

Semantic Implications: Testing them with Hindi ‘-to’ particle

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Outline of the talk:-

- Brief introduction to implications
- What are we looking at and why?
- A linguistic puzzle
- Tools and tests to work on that puzzle
- End result and key takeaway points

1. An Introduction to Implications:-

- Implication – an inferential relationship between two sentences or sets of sentences; it is a directional relation - where one sentence or a set ‘leads to’ another sentence or a set.

Example:-

Sentence 1: Jack doesn’t like John anymore.

Sentence 2: Jack used to like John at some point prior to the utterance time.

→ Sentence 1 implies sentence 2 or sentence 2 can be inferred from sentence 1

- Can be further classified based on what licenses them (informational content of a sentence or conversational expectations) or their contribution to the ongoing discourse. More on this later.
- If an implication can be traced to a particular lexical item or as arising because of a particular syntactic construction, then that lexical item or construction is tagged as a ‘trigger’ for that inference. Example: lexical item ‘anymore’ triggers the inference from sentence 1 to sentence 2 above.

2. What are we looking at ?

- Hindi (Indo-Aryan, SOV) language data
- Distribution-wise: enclitic particle attached to an XP v/s an independent word

(i) korona=ne=**to** səb=ko dʊk^hI kər dɪ-ja hɛ
corona=ERG=TOP all=DAT sad do give-PFV.3M be.3S

‘Corona has troubled everyone.’

(ii) əgər korona k^hətəm ho dʒa-je **to** ek naji dʊnija dɪk^hegi
if corona finish happen go-SBJV then one new world seen.FUT.3F

‘If Corona gets finished then one new world will be seen.’

- Conditional ‘to’ of (ii) – different lexical item – not the focus in this talk
- Enclitic ‘-to’ can attach to XPs where X=N/Adj/V/Perf (not an exhaustive list). Only looking at cases where XP is an argument NP whose extension is that of a discourse referent

3. Why are we looking at this ?

- Reason for looking at ‘NP-to’ structure: because ‘-to’ is traditionally analysed as a topic marker (similar to Japanese *-wa* or Korean *-(n)un* particle) and such NPs fit into an entity or entity type (discourse referent based) conception of a (Sentence) Topic. Eg: A topic is what the sentence is *about* (Reinhart 1982).
- Reason for not looking at sentence-initial ‘NP-to’ structure: Hindi is a subject-prominent language; sentence initial NP gets default topical interpretation with or without ‘-to’. This should not be the case for a sentence-medial, non-subject NP.
- Reason for looking at sentence-medial non-subject ‘NP-to’ structure:
 - (i) They convey more than what is linguistically encoded in the sentence
 - (ii) To tease apart this extra something (apart from topic interpretation) brought forth by this discourse particle ‘-to’

4. The Puzzle:-

Context: Ravi's mother has brought an apple and a banana for Ravi to eat.

Sentence 1: rəvi=ne kela k^ha-ja
 Ravi=ERG banana eat-PFV.M.S
 'Ravi ate the banana.'

Inference 1: He did not eat the apple.

Inference 2: It is uncertain whether he ate the apple.

→ Asserting sentence 1 does not lead to inferences of the kind mentioned above. Only the linguistically encoded information of the sentence is asserted and conveyed by the speaker to the hearer.

Sentence 2: rəvi=ne kela=**to** k^ha-ja
 Ravi=ERG banana=TOP eat-PFV.M.S
 'As for a banana, Ravi ate it.' (intended)

Inference 1: He did not eat the apple.

Inference 2: It is uncertain whether he ate the apple.

→ Speaking sentence 2 in the given context leads to implication of either one or both of the inferences mentioned above. Common ground remaining the same, attaching '-to' to the non-subject NP above yields to conveying more than what is asserted by sentence 2. This brings us back to where we started from-
IMPLICATIONS.

