come*(**B**) $\neq$ p$'$) $\rightarrow$ *will.come*(**B**) $\succ$ p$'$]

ASSERTS: *will.come*(**B**) $\wedge$ $\forall$p$'$[(p$'$ $\in$ C $\wedge$ p$'(w)$) $\rightarrow$ p$'$ = *will.come*(**B**)]

c. NEG[hii$_{excl+scal}$[boys will come]]

ASSERTS: $\neg$*will.come*(**B**) $\vee$ $\exists$p$'$ [(p$'$ $\in$ C $\wedge$ p$'(w)$) $\wedge$ p$'$ $\neq$ *will.come*(**B**)]

In (246) and (247), the addition of negation in the final step of the derivation requires one of two scenarios to hold. Either the boys did not come, or some other group came instead of the boys. In the reading we are targeting here, the second condition is relevant. If the girls came in addition to the boys, this is another group that came in the context.

Under a QUD-based approach to explaining how a 'not only' reading could arise, the same burden exists as when we had explained the 'only not' reading. A QUD that might give rise to the interpretation in (245) is (248).

(248) QUD: WILL ONLY THE BOYS COME?

The sentence with -*hii* responds to this QUD. The topic of discussion for B's response to A in (245) is with regards to whether the boys are the sole group to come or whether there are others that will also come. The response of B indicates the latter, thereby answering the QUD in (248). Note that this may not be the overarching QUD and may be just the CQ, or the topmost question on the stack. A's subject of discussion seems to be about whether the party will be boring or not, and B's response is a more targeted response to whether the boys are the only group to come. Regardless, this solution, as we have shown, suffers the shortcoming of not allowing us to reliably predict how the QUD in (248) is arrived at, other other possible formulations for the question.

The alternative scalar requirement formalization, on the other hand, easily accounts for this reading with the wide scope of negation. Recall that we saw in the previous section that the derivation for the 'even not' reading allows for cases where the alternatives are not ranked with respect to each other, due to the conventional implicature statement in that derivation, reproduced below in (249).

(249) CONVENTIONALLY IMPLICATES: $\neg\exists p'\ [p' \in C \wedge (p' \succ \text{will.come}(\mathbf{B})]$

This allowance is precisely what is needed to account for the wide scope denial reading, where a 'not only' reading is intended. Therefore, we are able to account for the wide scope denial reading of *-hii* with negation.

4.6 Other Scalar Particles' Interaction with Negation

We have seen so far in this chapter how *-hii* can give rise to multiple flavors of meaning in the presence of negation. In this section, I relate these results to scalar particles in other languages, and their interaction with negation.

4.6.1 *-Bhii* and *-Tak*

The optional scalarity that we entertain for *-hii* is something that exists also for the Hindi additive marker *-bhii*. Lahiri (1998) claims that "the 'emphatic marker' *bhii* can mean either English *also* or *even*, with the 'even'-meaning showing up in focused contexts and the 'also'-reading being prominent in non-focused contexts. It is reasonable to assume then that *bhii* means 'even' in focused-affected contexts, and since NPIs in Hindi are focused, *bhii* in these contexts simply corresponds to the English *even*" (p.59). Thus, Lahiri assumes that *bhii* has a single lexical entry corresponding to *also*, and its *even*-like meaning comes about through the effects of focus.

Lahiri proposes that (250) has the assertion and existence implicature in (251).

(250) raam-bhii aayaa.
Ram-BHII come.PRF.3.M.SG

(251) a. Asserts: $came(\mathbf{r})$

b. Implicates: $\exists x[x \neq \mathbf{r} \wedge came(x)]$

If *Ram* is focused as in (252), then the meaning is as in (253), which is like (251), but with an added likelihood implicature.

(252) raam$_F$-bhii aayaa.
Ram-BHII come.PRF.3.M.SG

(253) a. Asserts: $came(\mathbf{r})$

b. Implicates: $\exists x[x \neq \mathbf{r} \wedge came(x)]$

c. Implicates: $\forall x[came(x) \rightarrow \text{likelihood}(came(x)) > \text{likelihood}(came(\mathbf{r}))]$

The sentence in (250) is equivalent to an English sentence with *also* while (252) is equivalent to an English sentence with *even*. Lahiri leaves aside the issue whether (251) and (253) require two lexical entries for *-bhii* or whether the extra implicature is the result of the contribution of the focus. Regardless, Lahiri seeks to explain the distribution of *-bhii* as NPI's, and so he does not need to address whether scalarity is present in all uses of *-bhii*. This assumption about the presence/absence of focus is consistent with Krifka (1993)'s idea that the sorts of environments that give rise to the likelihood inference are focused or emphatic ones.

NPI's in Hindi are formed by combining *-bhii* or *-tak* with indefinites. The indefinite+*bhii* combination in Hindi can only occur in downward-entailing contexts[14], as shown in (254), establishing their status as NPI's.

(254) a. * koii-bhii aayaa
anyone-BHII come.PRF.M.SG
'Anyone came.' (Lahiri 1998:60)

b. koii-bhii nahiiN aayaa
anyone-BHII NEG come.PRF.M.SG
'No one came.' (ibid.)

c. * ek-bhii aadmi aayaa
one-BHII man come.PRF.M.SG
'Any man came.' (ibid.:61)

d. ek-bhii aadmi nahiiN aayaa
one-BHII man NEG come.PRF.M.SG
'No man came.' (ibid.)

[14]I will not be discussing the free-choice readings available with *-bhii*.

If we consider the unacceptable form in (254a), relationships between entailment and likelihoods explain why these are unacceptable, in the following way. Taking *koii* to be composed of the predicate **one**, then the meaning of *koii bhii aayaa* is as in (255a). Take the other alternative propositions as C = {∃x[two(x) & came(x)], ∃x[three(x) & came(x)], . . . }, due to focus on the numeral. Then, by the existence and likelihood presuppositions for focused -*bhii* we get the implicatures in (255b-c).

(255) *koi bhii aaya

a. ∃x[**one**(x) & *came*(x)]

b. Some alternative in C, other than ∃x[**one**(x) & *came*(x)], is true.

c. ∃x[**one**(x) & *came*(x)] is the least likely alternative in C

(255c) is the problem. The assertion with *one* is the weakest alternative, since it will be true for all other alternatives, so it cannot be the least likely. Recall the general assumptions about probability and entailment from, for example, Kolmogorov (1933), and our discussion in Chapter 3.

(254b), on the other hand, will be acceptable because the negation of the proposition with *one* now makes it the strongest alternative, fulfilling the likelihood requirement.[15]

We saw in Chapter 2 some differences between -*bhii* and -*tak*. Montaut (2004) gives the data in (256). In this case -*tak* is appropriate but -*bhii* is not.

(256) rasoi-meN koi tej ciij mil jaati! par caaku cimTa-tak/*?-bhii nahiiN.
kitchen-in some sharp thing get go.IMPER.F but knife pincer-TAK-BHII NEG
'If only there had been some sharp thing in the kitchen! But there was not even a knife or a pair of pincers.' (Montaut 2004:294)

Some NPI's in Hindi accept only -*bhii* and not -*tak*, and others can take either of them, as seen in (257).

(257) a. ek-bhii/*-tak nahiiN
one-BHII-TAK NEG

[15] Actually Lahiri revises this initial simplified analysis of the indefinite, but a similar argument about the unacceptability of (254a) holds. **koi bhii aaya* asserts ∃x[**one**(x) & person(x)][came(x)]. The alternatives to this are ∃x[P(x) & person(x)][came(x)], where P is one of a set of pragmatically-salient predicates (which may be cardinality predicates like **two**, **three**, etc.). But then the same argument runs through. The **one**(x) proposition cannot be the least likely in the positive, but will be least likely in a downward-entailing environment.

'not even one' (ibid.)

b. koi-bhii/*-tak nahiiN aayaa.
some-BHII-TAK NEG came
'Nobody came.' (Vasishth 1998:210)

However, (258) shows that if there is a head noun present, *koi* is acceptable with *tak*.

(258) koi kitaab tak nahiiN thii.
some book TAK NEG was
'There was not even a book.' (Veneeta Dayal, p.c.)

Thus, we see that the other Hindi scalars can function as NPI's.

A final puzzle I would like to tackle is one brought up by Montaut (2004), who observes that there are a few instances where using *-hii* under negation and using *-bhii* under negation leads to near equivalence in meaning and felicity, listed below in (259).

(259) a. maiN-ne yah soca-hii nahiiN thaa.
I-ERG this thought-HII NEG be.PAST
'I had not even thought of that.'

b. maiN-ne yah soca-bhii nahiiN thaa.
I-ERG this thought-BHII NEG be.PAST
'I had not even thought of that.'

c. mujhe pataa-hii nahiiN thaa.
me knowledge-HII NEG be.PAST
'I did not even know.'

d. mujhe pataa-bhii nahiiN thaa.
me knowledge-BHII NEG be.PAST
'I did not even know.' (Montaut 2004:296)

It is difficult to see the similarities within these constructions, so to give a sense of their similarity, I provide here examples I located in the CFILT Corpus for each of these forms. The findings are below in (260), (261), (262), and (263), with emphasis my own.

(260) Preceding Context: The speaker has a secret girlfriend. His parents have just told him they want to marry him to someone else.

meraa to dil balliyoN uchalne lagaa. **socaa bhii nahiiN** ki yah
my TOP heart poles jumping began thought BHII NEG COMP this
paRaav itni asaani se tay ho jayegaa lekin is kadar sahuliyat
halt such easiness with decide be go.FUT.3.M but this insomuch easiness

meri mushkil pasand rumaniyat ke lage se kaise utar sakti thii.
my difficult choice romance GEN beginning from how out can be.PAST.F
maiN ne socaa thaa, saal do saal ishk kareNge.
I ERG thought be.PAST year two year love do.FUT.3.SG

'My heart started racing. I never even thought that this end would be decided upon so easily, but how could I so easily get out after starting such a difficult but nice romance. I had thought that we would have a relationship for a year or two.'

(261) Preceding Context: Nidhi is preparing to marry into a family, and she and her family are trying to make conversation with the suitor's family.

kisii-ko-bhii socne-kaa avsar nahiiN milaa thaa. yahaan
anybody-ACC-even thinking-GEN opportunity NEG receive.PERF be.PAST here
tak kii nidhi-ko-bhii. use amma aur Syaamo caaci ko baatoN
until COMP Nidhi-ACC-even her Mom and Shyaamo aunt ACC conversation
bahut acchi lagtii thii. sondhi aur miiThi. par buaa kaa vinod to
very good IMPERF.F be.PAST.F fragrant and sweet but aunt GEN humor TOP
paapaa-bhii nahiiN kar pae the. phir us ne svayam to
Dad-even NEG do get.3.M be.PAST.3.M thereafter he ERG himself TOP
kuch **socaa hii nahiiN** thaa.
anything thought hii NEG be.PAST.M

'Nobody even had a chance to think. Not even Nidhi. She really liked the conversation of Mom and Aunt Shyaamo. It was warm and sweet. But as for the jokes of her maternal aunt, even Dad couldn't understand them. Thereafter he himself didn't even think of anything.'

(262) Preceding Context: The queen has gathered all kinds of thread to embroider handkerchiefs.

raani-ne rumaal kaaRhanaa Suru kiyaa. vah din-bhar isi kaam meN
queen-ERG handkerchief embroidery start do.PERF she day-long this work in
lagii rahtii. use **pataa hii nahiiN** caltaa thaa
keep.PERF.F remain.IMPERF.F her knowledge hii NEG go.IMPERF be.PAST
kii kab din biit gayaa aur kab raat biit gayii.
COMP when day pass go.PRF.M and when night pass go.PRF.F

'The queen started embroidering handkerchiefs. She would be engrossed in this work all day long. She would not even know when the day passed and when the night passed.'

(263) Preceding Context: The speaker is decribing his experience listening to fairy tales as a child.

maiN jab chhoTa thaa to meri maaN ham baccoN ko pariyoN ki
I when little be.PAST.M TOP my mother us kids ACC fairies GEN
kahaaniyaaN sunaayaa kartii thii. un kahaaniyoN ko
stories tell.PERF do.IMPERF.F be.PAST.F those stories ACC
sunate-sunate hameN **pataa** **bhii nahiiN** caltaa
listen-IMPERF-listen-IMPERF we knowledge even NEG go.IMPERF
thaa kii ab aadhi raat ho gayii. ham caahate the kii
be.PAST.M COMP now half night be go.PRF.F we want.IMPERF be.PAST COMP
kahaani calti-hii rahe.
stories walk.IMPERF.F-HII PROG

'When I was little, my mother would read us fairy tales. While we would go on listening to those stories, we wouldn't even know that half the night had already passed. We wanted the story to just keep on going.'

In each of these pairs, replacing *-hii* with *-bhii* gives a very similar meaning and informants find them equally felicitous. All of the contexts appear to be also emphatic in nature. Seemingly, other verbs of thinking or saying similarly allow for this. We could even add to this list the sentence *mujhe yah samajh hii/bhii nahiiN aaya* ('I didn't even understand that.'). See (264) and (265) from CFILT.

(264) Preceding Context: The speaker is explaining for empathy towards mentally-retarded children.

jyoN-hii uski simaaoN ko sviikaar kiyaa jayegaa, uskaa
when-HII his limitations ACC acceptance do.PRF.M go.FUT.3.M.SG his
chiRchiRaapan, uskaa Sor karne tatha uski agyaanataa bahut kam
irritability his noise do.INF and his ignorance much less
akhregii. is avasthaa meN maataa-pitaa ko baalak yaa apne-aap
be.bothersome-FUT this state in parents ACC child or self
par krodhit hone ke bajaaye baalak ke prati dayaa utpann
on angry become.INF GEN instead child GEN each compassion generate
hogii. aise baalak kisi ko jaan-buujhkar tang nahiiN karte.
be.FUT.F this child anybody ACC deliberately annoyed NEG do.IMPERF
un becaaroN meN itnii **samajh** **hii nahiiN** hotii.
those unlucky.ones in much knowledge hii NEG become.IMPERF.F

'As soon as his limitations are accepted – his irritability, his ruckus-making, and his ignorance – it will be much less burdensome. In this state, instead of the parents

becoming angry at the child or at themselves, they will start feeling compassion. This type of child does not annoy anyone deliberately. These poor souls don't even understand this much.'

(265) Preceding Context: The speaker is in a new place and not understanding the language spoken around him.

maiN-ne rui ali se yah kahaa, yahaaN jo baate ho rahi haiN un
I-ERG Rui Ali from this say.PRF here REL speech be PROG be.PRES those
meN se adhikaaNsh-hii maiN samajh nahiiN paa rahi huuN.
in from most-HII I understanding NEG get PROG be.PRES
islie aap-se mujhe bahut-si baateN sunanaa jaruri hai. unhoN ne
therefore you-from me many things listening necessary be.PRES he ERG
kahaa, "**samajh bhii nahiiN** sakogi. use ham log 'cigliS'
say.PRF understanding even NEG can.FUT.F it we people Chinglish
kahate hai." maiN samajh nahiiN paayii kii ve kis
say.IMPERF be.PRES I understanding NEG get.PRF.F COMP that which
bhaaSa meN baat kar rahe the.
language in speak do PROG be.PAST

'I said this to Rui Ali: I'm not understanding most of what is being said here. For this reason, it is critical that I hear many things from you. He said, "You won't even understand this. This is what we call Chinglish." I did not get which tongue they were speaking in.

These corpus examples help show that there are differences in the use of *-hii* and *-bhii* in these negated sentences. Montaut (2004) admits that the sentences in (259) express subtle meaning differences: "Whereas the *-hii* statement can be paraphrased by the insistence of the verbal core notion (...this only/very knowledge I had not, I was in the very ignorance of), the *-bhii* statements, perceived as less strong, can be paraphrased by 'I was to this point of ignorance.'" (p.296).

The use of *-bhii* in (265) is similar to a use of English *even* in the sentence 'Hans didn't even win a BRONZE medal.' This is discussed by Schwarz (2005) as saying that such a sentence makes *characteristic implications* about the other alternatives, like German *einmal* and *auch nur*, discussed later in this chapter. In this case, the implication would be that Hans didn't win the silver medal or the gold medal. In a similar vein, (259) also makes the characteristic implication that I didn't act on it. Thus, we should not find an existential

presupposition. In (266), the derivation for (261), I will avoid inserting the existential presupposition of -*bhii*, setting aside for the moment how this can be achieved.

(266) bhii$_{scalar}$[NEG[I thought of that]]

a. NEG[I thought of that]

ASSERTS: $\neg$(*thought*(I, that))

b. bhii$_{scalar}$[NEG[I thought of that]]

PRESUPPOSES: $\neg$(*thought*(I, that)) $\prec$ $\neg$(*acted.on*(I, that))

ASSERTS: $\neg$(*thought*(I, that))

(266b) shows that the sentence with -*bhii* is felicitous when my not thinking of something is less likely than my not acting on it (i.e. thinking of it is more likely than acting on it). The sentence is true when I didn't think of it.

Similarly we can see the derivation for -*hii* in this sentence. Going by what we had before, we can see that the contexts are emphatic, and so we need to employ Emph.Assert. The derivation for regular -*hii*$_{excl}$ and -*hii*$_{excl+scal}$ are in (267) and (268).

(267) NEG[-hii$_{excl}$[I thought of that]]

a. -hii$_{excl}$[I thought of that]

PRESUPPOSES: $\exists$p$'$ [(p$'$ $\in$ C $\wedge$ $^{\vee}$p$'$]

ASSERTS: *thought*(I, that) $\wedge$ $\forall$p$'$ [(p$'$ $\in$ C $\wedge$ p$'(w)$) $\rightarrow$ p$'$ = *thought*(I, that)]

b. NEG[-hii[I thought of that]]

ASSERTS: *I didn't think of it* OR I acted on it

c. Emph.Assert[NEG[-hii[I thought of that]]]

PRESUPPOSES: $\neg$(*thought*(I, that)) $\prec$ $\neg$(*acted.on*(I, that))

ASSERTS: *I didn't think of it* OR I acted on it

(268) NEG[-hii$_{excl+scal}$[I thought of that]]

a. -hii$_{excl+scal}$[I thought of that]

PRESUPPOSES: $\exists$p$'$ [(p$'$ $\in$ C $\wedge$ p$'(w)$]

PRESUPPOSES: *thought*(I, that) $\succ$ *acted.on*(I, that)

ASSERTS: *thought*(I, that) $\wedge$ $\forall$p$'$ [(p$'$ $\in$ C & p$'(w)$) $\rightarrow$ p$'$ = *thought*(I, that)]

b. NEG[-hii[I thought of that]]

ASSERTS: *I didn't think of it* OR I acted on it

c. Emph.Assert[NEG[-hii[I thought of that]]]

PRESUPPOSES: $\neg$(*thought*(I, that)) $\prec$ $\neg$(*acted.on*(I, that))

ASSERTS: *I didn't think of it* OR I acted on it

We can see that the truth conditions are very similar for *-hii* and *-bhii* in this case, but some differences are also evident. First, we have an existential presupposition contributed by *-hii*. Even if we are to follow a Rullmann-style analysis for *even* to eliminate the existential presupposition for *-bhii* in this case, we would have to decide whether we should do the same thing for *-hii*, or if the presupposition is actually valid.

The ideal conditions under which *-hii* and *-bhii* are felicitous are slightly different for other negated cases discussed in this chapter as well. Take the differences in (269) (Veneeta Dayal, p.c.). (269a) is not appropriate if *-bhii* is replaced with *-hii*, and (269b) is not appropriate if *-hii* is replaced by *-bhii*.

(269) a. koi nahiiN aayaa. jon-bhii/#-hii nahiiN.
anyone NEG come.PRF.M.SG John-bhii NEG
'Nobody came. Not even John.'

b. jon-hii/#-bhii nahiiN aayaa, to aur kaun aataa?
John-hii NEG come.PRF.M.SG so else who come.SUBJ
'Even John didn't come, so who else would have?'

