Factivity and nominalization: A study on 'mind-predicates' in Bangla

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Aims

- We focus on certain attitude verbs in Bangla, which are *complex predicates* (Lapointe, 1980; Alsina et al., 1997; Butt, 2005) in form, sharing the same preverb *mone* 'in mind', but different light verbs.
- These verbs include *mone howa* 'think', *mone pora* 'recall', *mone thaka* 'remember' and *mone rakha* 'to keep in mind'.
- We show that these verbs fall into different classes in terms of *factivity* (Kiparsky and Kiparsky, 1970; Karttunen, 1971).
- We also show that these differ from each other in terms of their ability to take nominalized clauses.
- Lastly, we explore if the light verbs play any role in their meaning construal as a whole.

- Part 1: 'mind-predicates' within factivity ontology
- Part 2: Nominalization and 'mind-predicates'
- Part 3: Role of light verbs in invoking (non)presuppositional readings of 'mind-predicates'
- Part 4: Conclusion.

What is factivity?

As Kiparsky and Kiparsky (1970) mentions, a predicate F is *factive* if and only if Fφ *presupposes* the truth of φ; otherwise *non-factive*.

(a) Batman *knows/realizes* that Gotham city is in danger.

(b) Batman *believes/claims* that Gotham city is in danger.

- In sentence (a), *know*, *realize* presupposes the truth of its complement clause *i.e.* Gotham city is in trouble. Thus, these are factives.

- In sentence (b), *think*, *claim* do not pressupose so. They are non-factives.

- In the former case, the complement is true in the actual world, while the latter one lacks this property.

(1) Rahuler   mone   hoy   je   Ram mithye bolechilo, [kintu
Rahul.GEN mind.LOC happen.PRS.3 that Ram lie   tell.PST.3, but
Ram mithye boleni].
Ram lie   tell.PST.NEG.3

'Rahul thinks that Ram$_i$ lied, but he$_i$ didn't.'
(It does not entail that 'Ram lied'.)

- *mone howa* does not entail that Ram lied in the actual world.
- The speaker might disagree with what Rahul, the attitude subject here, is thinking (see the *but*-clause).
- The embedded clause is compatible only with the *doxastic alternatives* of Rahul, not with the speaker.
- $[\![\text{mone howa}]\!]^{c;w,t,j} = \lambda p_{\langle s,\langle i,et\rangle\rangle} \lambda x_e.[\forall \langle w',t',z\rangle \in \text{Dox}_{w,t,x} : p(w')(t')(z) = 1]$
- The 'judge' (j) of the embedded clause (p) of *mone howa* comes out to be the attitude subject, with respect to which p holds true (Stephenson, 2007).

(2) Rahul(er)   mone   pore/ache/rekheche   je   Ram mithye
     Rahul(GEN) mind.LOC fall.PRS.3/be.PRS.3/keep.PST.3 that Ram lie
     bolechilo, #[kintu Ram mithye boleni].
     tell.PST.3, #[but   Ram lie   tell.PST.NEG.3

     'Rahul recalls/remembers/kept in mind that Ram$_i$ lied, #[but he$_i$ didn't].'
     (It does entail that 'Ram lied'.)

- *mone pora/thaka/rakha* entail that Ram lied in the actual world.
- The speaker cannot disagree with what Rahul, the attitude subject here. (see the incompatibility of *but*-clause).
- The embedded clause is compatible with *epistemic alternatives* of both Rahul and the speaker.
- $[\![\text{mone pora/thaka/rakha}]\!]^{c;w,t,j} = \lambda p_{\langle s,\langle i,et\rangle\rangle}\lambda x_e.[\forall\langle w',t',z\rangle \in \text{Epist}_{w,t,x} : p(w')(t')(z) = 1 \wedge \forall\langle w'',t'',y\rangle \in \text{Epist}_{w,t,sp} : p(w'')(t'')(y) = 1]$
- The embedded clause p is true from the perpectives of both attitude subject and the speaker.

