

How light verbs shed light on attitude building

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1. Introduction

Speakers often report on the mental states or communicative acts of individuals, *i.e.* what they believe, want, hope, say etc. (Pearson to appear). The individual whose states or acts are reported is called the *attitude holder*, and the whole clause can be tagged as an *attitude report*. This paper explores the contribution of light verbs in building certain attitude reports in Bangla (*aka* Bengali), an Indo-Aryan language. We pick up certain Bangla attitude verbs that are *complex predicates* (Butt 1995, 2005, a.m.o.) in nature. Intriguingly, these attitude verbs share the same preverb and differ from each other with respect to the light verbs they contain. These verbs which have the preverb *mone* ‘in mind’ include instances such as *mone hO-* ‘think’, *mone pOR-* ‘remember’, *mone ach-* ‘exist in memory/mind’, *mone rakh-* ‘keep in memory/mind’ etc. Since preverbs provide the main semantic content of the whole predicate (Lazard 1957), and all these verbs are related to attitude holder’s cognition, we will use the term ‘*mind-verb*’ to refer to them hereafter. Out of these *mind-verbs*, some are presuppositional¹ and some are not. Hence, the attitude reports differ from each other. In this paper, we explore the question of what role the light verbs *viz.* *hO-* ‘happen’, *pOR-* ‘fall’, *ach-* ‘exist’ and *rakh-* ‘keep’ play in triggering the difference in attitude reports. We propose that the restriction of prior existence associated with the Theme arguments of *pOR-*, *ach-*, and *rakh-* leads to the presuppositional behavior of *mone pOR-*, *mone ach-* and *mone rakh-*, while the lack of it in *hO-* cannot do the same for *mone hO-* which is a non-presuppositional verb.

2. Classifying the *mind-verbs*: Presuppositional and Non-presuppositional

Kastner’s (2015) view on attitude verbs roots back to the classification of Cattell (1978) which is the following.

- (1) a. *Volunteered-stance*: The embedded clause denotes a new idea.
John {thought/believed/claimed/supposed/assumed} that Mary committed the murder.
- b. *Non-stance*: The embedded clause denotes a fact.
John {recalled/knew/regretted/realized/forgot} that Mary committed the murder.

¹ Following Kastner (2015), presuppositional verbs such as *deny* and *know* ‘presuppose the existence of a clausal discourse referent as their complement’.

c. *Response-stance*: The embedded clause denotes a familiar idea.

John {agreed/accepted/denied/confirmed/admitted} that Mary committed the murder.

The latter two classes, following Kastner (2015), are called presuppositional, while the former one is non-presuppositional in nature. Kastner called the third type presuppositional, since the clause embedded by the response-stance verbs refers to a familiar idea in discourse. Let's see (2) where the clausal extension *No one told him...* sounds inappropriate, because an attitude holder cannot agree/accept/deny/confirm/admit something which is not introduced before in discourse. On the other hand, the volunteered-stance verbs introduce a new idea in discourse. That is why the clausal extension is fine in (3) where the embedded clause is embedded by any of the volunteered-stance verbs, referring to new information that Mary committed the murder.

(2) John {agreed/accepted/denied/confirmed/admitted} that Mary committed the murder. #No one told him before that Mary committed the murder.

(3) John {thought/believed/claimed/supposed/assumed} that Mary committed the murder. No one told him before that Mary committed the murder.

The second type of predicates, *i.e.* the non-stance class is also presuppositional, and additionally it presupposes the truth of the complement clause. This class is tagged as *factive* (Kiparsky & Kiparsky 1970), since it refers to a presupposed fact. Let's consider the following.

(4) John {recalled/knew/regretted/realized/forgot} that Mary committed the murder. #But, Mary did not commit the murder.

The *but*-extension is inappropriate in (4), because the embedded clause is presupposed to be true and, thus, cannot be defeated. Thus, the collection of factive verbs turns out to be a proper subset of the set of presuppositional verbs. The complement of a response-stance verb refers to an idea which exists in the prior discourse, while that of a non-stance (factive) verb refers to a familiar idea that is also true in the actual world. Using the idea of Common Ground (Stalnaker 2002), it can be summarized that the complement of both the response-stance and non-stance verbs refers to the information existing in Common Ground, while the clause embedded by a volunteered-stance (non-factive) predicate introduces a new idea to the Common Ground.