The first sentence in (269a) sets up a context where the existential presupposition of the second sentence with *-bhii* is met. The situation is parallel to the English sentence in the translation with 'not even,' and the *-hii* structure is not felicitous here. (269a) could be an answer to the question *Who came?*. In this construction, it must hold that everyone did not come. (269b) can only be an answer to the question *Did no one come?*. Crucially, in (269b), there is an expectation that John should have come. In (188), the speaker example discussed in the biased rhetorical question cases, where the speaker was the most likely to show up for the meeting but didn't, the sentence is felicitous in situations where others showed up but just the speaker did not; it does not need to hold that everybody didn't show up.

Contrasts such as the above need to be studied further to see how (non)-scalarity and (non)-exclusivity in these particles interact and contribute to discourse.

4.6.2 *Even* in Conditionals and Superlatives

There is a similarity between Lahiri's account of Hindi NPI's with *-bhii* and Krifka's analysis of strong NPI's in English (Krifka 1994, 1995), discussed earlier in this chapter. In these accounts, NPI's have an *even*-like meaning. Emph.Assert is a speech act operator, and takes widest scope.

There are further advantages to Krifka's Emph.Assert analysis, one suggested by Lahiri (2008) for English *even*. Lahiri (2008) points out that using Emph.Assert avoids having to posit actual movement for English *even*, as done by Wilkinson (1996) to account for the NPI behavior of *even*. With the sentence *If you see even Mary, you must talk to her*, there can be an argument made in line with Rullmann (1997). The scope theory of *even*, using movement, would have to mysteriously allow *even* to escape from the antecedent of a conditional. Here Emph.Assert is attached low. The more interesting case is (270b), where it is attached high. However, Lahiri suggests we can simply attach Emph.Assert at different points in the derivation, as done in (270), to select for the least likely proposition.

(270) If you see even Mary, you must talk to her. (Lahiri 2008:367)

a. '[Emph.Assert If you see even Mary], you must talk to her.

b. Emph.Assert [[If you see even Mary], you must talk to her].

In (270a), the antecedents rule in the worlds where you seeing Mary is the least likely compared to you seeing anyone else. The derivation of the felicity conditions and truth conditions for (270b) is given in (271). Suppose that the alternative to Mary is Julie.

(271) a. if you see Mary

ASSERTS: *see*(you, **m**)

b. even [if you see Mary]

PRESUPPOSES: *see*(you, **m**) $\prec$ *see*(you, **j**)

PRESUPPOSES: *see*(you, **j**) is TRUE

ASSERTS: *see*(you, **m**)

c. you must talk to her

   ASSERTS: it is necessary that *talk*(you, **m**)

d. even [if you see Mary], you must talk to her

   ASSERTS: TRUE in all worlds where either:

   (i) *see*(you, **m**) & *talk*(you, **m**) necessary

   (ii) ¬*see*(you, **m**) & *talk*(you, **m**) necessary

   (iii) ¬*see*(you, **m**) & *talk*(you, **m**) not necessary

e. Emph.Assert[[even [if you see Mary]], you must talk to her]

   PRESUPPOSES: *If you see even Mary, you must talk to her* ≺ *If you see even Julie, you must talk to her.*

The use of Emph.Assert at the outermost level allows for a scalar meaning component to arise from the conditional as a whole compared to other alternatives.

Moving on to negated *even* with superlatives, Fauconnier (1975) discusses an ambiguity with English statements with superlatives like in (272). In both interpretations, a scale is implicit in the background based on the likelihoods of foods that could be eaten (which correlates with the scale created by the superlative 'most delicious').

(272) Tommy will not eat the most delicious food. (Fauconnier 1975:353)

One reading of (272) has it that Tommy will not eat what is at the end of that scale, though he could eat other things. The second reading, which is perhaps much more immediately salient, is that he eats nothing on the scale. One could imagine there being a covert form of *even* to disambiguate the sentence, or a covert form of *only.* In such a case, then, we have an ambiguity between a negated exclusive reading and a negated scalar reading, similar to what we see with *-hii* in negated environments, shown in (273).

(273) a. Tommy won't eat the most delicious thing, but he will each all the less delicious things.

b. Tommy won't eat anything, not even the most delicious stuff.

The reading in (273a) is an 'only not' interpretation, while the interpretation in (273b) is like an 'even not.'

Interestingly, Fauconnier also points out that sometime with *even*, there is felicity with either end of the scale, something we have been seeing repeatedly with *-hii*. Compare (274) and (275).

(274) Martha didn't hear even the loudest noise. (Fauconnier 1975:367)

(275) Martha didn't hear even the faintest noise. (ibid.)

Loudest and *faintest* are on opposing ends of the scale, and yet *even* is felicitous with both. In (274), it is entailed that Martha is hard of hearing. If the scale of sound is oriented by the likelihood of being heard, *loudest noise* would be at the maximal endpoint of the likelihood scale. Contrast this with (275), where it is entailed that there was no sound at all in the room.

4.6.3 *Einmal* and *Auch nur*

Schwarz (2005) discusses the German *even*-like focus particles *sogar*, *einmal*, and *auch nur*. He observes that sentences with *einmal* and *auch nur* give rise to implications as to the truth values of certain alternative propositions. The examples he uses in (276) and (277) illustrate this.

(276) a. Hans hat nicht einmal den ERSTEN Band gelesen.
Hans has not even the first volume read
'Hans hasn't even read the FIRST volume.'

b. Keiner von uns hat auch nur den ERSTEN Band gelesen.
none of us has even the first volume read
'None of us has even read the FIRST volume.'

(277) a. Hans hat nicht einmal die BRONZEMEDAILLE gewonnen
Hans has not even the bronze-medal won
'Hans didn't even win the BRONZE MEDAL.'

b. Keiner von uns hat auch nur die BRONZEMEDAILLE gewonnen
none of us has even the bronze-medal won
'None of us even won the BRONZE MEDAL.' (Schwarz 2005:135)

The relevant point here is that if Hans hasn't read the first volume, then there is no way he could have read the second, third, etc. Similarly, if he didn't win the bronze, he wouldn't win

the silver or gold. Thus, the higher-ranked alternatives must be false. Schwarz demonstrates that these "characteristic implications" are distinct from conversational implicatures, as they cannot be suspended in the way true conversational implicatures can be suspended.

This seems almost similar to the 'even not' inferences we get with *-hii* and negation, where the rhetorical question could be formulated to make this clear. Compare the original example we used (278) with the variant (279). Rhetorical questions will again help to tease these apart.

(278) jon-hii nahiiN aayaa. to aur kaun aayegaa?
John-HII NEG come so more who come.FUT
'John-hii didn't come. So who else would?'

(279) jon-hii nahiiN aayaa. to saam aur heri kaise aayeNge?
John-HII NEG come so Sam and Harry how come.FUT
'John-hii didn't come. So how can it be that Sam and Harry will come?'

That is, after we know that John isn't showing up, the likelihood of Sam and Harry coming is lowered even more.

Nevertheless, it is important to note here is that characteristic implications have to do with inferences about truth of other propositions, instead of inferences about likelihood of other propositions. In the case of the German *einmal* and *auch nur*, the use of the particle entails that other scalar alternatives are not true. In the case of *-hii*, the most that is done is a further demotion of the likelihood of other alternatives, but not a complete ruling out of them as possibly true in the world.

4.6.4 Scalar *only*

English *only* and negation do not lead to ambiguity when they occur together. If the negation is cliticized to the verb, it seems difficult for the negation marker to scope outside of *only*. Instead the phrase *not only* seems to be a lexicalized form that ensures this role. Beaver (2004) shows that *not only* involves focus on *only*.

To my knowledge, it has not been explored whether the possible rank-order reading of *only* is still obtainable under negation, or whether like *-hii* it can become masked. However, it appears to me and to an informant that it is more difficult to get a scalar interpretation when *only* and negation appear together, as in (280).

(280) Only John didn't come to the party.

a. Everyone else came to the party except John.

b. ? Everyone else except John came to the party, and John's attendance doesn't matter to us.

A further systematic judgment study could help to determine whether (280) generally holds.

4.7 Teleological Modality

One remaining interesting issue is related to what appears to be a clear interaction of negation with the particular type of ordering source for the scale. That is, we saw that the scale in the case of negation had to do with goal-oriented necessity, though this teleological modal flavor does not show up without negation.

With a traditional Kratzerian account of modality, note that the teleological necessity that arises in negated constructions with *-hii* is necessity of something that can be based on epistemic or circumstantial modal bases, as shown by the possible contexts and interpretations in (281).

(281) a. Context: The speaker doesn't believe anybody will come if John doesn't.

jon-hii nahiiN aayaa, to aur kaun aa saktaa hai?
John-HII NEG come-PRF.M.SG so who else come can be.PRES.3.SG
'John-hii didn't come, so who else will come?'

b. Context: The speaker is having a party, and since John is the most talkative and sociable, it will be a bad party if he doesn't show up.

jon-hii nahiiN aayaa, to accha *party* kaise ho saktaa hai?
John-HII NEG come-PAST.M.SG so good party how be can be.PRES.3.SG
'John-hii didn't come, so how can we have a good party?'

c. Context: The speaker is traveling out of the country, and John is the one who has packed everyone's passports, so if he doesn't make it to the airport, nobody will be able to fly out.

jon-hii nahiiN aayaa, to *plane* par kaise jaayenge?
John-HII NEG come-PAST.M.SG so plane on how go-FUT.1.M.PL
'John-hii didn't come, so how can we get on the plane?'

For these goal-oriented necessity cases, the modal base is either epistemic or circumstantial, while the ordering source is teleological. The epistemic and circumstantial modal bases are what exist for the likelihood and desirability scale types we saw previously in non-negated *-hii* constructions. Thus while the modal base type for the goal-oriented reading is either the one of the likelihood or desirability, the difference is in the ordering source, which is teleological. One question that is beyond the scope of the current project but could be studied further is how this switch in the ordering source type happens with the inclusion of negation.

4.8 Conclusions and Summary

This chapter has shed light on the interaction of *-hii*'s scalar meaning with negation. Using negation helped to tease apart the exclusive and scalar meaning components and see the need to modify the statement of the conventional implicature to accommodate the non-scalar use of *-hii*.

The experiment presented in this chapter demonstrates that there is indeed both a negated exclusive interpretation as well as a negated scalar interpretation. We saw how several accounts – one based on syntax, another on lexical ambiguity, a third appealing to the QUD, and a fourth involving adjustment of the scalar requirement – fared for accounting for the data. I showed that the syntax-based account suffers issues in light of the experimental data, but further testing of certain constructions may render it viable. I showed then that the QUD is a useful discourse component to appeal to for intuitively capturing how the scalar and non-scalar readings are made salient, but on its own does not provide a full explanation. Lastly I demonstrated that a fourth method involving altering the statement of the scalar requirement captures the variance in meaning.

Lastly, we can see several similarities and differences between the way *-hii* behaves in negated environments and the way other scalar and exclusive particles behave in negated environments. Just as with the extensive history of debate over whether there is one form of *even* or two, there is reason to question the lexical ambiguity of *-hii*. The study of characteristic implications of German *einmal* and *auch nur* shows instances where characteristic implications about other alternatives on the scale can be deduced. Overall we see that *-hii*

occupies a unique place in the typology of scalars that interact with negation.

Chapter 5

Targeting Endpoints through Intensification

In Chapter 1, I identified three components of -*hii*'s meaning – exclusivity, scalarity, and intensification. In Chapters 2 through 4, we explored the interaction of the exclusive and scalar components of meaning, and saw that -*hii* occurs with scales of likelihood, desirability, and goal-oriented need. Furthermore, there is the ability to associate with either the maximal or minimal endpoint of the scale. Now we turn to the intensificational aspect of meaning.

Recall that beyond having the flexibility to choose between two different scalar endpoints, depending on whichever scale is active in the discourse context, the cases of -*hii* combining with overt forms of *only*, such as *sirf*, reveals that -*hii* can reference a scale of degree of speaker certainty. In this chapter we examine cases where -*hii* exhibits a slightly different function from what we have been discussing so far, namely its intensificational meaning. Though seemingly different, I will show that the intensificational meaning is related to the scalarity we have been witnessing in -*hii* up to this point.

In the process, I will show that in addition to likelihood, desirability, and goal-oriented need, there is a critical role of other types of expectations. This chapter thus forays into how the intensificational aspect of -*hii* combines with other constructions that are intensifying structures. This includes degree intensifiers (i.e. *very*) and reduplicated nouns and adjectives.

This chapter also discusses other approaches to cross-categorial polysemous particles that show some of the varied scalar properties that -*hii* does. I will look specifically at Italian -*issimo* and Washo *šému* as well as Marathi -*c*, and the analyses that have been given by Beltrama & Bochnak (2015) and Deo (2014) to handle the crosscategorial nature of these particles.

This chapter is organized in the following way. In 5.1 I introduce additional data that we

will examine in this chapter that are not accounted for under the analysis up to this point. In 5.2 I describe the analysis of Beltrama & Bochnak (2015), which partially draws on the phenomenon of pragmatic slack and halos to account for the polysemy of *-issimo* and *šému*. I also present the analysis of Deo (2014) for an emphatic particle in Marathi, which has a similar distribution to *-hii*, and then Goncharov (2012)'s analysis of Russian *sam*. In 5.3, I discuss the mirative component of meaning and how expectations with *-hii* are related to probabilities. In 5.4, I present the related issue of multiple occurrences of focus particles in Hindi and English. I then end the chapter with a conclusion and summary in 5.5.

5.1 Various Types of Intensifying Meaning

We have so far looked at DP's and numeral phrases with *-hii*, and have seen empirical support for there being a meaning contribution of *-hii* that is scalar. Here we expand the empirical landscape further.

Various cases will be listed first, and then some discussion follows about how these cases do not fit the 'only' and 'even'-like cases of Chapter 2. In these examples *-hii* adds a high degree reading and a doubt removal reading. We will also see that these meanings are closely related to uses of *-issimo* in Italian.

5.1.1 Adjectives

Montaut (2004) raises the case of *acchaa* ('good') combined with *-hii* in (282), where the translation uses English *really*. What we cannot determine without additional surrounding context is whether this sort of translation is indicative of a high-degree reading, or a doubt removal function.

(282) acche-hii aadmii
good-HII man
'really good man' (Montaut 2004:291)

Based on judgments I have collected and a corpus example, the reading induced by the addition of *-hii* is actually one of doubt removal rather than asserting a high degree reading of the adjective. For example, a possible context for (282) is in (283), produced for me by an informant.

(283) Context: Mary is single and is trying to find for once what she considers decent bachelors to choose from. Jennifer points to a set of men at a party and tells her that they are decent. Mary tells her she's doubtful that the group Jennifer is pointing to are actually good. Jennifer responds:

yeh log acche-hii aadmii haiN.
these people good-HII men be-PRES.PL

'These people really are good men.'

(. . . Believe me; you can talk to them and see.)

We can see in this context that it is not the standard for *good* that is being boosted with *very*, but rather that there is a removal of doubt about the men counting as *good*.

An entry in the CFILT corpus[1] in (284) (emphasis my own) shows how this type of removal of doubt emerges when a discourse context is included.

(284) khaanaa khaane-ke baad kursi-se uThaa aur *washbasin*-ko jaate
food eat-GEN afterward chair-PREP rose and washbasin-ACC go.IMPERF
hue bolaa, "maiN soctaa huuN ki ab maiN cal-hii
happen say.PRF.M I think be.PRES.1.SG COMP now I go-HII
duu. mera aaj ek sthaan-par sakSaatkar hai. dekho kyaa *result*
give.PRES.3.SG my today one place-PREP interview be-PRES see what result
nikaltaa hai?" niinaa bolii, "**acchaa-hii** niklegaa. jab aadmi mehnat aur
come PRES Nina said good-HII come-FUT when man hard.work and
imaandari-se apna kaam karta hai, to use bhagwaan-bhii
honesty-INSTR REFL work do.IMPERF be.PRES.3.SG then he.DAT god-even
acchaa-hii phal deta hai."
good-HII fruit give.IMPERF be-PRES.3.SG

'After eating, he got up from his chair, and walking towards the sink, he said, "I think I should leave now. I have an interview someplace. Let's see what result it brings." Neena said, "It'll be fine. When a man works with honesty and commitment, then God too gives him good reward."'

From (284) we can see that the inclusion of *-hii* by Nina attempts to calm the man down and reassure him of the okay (*acchaa*) outcome of his interview.[2] Thus, the use of *-hii* with an adjective serves not to give a high degree meaning, but rather remove doubt.

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[1]Unfortunately the corpus seems to have altered the contents since the search was first conducted in 2014, so this particular hit is no longer locatable.

[2]Note that there is an additional *-hii* in the passage, used with the verb *cal* ('go'). The use of *-hii* with verbs will be discussed briefly in Chapter 7.

Much of this also applies to the following example in (285), using 'near.'

(285) Sahar paas-hii hai.
city near-HII be-PRES.SG
'The city is quite near, very near.' (McGregor 1972:142)

5.1.2 Degree modifiers

Beyond adjectives, *-hii* also combines with degree modifiers, like 'very' in (286) and 'little' in (287).[3]

(286) to us meN mere pati-kaa yogdaan bahut-hii jyaadaa hai.
so that in my husband-GEN contribution very-HII great be-PRES.3.SG
'So my husband's contribution is very great in that.' (Bhatt 1994:4)

(287) thoRi-hii
little-HII
'just a little' (Montaut 2004:290)

It is difficult to see what the contribution of *-hii* is in these cases, so some examples pulled from CFILT Corpus will help bring out the meanings here as well. (288) shows an example with *bahut hii*. What we can infer is that the radio receiver being spoken of is of the highest level of sensitivity for picking up noise.

(288) adhik duuri-ke-liye adhik SaaktiSaali (*meter*) taraNg TraansimiTeroN-kaa
more distance-GEN-for more powerful meter wave transmitters-OBL-GEN
upyog kiyaa jaataa hai. senaa dwaaraa upyog-meN laaye
use do.PRF.M go.PRF.M be-PRES.3.SG force by use-in rhythm
jaane vaale *radio receiver* **bahut-hii** suukShmagraahi evam sabhi prakaar-ke
go.INF ones radio receiver very-HII sensitive and all type-GEN
vataavaran-meN kaam karne vaale hote haiN.
environment-in work do.INF one do.IMPERF be-PRES.3.SG
'For longer distances, more powerful (meter) wave transmitters are used. The force used by the external radio receiver is VERY sensitive and tends to work in all kinds of environments.'

We can find *thoRi hii* in the following entry in (289). Here what we can infer in the story is that the man drank nearly all the wine with an extremely small amount remaining.

[3]Montaut's phrase is the intensifying meaning, but this does not rule out the possibility of a confirmation reading with this adverb. *mujhe lagaa ki thoRi-hii ciini hogi aur thoRi-hii thii.* ('I thought that there would be just a little sugar and there WAS little sugar.') is another possible reading (Veneeta Dayal, p.c.).

(289) raajkumar-ne upahaar-meN baarah DabalroTiyaaN paniir-kaa gol tukRaa
prince-ERG gift-in twelve bread-PL cheese-GEN round piece
aur do maSkoN-meN baRiya Saraab bheji thii.
and two bottles.OBL-in great alcohol send.PRF.F do.PAST.F
'The prince sent as a gift twelve loaves of bread, a round piece of cheese, and two bottles of fine wine.'

...

par raaste-meN is habSi duut ne gaDbaD kar dii yah ek
but route-in this black messenger ERG messup do give.PAST.F this one
DabalroTi aadhaa paniir aur dono maSkoN-ki Saraab pii gayaa.
bread half cheese and both bottles-GEN alcohol drink come.PRF.M
SeS maSkoN-meN bahut **thoRi-thoRi-hii** Saraab usne rahane
remaining bottles-in very little-little-HII alcohol he-ERG left
dii.
give.PRF.F
'But en route this black messenger messed things up; he had a bread, half the cheese, and he drank both bottles of wine. In the rest of the bottles he left really very little wine.'

Observe that the asserted proposition does not have a high likelihood. We have no evidence from the background context in (289) that the speaker expected very little quantity of wine to be left.

Thus, these cases of *thoRi hii* seem to indicate a high-degree meaning instead of one based on a speaker's conception of likelihood/desirability. Indeed these do not include a background context, and we are able still to derive this meaning.

5.1.3 Reduplicated adjectives and nouns

Observe that in (289) *-hii* occurs with a reduplicated constituent. Reduplication occurs frequently in Hindi[4] and (290) shows that *-hii* can even occur as an infix between the two occurrences of its associate.