5. Advantage of being a linguist:-

- Technical terminology for describing each implication type
 - (i) Entailment
 - (ii) Presupposition
 - (iii) Implicature
- Diagnostic tests based on properties of each implication type
 - (i) Defeasibility Test
 - (ii) Projection Test
 - (iii) Redundancy Test

6. Entailment:-

- Definition : sentence *A* entails sentence *B* if and only if whenever *A* is true, *B* has to be true too.

Note 1: In semantics, a speaker *knows* the meaning of a sentence if he knows under what condition that sentence is true or not. He need not know whether a sentence is actually true or not , only the conditions under which it is true or not .

Example: I am a human being.

To *know* the meaning of this sentence, one needs to know the conditions under which this sentence will be true. If in a given world those conditions are met, then the sentence is true in that world. Otherwise false. Such conditions are the truth-conditions of a sentence.

Note 2: Entailment is a strong implication relation that is judged based on the truth-conditional content of sentence *A* (conditions under which sentence *A* is true)

- Example:-

A: After Ravi cooked his dinner, his flat-mate cleaned their kitchen.

B: Ravi cooked dinner.

→ In all possible worlds where sentence *A* is true , sentence *B* will be true too. Thus, *A* entails *B*.

- Defeasibility Test: ‘*A* and *not B*’ should be contradictory
- Applying this test to the previous example:

A: After Ravi cooked his dinner, his flat-mate cleaned their kitchen.

B: Ravi cooked dinner.

Not B: It is not the case that Ravi cooked dinner.

‘*A* and *not B*’: # After Ravi cooked his dinner, his flat-mate cleaned their kitchen. It is not the case that Ravi cooked dinner.

→ In a world where sentence *A* is true, Ravi did cook dinner and his flat-mate did clean the kitchen. In a world where ‘*not B*’ is true, Ravi did not cook dinner. These two worlds are contradictory as the same condition is met in one and not in the other. Thus, the sentence (*A* and *not B*) is indeed contradictory confirming that whenever *A* is true, *B* has to be true too. This proves *A* entails *B* in the given example.

7. Presupposition:-

- Definition: sentence *A* presupposes sentence *B* if *A* implies *B* and also if the truth of *B* is implied to be taken for granted as background for considering *A*.

Example:

Sentence *A*: The class president has green hair.

Sentence *B*: There is a unique class president.

→ *A* presupposes *B* as existence of a unique class president is taken for granted and assertion of sentence *A* is based over this background.

→ English definite article 'the' triggers this presupposition as definite descriptions license such existence and uniqueness implicatures.

- Projection Test: presuppositions project through a P-family of contexts (affirmative declarative, negative of declarative, interrogative, antecedent of conditional)
- A presupposes B iff if not only A but also other members of P family imply (and assume as background) B .

Affirmative Declarative: The class president has green hair.

Negative Declarative: The class president does not have green hair.

Interrogative: Does the class president have green hair?

Antecedent of Conditional: If the class president has green hair, then she must be expressing a point via them.

Underlying presupposition: There is a unique class president.

Testing Presupposition for Hindi ‘-to’:-

Using the already introduced context: Ravi’s mother has brought an apple and a banana for Ravi to eat.

i. Affirmative Decl: rəvɪ-ne kela-to k^haja ‘As for banana, Ravi ate it.’

ii. Potential Prsp: rəvɪ-ne seb nəhɪ k^haja ‘Ravi did not eat the apple.’

Checking whether this potential presupposition projects through (is implied and taken for granted) in other P-family contexts:

iii. Negative Decl: rəvɪ-ne kela-to nəhɪ k^haja ‘Ravi did not eat the banana.’

iv. Interrogative: kja rəvɪ-ne kela-to k^haja ? ‘Did Ravi eat the banana?’

v. Conditional Antecedent: # əgər rəvɪ-ne kela-to k^haja təb us-ko dʒəldɪ b^huk^h nəhɪ ləgeɪ

‘If Ravi ate the banana then he will not become hungry soon.’