Following the above line of classification, we now categorize our *mind*-verbs with respect to their ability to presuppose their complements. In other words, our classification of them focuses on whether they can presuppose the existence of their complements in prior discourse. Let's witness the following².

(5) onu-r **mon-e** **hOY** je rahul khun-Ta koreche, jodio keu
Anu-GEN mind-LOC happen.PRS.3 that Rahul murder-CLF do.PRF.PRS.3 though none
take bOl-e ni je rahul khun-Ta koreche.
she.ACC tell-3 PRF.PST.NEG that Rahul murder-CLF do.PRF.PRS.3
'Anu thinks that Rahul committed the murder, though no one told her that Rahul committed the murder.'

(6) onu-r **mon-e** **pOR-e** je rahul khun-Ta koreche, #kintu rahul
Anu-GEN mind-LOC fall-PRS.3 that Rahul murder-CLF do.PRF.PRS.3 but Rahul
khun-Ta kOr-e ni.
murder-CLF do-3 PRF.PST.NEG

² Throughout this paper, we take those cases where the matrix attitude verbs in Bangla get the nuclear pitch accent while embedding propositions.

‘Anu remembers that Rahul committed the murder, #but Rahul did not commit it.’

- (7) onu-r **mon-e ach-e** je rahul khun-Ta koreche, #kintu rahul
Anu-GEN mind-LOC exist-PRS.3 that Rahul murder-CLF do.PRF.PRS.3 but Rahul
khun-Ta kOr-e ni.
murder-CLF do-3 PRF.PST.NEG

‘Anu has it in her mind that Rahul committed the murder, #but Rahul did not commit it.’

- (8) onu **mon-e rekheche** je rahul khun-Ta koreche, #kintu rahul
Anu mind-LOC keep.PRF.PRS.3 that Rahul murder-CLF do.PRF.PRS.3 but Rahul
khun-Ta kOr-e ni.
murder-CLF do-3 PRF.PST.NEG

‘Anu has kept it in her mind that Rahul committed the murder, #but Rahul did not commit it.’

The sentence in (5) exhibits a case where the *mind*-verb *mone hO*- ‘think’ embeds the proposition that Rahul committed the murder. The *though*-clause after it sounds completely fine, because the complement of the concerned *mind*-verb introduces new information to discourse. Therefore, this verb can be diagnosed as a volunteered-stance one which gives rise to no factivity at all. As opposed to that, the rest of the *mind*-verbs are presuppositional and factive, because the *but*-clause after (6)-(8) sounds weird. The weirdness of it tells us that the *mind*-verbs in the latter three sentences presuppose the truth of their complements. The complements of them denote already-existing referents holding true in the actual world, while the complement of *mone hO*- cannot refer to anything which is already-existing in the Common Ground. Thus, as shown empirically, the above-mentioned Bangla *mind*-verbs are not similar in terms of their ability to presuppose their complements. Only *mone hO*- is non-presuppositional, and the other three verbs *viz. mone pOR*- ‘remember’, *mone ach*- ‘exist in mind’, *mone rakh*- ‘keep in mind’ are presuppositional and also factive.

3. The puzzle

As mentioned in Section 1, these *mind*-verbs are complex predicates. They share the same preverb *mone*, which is a postpositional phrase (PP), consisting of a noun *mon* ‘mind’ and an inflection *-e* which is the locative marker. Thus, the PP in concern translates into ‘in mind’. Let’s now dive into what the lexical forms of the *mind*-verbs mean literally. The verb *mone hO*- literally translates into ‘happen in mind’ with the light verb *hO*- to mean ‘happen’. So, the locus of happening something is the attitude holder’s mind. In the similar way, *mone pOR*- means ‘fall in mind’³ where the light verb *pOR*- means ‘fall’, while *mone ach*-, *mone rakh*- consist of the light verbs *ach*- and *rakh*- that correspond to ‘exist’ and ‘keep’ respectively. Thus, *mone ach*- literally corresponds to ‘exist in mind’, and *mone rakh*- denotes ‘keep in mind’ in the literal sense. In case of the *mind*-verbs, it is noted that the light verbs refer to different events that take place at the same locus which is the attitude holder’s mind.