(290) sundar-hii-sundar
beautiful-HII-beautiful
'very/extremely beautiful' (Montaut 2004:290)

[4]For more about reduplication in Hindi, see Abbi (1992). A crosslinguistic survey of reduplication is in Inkelas & Downing (2015).

Like with *-hii* on degree adverbs, we see here a high degree reading of the adjective 'beautiful.'

Reduplication can also be done with nouns, as shown in (291), with the addition of *-hii* lending a 'total' or 'absolute' meaning to the noun's property.

(291) a. andheraa-hii-andheraa
darkness-HII-darkness
'absolute obscurity' (ibid.)

b. dukh-hii-dukh
pain-HII-pain
'total misery' (ibid.)

c. mail-hii-mail
dirt-HII-dirt
'absolute dirt' (ibid.)

It should be noted that these 'X-hii-X' forms are more common in a poetic or literary register.[5] However, one naturally-occurring context of use is in (292).

(292) Urmila is making different types of ice cream. She has previously made regular, milk-based ice cream, but today has made sorbet (i.e., non-milk ice cream). Archna comments that it tastes different. Urmila responds:

kyoNki yah *fruit*-hii-*fruit* hai, aur vah *milk* kaa thaa.
because this fruit-HII-fruit be-PRES.3.SG and that milk GEN be-PAST

'Because this one is entirely fruit, and that one was of milk.'

We can see with the context in (292) that the use of *-hii* is for a more intensified meaning of the noun that is reduplicated. The sorbet is explained to have a different taste than regular ice cream because it is composed completely of fruit, with no dilution of milk.

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[5]From (289) and the current data, we can see that the occurrence of *-hii* with a reduplicated adjective may be of the form 'X-X-hii' or 'X-hii-X.' I leave aside the issue of what precise conditions result in the suffixation of *-hii* versus the infixation of *-hii* in this environment. However an initial judgment with regards to the combination of *-hii* with *thoRi* ('little') reveals that either *thoRi-hii-thoRi* or *thoRi-thoRi-hii* (as in (289)) are allowed for the intended boosting reading. For *sundar* ('beautiful'), changing (290) to *sundar-sundar-hii* seems to not lend the high-degree meaning as easily. Rather it conveys that the individual referenced is only beautiful and does not possess other qualities. It may turn out empirically that adjectives that reference endpoints of scales of inferiority like 'little' may allow either the infixation or the suffixation whereas superiority scalar endpoints like 'beautiful' may only allow infixation. This however is a question that requires further detailed study.

For a word like *andheraa* in (291a), there is again appeal to the end of a scale with the infixation of *-hii*. The associated concept of darkness is that of a gradable noun. As Kennedy & McNally (2005) show, gradability can be a property not just of adjectives, but also of verbs and nouns. The adjective *dark*, as shown by Kennedy & Levin (2008), is associated with an upper closed scale, and we can speak of there being more or less darkness. For cases like (291a-b) we can think of these nouns as easily marking a higher quality when *-hii* is employed. The context of use in (293)[6] (emphasis my own) may help to show that (291c) is similar to the other two, in expressing a total and complete level of dirt in the ear.

(293) Context: A girl has just listed reasons for why she is in love with someone. The Buddha's response to her reasons is:

muh-meN thuuk-hii bharaa rahta hai. kaanoN-meN
mouth-in spit-HII filled remain.IMPERF be-PRES.3.SG ears-in
mail-hii-mail hotaa hai aur Sarir mal-mutr-kaa khajaana
dirt-HII-dirt be.IMPERF be-PRES.3.SG and body excrement-GEN treasure
maatr hai.
only be-PRES.3.SG

'The mouth is filled with spit. In the ears there is total dirt and the only treasure in the body is excrement.'

The CFILT corpus shows the following result for *tu-hii-tu* ('you-hii-you'). Montaut indicates that this common expression "amounts to state the absolute character of the beloved by stating its uniqueness" (Montaut 2004:290).

(294) tu aur maiN do nahiiN haiN, ek haiN. sarvartra maiN-hii
you and I two NEG be.PRES.PL one be-PRES everywhere I-HII
huuN, athva sarvartra **tu-hii-tu** hai.
be-PRES.1.SG or everywhere you-HII-you be-PRES
'You and I are one, not two. Everywhere am I, or everywhere are *you* – no other.'

Thus, both the reduplicated adjective and noun cases show that *-hii* indicates a high degree for the property it associates with. This is not accounted for by the analysis discussed in Chapter 2. The scale here is not one composed of propositions ordered by likelihood, desirability, or entailment. The scale appears to be one where degree of the obscurity/misery,

[6]Found on p.95 of *Bhagwaan Buddha aur unka Dhamm, Vol.1*, by B.R. Ambedkar

or amount of dirt, determines the ranking. Thus, we see that these scales are defined not by the speaker's ranking, but by the concept associated with a certain lexical item.

5.1.4 Numerals, non-cardinally ordered

In Chapter 3, we witnessed how the combination of *-hii* with a numeral normally suggests a lower than expected quantity. However, there are cases of numerals attached with *-hii* that are like (295) from Varma (2006) and (296) from Imai (1981), which do not appear to give an under-expectation reading:

(295) Context: The domestic help wants to know how many cups of tea she should make. There is confusion, at issue is whether one or two cups should be made.

do-hii *cup* banauu?
two-HII cups make-SUBJ.1.SG

'Should I make TWO cups? / Is it TWO cups that I should make?'

(Varma 2006:92)

(296) ham log nagroN-meN do baar hii Daak baaNTte haiN.
we people city.PL-in two time HII mail distribute be.PRES.PL
'In cities, we of course distribute the mail twice a day.' (Imai 1981:48)

The English translations are not entirely clear, as the English sentence can be used as a surprise response to a request to make two cups of tea, in a context where it is normal to make only one cup. However, the relevant context that Varma brings up for (295) shows that this is a response that looks for confirmation. Thus, we again have an interpretation referencing speaker certainty. Similarly, if there is an expectation that mail would be delivered more than once in a populated city, the use of *-hii* in (296) indicates that expectation is confirmed.

Such a confirmation of expectation makes this case of numerals different from what we had seen before. In the context in (295), *-hii* is associating with the alternative *two cups* instead of *one cup*. Recall that with such focus-sensitive particles one type of scale we can access is the scale that comes for free with the quantity implicature inherent to numerals. In that case, as explained in Chapter 3, the strength ordering of the alternatives is fixed by the scale of natural numbers. If the context were different and the alternatives were *2 cups*

or *3 cups*, our analysis for numerals with *-hii* from before would suffice.

Note that (295) brings out an additional difference between *only* and *-hii*. While *sirf/bas/keval* ('only') have to respect the entailments, *-hii* does not. The case of (295) supports association of *-hii* with *2 cups* even though by entailment it is stronger than the alternative, but *sirf 2 cups* would not allow for this.

It follows, then, that there is no sense of likelihood at play, as both options are under debate. Furthermore, there is also no entailment-induced probability. The probabilities that come with entailment relations are respected by *only*, as with *even*. As Crnič (2011) had declared for *even*, the ordering relation between propositional alternatives for *even* must be faithful to logical entailments between those alternatives. If we apply this axiom to (295), it renders *2-hii cups* less likely than *1-hii cup*, and by the maximal-likelihood requirement for *-hii* given in Chapter 2, the sentence would be infelicitous. Thus likelihood does not appear to be the factor underlying the felicity of (295).

Similarly it does not have a pure exclusive interpretation either. As Varma indicates, it would be inappropriate to translate (295) as 'only two cups.' More specifically, we cannot get the interpretation 'no more than 2 cups' because the only other alternative is 1 cup, and 1 is less than 2. Recall the judgments from Chapter 3 in (297) about where *sirf* ('only') can be used with numerals, and where *-hii* can, if the numerals are ordered by their cardinality on the scale.

(297) a. maiN-ne socaa thaa ki caar aayeNge lekin sirf do-hii
I-ERG thought PAST that four come.3.M.PL.FUT but only two-HII
aaye.
come-PRF.3.PL
'I thought that four would come but only two came.'

b. * maiN-ne socaa thaa ki caar aayeNge aur sirf caar-hii
I-ERG thought PAST that four come.3.M.PL.FUT and only four-HII
aaye.
come-PRF.3.PL
'I thought that four would come and only four came.'

c. maiN-ne socaa thaa ki caar aayeNge aur caar-HII
I-ERG thought PAST that four come.3.M.PL.FUT and four-HII
aaye.
come-PRF.3.PL
'I thought that four would come and four (did) come.'

(Veneeta Dayal, p.c.)

Imai (1981)'s sentence in (296) also brings out a different quality to the numeral than we had seen in Chapter 3. Imai doesn't include the preceding discourse, but it appears most felicitous with a background expectation like in (298), provided to me by an informant. In this case, *-hii* indicates confirmation:

(298) Are you sure? Do you deliver the mail two times or three times in cities? Yes, ...

ham log nagroN-meN do baar hii Daak baaNTte haiN.
we people city.PL-in two time HII mail distribute be.PRES.PL

'In cities, we deliver mail TWO times.'

(298) shows that we do not have the equivalent to an under-expectation reading, as we cannot translate the relevant part of the sentence as *#we only distribute the mail twice.* Likelihood seems to be slightly at play here, in the translation of 'of course.' However if the alternative entertained is distributing the mail once a day (as, for example, a comparison of cities to small towns), then this example can very easily exhibit the same kind of violation of entailment-based likelihood relationships that was shown for (295). *Two times* entails *one time*, rather than the other way around.[7]

5.1.5 Non-gradable nouns

In cases where the noun does not appear to be gradable, the use of *-hii* indicates a removal of doubt. In (299), a scene from the script of the Hindi film *Dev. D*, Paro's father suspects that there may be turmeric on Dev, and his closer examination confirms that suspicion.

(299) Paro's father: are, dev beTaa. kaise ho tum? (Hey, Dev. How are you?)
Dev: *Manager Uncle!* ekdam Topform. (Just great.)
Paro's father: kitne dinoN ke baad dekh rahaa huuN. beTaa tumhare kapRoN pe kyaa hai? (How long it's been since I've seen you. Son, what's on your clothes?)
Dev: Yah? pataa nahiiN. (This? Don't know.)
Paro's father: haldi dikhtii hai. (It looks like turmeric.)

[7] If the alternatives are *two times* and *three times* for (298), it's possible in this context to assert *-hii* with *three times*, but that is less acceptable.

Paro's father: khushbhu-to haldi jaisi hai. (It also smells like turmeric.)

(Paro's father tastes the substance.)

Paro's father: Haldi-hii hai! [Turmeric-HII is] (It IS turmeric!)

The association of *-hii* with *haldi* ('turmeric') indicates that Paro's father is now absolutely certain of the identity of the substance as turmeric, even though he did not come into the situation with any expectation initially.

Notice that this is a case that does not fit in with the scenarios of likelihood or desirability that we had explored in Chapter 2 and 3. First, the alternatives are constructed differently. The alternatives under consideration in this context are p and $\neg p$, *It is turmeric* and *It isn't turmeric*. Turmeric is not the entity that we generate alternative objects to, as the alternatives are not other types of powdery substances. Nor are the alternatives related to each other by entailment, as the propositional alternatives define mutually-exclusive sets of worlds.

Secondly, the speaker's conception of likelihood or desirability does not seem to come into play here. The way the context is set up, Paro's father does not come in with any expectations about whether it is more likely that one alternative will be true or another. Similarly, there is no expectation about one being more desirable than another.

It could be argued that while Paro's father did not come in with any sense of relative likelihood, the point at which he uttered the final sentence of the scene, he probably had a high expectation of turmeric being the substance in question, since he already smelled and tasted the substance. However, the licensing of *-hii* here deals with the level of certainty. Even if there is a likelihood that the substance is turmeric, there is still doubt, and the use of *-hii* indicates that that doubt is removed.

What we saw as the exclusive contribution of *-hii* does not seem to be what the crux of this sentence is either, as such a meaning would imply that the alternatives considered in the context are {It is turmeric, It is turmeric+other yellow substance, ...}. However, this does not appear to be what the character had in mind.

It should be mentioned that in the sentence in question in (299), using *sirf* instead of *-hii* would not yield the same effect. If the scene ended with Paro's father saying (300), the inference would be that he would have entertained that the alternatives instead were the

above, with an entailment relationship between the alternatives.

(300) sirf haldi hai.
only turmeric be-PRES.3.SG

5.1.6 Adjectival scales

I would like to discuss one final case. We will see that this instance of association with *-hii* actually does not pose a problem for the existing analysis, and so will not be discussed further. I however include it here for completeness.

Imagine you randomly find a restaurant, with the expectations that the food should be at least decent.[8] You do not have any sense of the likelihood of this restaurant serving good food, but your hope is that the food will be great. The following judgments hold in (301) about which statements can be made about the food in these circumstances.

(301) a. # khaanaa bekaar-hii thaa.
food bad-hii be-PAST.3.SG

b. khaanaa Thiik-hii thaa.
food okay-hii be-PAST.3.SG
'The food was (just) okay.'

c. # khaanaa baRhiaa-hii thaa.
food great-hii be-PAST.3.SG

Of the above, where the choices are {bad, okay, great}, in that order on the scale, the middle value is the one that is acceptable (*okay*). This sort of scale departs from the quantity scales we looked at in Chapter 3 because while there is no entailment between *bad* and *okay* nor between *bad* and *great*, there is one between *okay* and *great*. Specifically, if the food is great, it must be at least okay.[9] We assume that only *The food is okay* and *The food is great* are the alternatives under consideration. This is similar to what we see in, for example, Horn scales of numerals, where 0 is not in the set, because the alternatives that exist are only the expressions that fall in an entailment relation. This type of association with *-hii*, then, fits in nicely with the generalization we already made in Chapter 2 because it is the low-rank desirability item that is acceptable.

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[8] Thanks to Veneeta Dayal for pointing out this case and the associated judgments.

[9] As an aside, the *goodness* in the case of the kind of context in (301) is not so much goodness in the sense of general moral goodness, but rather with respect to a subjective taste. Taste predicates are analyzed by Lasersohn (2005) to involve a judge parameter.

5.1.7 Interim Conclusions

Having examined a wide range of data for several constituent types, let us take stock. What we see is that *-hii* can give rise to a scalar meaning referencing speaker certainty. When *-hii* occurs with certain adjectives or nouns that are reduplicated, or with degree adverbs, *-hii* exhibits a high degree effect like *very*. Lastly, in the case of numerals, we can either have an under-expectation reading as we saw in Chapter 3, or reference to certainty. Recall that the reference to certainty and uncertainty on the part of the speaker is something we saw in Chapter 3 while examining cases of *-hii* in combination with *sirf* ('only').

In addition to the scales of entailment, likelihood, and desirability that we saw in the previous chapters, we now see evidence of *-hii* having slightly different kinds of semantic and pragmatic effects. These include standard-boosting effects as well as doubt removal and confirmation of expectation. Central to all of these notions is the critical role of expectations, which can come in various forms.

5.2 Approaches to Polysemous Particles

I now turn to other cases in the recent literature that exhibit the same kind of polysemy as *-hii*. I outline here three recent proposals in the literature. First, we look at the analysis of Beltrama & Bochnak (2015) and then we look at that of Deo (2014). I end with Goncharov (2012).

5.2.1 Italian *-issimo* and Washo *šému*

We already saw in Chapter 3 that *-hii*'s intensificational role can be thought of in terms of pragmatic slack regulation. Beltrama & Bochnak (2015) show how this might play a role in explaining the behavior of the particles they examine.

Beltrama & Bochnak (2015) provide a general, uniform analysis for the *-issimo* suffix in Italian and the particle *šému* in Washo, intensifiers that may combine with both gradable and non-gradable predicates. A gradable expression is one that references some sort of scale of degrees of the property of the expression.[10] Theirs is a crosslinguistically robust analysis

[10]Lassiter (2011) uses this definition, which does not appeal to degrees: a gradable expression is one that can manipulate the threshold value.

that works both for languages that encode degree grammatically and those that do not. In a language that grammatically encodes degree, a degree variable is introduced by the expression in some overt way, whereas in a language that does not encode degree, there is no ability to explicitly reference a scalar ordering or degree variable.

With gradable predicates, *-issimo* and *šému* perform a regular standard-boosting function, like *very*. The reason Beltrama & Bochnak cannot account for the data with a degree analysis is the absence of degree morphology in Washo, as well as the use of both of these particles on non-gradable predicates.

The *standard* is an expected norm for a class of objects. See (302) for Italian *-issimo*. A *standard-boosting* effect arises when the standard is raised. (see Kennedy (1999) and Barker (2002)). However, the intensifying effect of *-issimo* seems to be stronger in intensity than *molto* ('very') in Italian. Moreover, the speaker can assert a property and also deny the form of it modified with *-issimo*, as in (303).

(302) La casa è bell-**issima**.
the house is beautiful-ISSIMO
'The house is extremely beautiful.' (Beltrama & Bochnak 2015:844)

(303) La torre é alta ma non alt-**issima**.
the tower is tall but not tall-ISSIMO
'The tower is tall but not extremely tall.' (ibid.:847)

The same holds for *šému* in Washo, as shown in (304)-(305).

(304) dawp'áp'il delélegiʔ Migi-ʔáŋaw-iʔ **šému**-yi
flower red look-good-ATTR ŠÉMU-IPFV
'The red flower is very pretty.' (ibid.)

(305) mé:hu ʔil-káykay-iʔ-i ʔiŋa ʔil-káykayi-iʔ-**šému**-yé:s-i
boy ATTR-tall-ATTR-IPFV but ATTR-tall-ATTR-ŠÉMU-NEG-IPFV
'The boy is tall, but not very tall.' (ibid.:848)

An informant indicates to me that (303) might naturally be translated into English as 'The tower is tall but not THAT tall.'

With non-gradable predicates, *-issimo* can occur, but not *molto* ('very') or *piu* ('more'). Beltrama & Bochnak describe this effect as "a reinforcement of the meaning of the expression it comes with."

(306) a. Serve un governo subit-**issimo**
is.needed a government immediately-ISSIMO
'We need a government right now.'

b. ?? Serve un governo **molto** subito.
is.needed a government very immediately

c. ?? A noi serve un governo **più** subito che a loro.
to us is.needed a government more immediately than to them
(ibid.)

(307) a. fumare dal benzinaio è proibit-**issimo**.
smoking at.a gas.station is forbidden-ISSIMO
'Smoking at a gas station is absolutely/strictly forbidden.'

b. ?? Fumare dal benzinaio è **molto** proibito.
smoking at.a gas.station is very forbidden

c. ?? Fumare dal benzinaio è **più** proibito che fumare in un bar.
smoking at.a gas.station is more forbidden than smoking in a bar
(ibid.:848-49)

They also say of (306) that "the presence of *-issimo*... forces as close as possible an interpretation to the literal truth conditions, dramatically reducing the time difference that can be tolerated [for *subito*]." For (307), "*-issimo* forces a strict reading of the predicate in which the activity at stake can be considered as prohibited under any interpretation, including the strictest one."

Recalling what we witnessed at the beginning of the chapter in relation to *-hii*, we see that *šému* also marks a high degree of certainty on the part of the speaker:

(308) Context: You and a friend are walking along a path and come across a rabbit lying on the ground. You ask your friend if the rabbit is dead. Your friend replies:

lí: de-yúli-yiʔ **šému** k'-éʔ-i
PRT NMLZ-dead-ATTR ŠÉMU 3-COP-IPFV

'It's really dead!' (ibid.:849-50)

Specifically, the speaker is certain here that the rabbit is dead.

Šému modifying nouns picks out a good exemplar or definite member of a category of the referent selected. Note the similarity of (310) with *-hii* in between the reduplicated *andheraa* ('darkness'), described earlier.

(309) t'é:liwhu dókto **šému** k'-é?-i
man doctor ŠÉMU 3-COP-IPFV
'The man is a real doctor.' (It means he's not a quack.)

(310) lélim **šému**
night ŠÉMU
'middle of the night' / 'really dark'

(311) gum-bu?-aŋal-i?-**šému**-yeti?-a?
REFL-DU-house-ATTR-ŠÉMU-INCH-AOR
'They (dual) made a permanent home together.'