Conversational implicatures of 'mind-predicates' and presupposition survival

Presuppositions can be cancelled by inconsistent conversational implicatures (Huang, 2007).

- In case of *mone pora/thaka/rakha*, they conversationally implicate truth of their complement clauses.
  - *Rahuler mone pore/ache je Ram mithye bolechilo.*
    +> Ram mithye bolechilo. (p)
  - If we take p as our presupposition, it comes out consistent with what these predicates conversationally implicate. Thus, the presupposition p is retained.
  - *Rahuler mone pore/ache je Ram mithye bolechilo.*
    >> Ram mithye bolechilo. (p).
- But, *mone howa* does **not** conversationally implicate the truth of its embedded clause (p).
  - It conversationally implicates either p or $\neg p$.
  - *Rahuler mone hoy je Ram mithye bolechilo.*
    $\neg$ >> Ram mithye bolechilo.

Nominalization of the embedded clause and compatibility with 'mind-predicates'

We check which of these 'mind-predicates' make sense if the embedded clause is nominalized; we check which of these predicates are compatible with gerundive complements.

(3) *[Ramer   mithye bolata]   Rahuler   mone   hoy.
Ram.GEN lie   tell.GER.CLF Rahul.GEN mind.LOC happen.PRS.3
Intended: Rahul thinks that Ram lied'.

(4) [Ramer   mithye bolata]   Rahul(er)   mone
Ram.GEN lie   tell.GER.CLF Rahul.(GEN) mind.LOC
pore/ache/rekheche.
fall.PRS.3/be.PRS.3/keep.PST.3
'As for [Ram's telling lie]$_i$, Rahul recalls/remembers it$_i$./kept it$_i$ in mind.'

- Non-factive *mone howa* does **not** allow nominalized embedded clauses.
- Factive *mone pora/thaka/rakha* **allow** them.

- Not only *mone howa*, we found other non factives like *biswas kora* 'believe', *dabi kora* 'claim' *etc.* which behave the same way *mone howa* does.
  - a. ??[Ramer mithye bolata] Rahul biswas korechilo.
    Intended: 'Rahul believed that Ram lied'.
  - b. ??[Ramer mithye bolata] Rahul dabi korechilo.
    Intended: 'Rahul claimed that Ram lied'.
- Other factives such as *bujhte para* 'realize', *jante para* 'come to know' *etc.* also allow their embedded clauses to get nominalized.
  - a. [Ramer mithye bolata] Rahul bujhte perechilo.
    'Rahul realized that Ram lied'.
  - b. [Ramer mithye bolata] Rahul jante perechilo.
    'Rahul came to know that Ram lied'.

Generalized pattern

Class	Verbs	Embedded clause	Nominalized clause
Class 1	*mone howa* etc.	+	−
Class 2	*mone pora* etc.	+	+

Is there any underlying semantic reason behind this syntactic observation?

- Class 1 verbs take embedded clauses, which are not presupposed.
- Class 2 verbs take both embedded and nominalized clauses, which are presupposed.
- This (non)presuppositionality is not intrinsic either to the embedded or to the nominalized clauses.
- It is the semantics of 'mind-predicates' which is crucial to impose (non)presuppositionality to both types of clauses.

The role of light verbs in invoking (non)presuppositional readings of 'mind-predicates'

As mentioned by Kastner (2015), non-factive verbs introduce new ideas to discourse, while complements of factives exist in the Common Ground (CG) (see Stalnaker, 2002).

- $[\![$mone howa$]\!] =$
  $\lambda w_s \lambda p_{\langle s,t \rangle} \lambda x_e . [\text{mone howa}(x, p, w) \wedge p \in \text{CG'} - \text{CG}]$, where CG $\subset$ CG'.
    - We are assuming here that no one objects to p.