The central question of this paper is to explore whether the light verbs play any role in triggering the (non)presuppositional semantics of the *mind*-verbs. Our focus of this paper is on the concerned light verbs to investigate their impacts on the (non)presuppositionality of the attitude verbs in concern. More specifically, we explore the contribution of *hO*- ‘happen’ in invoking the non-factivity in *think* and that of *pOR*- ‘fall’, *ach*- ‘exist’ and *rakh*- ‘keep’ in the invocation of

³ Bondarenko (in prep.) also noted that Balkar language lexicalizes *remember* as ‘dropping in one’s memory’.

presuppositionailty associated with *remember*, *have in mind* and *keep in mind* in Bangla.

4. The light verbs as main verbs

This section draws our attention to the semantics of the light verbs that are in our focus. In order to unfold what kind of role they play in attitude making, we need to consider them when used as main verbs in sentences. The verb *hO-* is ambiguous between two readings in Bangla. Let's consider the following.

(9) rahul amar bhai **hOY**.
 Rahul I.GEN brother COP.PRS.3
 'Rahul is my brother.'

(10) megh theke briSTi **hOY**.
 cloud from rain happen.PRS.3
 Lit. 'Rain happens from cloud.'

In the former sentence, the verb *hO-* refers to a copulative interpretation. It acts like an identity function which, following Heim & Kratzer (1998), is semantically vacuous. Let's call this copulative *hO-* or *hO_{c-}* that has the interpretation as in what follows. It takes an e-type argument x and returns us that x.

(11) $[[hO_{c-}]] = \lambda x_e.[x]$

On the other hand, the latter does not refer to any copulative sense of *hO-*. Rather, here it denotes an event, an event of happening. So, the sentence means that rain happens from the cloud. This reading of this concerned verb has a totally different interpretation. It has an argument which is the Theme of the event of happening. In (10), the Theme is *rain* which happens from the cloud. The intriguing fact about its Theme is that it does not exist prior to the event of happening. The sentence (10) depicts a story of transformation of rain from the cloud. It conveys us a sense where the Theme *rain* does not exist before the event time. Let's use *hO_{h-}* to denote its different status compared to its copulative avatar. We argue that this type of reading is involved in *mone hO-* 'think', which literally gives us the sense of something happening in mind. We propose that this kind of interpretation can be taken care of by the following formulation, relative to an assignment function g and a world w.

(12) $[[hO_{h-}]^{w,g} = \lambda x_e \lambda e_v. \text{happen}_w(x)(e)$

It takes an individual x of type e and an event argument of type v. It returns true iff e is the event of happening of x in w. This individual argument is the Theme of the verb in concern. Verbs like *pOR-* 'fall', *ach-* 'exist' and *rakh-* 'keep' differ from *hO_{h-}* in a sense that the Theme arguments of them do exist prior to the relevant event times. Let's consider the following data.

(13) apel-Ta gach theke **poRlo**.
 apple-CLF tree from fall.PST.3
 'The apple fell from the tree.'

(14) boi-Ta bEg-e **ache**.
 book-CLF bag-LOC exist.PRS.3
 Lit. 'The book exists in the bag.'

(15) rahul boi-Ta bEg-e **rakhlo**.
 Rahul book-CLF bag-LOC keep.PST.3
 'Rahul kept the book inside the bag.'

In case of the above three verbs, the Theme arguments of them must exist before the beginning of the events. In (13), the Theme *apple* needs to exist before the event of falling.

So is the case with the Theme *book* in (14) and (15), where it exists before the events of existing and keeping respectively. Verbs impose restrictions on their arguments, and these restrictions are realized at the syntax-semantic interface (à la Diesing 1992). As mentioned in Bondarenko (in prep.), verbs of destruction (16) and verbs of use (17) require their Theme arguments to pre-exist the events, whereas verbs of creation (18) do not need that.

(16) John broke the glass, #but there was no glass. → There existed a glass before the time of breaking it.

(17) John read the book, #but there was no book. → There existed a book before the reading event.

(18) John wrote an essay. → There did not exist an essay before the event of John's writing it.

This kind of prior existence restriction associated with the Theme arguments in (16), (17) can be noted in case of the verbs such as *pOR-* 'fall', *ach-* 'exist' and *rakh-* 'keep'. We argue that the prior existence restriction is semantically encoded in these verbs. Let's take *pOR-* which has the following denotation in *w*.