(ibid.:850)

Slightly differently, *-issimo* on a noun as in (312) conveys that Michael Jordan is a clear case of the property *champion*. As Beltrama & Bochnak elaborate, if there is a set of individuals that are borderline cases of whether they should be considered champions or not, the use of *-issimo* on *Michael Jordan* indicates that he definitely can count as *champion*.

(312) Michael Jordan è un campion-**issimo**.
Michael Jordan is a champion-ISSIMO
'Michael Jordan is a big/real champion / the champion of champions.'

(ibid.:851)

Crucially the type of ranking that is used on the associate of *-issimo* is highly variable, depending on context. In (313), "the suffix is just conveying that the noun's referent is somehow outstanding according to some contextually inferable dimension, be that size of the fish, its color, its prestige, or some other criterion."

(313) Lampugh-**issima** in Alto Adriatico
dorado-ISSIMO in northern Adriatic Sea
'[Outstanding/huge/spectacular] exemplar of dorado fish caught in northern Adriatic Sea.' (ibid.)

-Issimo cannot be used with numerals, but *šému* can be used with numerals, where it gives rise to an 'exactly n' interpretation, like *-hii* with numerals. See (314), and (315), showing that the Italian *esattamente* ('exactly') has to be used for the 'exactly n' interpretation in Italian, as *-issimo* is ungrammatical.

(314) dubáldi? **šému** hé:š ʔíʔw-i
five ŠÉMU Q 3.EAT-IPFV
'Did he eat exactly five (apples)?' (ibid.:853)

(315) a. Lucia ha mangiato **esattamente** cinque mele.
Lucia has eaten exactly five apples
'Lucia has eaten exactly five apples.' (ibid.)

b. * Lucia ha mangiato cinque-**issime** mele.
Lucia has eaten five-ISSIMO apples
(ibid.)

Beltrama & Bochnak give a unified analysis by appealing to quantification over contexts for evaluation of the predicate. The semantics that they appeal to is one where *-issimo* and *šému* operate over c, the contextual parameter. The particles apply to P_c (the context-sensitive predicate) and universally quantify over possible values of c. In the case of relative standard predicates, this is the relevant comparison class to derive the standard. In the case of absolute standard predicates and precise predicates, this is the amount of pragmatic slack allowed. P_c must hold under all possible values of c, as given by (316). Since an alternative context c' may be the most restrictive one, even there P should hold for the individual (from Beltrama & Bochnak (2015:861)).

(316) $[\![P_c]\!]^{w,g,c} = \lambda x.P(x)$ in c

The meaning in (317) is thus a general meaning for both *-issimo* and *šému*.

(317) $[\![\text{mod}]\!]^{w,g,c} = \lambda P_c \lambda x.\forall c'[cRc' \rightarrow P(x)$ in $c']$

In addition, Beltrama & Bochnak posit an additional expressive component for *-issimo*, and give it the expressive meaning in (318) (Beltrama & Bochnak (2015:873)). Expressive content, as described by Potts (2005), refers to content of an expression that has some properties and to the speaker's emotional state.

(318) $[\![\text{-issimo}_{ex}]\!] = \lambda P \lambda x.([\![\text{-issimo}_{des}]\!](P))(x) = 1 \rightarrow \mathbf{EX}(\mathbf{SI}(P(x)))$

SI refers to the function speaker.involvement, which is a measure function from propositions to degrees of the speaker's emotional involvement. The expressive meaning in (318) operates on another dimension from the descriptive content, following Potts (2005). Like other types

of conventional implicature discussed in Chapter 2, expressive content can come in the forms of, for example, epithets and honorifics, where they remain separated from the at-issue core of the utterance.

Beltrama & Bochnak's proposal accounts for a standard 'grammatical' form of intensification, whereby rank-orderings are lexically encoded in the modified expression. Furthermore, they can account for what they term a 'pragmatic' form of intensification, where the intensification is context-dependent, without a grammatical scalar ordering present, and therefore no degree variable introduced by the modified expression.

For the reasons described in Chapter 3, pragmatic slack regulation is not an analysis well-suited for *-hii*. Nonetheless, we can see that *-hii* patterns with Italian *-issimo* and Washo *šému* and provides crosslinguistic corroboration of the kind of polysemy they argue for.

The expressive dimension part of the Beltrama & Bochnak analysis might be appropriate for *-hii*, especially in light of *-hii*'s *-self*-like constructions. The *-self*-like constructions with *-hii* seem to involve some exaggerated sense on the part of the speaker. They are repeated here below in (319), (320), (321), and (322).

(319) itne varSoN meN vah mere parivaar-hii ka ang ban gaii.
so.many years in she my family-HII of part become go.PRF.F
'In so many years she became part of my family.' (Imai 1981:50)

(320) jab ek baar dhurii gaRabaRaa jaati hai to jindagii-hii
when one time axis-F disturbed go-IMPF.F.SG be-PRES.3.SG then life-HII
laRakhaRa jaati hai.
wobble go-IMPERF.F.SG be-PRES.3.SG
'When the axis is disturbed, LIFE itself starts wobbling.' (Varma 2006:102)

(321) havaa-hii maut ban gaii to!
air-HII death become go-PERF.F.SG then
'What if the AIR itself becomes death!' (ibid.)

(322) *NT*-ki kamii aisi khalii jaise khaane meN namak-hii gaayab ho
NT-GEN lack-F such-F empty as food in salt-M-HII gone be
gayaa ho.
go-PERF-M.SG be-SUBJ.PRES
'The absence of the NT [Navbharat Times] feels as if the SALT itself is missing from the food.' (ibid.:102-03)

An informant indicates to me that (319) could be used in the context in (323), with the preferred translation given.

(323) Two years back, Sita joined my family as a servant, but her behavior has been so nice that...

itne varSoN meN vah mere parivaar-hii ka ang ban gaii.
so.many years in she my family-HII of part become go.PRF.F

'in these years she has even become an integral part of my family.'

Similarly, the other examples in (320), (321), and (322) might be best translated into English with *even*.

It is not clear that the other intensificational uses described in this section necessarily have the "high emotional involvement" that is described for *-issimo*, but the *-self* cases above indicate that this may be something to consider exists with *-hii*. Importantly, we also see in the above data that *-hii* has an emphatic *-self*-like meaning,[11] though *-hii* has a more general scalar endpoint association than *-issimo*, and further, it has the ability to confirm expectation or be a marker of mirativity.

Beltrama & Bochnak say that *-issimo* added to *Marco is tall* has the descriptive and expressive content listed in (324).

(324) DESCRIPTIVE CONTENT: 'Marco counts as tall in every context.'
EXPRESSIVE CONTENT: 'The speaker could not be more excited/amazed/surprised that Marco is tall.'

Beltrama & Bochnak provide evidence that this expressive layer of meaning for *-issimo* is on another dimension of meaning from the propositional one, making it consistent with its conventional implicature behavior. It cannot be targeted by negation, and it cannot be displaced from the utterance time. Thus, (325) and (326) are infelicitous.

(325) La casa è bell-**issima**! #ma non sono così eccitato.
the house is beautiful-ISSIMO but not I.am so excited

[11] A tangential issue that could be interesting to some is the use of *only* and *itself* in Indian English, as reported by Lange (2007), who gives results of a corpus analysis to draw conclusions about the distribution of these two items in both spoken and written Indian English. See her article and references therein for reasons to believe that IE *only* and *itself* developed from substrate influence from Hindi *-hii* and other similar discourse markers in Indian languages.

'The house is beautiful-issima! #but I'm not so excited about it.'

(326) Marco tra dieci anni sarà alt-**issimo**. #Adesso però non provo niente.
Marco in ten years will.be tall-ISSIMO now however not I.feel anything
'Marco in ten years will be tall-issimo. #Now however I don't feel anything about it.'

The constructions in (321) seem to require a similar sort of emotional sense on the part of the speaker, shown for example by (327). This shows that there are cases of *-hii* exhibiting a performative function, like *-issimo*, and the emotional aspect cannot be targeted by negation.

(327) havaa-hii maut ban gaii to! #lekin mujhe koi farak nahiiN
air-HII death become go-PERF.F.SG then but me any effect NEG
paDtaa.
does
'What if the AIR itself becomes death! #but I don't care if it does.'

Beltrama & Bochnak indicate that the superlative sense of *-issimo* is purely on the level of the affective content. This stands in contrast to *-hii*, which we see from all the data together has scalar endpoint inferences that are on the descriptive (non-affective) level. Recall the example of *-hii* with reduplicative adjectives, as repeated below in (328).

(328) sundar-hii-sundar
beautiful-HII-beautiful
'very/extremely beautiful' (Montaut 2004:290)

Just as in the case of English *-self*, *-hii* is compatible with both surprise and non-surprise uses, as we saw earlier. Also, as we saw in Chapter 2, *-hii* in many basic cases associates with the proposition that is maximally likely, which can be thought of as a context lacking surprise. What appears to be driving the emphatic aspect of *-hii* is rather that the speaker is committed to a particular position on the scale, which must be an endpoint. Whether that scale position is surprising or not seems variable. Hence, there is reason to see this part of *-hii*'s meaning as a conventional implicature.

As a final point, the way that *-hii* differs from *šému* is that it does not yield an 'exactly n' interpretation with numbers. As we saw in Chapter 3, *-hii* with cardinal numbers gives a distinctly under-expectation inference, and this is different from *exactly*. Thus, we again

see a critical role of prior expectations with *-hii*, specifically anchored to the speaker of the utterance.

5.2.2 Marathi *-c* and IT-expressions

Let us now look at an analysis of Marathi enclitic *-c*, another particle that exhibits polysemous behavior, very similar to *-hii*. Deo (2014) proposes that *-c* associates with the strongest true alternative among the set of propositional alternatives.

Marathi *-c* has meanings of *only*, *even* in the scope of negation, cleft readings, and an emphatic particle, as shown in (329).

(329) a. kaal tiin-ac muli alyat.
yesterday three-C girl-NOM.PL come-PERF.3.F.PL
'Yesterday only three girls came.' (Deo 2014:3)

b. nahii, tyaacya bhaava-ne-c tyaa-laa madat keli
NEG his.OBL.M.SG brother-ERG-C he-DAT help.NOM.F.SG do-PERF-F.SG
nahii.
NEG
'No, even his brother didn't help him (let alone his friends). (ibid.)

c. tyaacya bhaava-ne-c tyaa-ca khuun kela.
his.OBL.M.SG brother-ERG-C he-GEN murder.NOM.M.SG do-PERF-M.SG
'It was definitely his brother who murdered him.' (ibid.:4)

d. he pradarSan ithe-c aplya Saalet bharnar aahe.
this exhibition.NOM here-C our school.OBL-LOC happen-PROSP PRES.3.SG
'This presentation will take place right here, in our school.' (ibid.)

-C can give both a quantificational *only* interpretation, or a rank-order *only* interpretation. As for the *even* interpretation, we cannot tell from the data whether this only arises with negation or whether this can also arise without it, as the data that Deo provides is only with negated sentences. Additionally, there is a *-self* interpretation, as shown in Pandharipande's example in (330).

(330) tudzha ghadyaal tar mii kaal-ac tu-laa parat dila.
you-POSS-3.SG watch-3.SG EMPH I yesterday-C you-DAT return give-PST-3.SG
'As for your watch, I returned (it) to you yesterday itself!'

(Pandharipande 1997:253)

With regards to the use of *-c* as an emphatic, Deo argues that it could be a precisification effect, a slack regulator, an intensifying adverb, and confirmation of expectation. Thus, we see many of the same behaviors of *-c* as with Italian *-issimo*, and we also see close parallels with Hindi *-hii*.

The analysis that Deo proposes for *-c* is one that relies on Beaver & Clark (2008)'s system of focus interpretation and theory of exclusivity. The main idea is that "*-c* uniformly conveys that the prejacent is the strongest true alternative in the CQ" (p.19).

What we will see is that another observation, that *-c* is an inquiry-terminating expression, will be useful for understanding the place of *-hii* in the broader crosslinguistic taxonomy of similar particles.

Importantly, Deo indicates that *-c* is an inquiry-terminating expression (IT expression). IT expressions are discussed in depth by Velleman, Beaver, Destruel, Bumford, Onea & Coppock (2012). They include both exclusives like *only* as well as cleft constructions.

Indeed there is a cleft-like interpretation of *-hii* as well. Bhatt (1994) mentions that there is the ability of *-hii* sentences to give rise to an English *it*-cleft interpretation. That is, a sentence like (331) could be translated either as in (a) or (b).

(331) raam-hii aaya.
Ram-HII come-PAST
a. 'It was Ram that came.'
b. 'Only Ram came.'

Clefts, like the interpretation in (331a), presuppose both an existence requirement and an exhaustive requirement (Percus (1997), Halvorsen (1978)). Thus, this interpretation presupposes that someone came and nobody other than that person came, and asserts that Ram came.

This is something that Varma (2006) also discusses, showing that the type of existence requirement said to hold of clefts holds for *-hii* too. Varma points out that the sentence in (332) *-hii* evokes alternatives to Sonu as the other people who also went to the station to pick up the father. It is presupposed that somebody recognized the father.

(332) *station* par sonu-ne-hii paapaa-ko pahacaana.
station on Sonu-ERG-HII Dad-ACC recognize-PERF.M.SG
'At the station, it was SONU who recognized Dad.' (Varma 2006:91)

Similarly, in (333), it is assumed that somebody introduced the couple to each other.

(333) meri maaN-ko mere pitaji-se milanevaale tumhare
my-F mother-ACC my.M father-HON-with introduce-INF-INFL-NOM-M.PL your-M.PL
pita-hii the.
father-HII be.PAST.2.M
'It was YOUR FATHER who introduced my mother to my father.'

(ibid.:93-94)

Returning to IT-expressions, Velleman et al. (2012) argue that clefts, contrary to traditional views, can indeed show a difference in meaning depending on which aspect of the pivot is focused. They also posit a covert operator, CLEFT$_S$, which encodes the exhaustive meaning component. Clefts seem to show a reverse of the generalization in Beaver & Clark (2008) and Coppock & Beaver (2014). That is, they can be described as presupposing MAX (or at least that there is no true answer strictly stronger than the prejacent) and asserting MIN(p). Recall that this is actually the pattern of data for Polish *aż* from Tomaszewicz (2012) (See Chapter 2). Given the similarity with exclusives, they suggest the following: "we suggest that *it*-clefts and exclusive particles such as *only* belong to a single broader family 'inquiry terminating constructions' or 'IT constructions.' These constructions have a common pragmatic function: they mark an answer to the current question under discussion as a *maximal answer*, thereby resolving the question and terminating it as an active line of inquiry" (p.443).

Deo says that *-c* is an inquiry terminating expression and marks the prejacent as a maximal answer to the CQ. Her lexical semantics for *-c* is thus given in (334). *-c* presupposes that there is a strictly strongest true alternative, and asserts that the prejacent is the strongest true alternative.

(334) $[\![\text{-c}]\!] = \lambda p.\lambda w : \exists p' \in CQ_S[p'(w) \wedge \forall p'' \in CQ_S[p''(w) \rightarrow p >_S p'']].p' = p$

This section will delve deeper into the class of IT constructions. This is a class of constructions that I will show is relevant to the semantics and pragmatics of *-hii*.

Velleman et al. (2012) motivate against the traditional view that clefts have an existence presupposition and an exhaustive presupposition. Together, those will entail the prejacent, but then the fact that it is entailed means that uttering the cleft sentence does not contribute

any informative entailments. We would expect then the cleft sentence to sound oddly redundant, but we do not.

Secondly, Beaver (2015) shows that "vice versa clefts" have no existential inference; see (335).

(335) It isn't FRED that called MARY, it's MARY that called FRED.

(Beaver 2015:34)

The Velleman et al. work sheds light on the fact that there is no obligation for the entire pivot to be in focus. It can be one portion of it, which changes the conditions for the exhaustivity of the predicate. Thus, clefts are focus-sensitive. Specifically they are 'conventionally' focus sensitive, in the sense that "their lexical categories make explicit reference to the current question under discussion." The diagnostic they use from Beaver & Clark (2003) is to test whether it fits this quality: "conventionally focus sensitive operators *must* have a focus within their scope with which they can associate. They cannot associate with prosodically reduced words such as clitic pronouns."

What Velleman et al. (2012) show is that clefts do the opposite of exclusive particles – "The only difference is what's at-issue: clefts make the MIN component at issue, while *only* makes the MAX component at issue. We show that all differences in behavior between clefts and *only* sentences can be derived from this difference in at-issueness." The definition of MIN is the same as in Coppock & Beaver (2014), but the definition of MAX is slightly different; they are both given here in (336) and (337).

(336) $\text{MIN}_S(p) = \lambda w.\exists q \in CQ_S[q(w) \wedge (q \geq_S p)]$

(337) $\text{MAX}_S(p) = \lambda w.\forall q \in CQ_S[(q >_S p) \rightarrow \neg q(w)]$

Thus the meaning of the CLEFT_S is in (338).

(338) $\text{CLEFT}_S = \lambda w.\lambda p : MAX_S(p)(w).MIN_S(p)(w)$

As we can see, there is no existential inference posited, another difference of this account and previous analyses of clefts. "it is not strictly speaking the cleft itself which triggers an existential inference; it is the CQ which the cleft indicates. And the existential inference is to some extent defeasible – we can block it by rejecting the question which was responsible for it."

Thus, the combination of clefts, a syntactic construction, into the class of exclusives gives us a broader class of inquiry-terminating expressions – "they serve a discourse function: they mark an answer to the CQ as a *maximal* answer, indicating that the line of inquiry represented by that question has been fully explored and can now be closed."

Beaver (2015) shows some useful tests for determining the at-issue/not-at-issue status with clefts. First is informativity asymmetries, shown in (339), where there is an attempt to strengthen the prejacent.

(339) a. Sabine ate pizza and she only ate pizza.

b. # Sabine ate pizza and it was pizza she ate.

(Beaver 2015:28)

The second test is for NPI effects, shown in (340).

(340) a. Only Fred ate any olives.

b. # It was Fred who ate any olives.

(ibid.:29)

In (339b), the second clause is not informative. For (340b), the reasoning goes as follows. MAX creates downward-entailing environments with regard to appropriate CQ's. It is plausible to assume that NPI's are licensed by the downward-entailingness of the at-issue material. Thus, it follows that *any* is in a downward entailing environment and hence licensed in (a) but not (b).

Beaver shows that if clefts are combined with exclusives, the behavior is like that of exclusives used alone, such as with *Sabine ate pizza and it was only pizza she ate* (p.35).

This discussion reveals overall that *-hii*, like *-c*, is an inquiry-terminating expression. What seems to be two different constructions in English – the cleft and the exclusive lexical item – exist in Hindi and Marathi as single lexical items.

However, *-c* and *-hii* are different from each other. Deo's analysis of *-c* in terms of slack regulation can work for *-c* but it does not do so for *-hii*. I repeat the crucial data from Chapter 3 here in (341)-(342). *-Hii* cannot occur here without *Thiik* ('exactly').

(341) Question: The train was to arrive at three. When did it arrive?

gaaDi tiin vajtaa-c aali.
car three o'clock-C come-PERF.F.SG

'The train came exactly at three o'clock.' (Deo 2014:12)

(342) Question: The train was to arrive at three. When did it arrive?

relgaaRi *(Thiik) tiin baje-hii aayii.
traincar precise three o'clock-HII come-PERF.F.SG

'The train came exactly at three o'clock.'

Also *-hii* may select a MAX instead of a MIN. Given that *-hii* may be felicitous with a maximal endpoint alternative as well as a minimal endpoint, this would seem to be a problem for an analysis like Deo's that assumes one endpoint is selected.

5.2.3 Russian *sam*

The final analysis I want to discuss is that of *sam* in Russian. Goncharov (2012) describes how the Russian emphatic reflexive *sam* ('self') can be used as a superlative and also have other scalar kinds of meaning, illustrated in (343).

(343) a. sam-aja interesn-aja kniga
SELF-F.SG.NOM interesting-F.SG.NOM book-F.NOM
'the most interesting book' (Goncharov 2012:1)

b. sam Bog ne znal by otveta na takoj vopros.
SELF God NEG knew COND answer on such question
'God himself would not know the answer to such a question.' (ibid.:8)

c. malen'kij miša pozvonil sam-on mog by menja poprosit.
little Misha called SELF-he could COND me asked
'Little Misha himself telephoned. He could have asked me to do it.' (ibid.)