- $[\![$mone pora/thaka/rakha$]\!] =$
  $\lambda w_s \lambda p_{\langle s,t \rangle} \lambda x_e . [\text{mone pora/thaka/rakha}(x, p, w) \wedge p \in \text{CG} \wedge p(w) = 1]$

We now explore the role of light verbs *viz. howa* 'happen', *pora* 'fall', *thaka* 'exist' *etc.* construing their (non)presuppositional meanings.

The role of light verbs in invoking (non)presuppositional readings of 'mind-predicates'

Let's look at the following to see the difference between *howa* 'happen' and *pora* 'fall'.

(5) megh theke brishti hoy.
     cloud from rain   happen.PRS.3
     'It rains from cloud'. (Lit. Rain happens from cloud.)

(6) megh theke brishti pore.
     cloud from rain   fall.PRS.3
     'It rains from cloud'. (Lit. Rain falls from cloud.)

- In the former sentence, it seems that *rain* is transformed from cloud, while in the latter it falls from cloud.
- It seems that the object of *happen* does not exist before the event time, but the object of *fall* pre-exists before the event of falling.
- The objects of *exist* and *keep* behave the same way the object of *fall* does.

(Non)existence in invoking (non)presuppositional readings of 'mind-predicates'

- What is happening in an attitude subject's mind for an interval t does not exist prior to the beginning of t *i.e.* the event time of *happen.*

- $[\![$Rahuler mone hoy je Ram mithye bolechilo$]\!]$ =
  $\lambda t_i \lambda w_s. \exists x[\text{happen-in-mind-of}(x, \text{Rahul}, w, t) \wedge \neg \exists t' \propto t.\text{EXIST}(x, w, t')$
  $\wedge \text{F}_{\text{CONT}}(x)(t)(w) = \lambda w'.\text{Ram lied in } w']$

  - $\propto (t_i, t_j)$ means t_i has begun before t_j and abuts t_j (Krifka, 2000).
  - The partial function F_{CONT} takes an individual x in a world w at an interval t and returns back the set of worlds compatible with that individual in w at t (Moulton, 2009, 2015).
    - $\text{F}_{\text{CONT}}(x)(t)(w) = \lambda w'_s.[w'$ is compatible with x at t in $w]$

- Some content noun x happens in Rahul's mind for an interval t in w, and there is no interval abutting t where x exists in that w.

- The non existence of content x before event time corresponds to the non presuppositional nature of *mone howa* 'think' (Lit. 'happen in mind').

(Non)existence in invoking (non)presuppositional readings of 'mind-predicates'

- What is falling/existing in an attitude subject's mind pre-exists before the beginning of event interval t.
- The object of *fall, exist* exists at some interval abutting the event interval.
- $[\![$Rahuler mone pore/ache je Ram mithye bolechilo$]\!]$ = $\lambda t_i \lambda w_s. \exists x[\text{fall/exist-in-mind-of}(x, \text{Rahul}, w, t) \wedge \exists t' \propto t.\text{EXIST}(x, w, t') \wedge F_{\text{CONT}}(x)(t)(w) = \lambda w'.\text{Ram lied in } w' \wedge w \in F_{\text{CONT}}(x)(t)(w)]$
- The existence of content x before event time corresponds to the presuppositional nature of *mone pora/thaka* 'recall/remember' (Lit. 'fall/exist in mind').

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Conclusion

- We sum up the classification of 'mind-predicates' in terms of factivity, and a relation between factivity and nominalized clauses is shown up. We also dig into the role of light verbs in construing their (non)presuppositional nature.

- These 'mind-predicates' differ from each other in terms of their selection of clause types *i.e.* whether they are declarative or interrogative.

- As per Lahiri (2002)'s classification, *mone howa* is *anti-rogative i.e.* it embed only declaratives, not questions, while rest of the 'mind-predicates' are *responsive i.e.* they embed both declaratives and questions.

- Our future work also includes exploring the roles of light verbs in their clause selectional restrictions.

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