(19) $\llbracket pOR-\rrbracket^{w,g} = \lambda x_e \lambda e_v: LB(\tau(x)) < LB(\tau(e)).fall_w(x)(e)$

Following Krifka's (1989, 1992, 1998) insight, we defined a temporal trace function τ from the set of entities D_e to set of intervals I . We also base on Bondarenko (2019) in assuming that the set of eventualities is properly included in the set of entities (e.g. $D_v \subset D_e$). The trace function gives us the interval where an individual or an event exists. The semantics in (19) states that the concerned verb in *w* takes an individual *x* of type *e* and a *v*-type event. It is defined if the left boundary (LB) of the interval corresponding to the existence of *x* precedes (<) that of the interval corresponding to the existence of *e*. It returns true iff *e* is the event of falling of *x* in *w*. The presupposition component in (19) refers to the prior existence restriction mentioned above. It means that the Theme of *pOR-* needs to pre-exist the running time of the falling event. This same sort of restriction can be noted in the verbs *ach-* and *rakh-* also. We argue in the next section that this prior existence restriction which these light verbs bear is responsible for making the concerned *mind*-verbs presuppositional.

5. The light verbs influence the semantics of the attitude verbs

Though the prior existence restriction leads to the presuppositionality of the attitude verbs in concern, this kind of restriction is not exactly equivalent to what is meant by presuppositional inference (cf. Bondarenko in prep.). Unlike presuppositional inference, prior existence restriction does not project out of negation.

(20) John did not break the glass, because there was no glass at all.

We assume that this kind of restriction is imported from the concerned light verbs in case of the verbs like *mone pOR-* 'remember', *mone ach-* 'have in memory/mind', *mone rakh-* 'keep in mind', while *mone hO-* 'think' lacks this restriction in its denotation. The following is the denotation of *mone pOR-* in world *w*, relative to an assignment function *g*.

(21) $\llbracket mone pOR-\rrbracket^{w,g} = \lambda x_e \lambda e_v: LB(\tau(x)) < LB(\tau(e)).remember_w(x)(e)$

It refers to a decompositional denotation (Kratzer 2016; Bogal-Allbritten 2017; Elliott 2017; Özyıldız 2019, a.m.o.) of Bangla *remember*. This transitive attitude verb in *w* takes an *e*-type

individual x , *i.e.* the res-argument⁴, and an event argument of type v . It presupposes that the res pre-exists the running time of remembering x , and it returns true iff e is the event of remembering about x in w . We argue that the presupposition component in (21) is imported from the light verb *pOR-* ‘fall’. The other two *mind*-verbs, *viz.* *mone ach-* ‘have in mind’ and *mone rakh-* ‘keep in mind’ also maintain this prior existence restriction in their semantics. We postulate that this restriction associated with the res-arguments of these concerned *mind*-verbs is not available in *mone hO-* ‘think’ due to the semantics of the light verb *hO-* ‘happen’ which does not require its Theme to pre-exist the relevant event. We propose the following denotation of *mone hO-* in w .

$$(22) \llbracket \textit{mone hO-} \rrbracket^{w,g} = \lambda x_e \lambda e_v. \textit{think}_w(x)(e)$$

As is evident in (22), no presupposition component is available in the denotation of *mone hO-* in w . It takes an individual x , an event e such that e is the event of thinking about x in w . We exhibit that this semantics of *mone hO-* always gives us non-presuppositional or volunteered-stance reading, while the denotation like (21) can give rise to presuppositionality.

Bangla has two sorts of embedded finite clause, *i.e.* *je*-clause and *bole*-clause (Singh 1980; Bhattacharya 2001; Bayer et al. 2005, a.m.o.). The former has clause-initial complementizer, while in the latter the complementizer *bole* is clause-final. In the following sub-sections, we zoom in on the (non)presuppositional readings that the Bangla *mind*-verbs produce while embedding different types of finite clauses, and we compositionally formalize the phenomena at the syntax-semantics interface.

5.1 Non-presuppositional reading with *mone hO-* ‘think’

As shown in Section 2, *mone hO-* gives rise to non-presuppositional reading with a *je*-clause (5). This verb is non-presuppositional also while embedding a *bole*-clause.

- (23) *onu-r rahul khun-Ta koreche bole mon-e hOY, jodio*
 Anu-GEN Rahul murder-CLF do.PRF.PRS.3 BOLE mind-LOC happen.PRS.3 though
keu take bOl-e ni je rahul khun-Ta koreche.
 none she.ACC tell-3 PRF.PST.NEG that Rahul murder-CLF do.PRF.PRS.3
 ‘Anu thinks that Rahul committed the murder, though no one told her that Rahul committed the murder.’