(343a) is a superlative reading, (b) indicates that the associate of *sam* (God) is of great importance relative to other individuals, and (c) indicates what Goncharov refers to as a 'no help' reading.

Sam regularly has an exclusive truth condition, which Goncharov motivates should be maintained to keep the 'no other than' reading that exists for (343b-c). The way that such uses of *sam* give rise to the self-superlative of (343a), is through an interaction with agreement marking (AGR) and POS. According to Goncharov, AGR necessarily brings

about a familiarity interpretation, as shown in (344). The set of pianists referred to must be known in order for this sentence to be felicitous.

(344) ja znaju mnog-ix pianistov.
I know many-ACC.PL pianists-ACC
'I know many (of the) pianists.' (ibid.:10)

Goncharov represents this requirement on AGR as in (345), to require that the entity in question is in the salient set of alternatives.

(345) $[\![\text{AGR}]\!] = \lambda C \lambda R \lambda z . R(z) \wedge z \in C$

To see how this works for (343a), the resulting meaning arises from the composing these in the syntax in the following way: POS[sam[AGR[interesting book]]]. Combining AGR with *interesting book* conveys that the book in question needs to be in the set of familiar objects. Then, *sam* adds that there is no other book amongst the alternatives that is interesting to the same degree. Adding POS finally ensures that the book in question is above the set of neutrally interesting books.

This analysis demonstrates how a language may use the emphatic marker in combination with agreement marking to yield a high-degree meaning.

5.2.4 Section Summary

This section demonstrated how particles similar to -*hii* are accounted for in recent literature. We saw that the wide range of intensificational meaning for -*issimo* and *šému* can be given a unified analysis, as also is the case for Russian *sam*. With Marathi -*c*, we saw that there are distinct differences in judgments from data with -*hii*, but both -*hii* and -*c* are IT-expressions like *only* and *it*-clefts in English.

5.3 Speaker Certainty and Modality

As we have seen so far, -*hii*, like other polysemous particles, can associate with either a high endpoint of a certainty scale, as in the case of -*hii* with adjectives, or with a sense of speaker surprise, as with -*hii* with numerals. Recall from Chapter 2 that the notions of likelihood and desirability that we noted in the beginning of the thesis are inherently related

to the modal level of meaning, in terms of needing to reference accessibility relations on the sets of worlds. Similarly, there are connections between the speaker certainty cases and the reference to the set of epistemically accessible worlds.

My goal now is to show a method for generally modeling the role of the speaker's reasoning about what might happen in the world. This concept of a "set of expectations" may be difficult to pin down, but a way to formalize this notion is by appealing to a modal base, which we saw in Chapter 2 with thoughts in the literature about *even* and *only*. We have seen evidence up to this point that when speakers use *-hii*, they must be referencing their own reasoning about the state of affairs and what might actually happen. We will see in this section that *-hii* has a mirative meaning component in addition to the possibility of one related to high speaker certainty. These together help motivate a central role of modality to the meaning of *-hii*.

5.3.1 *-Hii* with overt modals

There are documented cases of the use of *-hii* with overt modal expressions in verb forms in Hindi. Varma (2006) indicates that there is a possibility for an epistemic and a deontic function, as in the following data.

(346) a. laaluu-ne kahaa ham banaaeNge to banaaeNge-hii.
Lalu-ERG say-PERF-M.SG we build-FUT-3.M.PL then build-FUT-1.M.PL-HII
'If Lalu said that he will build it he will definitely build it.'
(Varma 2006:116)

b. patrakaar vahaaN aaeNge-hii.
journalists there come-FUT-3.M.PL-HII
'Journalists are sure to come there.' (ibid.)

(347) a. abhiyukt-ko daNDit honaa-hii paRega.
culprit-ACC punish be-HII has-FUT.M
'The culprit has to be punished.' (Imai 1981:48)

b. *subsidy* kam karaani-hii paRegi.
subsidy less make-INF-F-HII have-FUT.F
'The subsidy will just have to be reduced.' (Varma 2006:117)

In the epistemic uses in (346), the addition of *-hii* indicates a higher level of certainty on the part of the speaker; in (346a) there is greater certainty of Lalu building something, and

in (346b) there is greater certainty of the journalists coming. In the deontic uses in (347), the addition of *-hii* indicates a higher degree of necessity of acting on the obligation. There is greater necessity for ensuring punishment in (346c) and greater necessity for reducing the subsidy in (346d). These cases in (346) are similar to Bhatt's sentence in (348), illustrating what he had observed as a role of *-hii* tied to the speaker of the utterance.

(348) to aap-ko pataa-hii hai maiN kal dilli meN thii.
so you-ACC know-HII PRES I yesterday Delhi in be-PAST
'So you (of course) know I was in Delhi yesterday.' (Bhatt 1994:4)

Note that the cases of speaker surprise that we saw in Chapter 3 (through the combination of *sirf* and *-hii*) and in Chapter 5 (through the use of *-hii* in adjectives) are similar. Here again in (346) are cases demonstrating that *-hii* associates with the endpoint of a scale of speaker certainty. More specifically, this scale can be an epistemic or deontic one, in these examples.

5.3.2 Mirativity

While we saw in the previous subsection that *-hii* can associate with a high speaker certainty, *-hii* may instead exhibit a conflict-with-expectations meaning in other contexts. Such *mirative* meaning, a sense of surprise or conflict with expectations, has also been shown to exist with English *only*.

Beaver & Clark (2008) say that English *only* requires an under-expectation condition for its use, and file this under the discourse function for *only* and other English exclusives (349).

(349) Discourse Function of Exclusives:

To make a comment on the Current Question, a comment which weakens a salient or natural expectation. To achieve this function, the prejacent must be weaker than the expected answer to the CQ on a salient scale.

(Beaver & Clark 2008:251)

Beaver & Clark further make concrete the notion of expectation, as follows: "To be general, what is expected will correspond to a probability distribution over stronger alternatives. For our purposes, it is simpler to conceive of a categorial distinction between

one set of alternatives which the hearer expects to contain the strongest true answers, and another set which the hearer does not expect to contain the strongest true answers.... The presence of an expectation that something stronger than the prejacent is true is an essential part of the meaning of *only*"(p.251).

As we saw in Chapter 3, *only* cannot associate with a higher-than-expectation number, when there is association with numerals. Beaver & Clark showed this with the pairs of sentences in (350)-(352).

(350) a. I really expected a suite but got a single room with 2 beds.

b. # I really expected a single room with 2 beds but only got a suite.

(351) a. London police expected a turnout of 100,000 but only 15,000 showed up. What happened?

b. # London police expected a turnout of 15,000 but only 100,000 showed up. What happened?

(352) a. On the other hand, seven people expected a negative result but only two received one.

b. # On the other hand, two people expected a negative result but only seven received one.

The constructed variants in the (b) sentences, where the higher numeral is asserted with *only*, are all infelicitous. Even in the case of (350), where numerals are not involved, there is still a salient notion of scalar strength, where a suite is a higher-ranked type of room than a single room with two beds. As we saw, we have this patterning with Hindi -*hii* as well, showing that -*hii* occurs with a clash of expectations.

Surprise on the part of the speaker does not always show up with the use of *only*. Building on proposals from Zeevat (2009), Al Khatib (2013) observes that *only* and *even* both have mirative meaning components – *even* is associated with surprise at the large size of a quantity, whereas *only* indicates surprise at the small size of a quantity. Zeevat (2009) proposes that *only* does not have exclusivity in its truth-conditional component at all. It just has a mirative component as part of its semantics, with the exclusivity arising from the contribution of focus. Thus the sentence in (353) has the meaning in (a-b).

(353) Only John ate dessert.

a. Presupposes: John and others ate dessert.

b. Asserts: The others didn't eat dessert.

Under this view, the presupposition is that more individuals beyond whoever is in focus have the property in question, and the assertion then denies that the other individuals have the property. The key behind this analysis is the observation that the surprise about the low quantity of people having eaten dessert means that there was an expectation of a higher quantity of people having eaten dessert.

However, there are a few problematic facts for such an analysis. First, a sentence like (354) seems to select not for a surprisingly low value on the scale.

(354) Only millionaires are invited to this club. (Kristen Syrett, p.c.)

In (354), the people that can get into the club are millionaires, billionaires, trillionaires, and all those richer. *Only* here is not intended to draw an upper bound, since the sentence does not entail that someone with less than a million dollars can get into the club. The sentence in (354) is similar to a case raised by Winterstein (2012) about "improvement readings" of *only*, as in (355).

(355) John only likes to drink SINGLE MALT SCOTCH. He is a real whiskey connoisseur. (Winterstein 2012:6)

In (355), like in (354), the use of *only* is to indicate "nothing less than," rather than "no more than."

The uses above seem related to what Coppock & Beaver (2014) refer to as a 'classy' use of *exclusive* that exists in (356). These uses, they indicate, are not true exclusives, and cannot be accounted for under their general analysis for English exclusives.

(356) a. I have not yet been privy to an invite into the exclusive boy's club.

b. The evening reception will be the most exclusive part of the day and it's the invite everyone wants. (Coppock & Beaver 2014:49)

Secondly, if it is the case that *only* references surprise at a low quantity, then it is unexpected that (357) would be felicitous, where the speaker indicates that John showing up is actually what they expected.

(357) As everyone/I expected, only John$_F$ showed up. (Al Khatib 2013:47)

(358) As everyone/I expected, (very) many people showed up. (ibid.:48)

Similarly, this is the case for *many* in (358). Together these make the acceptable sentence in (359) puzzling as well.

(359) There were only fifty$_F$ people at the party last year, and again this year many people came. (ibid.:50)

Thus, Al Khatib writes that mirativity is one (but not the sole) crucial meaning component of *only*. This possibility of a surprise meaning is similar to *-self*[12] and *-hii*, which both can occur with or without surprise.

To arrive at a new representation for the mirative component of *only*, Al Khatib draws on the POS morpheme from gradable predicates, as well as the use of N in von Stechow (2006, 2009) for the set of neutral degrees in (360). N must be properly included in the set of degrees D. 'Neutral' with height, for example, would be the set of normal heights, that is, whatever heights are in the middle range, that would be described as neither *short* nor *tall*.

(360) $[\![\text{POS}]\!]^N = \lambda D_{\langle D,N\rangle}.N \subset D$

In von Stechow's meaning for POS in (360), a set of degrees D will return true if N is a proper subset of it. Al Khatib redefines N as a set of expected/neutral propositions for *only*, giving POS the meaning in (361): "N holds of a proposition ψ iff ψ is true in at least one world w' that is compatible with expectation (i.e. that belongs to the set of worlds Exp)" (p.54), as shown in (362).

(361) $[\![\text{POS}\phi]\!]^w = 1$ iff $\{d : N(\lambda w'.[\![\phi]\!]^{w'}(d) = 1)\} \subset [\![\phi]\!]^w$

(362) N(ψ) iff $\exists w'(w' \in \text{Exp}\ \&\ \psi(w') = 1)$

According to (361), POS will hold of a set of degrees ϕ so long as the set of degrees that ϕ has in neutral worlds is a proper subset of ϕ in w.

Thus this captures the mirative presupposition of *only* in (363), generalized for any type of scale, whether entailment-based or not.

[12]See Cunningham (2012) for discussion of surprise and non-surprise readings of *-self*.

(363) Given a scale σ, $[\![only_{\sigma} S]\!]$ is defined only if there is an alternative $S' >_{\sigma} S$ and $\mathrm{N}(\lambda w [\![S']\!]^{w})$.

By (363) *only* will be felicitous so long as there is a higher value within N. If we have a logical / entailment-based scale, Al Khatib explains that a consequence of (363) is that S' entails the prejacent S and therefore S will also be within what is considered neutral. This means that *only* requires neutrality of its prejacent. Hence, the sentence in (364) is correctly predicted infelicitous.

(364) # John only has six_{F} children.

(ibid.:60)

In order for (364) to be acceptable, a stronger alternative than the prejacent would have to be in N. However, under normal assumptions, having 7 or more kids would not be considered normal.

Using a mirative presuppositional requirement is one way to model the sort of interaction with speaker expectations that we see with *only* and related particles. The approach I will take for -*hii*, however, involves appealing to modality, which was done partially in the previous chapters. Now I will add to the analysis by exploring the role of probabilities in the modal meaning of -*hii*.

5.3.3 Modalizing -*hii*

Here I extend my current theory to reference a scalar modal semantics as part of the meaning of -*hii*. Recall that the motivation for utilizing modality starts from the observation that -*hii* appeals to various necessary conditions on the form of expectations for the speaker. Starting with a modal meaning component for -*hii* might allow for properly formalizing this notion across the different scale types it can also associate with.

To begin, recall from the previous chapters that, in contrast to *only* and other exclusives, -*hii* can associate with different scales depending on the discourse context. -*Hii* can target different endpoints, depending on which kind of ordering for the alternatives is made salient in the context. If the scale is one based on likelihood of truth, then the prejacent needs to be the most likely within the set of epistemically accessible worlds. If the scale is one based

on desirability cued to the speaker, then the prejacent needs to be the least desirable within the set of bouletically accessible worlds. Including negation in a sentence with *-hii* results in two possible readings, one of which entails that some goal cannot be accomplished due to a proposition not being true, making it a teleological modal type.

To start, let us take the exam-taking scenario from an item in Experiment 1 (see Appendix A) from Chapter 2, repeated below in (365).

(365) Professor Mehta is giving an exam to his students Aatish, Vijay, and Deepak. Any time before that there was an exam given, Aatish always passed but Deepak always failed. Professor Mehta doesn't know anything about whether Vijay would pass or fail, since he is a new student. In the end, one student passed and two failed.

Situation	Prof. Mehta says...	Can this be said?
Aatish passed.	"Aatish-hii passed."	[YES]
Vijay passed.	"Vijay-hii passed."	[NO]
Deepak passed.	"Deepak-hii passed."	[NO]

Under a classical approach to modality (Kratzer (1981, 1991)) involving comparative possibility of worlds, *Aatish-hii came* is felicitous in this context so long as the highest ranked world is one in which Aatish passed. This fits well with what we need as an explanation. The experimental contexts only provided the participants with information about relative probabilities, not exact probability values. Aatish is the most expected to come, for Vijay there is no likelihood information about, and Deepak is extremely unlikely to come. If we were to relate these to probabilities, probably the participant would have in mind that Prof. Mehta assigns close to 100% probability that Aatish would come, Deepak close to 0%, and Vijay perhaps 50%. The alternatives are seen as having starkly contrasting likelihoods, and it is clear which is the MIN and which is the MAX.

The reason I raise the issue of specific, quantifiable probabilities for each proposition is that this may have an effect on the choice of the felicitous alternative. Indeed, under a probabilistic approach to modality, advocated by (Lassiter 2010, 2011, 2014), probability measures for propositions can be calculated by speakers and therefore have an effect on the interpretation of modal expressions. I first explain this account of modality.

Lassiter (2010) suggests that we can modify the classical Kratzerian approach to modals

to also have a way of analyzing *gradable* epistemic modals by referencing degrees, but doing so still has a major limitation. The approach using comparative possibility of worlds does not allow explicit quantitative comparisons:

(366) a. ϕ is twice as likely as ψ.

b. It is half certain that ϕ.

c. It is 95% certain that ϕ.

The second problem that Lassiter notes, which he calls The Disjunctive Inference Problem, is that Kratzer's analysis predicts the invalid (367) as valid.

(367) Invalid Inference

a. ϕ is at least as likely as ψ.

b. ϕ is at least as likely as χ.

c. $\Rightarrow \phi$ is at least as likely as $(\psi \vee \chi)$

Lassiter motivates that a proper modal analysis should capture (367) as invalid, yet make sure (368), dealing with goodness of propositions instead of likelihood, is valid.

(368) Valid Inference

a. ϕ is at least as good as ψ.

b. ϕ is at least as good as χ.

c. $\Rightarrow \phi$ is at least as good as $(\psi \vee \chi)$

(368c) is a valid inference, given (368a) and (368b).

Lassiter (2010, 2011, 2014) proposes a new analysis for modality in which we compare probabilities, rather than worlds. Probabilities do not only play a role in epistemic modality, as goodness is assessed in conjunction with the probabilities of propositions. This therefore provides a unified analysis for epistemic, deontic, and bouletic modality. Consequently, the problems posed by the Kratzerian analysis are also resolved through this approach. It solves the disjunctive inference problem of (367), and allows a way to make the quantitative comparison statements of (366). Lastly, Lassiter notes that another advantage of this approach is that it associates gradable epistemic modals with a fully closed scale, which allows for a greater range of empirical judgments about these particular lexical items.

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. The foundation of this analysis is the definition in (369) of the probability calculus.

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

a. $\mu(\mathrm{W}) = 1$

b. If $\mathrm{P} \cap \mathrm{Q} = \varnothing$, then $\mu(\mathrm{P} \cup \mathrm{Q}) = \mu(\mathrm{P}) + \mu(\mathrm{Q})$

Likelihood of a particular proposition can thus be compared directly by simple 'greater than' or 'less than' relationships between those probability measures. For likelihood, mapping each proposition to an explicit probability allows for now giving truth conditions for the gradable expressions and the quantitative comparison statements relatively easily, as shown in (370) and (371).

(370) a. ϕ *is possible* is true iff $\mu(\phi) \neq 0$.

b. ϕ *is likely/probable* is true iff $\mu(\phi) > 0$.

c. ϕ *is certain* is true iff $\mu(\phi) = 1$.

d. ϕ *is more likely than* ψ is true iff $\mu(\phi) > \mu(\psi)$.

(371) a. ϕ *is twice as likely as* ψ is true iff $\mu(\phi) = 2 \times \mu(\psi)$

b. *It is half certain that* ϕ is true iff $\mu(\phi) = 0.5 \times 1 = 0.5$

c. *It is 95% certain that* ϕ is true iff $\mu(\phi) = 0.95$

As mentioned, one of the things that falls out of this analysis is that an epistemic scale automatically has a defined MAX endpoint and MIN endpoint, since there can be no proposition with probability greater than 1, and none with probability less than 0.

Lassiter (2014) shows that in the cases of deontic and bouletic modality, modal expressions can still be gradable. The rankings of goodness need to involve probability, but now instead of just comparing probability values, what is compared is another measure, based in part on probabilities – *expected moral values*. The calculation of expected moral value in

(372) is based on conditional probabilities (defined in (373)) and is computed by weighted averages. The reason for this is that the construction of the scale is different from that of epistemic cases. Specifically, these lie on an *intermediate* scale, meaning that the disjunction of two propositions has a level of goodness that lies between (instead of above) the level of goodness of each individual proposition. As such, goodness necessarily folds into it the notion of probability.

(372) The *expected moral value* $\mathbb{E}_V(\mathrm{A})$ 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.

(373) 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).
$\mathrm{P}(\mathrm{A}|\mathrm{B}) = \frac{P(A \wedge B)}{P(B)}$

(372) derives the formula for calculating expected value in (374). 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.

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

Returning to *-hii*, such a probabilistic approach provides us with an analysis that possibly explains the patterning of data for Desirability contexts. The definition of expected value, below in (375), requires probability to be calculated, and 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.

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

The question, which we cannot answer from the results of Experiment 1, is what would happen with the felicity conditions of *-hii* if it turns out that there is a minimum threshold of probability for which *-hii* can be felicitous. That is, such a situation would hold if, instead of just comparing relative probabilities, there would be a minimum probability for any *-hii* alternative to be felicitous at all. For example, in (365), suppose that Aatish's probability is 30%, Vijay's 10%, and Deepak 5%. In this case, suppose that speakers have a constraint on the likelihood condition for *-hii*, for example, demanding that minimally the probability that 'X-hii came' is 60%. Then, in this case, all of *Aatish-hii*, *Vijay-hii*, and *Deepak-hii* would be infelicitous, and this would require us to have a different analysis than one that simply marks felicitous the most (relatively) probable alternative. Again, though, this is not something we can determine without prompting participants with explicit percentages about what the speaker of the *-hii* sentence believes with regards to specific percentages of probabilities.