→ The potential candidate for presupposition in (ii) fails this projection test because it may be implied but it is NOT taken for granted or assumed as background for considering for any of the family of contexts in (i) to (v). Thus, the implication under consideration is not a presupposition in our case.

8. Implicature:-

- Definition: sentence *A* implicates sentence *B* if we take *B* to be (part of what) the speaker of *A* meant by uttering that sentence.
- Implicatures can be explained based on Maxims of conversation (from Paul Grice's 1975 work) generally agreed upon and adhered to by all participants in a conversational discourse – maxims of Quantity, Quality, Relevance and Manner.
- Weaker semantic inference relations as they can be defeated (or reinforced).

Example:

A: I used to take a walk on the ring road daily.

B: I no longer take a walk on the ring road daily.

→ A speaker should be as “relevant” and “informative” as is required in a conversational discourse. Speaker of sentence *A* takes sentence *B* to be a part of the information that he wants to convey by uttering sentence *A* as a conversational move. Thus, sentence *A* implicates sentence *B*.

- Defeasibility Test: Since implicatures are defeasible, if *A* implicates *B* then ‘*A* and *not B*’ should not be contradictory (unlike entailments).

A: I used to take a walk on the ring road daily.

B: I no longer take a walk on the ring road daily

Not B: It is not the case that I no longer take a walk on the ring road daily = I take a walk on the ring road daily.

‘*A* and *not B*’: I used to take a walk on the ring road daily. In fact, I still take a walk on the ring road daily.

→ The pair of sentences for ‘*A* and *not B*’ are coherent and not contradictory. What was implied by first sentence is defeated , so much so that it can exist with the negation of that implication. By using additional linguistic information ‘in fact’ and ‘still’ , these weak semantic inferences are defeated.

- Redundancy Test: Since implicatures are reinforceable, if *A* implicates *B* then ‘*A* and *B*’ should not be redundant.

A: I used to take a walk on the ring road daily.

B: I no longer take a walk on the ring road daily

‘*A* and *B*’: I used to take a walk on the ring road daily. But I no longer take a walk on the ring road daily (because of Corona Virus).

→ The pair of sentences for ‘*A* and *B*’ are not redundant. What was implied by first sentence is re-inforced by sentence *B* and the linguistic connective ‘but’ along with an optional because-clause helps in doing so. This re-affirms that *A* implicates *B*.

Testing Implicature for Hindi ‘-to’:-

Using the already introduced context: Ravi’s mother has brought an apple and a banana for Ravi to eat.

A: rəvɪ-ne kela-to k^haja ‘As for banana, Ravi ate it’

B: rəvɪ-ne seb nəɦɪ k^haja ‘Ravi did not eat the apple.’

Not B: It is not the case that Ravi did not eat the apple = Ravi ate the apple

1. Applying the Defeasibility Test:-

A and *not B*: rəvɪ-ne kela-to k^haja. us-ne seb b^hɪ k^haja

Ravi ate the banana. He ate the apple too

→ Using the additive particle ‘b^hɪ’ (also), the inference *B* is explicitly defeated in ‘*A* and *not B*’ structure. Thus, it is confirmed that the status of inference drawn in our case is that of an implicature.

2. Verifying with Redundancy Test:-

A and *B*: rəvi-ne kela-to k^haja. məgər us-ne seb nəhi k^haja

Ravi ate the banana. But he did not eat the apple.

→ The pair of sentences are not redundant and the implicature is re-inforced using the help of connective ‘but’. This verifies that *B* is indeed an implicature drawn from *A*.

9. Conclusion:-

- Hindi ‘-to’ attached to a sentence medial non-subject argument triggers an inference.
- Using the diagnostics of defeasibility test, projection test and redundancy test, entailment and presupposition was ruled out and this inference was proven to be an implicature.
- Besides having a topical interpretation, the semantic import of this particle is that of being a contrastive implicature trigger.
- This particle affects the felicity of a sentence in a given context (and not its grammaticality) and has an interpretative role to play at the semantic-pragmatic interface of our computation mechanism.

THANK YOU