In this section, we offer a compositional treatment of how this attitude verb produces such reading with the two different types of clause embedded. As mentioned in Moulton (2019), Bangla *je*-clauses are of type $\langle e, t \rangle$, referring to predicates of individuals which are contentful (see Moulton 2009, 2015). Viewing the complementizer *je* as an embedder which is built on contentful individuals gets its foothold from the fact that this type of clauses can be modified by content nouns like *news*, *story*, *rumor* etc. Let’s consider the sentence below.

- (24) *ami ei kOtha-Ta jan-i je rahul khun-Ta koreche.*
 I.NOM this talk-CLF know-PRS.1 that Rahul murder-CLF do.PRF.PRS.3
 ‘I know this talk/story/news that Rahul committed the murder.’

In the above data, the embedded *je*-clause is modified by the content noun *ei kOthaTa* ‘this

⁴ The res-argument of an attitude verb is the topic of the attitude in concern. Thus, it denotes the ‘aboutness’ of the attitude report (see Heim 1994; Rawlins 2013; Deal 2018, a.m.o.).

talk'. The compatibility of the content nouns with *je*-clauses leads us to claim that this complementizer has the denotation as in (25). In world *w*, it takes a propositional argument of type $\langle s,t \rangle$ and an *e*-type contentful individual such that the content (CONT) of *x* in *w* refers to the proposition *p*. As a result, the embedded *je*-clause in (24) will have the denotation as what is shown in (26), where it refers to the set of contentful individuals whose content is denoted by the proposition that Rahul committed the murder.

$$(25) \llbracket je \rrbracket^{w,g} = \lambda p_{\langle s,t \rangle} \lambda x_e. \text{CONT}_w(x) = p$$

$$(26) \llbracket je \text{ rahul khunTa koreche} \rrbracket^{w,g} = \lambda x_e. \text{CONT}_w(x) = \lambda w'. \text{Rahul did the murder in } w'$$

As opposed to it, a *bole*-clause cannot have a nominal correlate (Bayer et al. 2005; Moulton 2019, a.m.o.). It is not compatible with a content noun as shown below.

(27) *ami ei **kOtha**-Ta rahul khun-Ta koreche **bole** jan-i.

I.NOM this talk-CLF Rahul murder-CLF do.PRF.PRS.3 BOLE know-PRS.1

Intended: 'I know this talk/news/story that Rahul committed the murder.'

This type of embedded clause cannot be correlated to a content noun because of the nature of the final complementizer *bole*. According to Kratzer (2013), some clausal embedders, apart from the contentful individuals, are based on contentful eventualities of type *v* (Hacquard 2006; Moulton 2008; Elliott 2018). As suggested in Moulton (2019), like Korean *ko*-, Japanese *to*-, Zulu *ukuthi*, Bangla *bole* is built on contentful eventualities instead of individuals, having the denotation as in what follows.

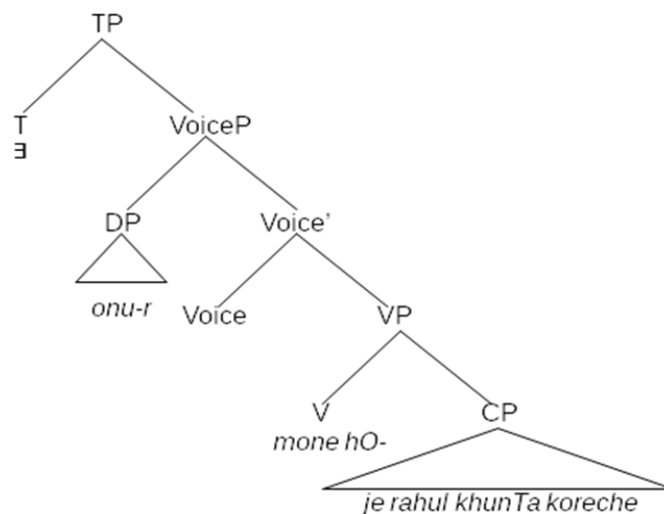
$$(28) \llbracket bole \rrbracket^{w,g} = \lambda p_{\langle s,t \rangle} \lambda e_v. \text{CONT}_w(e) = p$$

This *verby embedder* (see Moulton 2019) in *w* takes a propositional argument and a contentful event variable *e* of type *v* such that the content of *e* is equal to that *p*. Following a Functional Application (henceforth FA), the embedded *bole*-clause in (23) gets the following interpretation in world *w*. It denotes the predicate of eventualities that bear the propositional content that Rahul committed the murder.

$$(29) \llbracket rahul khunTa koreche bole \rrbracket^{w,g} = \lambda e_v. \text{CONT}_w(e) = \lambda w'. \text{Rahul did the murder in } w'$$

We are now in a position to propose the compositional pictures of *mone hO*- 'think' embedding these two types of finite clause. Let's first get into the picture where this verb embeds a *je*-clause. We propose the following LF that accounts for (5) without the *though*-extension.