I now turn to the matter of finding a proper way to characterize the modal implicature of *-hii*. Note that this is not meant to characterize *-hii* as a modal expression in the same way that common modal expressions in English (*must*, *can*, etc.) are overt. Such expressions have modal meaning as part of the truth-conditional component of the lexical item. Here, in keeping with the analysis in Chapter 2, the particle has a conventionally implicated meaning that references modalized scales. The representations in (376) and (377) show my proposed requirements for *-hii* for each modal type we saw exists for *-hii*.

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

(377) $\forall p'[\mathbb{E}(p) > \mathbb{E}(p')]$ TELEOLOGICAL

If we instead quantify over worlds, we can recast (376)-(377) in traditional Kratzerian terms.

Given what we have seen for *-hii* in the previous sections, we can see that it is either a case of epistemic modality (least unlikely) or bouletic modality (least desirable). In the case of the negated scalar meaning, we get teleological modality, provided that the *-hii* clause is within the right speech act to make this salient (specifically, a rhetorical question, discussed in Chapter 4).

In this section, we have seen how modality is inherently part of *-hii*'s meaning, and how the existing conventional implicature can be altered to reference it. The advantage to doing

so is a clearer formalization of the speaker-oriented nature of -*hii*'s expectations, similar to advantages of the refinements for *only* by Yabushita (2014) discussed in Chapter 2.

5.4 Multiple Foci and Multiple Particles

The last topic I want to explore in this chapter is whether exclusives and scalars, in Hindi and in English, can or cannot combine with one another. While this is not something I will present a fleshed out analysis for, there are questions raised here that have not, to my knowledge, been resolved in the literature so far. What we will see is that there is perhaps a constraint on multiple scale-associating particles in certain environments, for certain speakers.

The ungrammatical sentence in (378) shows that *hii* cannot occur more than once. This is an issue raised by Bhatt (1994).

(378) * raam-ne-hii siitaa-ko-hii dekhaa.
Ram-ERG-HII Sita-ACC-HII see.PRF

(Bhatt 1994:2)

Sharma also shows this to exist with (379):

(379) # [us-ke-hii jute] [mere-hii kamre-meN] the.
he-POSS-HII shows my-HII room-LOC be-past.m.pl
'*His* shoes were in *my* room.'

(Sharma 2003:69)

Sharma shows, however, that -*hii* can appear twice in one sentence, so long as the two instances are in separate clauses.

(380) raam-ne-hii anu-ko bolaa [ki vah *director*-se-hii baat
Ram-ERG-HII Anu-ACC tell-PRF.M.SG that she director-INSTR-HII conversation
kare].
do-SUBJ
'*Ram* told Anu that she should talk to the *director*.' (Sharma 2003:70)

Thus, Sharma concludes that there is a co-occurrence restriction on -*hii*, limited to the finite clause boundary.

However, Bhatia (2014) considers (378) to be acceptable to some speakers, and renders it a grammaticality rating of '%' (Bhatia (2014:6)). Thus we have reason to believe that

there is speaker variation with regards to whether two *-hii*'s are allowed in a clause.[13]

Contrast this with *only*. There seems to be no problem with multiple occurrence of *only* within a clause.[14]

(381) Only John only eats rice. (Horn 1969:106)

If we look at other common exclusives in English, like those discussed in detail by Beaver & Clark (2008) (*just*, *merely*, *sole*, etc.), it seems perfectly acceptable to combine any of these together in a single sentence. Furthermore, Bhatt (1994) shows this to hold for *sirf* as well.

(382) sirf raam-ne sirf siitaa-ko dekhaa.
only Ram-ERG only Sita-ACC see.PRF
'Only Ram saw only Sita.' (Bhatt 1994:2)

Based on this, we can conclude that speakers find it acceptable to use multiple instances of pure exclusives in one sentence.

On a related note, Horn (1969) notes that (383) is ungrammatical in English.

(383) * Only John even eats rice.

(Horn 1969:106)

The judgment is perhaps questionable, as I was able to find instances of 'Only X even Y' in written texts. The first is in (384) (emphasis my own)[15] and a second finding is in (385)[16].[17]

(384) In "Three Forms of Exposition," Calvin provides what he calls an "analogous case" through which to understand this model of interpretation: the story of John from St.

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[13]Bhatia (p.c.) indicated to me that this grammaticality rating was based on the lack of agreement between herself and four other speakers, and furthermore that in her opinion this becomes an acceptable sentence if there is contrastive stress on both instances of *-hii*.

[14]Pilot data I collected about the acceptability of this sentence seems to show that it is only marginally acceptable, and it might be that this requires a specific prosody. Speakers were asked to rate on a 1 (completely bad) to 5 (completely okay) Likert scale the acceptability of the final sentence in: "John, Sue, and Harry are in the lunch line. Their options are rice, beans, vegetables, and meat. Sue ate rice and beans, and Harry had rice, beans, and meat. Only John only ate rice." The mean rating was 2.67 (SD = 1.30). 7/12 subjects gave a rating of 3 or greater, but of these 7, only 3 gave a rating of 4 or 5. It might be that speakers access the rank-order form of *only* here if they are considering this unacceptable or only marginally acceptable.

[15]Found on page 39 of *The Constitution of Literature: Literacy, Democracy, and early English* by Lee Morrissey, 2008.

[16]Found on page 14 of *Big Bend: Stories*, by Bill Roorbach, 2001.

[17]Kristen Syrett (p.c.) has pointed out to me that (384)-(385) may be more acceptable than (383) because of the NPI flavor of what is in the scope of the former two; changing (383) to *Only John even thought to eat rice* or *Only John even tried to eat the rice* makes it sound more acceptable.

John the Baptist, seeing "the Spirit of God descending" in the form of a dove. Or, as Calvin points out, "if we look more closely, we shall find that he found nothing but the dove, in respect that the Holy Spirit is in his essence invisible" (515). Thus the "meaning" of the dove – in this case that it represented the Spirit – was visible to only one of those who saw the dove. **Only John even considered the dove a sign.** Thus, for Calvin, the meaning is in the believer/reader.

(385) Gentle Connie sees the gauntlet hitting the parched earth, says, "At my office there's this gal who has this dream to fly in a balloon. Of course we just laughed and laughed at her…" And keeps trying, though **only Mary even pretends to listen**.

Thus, it seems at least possible to have *only* followed by *even* in a clause.[18] The 'reverse' order is judged by Horn to be acceptable.[19]

(386) Even John only eats rice. (Horn 1969:106)

This is also shown in Krifka (1993)'s example in (387).

(387) Even John only kissed Mary. (Krifka 1993:273)

As we might predict, *only* and *even* cannot co-occur on the same constituent, as shown in (388).

(388) # So although Henry the Hobo expected tons of peasants at his party, (none of them came, but rather,) only even the king came to the party.
(Cunningham 2012:9)

However, *even* and *only* can possibly combine, as in (389).

(389) Bill even danced only with $[\text{Sue}]_F$. (von Stechow 1991:817)

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[18]Pilot data collected shows though that this may not be acceptable. Speakers were asked to rate the target sentence of: "John, Sue, and Harry are in the lunch line. They are known to be pretty picky eaters, and never eat anything other than meat and potatoes. Today the cafeteria tried to serve some foreign cuisine – Chinese food. It was a big failure. Only John even ate rice. Nobody else touched any of it." The mean rating was 2 (SD = 1.28), with 2/12 speakers giving a rating of 3 or higher.

[19]Pilot data collected seems to confirm this judgment. Speakers were asked to rate the target sentence of: "John, Sue, and Harry are in the lunch line. Their options are rice, beans, vegetables, and meat. Sue usually eats like a bird, and everyone knows John has a big appetite. But today the food looked so bad that everybody ate very little. Even John only ate rice." The mean rating was 3.92 (SD = 1.38), with 10/12 speakers giving a rating of 3 or higher.

In (389), *even* and *only* are associating with the same F-marked constituent. Thus, there appears to be no issue of combining *only* and *even* on separate constituents in a sentence, in any order, though whether they can double-mark a single constituent is open to further inquiry. Cf. (389) and (388).

Both Hindi *-hii* and *-bhii* seem to show no resistance in occurring together in a sentence, and even within a clause, as seen in (390).

(390) Context: After describing a fan as slow the speaker comments on another fan.

vah-bhii dhiime-hii cal rahaa thaa.
that-also slowly-HII move stay-AUX-PROG-M.SG be-AUX-PAST-M.SG

'That one was going at the same slow speed.' (Varma 2006:104)

With regards to multiple instances of *even*, Horn (1969) indicates that (391) is ungrammatical in English.

(391) * Even John even eats rice.

(Horn 1969:106)

Kay (1990), however, citing Fraser (1970), reports that the sentence in (392) is possible, with the interpretation indicated in (393).

(392) Even *words* give trouble to even *linguists*.

(393) Many phenomena give trouble to people and surprisingly, words give trouble: moreover words, unexpectedly, trouble linguists.

(Kay 1990:104)

In other cases, Kay shows, there is degradation of the construction with two *even*'s because it is simply harder to come up with a discourse that supports the likelihood relationships inherent to *even*. By this account, it is difficult to get the meaning of two *even*'s, but perhaps with the right context as in (393), it is possible.[20] Kay (1990) indicates that (393) improves with the context in (394).

[20]Pilot data seems to confirm that two *even*'s are unacceptable. Speakers were asked to rate the target sentence in: "John, Sue, and Harry are in the lunch line. Sue and Harry are pretty good about eating whatever is served, but John is really picky about what he'll eat. Today the cafeteria workers tried to serve some foreign cuisine – Chinese food – and they weren't sure how much would be eaten. They thought the fortune cookies would be eaten, because everyone probably has a sweet tooth, but they weren't sure about anything else, including the rice. Surprisingly, the Chinese food was a hit with everyone. Even John even ate rice." The mean rating was 2 (SD = 1.54), with 2/12 speakers giving a rating of 3 or greater.

(394) A: Language is really hard to deal with at the technical level. There are certain syntactic constructions that make problems for even the most experienced copy editors.

B: Listen, it's worse than you think. Even words give trouble even to linguists.

(Kay 1990:108)

Kay also indicates that anecdotally, he found the discourse in (395) acceptable.

(395) A: How did your class do on the quiz?

B: Fantastic, even my **slowest** student even got the **hardest** problem.

(ibid: 106)

Lastly, another particle I wish to add to the discussion is the emphatic reflexive *-self*. *-self* can occur with *only* but not with *even* on the same constituent, as shown in (396).

(396) So although Henry the Hobo expected tons of peasants at his party, (none of them came, and instead) only the king himself came to the party.

(Cunningham 2012:8)

Cunningham finds (396) is acceptable in comparison to (388) because *himself* does not have an existential presupposition, unlike *even*.[21]

We find that two instances of *-self* in one sentence is dispreferred, in a construction like (397).[22]

(397) * John himself talked to Sue herself.

If we find that separating the two instances of *-self* with a clause boundary improves this, then this would show a parallel with multiple instances of *-hii*. The sentence in (398) from the Bible (Romans 15:14) seems to show that this construction may exist in the dialect of English that the Bible is written in.[23]

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[21]Pilot data polling native speakers indicates that this may not be generally acceptable. 12 speakers assigned this sort of construction a mean rating of 3.5 on a 5-point scale (SD = 1.57). 7 speakers assigned a rating of 3 or higher, while 5 speakers assigned a rating of 1 or 2.

[22]Thanks to Veneeta Dayal for making this observation.

[23]Thanks to Mark Baker for having pointed out this datum to me.

(398) I myself am convinced, my brothers and sisters, that you yourselves are full of goodness, filled with knowledge and competence to instruct one another.

(Romans 15:14 New International Version)

Secondly, the passage in (399) (emphasis my own) is found in a fiction book.[24]

(399) 'Little did you know,' said the courtier to the woman, 'that the boy you sheltered was the Prince himself.' 'I knew it perfectly well,' said the woman. 'What is your business?' 'I have been sent by **the King, himself, and the Queen, herself,** to thank you.'

While *the King himself* and *the Queen herself* are in the same clause in (399), this may be something specific to the dialect the story is written in. Secondly, the difference here is that this is a use of *-self* on coordinated NP's.

Taking stock, we find some generalizations can be made. Even if we accept that two *-hii*'s are acceptable for some speakers, or that two *even*'s are acceptable given an appropriate context, it is still notable that these sentences are degraded in their acceptability. For now, I would like to conjecture that a stronger version of Sharma's observation about *-hii* holds. That is, there is a general limitation on multiple instances of scalar particles, such that there must be at most one per finite clause.

There is reason to believe that such co-occurrence restrictions might very well exist in the grammar. Filik, Paterson & Liversedge (2009) show results of an eyetracking experiment that indicates there is a slightly longer processing time for English *even* than *only*.

Filik et al. set up two experiments to study online semantic interpretation of *only* versus that of *even*. They build on previous research that support the idea that if information presented to a reader is not in line with the world knowledge expectations that they had, those disruptions can be detected in the eye movements as they read. The items in the experiment were designed with the assumption that *only* would associate with a MAX-likely event and *even* would associate with a MIN-likely event. They predicted shorter reading times for sentences with *only* that occurred with likely events than unlikely events, and

[24]Found on p.16 of *The Fabulous Feminist*, by Suniti Namjoshi, 2014. The dialect this book appears to be written in may be a variety of Indian English.

longer reading times for sentences with *even* that occurred with unlikely events than likely events. Some sample test sentences they used are in (400).

(400) a. Only/Even students taught by the best/worst teacher passed the examination in the summer.

b. Only/Even countries represented by the strongest/weakest army won the battle in the desert.

Part of their measure involved the "regressions in," meaning the amount of trials where the participant made a regressive eye movement of the text region, so they could use this measure to evaluate whether the participant was reevaluating the text. They found that sentences including *even* showed a significant amount of regressions for the likely versus unlikely, whereas they did not for *only*. The effect of the time difference of processing occurred earlier for *only* than for *even*. Filik et al. conclude that this may hint to the likelihood component of *even*'s meaning that causes more processing time, since this is something in the semantics that is additional to *even* and that *only* does not have.

This might have an effect on the ability to comprehend *even* in the syntax. As a result, the restriction on having more than one *even* in a finite clause would follow from processing costs. If a similar eyetracking result showed a longer processing time for *-self* and *-hii*, this might be more motivation for a generalized universal constraint, based on processing.

5.5 Summary

My primary goal in this chapter was to show how *-hii* exhibits a broad, cross-categorial range of association, all showing the hallmark of *-hii*'s intensificational aspect of meaning, going beyond the exclusive and scalar meanings we saw in the previous chapters. At the same time, we noted a consistent sensitivity to scalar endpoints. We also saw that *-hii* has parallels with other cross-categorial 'chameleon'-like particles, while nevertheless retaining its core exclusive function. One of the goals of this chapter was to make clear the judgments regarding adjectives combined with *-hii*. We did that with specific examples and contexts that show that the use of *-hii* is not like a standard-boosting term as it is for degree adverbs, but is rather used with adjectives as a confirmation of expectation. Secondly, the addition of corpus examples helped to clarify these meaning for other uses of *-hii*.

We see that the speaker certainty readings of -*hii* are not available with Hindi *sirf* ('only'), and this is a way in which -*hii* and *sirf* are distinct. Secondly, -*hii* is an inquiry-terminating expression, in the same class as Marathi -*c* and cleft constructions. Lastly, there is reason to believe that may be a general constraint against having more than one scalar focus item per clause in both Hindi and English.

Chapter 6

Conclusion

6.1 Overview

In this thesis I have studied the meaning of Hindi -*hii* in a variety of contexts. I have drawn conclusions about its semantic and pragmatic components from an extended study of -*hii* with proper names, numerals, common nouns, adjectives, and adverbs. We have seen that there is empirical evidence showing that -*hii* is not the Hindi equivalent of *only*, and consistently exhibits a scalar endpoint requirement.

I have presented new results about Hindi -*hii* that have impact for researchers in descriptive linguistics of Hindi as much as for formal semantics and pragmatics of focus particles. The experimental portion of the thesis provides interesting data for further work in empirical data collection of Hindi, and we have seen how a much less *ad hoc* style of putting together the various uses of -*hii* can be accomplished. Furthermore, many of the examples in nearly every chapter were taken from a Hindi corpus, to help provide a natural discourse context. The use of empirical judgment data and corpus examples was crucial for beginning to uncover the scale-associating nature of this particle.

The experimental results show that there is a conventional implicature for -*hii*'s felicity, beyond its exclusive meaning contribution. The items in the experiment in Chapter 2 demonstrated that -*hii* is felicitous with either a maximally likely proposition or a minimally desirable proposition.

I refined these observations in Chapter 3, showing that -*hii* not only occurs with pragmatic scales, but also with logical ones, where there are entailment relationships between alternatives. With numerical scales we were able to see that there is the ability for there to be domain restriction on the alternatives. Also, -*hii*'s minimal desirability requirement could be made more general to be a minimal endpoint. Whether the scale is desirability

or one based on entailment, -*hii* selects for the MIN, in a fashion similar to *only* and other exclusives in English, described by Coppock & Beaver (2014). Furthermore, such cases show that -*hii* may have, depending on the type of context and set of alternatives, an association with a scale of speaker certainty. Additionally, I outlined several possible approaches to explaining how *sirf* ('only') can combine with -*hii* associating with the same constituent.

In Chapter 4, I showed how -*hii*'s interaction with negation reveals that there are two salient interpretations that arise from a -*hii* sentence. -*Hii* is, ultimately, a scale-associating particle, but certain non-scalar interpretations can be obtained under certain conditions lacking explicit rank ordering. The scalar endpoint requirement of -*hii* can be restated to prevent an alternative from occupying a higher position on the scale, thereby forcing an endpoint interpretation for the scalar 'even not' interpretation, or a completely non-scalar 'only not' interpretation where the alternatives are not ranked with respect to each other. We also witnessed in this chapter how -*hii* relates to NPI's and 'even'-like particles in other languages. Just as the debate exists for whether there is more than one lexical entry for *even*, this also can be asked for -*hii*, though I showed how we can have a parsimonious analysis that retains just one lexical entry for -*hii*.

While -*hii* is like English clefts and *only* in being an inquiry-terminating expression in the sense of Velleman et al. (2012), -*hii*'s even wider range of association than *only* or *even*, such that it can occur with adjectives and other gradable predicates, shows a polysemous characteristic of the particle. This is what I demonstrated in Chapter 5. I further showed how we could recast the felicity conditions of -*hii* to be modally defined, to refine the meaning of the implicatures to be referencing the speaker's conception of probabilities of the propositions, using Lassiter (2010, 2011, 2014). Moreover, we saw how -*hii*'s broad range of meaning puts it in a class with Italian -*issimo*, Washo *šému*, Marathi -*c*, and Russian *sam*.

Overall, we have witnessed that -*hii* associates with the MAX endpoint alternative of scales of likelihood, goal-oriented necessity, or speaker certainty. With scales of desirability or logical entailment, -*hii* associates with the MIN endpoint alternative.

Below is a summary table of the critical attributes of the various focus particles that formed the discussion in this thesis. Note now the similarities and differences along these

parameters, and moreover that -*hii* expands our understanding of such particles by adding a new particle with distinct characteristics.

Lexical Item	**Inquiry-terminating?**	**Speaker Commitment**
only	yes	Under expectation or MAX likely
even	no	MIN likely
-*hii*	yes	MAX or MIN endpoint
it-cleft	yes	
-*issimo*	no	high emotional involvement
-*šému*	no	
-*c*	yes	strongest true alternative
self	no	

Table 6.1: Lexical items and their speaker commitments

6.2 Future Directions

We have seen in this thesis that there is much to gain by studying a language like Hindi through rigorous empirical study. Surveys asking for judgment data in a systematic fashion can help to sort through the mist that can exist for particles like -*hii* that exhibit a wide range of use and apparent meanings. All in all, we see that -*hii* goes far beyond the meaning of 'only' or 'even.'

This work opens many doors for further empirical validation of -*hii* data. One is the suggestion above about designing a study to test the pure exclusive component of -*hii*, described in Chapter 4. Another idea is one which was discussed in Chapter 5. In order to see if there is a probability threshold that speakers use when determining whether -*hii* is felicitous, a study where participants are presented with probabilities from the point of the speaker are made explicit in the background context will help to determine this. This will also help to determine whether we need to appeal to a probabilistic theory of modality or whether a classical analysis using just a comparative possibility of worlds will suffice for -*hii* and related particles. Thirdly, I suggested there may be a general restriction against more than one scalar item per clause; this should be tested in a systematic judgment study. Lastly, a judgment study of -*hii* with negation and -*bhii* with negation would help to reveal their fine-grained semantic differences.

A final extension of the theory that would be helpful would be to carefully examine

the use of -*hii* with verbs. For the most part, in this work we have focused on -*hii* in the nominal domain, with some discussion of -*hii* with adjectives and adverbs. We have not so far discussed how -*hii*'s lexical meaning provided in this work has effects for its association with verbs.

There is a large amount of data regarding -*hii*'s use within verbal complexes, as in (401)-(404). The versions without -*hii* are in (a) while the addition of -*hii* is indicated in (b) for each.

(401) a. ham use jagaane vaale the.
we he-INFL-ACC wake-INF-INFL IMM.ASP-M.PL be-PAST
'We were going to wake him.'

b. ham use jagaane-**hii** vaale the.
we he-INFL-ACC wake-INF-INFL-HII IMM.ASP-M.PL be-PAST
'We were just going to wake him.'

(402) a. maiN apnii didi-ko de rahii thii.
I own-F sister-ACC give stay-AUX-PROG-F be-AUX-PAST-F
'I was going to give it to my sister.'

b. maiN apnii didi-ko de-**hii** rahii thii.
I own-F sister-ACC give-HII stay-AUX-PROG-F be-AUX-PAST-F
'I was just going to give it to my sister.'

(403) Context: Someone was extolling the merits of his mobile server. The card lasted well beyond the point where he saw that the time he had paid for was over. He says that at that point:

a. cal rahii thii.
go stay-AUX-PROG-F be-AUX-PAST-F
'It was working.'

b. cal-**hii** rahii thii.
go-HII stay-AUX-PROG-F be-AUX-PAST-F
'It was going on and on working.'

(404) a. ghar lauTate (hue) usne apnii patnii-ko *phone* kiyaa.
home returning STAT he-INFL-ERG own-F wife-ACC phone make-PERF-M.SG
'As he was returning home he phoned his wife.'

b. ghar lauTate-**hii** usne apnii patnii-ko *phone* kiyaa.
home returning-HII he-INFL-ERG own-F wife-ACC phone make-PERF-M.SG

'As soon as he returned home he phoned his wife.'

(Varma 2006:109-11)

If we cast the semantics of these scales into a graded scale in the same way that we can for other gradable predicates for verbs, we would be able to give an analysis to capture how the progressive forms above work with a certain time endpoint. In (401), -*hii* appears to associate with the precise beginning instance of the action. Also, for (404), we can show how the use of the adverbial form of the imperfective participle with -*hii* associates with the event as just having been completed.

I showed in Chapter 3 that there is the possibility of infixing -*hii* in between two reduplicated nouns or adjectives. It turns out it is possible to infix it between two verbs as well, as shown in (405).

(405) pahuNcte-hii-pahuNcte
arriving-HII-arriving

(Montaut 1997:243)

-*Hii*'s interaction with verbs would be a useful extension of the research into its role in the nominal domain, and worthy of further study. We can already see that the result reached in this work about -*hii*'s felicity with a scalar endpoint will likely be directly applicable to these cases in the verbal domain.

6.3 Final Remarks

The main goal of this dissertation has been to provide a formal analysis of the meaning of the Hindi -*hii*. In the process of looking at various phenomena that arise with the use of this particle, we have also learned about the general linguistic processes that give rise to related scalar particles across languages. I have tackled the question of what sort of lexical meaning can represent the varied uses of -*hii*, and I have argued that these varied meanings are the result of the interaction of its scalar meaning with its intensifying effect and its exclusive 'only' meaning.

The semantics of the scalar meaning component of -*hii* is a conventional implicature, and it can be more refined by representing the nature of expectations and speaker certainty by appealing to modality. At the pragmatic level, I have argued that the discourse plays a

crucial role in allowing the scalarity to become salient, but the meaning of -*hii* is flexible to accommodate both a scalar and non-scalar interpretation. Overall, this study has provided us a better understanding of the general landscape of scale-associating particles.

Appendix A

Experiment 1 Items

The original stimuli presented to the subjects were in Hindi. The original target sentences are indicated here with translation in parentheses. The bracketed text inside the table rows are the anticipated responses.

A.1 Test

A.1.1 Likelihood

1. 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	Rohini says...	Can this be said?
Bina attends.	"biina-hii cai parTi ke liye aayii." (Bina-hii came to tea.)	[YES]
Tara attends.	"taaraa-hii cai parTi ke liye aayii." (Tara-hii came to tea.)	[NO]
Preeti attends.	"priiti-hii cai parTi ke liye aayii" (Preeti-hii came to tea.)	[NO]

2. Professor Mehta is giving an exam to his students Aatish, Vijay, and Deepak. Any time before that there was an exam given, Aatish always passed but Deepak always failed. Professor Mehta doesn't know anything about whether Vijay would pass or fail, since he is a new student. In the end, one student passed and two failed.

Situation	Prof. Mehta says...	Can this be said?
Aatish passed.	"aatiS-hii paas hua." (Aatish-hii passed.)	[YES]
Vijay passed.	"vijay-hii paas hua." (Vijay-hii passed.)	[NO]
Deepak passed.	"diipak-hii paas hua." (Deepak-hii passed.)	[NO]

3. Anu wants to do pooja, but needs to first make halva. She's not sure whether she has the ingredients for halva already or whether she will have to go to the store. She thinks that she must have ghee because ghee is always something she uses. She thinks that she probably doesn't have flour because she thinks she already finished it up. She's not sure if she has all the sugar she needs or not. In the end, she finds one ingredient and she has to buy the other two from the store.

Situation	Anu says...	Can this be said?
There is ghee in the cabinet.	"ghii-hii milaa." (I found ghee-hii.)	[YES]
There is sugar in the cabinet.	"Sakkar-hii milaa." (I found sugar-hii.)	[NO]
There is flour in the cabinet.	"aaTa-hii milaa." (I found flour-hii.)	[NO]

4. Ravi is heading off to college, but he is not sure whether he can keep his mouse, dog, and fish with him in his dorm. His brother Manish hopes that Ravi will give him one of the animals. Probably Ravi won't give Manish his fish because it's possible that keeping a fish is allowed in dorms. Ravi thinks that probably dogs are unallowed in the dorm, so it's likely that he'll give Manish his dog. Ravi doesn't know if keeping a mouse in the dorm is okay or not. In the end, Ravi gives Manish one animal and keeps two animals.

Situation	Manish says...	Can this be said?
Ravi gives Manish his dog.	"ravi-ne mujhe kutta-hii dii." (Ravi gave me the dog-hii.)	[YES]
Ravi gives Manish his mouse.	"ravi-ne mujhe cuuhaa-hii dii." (Ravi gave me the mouse-hii.)	[NO]
Ravi gives Manish his fish.	"ravi-ne mujhe maclii-hii dii." (Ravi gave me the fish-hii.)	[NO]

5. When Deepti was little, her mother Nita would wonder what Deepti would grow up to be. Deepti was good at math so Nita thought that she would probably become an engineer. Nita thought that Deepti couldn't become a painter because she wasn't good at drawing. Nita couldn't tell whether Deepti would make a good lawyer or not, because Deepti wouldn't talk much when she was little.

Situation	Nita says...	Can this be said?
Deepti chooses engineering.	"dipti injiniir-hii banii." (Deepti became an engineer-hii.)	[YES]
Deepti chooses law.	"dipti vakiil-hii banii." (Deepti became a lawyer-hii.)	[NO]
Deepti chooses painting.	"dipti citrakaar-hii banii." (Deepti became a painter-hii.)	[NO]

A.1.2 Desirability

1. 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 says...	Can this be said?
Kartik rolls a 12.	"baarah-hii mile." (I got a twelve-hii.)	[NO]
Kartik rolls a 6.	"saat-hii mile." (I got a six-hii.)	[NO]
Kartik rolls a 2.	"do-hii mile." (I got a two-hii.)	[YES]

2. Leela just got married, and she is opening a guest's gift. She and her husband don't know what that guest would have given to them, but they really hope for money because they really need money right now. They definitely do not want cookware because they both always eat out. They know there is also the possibility they might be given a suitcase, but they don't know if they will travel and use a suitcase or not.

Situation	Leela says...	Can this be said?
The gift is money.	"paisa-hii diya." (He gave money-hii.)	[NO]
The gift is a suitcase.	"suutkes-hii diya." (He gave a suitcase-hii.)	[NO]
The gift is cookware.	"bartan-hii diya." (He gave cookware-hii.)	[YES]

3. Amit's wife Meghna is pregnant, and she is craving fruit. Amit goes to store, but he isn't sure what fruit will be available that day, because different fruits are available each day at the store. Meghna loves mango and hopes that Amit will find mango. Meghna doesn't like bananas at all, and she feels disgusted from even looking at bananas. It might be that the store has lychee, but Meghna never tried lychee so she doesn't know whether she will like lychee or not.

Situation	Meghna says...	Can this be said?
Amit gets mango.	"amit-ne aam-hii khariida." (Amit bought mango-hii.)	[NO]
Amit gets lychee.	"amit-ne liichii-hii khariida." (Amit bought lychee-hii.)	[NO]
Amit gets banana.	"amit-ne kela-hii khariida." (Amit bought banana-hii.")	[YES]

4. Chitra's mother Jaya is buying Chitra a gold necklace. Chitra doesn't know how much gold's worth of a necklace her mother will buy, but Chitra hopes for an 18k gold necklace. If Jaya buys her a 10k gold necklace, Chitra will immediately tell her mother to take it back, because she thinks such a necklace would be low-quality. If Jaya gives her a 14k gold necklace, Chitra is unsure whether she would keep it or give it to somebody else.

Situation	Chitra says...	Can this be said?
Jaya buys an 18k necklace.	"amma-ne 18 keraT hii khariidi." (Mom bought 18k-hii.)	[NO]
Jaya buys a 14k necklace.	"amma-ne 14 keraT hii khariidi." (Mom bought 14k-hii.)	[NO]
Jaya buys a 10k necklace.	"amma-ne 10 keraT hii khariidi." (Mom bought 10k-hii.)	[YES]

5. Gautam wants to buy tickets to see his favorite tabla player in concert. He doesn't know what sort of seat he will get because he's buying the ticket very close to the

show date. If he gets a front seat he will be very happy because he will get to see and hear the performer very clearer. If he gets a back seat he will be very disappointed because everyone's heads will be in the way. If he gets a seat in the middle, then he will be indifferent.

Situation	Gautam says...	Can this be said?
Gautam gets a front row seat.	"mujhe aage-ki siiT hii milii." (I got a front seat hii.)	[NO]
Gautam gets a middle row seat.	"mujhe biic-ki siiT hii milii." (I got a middle seat hii.)	[NO]
Gautam gets a back row seat.	"mujhe piiche-ki siiT hii milii." (I got a back seat hii.)	[YES]

A.2 Filler

1. Sujata, Tina, and Rutu are Professor Sharma's students. Today Professor Sharma is wondering who out of the three will come to class. Sujata always comes to class every time. Tina never comes. Rutu sometimes comes and sometimes doesn't come.

Situation	Prof. Sharma says...	Can this be said?
Sujata, Tina, and Rutu come.	"klaas-meN sujaata-bhii aayii." (Even Sujata came to class.)	[NO]
Sujata, Tina, and Rutu come.	"klaas-meN Tiinaa-bhii aayii." (Even Tina came to class.)	[YES]
Sujata, Tina, and Rutu come.	"klaas-meN rutu-bhii aayii." (Even Rutu came to class.)	[NO]

2. Ashwin has made a New Year's resolution that he will let go of his bad habits. Everybody knows that last year Ashwin would smoke, drink a lot, and eat too much ice cream.

Situation	Ashwin says...	Can this be said?
Ashwin smoked.	"maiN-ne sigreT piinaa band kar diya." (I stopped smoking.)	[NO]
Ashwin drank.	"maiN-ne Saraab piinaa band kar diya." (I stopped drinking.)	[NO]
Ashwin didn't eat ice cream.	"maiN-ne kulfi khaanaa band kar diya." (I stopped eating ice cream.)	[YES]

3. Rajiv and his daughters Priya, Lata, and Meena saw a tall apple tree, and they want to pick apples from it. Priya is the tallest. Lata is shorter than her, and Meena is

the shortest of all. Rajiv thinks that Priya will definitely be able to pick the apples and that maybe Lata will be able to as well. But he thinks that it isn't possible for Meena to pick the apples.

Situation	Rajiv says...	Can this be said?
No girl could pick the apples.	"priya-bhii epal nahiiN toR saki." (Even Priya couldn't pick the apples.)	[YES]
No girl could pick the apples.	"lata-bhii epal nahiiN toR saki." (Even Lata couldn't pick the apples.)	[NO]
No girl could pick the apples.	"miina-bhii epal nahiiN toR saki." (Even Meena couldn't pick the apples.)	[NO]

4. Siddharth and his friends Chandan, Dev, and Ram are lifting weights at the gym. Chandan is short. Dev is very tall, and Ram is muscular. Siddharth always thinks that short people are weak and would never be able to lift a barbell, but if someone is tall or muscular they would have no trouble lifting a barbell.

Situation	Siddharth says...	Can this be said?
Chandan can lift the barbell.	"candan choTa hai, lekin taakatvar hai." (Chandan is short, but he is strong.)	[YES]
Dev can lift the barbell.	"dev lambaa hai, lekin taakatvar hai." (Dev is tall, but he is strong.)	[NO]
Ram can lift the barbell.	"raam haTTa-kaTTa hai, lekin taakatvar hai." (Ram is muscular, but he is strong.)	[NO]

5. Neha wants to buy shoes. She doesn't know what kind of shoes she'll take, but her plan is to buy cheap ones.

Situation	Neha says...	Can this be said?
Neha buys boots.	"maiN-ne sniikar khariid lii." (I bought sneakers.)	[NO]
Neha buys boots and sneakers.	"maiN-ne buuT ya sniikar khariid liye." (I bought boots or sneakers.)	[NO]
Neha buys boots and sneakers.	"maiN-ne buuT aur sniikar khariid lii." (I bought boots and sneakers.)	[YES]

6. Professor Gupta is looking over his final exams. He has ten students in his class that took the exam. After checking over the exams, Professor Gupta needs to write a summary report of the performance of his class.

Situation	Prof. Gupta says...	Can this be said?
Ten people failed.	"kuc log fel hue." (Some people failed.)	[NO]
Five people failed.	"kuc log fel hue." (Some people failed.)	[YES]
Zero people failed.	"sab log fel hue." (Everybody failed.)	[NO]

7. Meera loves dessert. At a party, Meera saw laddu, peda, kalaakand, and barfi on a big plate, and she took some of those sweets.

Situation	Meera says...	Can this be said?
Meera eats laddu, kalaakand, and barfi.	"maiN-ne do miThaai khaayi." (I ate two sweets.)	[NO]
Meera eats kalaakand, laddu, and peda.	"maiN-ne tiin miThaai khaayi." (I ate three sweets.)	[YES]
Meera eats laddu, peda, and barfi.	"maiN-ne caar miThaai khaayi." (I ate four sweets.)	[NO]

8. Rupa needs to track the weather for a school science project. She needs to watch the weather for three days, and then report to her class what the weather was.

Situation	Rupa says...	Can this be said?
Rain on Day 1, rain on Day 2, rain on Day 3.	"abhi-bhii baariS ho rahi hai." (It is still raining.)	[YES]
Hail on Day 1, rain on Day 2, sun on Day 3.	"abhi-bhii dhuup hai." (It is still sunny.)	[NO]
Sun on Day 1, rain on Day 2, hail on Day 3.	"abhi-bhii aale gir rahe haiN." (It is still hailing.)	[NO]

9. Sunil and his boss Shekhar are meeting with a client over breakfast. Shekhar saw that Sunil grabbed a drink more than once.

Situation	Shekhar says...	Can this be said?
Sunil's first drink was coffee and second drink was juice.	"sunil-ne ek aur juus piya thaa." (Sunil drank another juice.)	[NO]
Sunil's first drink was juice and second drink was tea.	"sunil-ne ek aur cai pii thii." (Sunil drank another tea.)	[NO]
Sunil's first and second drinks were coffee.	"sunil-ne ek aur kofii piya thaa." (Sunil drank another coffee.)	[YES]

10. Sanjay is a travel agent. One day a customer calls Sanjay. That customer needs to go to London suddenly. He hopes that Sanjay will find and buy a plane ticket for him.

Situation	Sanjay says...	Can this be said?
Sanjay finds an open seat and buys it.	"maiN-ne TikaT khariidne ki koSiS kii." (I tried to buy a ticket.)	[NO]
Sanjay doesn't find an open seat.	"maiN-ne TikaT khariidne ki koSiS kii." (I tried to buy a ticket.)	[YES]
Sanjay doesn't look for a seat.	"maiN-ne TikaT khariidne ki koSiS kii." (I tried to buy a ticket.)	[NO]

A.3 Practice

The following items were given to each participant for practice, with the correct answers filled in.

1. Asha wants to get vegetables from the market. She goes to the market and gets some items.

Situation	Asha says...	Can this be said?
Asha buys a potato and carrot.	"maiN-ne caar sabji khariidi." (I bought four vegetables.)	[NO]
Asha buys milk, a potato, and cauliflower.	"maiN-ne do sabji khariidi." (I bought two vegetables.)	[YES]
Asha buys bread, rice, and a carrot.	"maiN-ne tiin sabji khariidi." (I bought three vegetables.)	[NO]

2. Prof. Khemlani thinks that whoever wears glasses is smart and gets good grades on exams. He also thinks that if someone doesn't wear glasses, then it will be very hard for him to get a perfect score. His students Jagdish and Prem don't wear glasses. The other student Aakash does wear glasses. The three students take an exam one day.

Situation	Prof. Khemlani says...	Can this be said?
Jagdish gets 100%.	"jagdiS caSma nahiiN pahanta hai, magar accha marks laya." (Jagdish doesn't wear glasses, but he got a good grade.)	[YES]
Prem gets 100%.	"prem caSma nahiiN pahanta hai, magar accha marks laya." (Prem doesn't wear glasses, but he got a good grade.)	[YES]
Aakash gets 100%.	"aakaaS caSma nahiiN pahanta hai, magar accha marks laya." (Aakash wears glasses, but he got a good grade.)	[NO]

Appendix B

Experiment 2 Items

The original stimuli presented to the subjects here were in Hindi. Underlining corresponds to text that was in a different color font in the experiment. The original target sentences are indicated here with translation in parentheses. The bracketed text following the question is the anticipated response.

B.1 Test

B.1.1 only-not/subject

1. Professor Bhatia is leading Tina, Bindu, and Ami through a new lab experiment.
   Situation: Bindu and Ami have safety goggles, Tina does not.
   Prof. Bhatia says: "ham log eksperimenT karne ke liye lagbhag taiyaar hai. Tiina-ke-paas-hii gogal nahiiN hai." (We're almost ready to run the experiment, Tina-hii doesn't have safety goggles.)
   Can this be said? [YES]

2. Professor 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: "ham log khudaai karne ke liye lagbhag taiyaar hai. pavan-ke-paas-hii belca nahiiN hai." (We're almost ready to start the digging, Pavan-hii doesn't have a shovel.)
   Can this be said? [NO]

3. Sanjay schedules a meeting with his employees Govind, Shyaam, and Hari.
   Situation: Govind and Shyaam attend, Hari doesn't.

Sanjay says: "ham log miiTing Suru karne ke liye lagbhag taiyaar hai. hari-hii nahiiN aayaa." (We're almost ready to start the meeting, Hari-hii didn't come).

Can this be said? [YES]

4. Kavit, a soccer coach, gathers his players Ajay, Raj, and Sameer for a pre-game meeting.

   Situation: Ajay attends, Raj and Sameer don't attend.

   Kavit says: "ham log baatcit karne ke liye lagbhag taiyaar hai. samiir-hii nahiiN aayaa." (We're nearly set to start the discussion, Sameer-hii didn't come)."

   Can this be said? [NO]

5. Sheela is directing a play with actors Manish, Padma, and Naresh.

   Situation: Manish and Padma are dressed, Naresh is not.

   Sheela says: "ham log pahale driSya-ko Suru karne ke liye kariib-kariib taiyaar hai, nareS-hii taiyaar nahiiN hai." (We're almost ready to start the first scene, Naresh-hii hasn't gotten dressed)."

   Can this be said? [YES]

6. Meena owns a store, and Rahul, Kavya, and Nishka are clerks for her.

   Situation: Rahul and Kavya have store keys, Nishka does not.

   Meena says: "ham log dukaan kholne-ko lagbhag taiyaar hai. niSka-ke-paas-hii caabii nahiiN hai." (We're almost ready to open for business, Nishka-hii doesn't have keys)."

   Can this be said? [YES]

B.1.2 only-not/object

1. Ronak is going to the airport to travel to London on a business trip and needs to take clothing, his computer, and his passport.

   Situation: Ronak packed his clothing and computer, not his passport.

   Ronak's wife says: "ronak-ne Trip-ke-liye kariib-kariib sabhi samaan jamaa liya hai. paasporT-hii paik nahiiN kiya." (Ronak has almost everything for the plane, he didn't pack his passport-hii.)

   Can this be said? [YES]

2. 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: "kamping-ke-liye arjun-ke-paas kariib-kariib sabhi samaan hai. usne juute-hii paik nahiiN kiye." (Arjun has almost everything for camping, he didn't pack his boots-hii)."

   Can this be said? [NO]

3. Lakshmi is getting married and needs to have a sari, jewelry, and shoes.

   Situation: Lakshmi has jewelry and shoes, not a sari.

   Lakshmi's mother says: "Saadi-ke-liye lakSmi-ke-paas kariib-kariib sabhi chiizeN haiN. saaRi-hii nahiiN hai." (Lakshmi almost has everything for the wedding, she doesn't have a sari-hii)."

   Can this be said? [YES]

4. Naman is going to a job interview and needs to have a suit, a briefcase, and a tie.

   Situation: Naman has a tie, not a suit or briefcase.

   Naman's wife says: "inTarvyu-ke-liye naman-ke-paas kariib-kariib sabhi chiijeN haiN, uske paas suuT-hii nahiiN hai. (Naman almost has everything for his interview, he doesn't have a suit-hii)."

   Can this be said? [NO]

5. Anu needs to make halva, and so needs to find sooji, sugar, and ghee.

   Situation: Anu finds ghee and sooji, not sugar.

   Anu says: "mere paas halvaa banaane-ka lagbhag saara samaan hai, Sakkar-hii nahiiN hai." (I have almost all the ingredients, I don't have sugar-hii)."

   Can this be said? [YES]

6. Seema needs to paint her room, and so needs to have a roller, a dropcloth, and paint.

   Situation: Seema finds roller, not a dropcloth or paint.

   Seema says: "rang caRhaane ke liye mere paas kariib-kariib saaraa samaan hai, penT-hii nahiiN hai." (I have almost everything to start painting, I don't have paint-hii)."

   Can this be said? [NO]

B.1.3 even-not/subject

1. Professor Bhatia is leading Tina, Bindu, and Ami through a new lab experiment. If Tina doesn't have safety goggles, then Prof. Bhatia feels that it will not be possible to proceed with conducting the experiment, because Tina was designated to mix the chemicals together. If Ami doesn't have safety goggles, Professor Bhatia won't mind, because she is going to be the notetaker.

   Situation: Bindu and Ami have safety goggles, Tina does not.

   Prof. Bhatia says: "ham eksperimenT kaise kar sakte haiN jab **Tiina**-ke-paas-hii gogal nahiiN haiN? (How can we do the experiment when **Tina**-hii doesn't have safety goggles)?"

   Can this be said? [YES]

2. Professor Shah is taking Kunal, Niraj, and Pavan on a trip to conduct an archaeological excavation. If Kunal doesn't have a shovel, Professor 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, Professor 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: "ham khudaai kaise kar sakte haiN jab **pavan**-ke-paas hii belca nahiiN hai?" (How can we start the excavation when **Pavan**-hii doesn't have a shovel)?"

   Can this be said? [NO]

3. Sanjay schedules a meeting with his employees Govind, Shyaam, and Hari. If Hari doesn't attend, then Sanjay feels that it is impossible to have the meeting at all, because Hari is the one scheduled to give the presentation at this meeting. If Shyaam doesn't come, then Sanjay won't mind, because he is not integral to the meeting.

   Situation: Govind and Shyaam attend, Hari doesn't attend.

   Sanjay says: "ham yah miiTing kaise kar sakte haiN, jab **hari**-hii nahiiN aaya?" (How could we have the meeting when **Hari**-hii didn't come)?"

   Can this be said? [YES]

4. Kavit, a soccer coach, gathers his players Ajay, Raj, and Sameer for a pre-game meeting. If Sameer doesn't attend, then Kavit feels it is impossible to have the meeting, since he is the goalkeeper. If Ajay doesn't attend, then Kavit doesn't mind, because he is a player that can be replaced.

   Situation: Raj and Sameer attend, Ajay doesn't attend.

   Kavit says: "ham yah miiTing kaise kare, jab **ajay**-hii nahiiN aaya?" (How can we have a meeting when **Ajay**-hii didn't come?)

   Can this be said? [NO]

5. Sheela is directing a play with actors Manish, Padma, and Naresh. If Naresh doesn't arrive on time dressed in costume, then Sheela feels that conducting the play is impossible because he has the lead role. If Manish doesn't come, then Sheela doesn't mind, because he can be replaced by an understudy.

   Situation: Manish and Padma are dressed, Naresh is not.

   Sheela says: "ham naaTak-ko kaise caalu rakh sakte haiN, jab **nareS**-hii taiyaar nahiiN haiN?" (How can we go on with the show, when **Naresh**-hii isn't ready?)

   Can this be said? [YES]

6. Meena is owns a store, and Rahul, Kavya, and Nishka are clerks for her. If Kavya doesn't have a key to the shop, then Meena feels that conducting business today is impossible because Kavya is the manager. If Nishka doesn't have a key, then Sheela feels that the shop can still be open, because Nishka won't be in charge of locking up or opening.

   Situation: Rahul and Kavya have store keys, Nishka does not.

   Meena says: "aaj dukaan-ka dhandhaa kaise hoga jab **niSkaa**-ke-paas-hii caabi nahiiN hai?" (How can we run the store today, when **Nishka**-hii doesn't have a key?)

   Can this be said? [NO]

B.1.4 even-not/object

1. Ronak is going to the airport to travel to London on a business trip. Without a passport, Ronak will not board the flight at all, so his wife feels that he needs to have his passport in order to go to London. New clothing can always be bought in London,

so his wife doesn't feel that clothing is most critical to pack.

Situation: Ronak packed his clothing and computer, not his passport.

Ronak's wife says: "ronak landan kaise ja saktaa hai jab **paasporT**-hii paik nahiiN kiya?" (How can Ronak go to London, when he didn't pack his **passport**-hii?)

Can this be said? [YES]

2. 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: "arjun kemping-meN ujaaR jagah par kaise rah saktaa hai, jab **tambu**-hii paik nahiiN kiya?" (How can Arjun go to the wilderness, when he didn't pack his **tent**-hii?)

   Can this be said? [NO]

3. 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: "yah Saadi kaise hogi jab lakSmi-ke-paas **saaRii**-hii nahiiN hai?" (How can we have a wedding, when Lakshmi doesn't have a **sari**-hii?)

   Can this be said? [YES]

4. Naman is going to a job interview and needs to have a suit, a briefcase, and a tie. His wife feels that without a suit, he would have no chance of ever landing a job, so a suit is essential. If he doesn't have a briefcase, she feels it should not matter much for the interview.

   Situation: Naman has a suit and tie, not a briefcase.

   Naman's wife says: "tumhe kaun naukrii degaa jab tumhare paas **briifkes**-hii nahiiN hai?" (How can they give you the job, when you don't have a **briefcase**-hii?

   Can this be said? [NO]

5. Anu needs to make halva, and so needs to find sooji, sugar, and ghee. Sugar is something that she wouldn't be able to substitute with another ingredient, so Anu feels that without sugar, she cannot make halva. Sooji is something she could substitute with flour, so she would not find it a big deal if she doesn't find sooji.

   Situation: Anu finds ghee and sooji, not sugar.

   Anu says: "maiN halvaa kaise banauuN, jab **Sakkar**-hii nahiiN hai?" (How can I make halva if I don't have **sugar**-hii?)

   Can this be said? [YES]

6. Seema needs to paint her room, and so needs to have a roller, a dropcloth, and paint. She feels that paint is essential to the job, because there is no substitute for it. But if she doesn't find a roller, she could always use a brush, so she feels that having a roller is not essential.

   Situation: Seema finds paint and a dropcloth, not a roller.

   Seema says: "maiN kamre-ko rang caRhaana kaise karuuN jab mere paas **rolar**-hii nahiiN hai?" (How can I paint my room if I don't have a **roller**-hii?)

   Can this be said? [NO]

B.2 Filler

B.2.1 only-not

1. Indra might read Alice in Wonderland, Robinson Crusoe, or Oliver Twist.

   Situation: Indra reads Alice in Wonderland and Robinson Crusoe, and doesn't read Oliver Twist.

   Indra says: "maiN-ne kitaabeN paRhne Suru kiya. do kitaabeN nahiiN paRhi." (I started reading. I didn't read 2 books.)

   Can this be said? [NO]

2. Gaurav might watch Lagaan, Devdaas, or Umrao Jaan.

   Situation: Gaurav watches Devdaas, not Lagaan or Umrao Jaan.

   Gaurav says: "maiN-ne pikcar dekhne Suru kiya. do pikcar nahiiN dekhii." (I started watching the films. I didn't watch 2 movies.)

Can this be said? [YES]

3. Kiran, Usha, and Sita might go to Simran's party.

   Situation: Kiran and Usha attend, Sita doesn't attend.

   Simran says: "maiN sab log gin liyaa. do log nahiiN aaye." (I counted everyone who came to the party, 2 people didn't come.)

   Can this be said? [NO]

4. Mona, Neha, and Gyaan might go to Prof. Iyer's class.

   Situation: Mona attends, Neha and Gyaan don't attend.

   Prof. Iyer says: "maiN sab log-ko gin liyaa. do log nahiiN aaye." (I counted everyone who came to class, 2 people didn't come.)

   Can this be said? [YES]

5. Bilal is going to the market, and needs to find potato, cauliflower, and onions to make dinner.

   Situation: Bilal gets potato and onion, not cauliflower.

   Bilal's wife says: "maiN sabji nahiiN banaa sakti. bilaal-ko gobhii nahiiN milii." (I can't cook the dish, Bilal didn't find cauliflower.)

   Can this be said? [YES]

6. Prem wants to grow roses, so needs to find soil, a pot, and seeds.

   Situation: Prem finds soil and a pot, not seeds.

   Prem says: "mere paas miTTii aur gamlaa hai, biij nahiiN hai." (I have soil and a pot, I don't have seeds.)

   Can this be said? [YES]

7. Prof. Kumar is teaching Piya, Chetna, and Maansi how to dissect frogs.

   Situation: Piya and Chetna have scalpels, Maansi doesn't have a scalpel.

   Prof. Kumar says: "hum abhi menDak disekSan Suru nahiiN kar sakte, maansi-ke-paas caaku nahiiN hai." (We can't start yet, Maansi doesn't have a scalpel.)

   Can this be said? [YES]

8. Dr. Rai is going to perform a surgery, with his assistants Saurabh, Neel, and Onkar.
   Situation: Saurabh and Neel washed their hands, Onkar didn't.)
   Dr. Rai says: "ham abhi opreSan Suru nahiiN kar sakte. onkar haath dho ka taiyaar nahiiN hai." (We can't start the operation yet, Onkar didn't wash his hands.)
   Can this be said? [YES]

9. Aditi is performing a concert with fellow musicians Raj, Nikhil, and Rachana.
   Situation: Raj and Nikhil arrive on stage, Rachana doesn't.
   Aditi says: "ham abhi yah samaaroh Suru nahiiN kar sakte. raaj-hii aaya hai." (We can't start the concert yet, Raj-hii came.)
   Can this be said? [NO]

10. Nikki is repairing a shirt, and needs a needle, thread, and a button.
    Situation: Nikki finds a needle and button, but not thread.
    Nikki says: "maiN silaaii Suru nahiiN kar saktii. mere paas dhaagaa nahiiN hai." (I can't start sewing yet, I don't have thread.)
    Can this be said? [YES]

B.2.2 even-not

1. Rohini invited Bina, Tara, and Preeti over to celebrate her birthday. Rohini feels that if Bina doesn't come, then there cannot be a celebration because Bina is going to bring the cake. If Preeti doesn't come, then Rohini feels that it doesn't matter, because she wasn't going to bring anything to eat anyways.
   Situation: Bina comes, Tara and Preeti don't come.
   Rohini says: "mera janamdin maiN kaise manaa sakti huuN jab **biinaa**-hii aayii?" (How can I celebrate my birthday, when **Bina**-hii came?)
   Can this be said? [NO]

2. Deepti's mother is wondering whether Deepti will choose to study medicine, law, or engineering in college. If Deepti chooses law, then her mother feels she will overcome her shyness. If she chooses engineering, then her mother thinks she will not overcome her shyness.

Situation: Deepti chooses engineering, not law or medicine.

Deepti's mother says: "ham kaise kah sakte haiN ki tumne tumhare Sarmalepan par kaabu pa liya hai, yadi tum **injiiniiyaring**-hii paRhegii?" (How can we tell whether you are over your shyness, if you study **engineering**-hii?)

Can this be said? [YES]

3. Aditya is building a table and needs to find wood, a hammer, and nails. If Aditya doesn't find wood, he feels that it is not possible to build a table. But it doesn't matter if he doesn't find nails, because he can use screws instead.

   Situation: Aditya finds nails, he doesn't find wood or a hammer.

   Aditya says: "maiN Tebal kaise banaa sakti huuN, yadi mere paas **kiileN**-hii haiN?" (How can I make a table, if I have **nails** hii?)

   Can this be said? [YES]

4. Bilal is going to the market, and needs to find potato, cauliflower, and onions to make dinner. If Bilal doesn't find potato, his wife feels it won't be possible to make the dish. If he doesn't find onion, it doesn't matter, because onion can be left out.

   Situation: Bilal gets potato, not cauliflower or onion.

   Bilal's wife says: "maiN kaise sabji banaa sakti huuN, jab bilaal-ko **aaluu**-hii mile?" (How can I cook the dish, when Bilal found **potato**-hii?)

   Can this be said? [NO]

5. Prem wants to grow marigolds, so needs to find soil, a pot, and seeds. Prem feels he needs to find seeds, as flowers cannot be grown without seeds. If Prem doesn't find a pot, it doesn't matter, since he can plant the marigolds in the ground.

   Situation: Prem finds a pot, he doesn't find seeds or soil.

   Prem says: "maiN gende ka paudhaa kaise ugaa saktaa huuN, jab mere paas **gamlaa**-hii hai?" (How can I grow roses, when I have **a pot** hii?)

   Can this be said? [YES]

6. Professor Kumar is teaching Piya, Chetna, and Maansi how to dissect frogs. If Piya doesn't have a scalpel, Professor Kumar feels that doing the dissection is impossible because she is designated to do the cutting. If Maansi doesn't have a scalpel, then

Professor Kumar doesn't mind, because she will be measuring the frog's organs.

Situation: Piya has a scalpel, Maansi and Chetna don't have scalpels.

Prof. Kumar says: "ham menDak-ki disekSan kaise kar sakte haiN, jab **piyaa**-ke-paas-hii caakuu hai?" (How can we do the dissection, when **Piya**-hii has a scalpel?)

Can this be said? [NO]

7. Vinod asks his employees Natasha, Eela, and Jyoti to assemble for a meeting. If Natasha doesn't come, Vinod thinks the meeting cannot happen because Natasha is his lead employee. If Jyoti doesn't come, then Vinod doesn't mind, because she is the lowest-ranked employee.

   Situation: Jyoti comes, Natasha and Eela don't.

   Vinod says: "ham yah miiTing kaise kar sakte haiN jab **jyoti**-hii aayii?" (How can have a meeting, when **Jyoti**-hii came?

   Can this be said?) [YES]

8. Doctor Rai is going to perform a surgery, with his assistants Saurabh, Neel, and Onkar. If Saurabh doesn't wash his hands, Doctor Rai feels that they cannot start the operation, as he is the chief assistant. If Onkar doesn't wash his hands, Doctor Rai doesn't mind, as Onkar will be observing the operation.

   Situation: Onkar washed his hands, Saurabh and Neel didn't.

   Dr. Rai says: "ham yah opreSan kaise Suru kar sakte haiN jab **onkar**-hii haath dhokar taiyaar hai?" (How can we start the operation, when **Onkar**-hii washed his hands?)

   Can this be said? [YES]

9. Aditi is performing a concert with fellow musicians Raj, Nikhil, and Rachana. If Raj doesn't arrive on stage on time, Aditi will feel that the concert cannot commence, because Raj will be playing a solo piece. If Rachana doesn't show up, Aditi doesn't mind, because Rachana's piece is unimportant.

   Situation: Rachana shows up, Nikhil and Raj don't.

   Aditi says: "yah sangiit samaaroh aage kaise baRh sakta hai, jab **racana**-hii sTej par aayii?" (How can we go on with the concert when **Rachana**-hii arrived on stage?)

   Can this be said? [YES]

10. Nikki is repairing a dress, and needs a needle, thread, and a button. If she doesn't find a thread, Nikki thinks she won't be able to repair the dress because she needs the thread to sew. But if she doesn't find a button, she doesn't mind, because she could use a zipper instead.

    Situation: Nikki finds a thread, doesn't find a needle or button.

    Nikki says: "maiN Dres-meN TaaNke kaise lagaauuN, jab **dhaagaa**-hii milaa?"(How can I repair this dress, when I found **thread**-hii?)

    Can this be said? [NO]

B.3 Practice

The following items were provided to the subject at the very beginning of the session, and included feedback. The first two items are the practice items for the 'only not' survey, while the second two items are the practice items for the 'even not' survey.

1. Asha is looking for an apple, banana, grape, and mango at the market.

   Situation: Asha finds an apple, banana, and mango, not grapes.

   Asha says: "adhiktar khariidadarii ho gayi hai. tiin phal mil gaye haiN." (I'm almost done shopping, I found three fruits.")

   Can this be said?

   The correct answer is 'yes' because Asha found an apple, banana, and mango, which totals to 3 fruits.

2. Aakash, Harish, and Prem are taking Prof. Khemlani's exam.

   Situation: Aakash and Prem pass, Harish fails.

   Prof. Khemlani says: "maiN-ne saare parikSaaoN-ko dekh liyaa. do vidhyaarthi fel hue." (I've graded all the exams, and two students failed.)

   Can this be said?

   The correct answer is 'no', because Harish failed, which totals to 1 student, not 2.

1. Aakash, Harish, and Prem are taking Professor Khemlani's exam. If two people pass, Professor Khemlani feels he can send a positive report about the class. But if two people fail, Professor Khemlani feels he must give a bad report.

Situation: Harish passes, and Aakash and Prem fail.

Prof. Khemlani says: "maiN acchaa riporT kaise bhejuuN, jab do vidhyaarthi fel ho gaye?" (How can I send a good report, when two people failed?)

Can this be said?

The correct answer is 'yes', because Aakash and Prem failed, totaling 2 people, which is the number that Professor Khemlani felt would not allow him to give a good report.

2. Asha is looking for an apple, banana, grape, and mango at the market. If she finds at least three fruits, she thinks she can make a fruit salad. But if she finds one or two fruits, she feels she cannot.

   Situation: Asha finds an apple, banana, and mango, not grapes.

   Asha says: "maiN phaloN-ka salaad kaise banaa sakti huuN, jab tiin phal mil gaye?" (How can I make a fruit salad when I found three fruits?)

   Can this be said?

   The correct answer is 'no' because while Asha found 3 fruits, this is the amount that she believed would indeed allow her to make a salad.

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