(30)



We can resort to Restrict (Chung & Ladusaw 2004) to compose the attitude verb of type $\langle e, \langle v, t \rangle \rangle$ with the *je*-clause of type $\langle e, t \rangle$. As a result, the VP in *w* will have the following denotation.

$$(31) \llbracket \text{VP} \rrbracket^{w,g} = \lambda x_e \lambda e_v. \text{think}_w(x)(e) \wedge \text{CONT}_w(x) = \lambda w'. \text{Rahul committed the murder in } w'$$

At this stage of derivation, we need to assume that the individual argument in VP gets existentially closed off in order to compose with the Voice head via Event Identification or EI (Kratzer 1996). The Voice head introduces the attitude holder or the experiencer (EXP), having the denotation as in what follows.

$$(32) \llbracket \text{Voice} \rrbracket^{w,g} = \lambda z_e \lambda e_v. \text{EXP}_w(z)(e) \quad (\text{attitude holder is introduced})$$

In *w*, it takes an individual *z* and a *v*-type event such that *z* is the experience of the event *e*. This head composes with the existentially closed VP by EI, resulting in the following interpretation of Voice' in *w*.

$$(33) \llbracket \text{Voice}' \rrbracket^{w,g} = \lambda z_e \lambda e_v. \exists x. \text{think}_w(x)(e) \wedge \text{EXP}_w(z)(e) \wedge \text{CONT}_w(x) = \lambda w'. \text{Rahul did the murder in } w' \quad (\text{EI, Voice, VP})$$

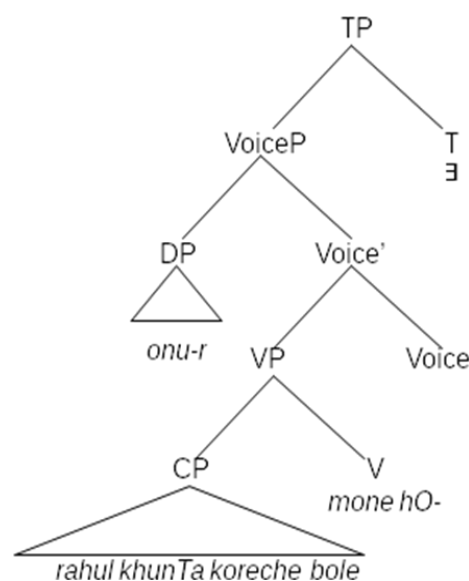
Now, an FA is applied to arrive at the interpretation of VoiceP. Following Kratzer (1996), we also assume that the T head existentially closes off the event variable introduced by the Voice projection. Thus, the TP will hold true in *w* iff the following condition is met.

$$(34) \exists x \exists e. \text{think}_w(x)(e) \wedge \text{EXP}_w(\text{Anu})(e) \wedge \text{CONT}_w(x) = \lambda w'. \text{Rahul did the murder in } w'$$

The interpretation of TP in *w* tells us that there exist an individual *x* and an event *e* such that *e* is the event of thinking about *x* in *w*, and Anu is the experiencer of *e* in *w*, and the content of *x* in *w* is the proposition that Rahul committed the murder. Though the content of the res-argument of thinking corresponds to the embedded proposition, no sign of presuppositionality is noted in (34).

We now analyze how it looks at the interface when this attitude verb takes the *bole*-clause as its complement, as shown in (23). We propose the following LF of (23), keeping aside the *though*-clause.

$$(35)$$



While composing the attitude verb of type $\langle e, \langle v, t \rangle \rangle$ with the *bole*-clause of type $\langle v, t \rangle$, we can make use of EI to arrive at the denotation of the VP which is like below, given an assignment function g and a world w .

$$(36) \llbracket \text{VP} \rrbracket^{w,g} = \lambda x_e \lambda e_v. \text{think}_w(x)(e) \wedge \text{CONT}_w(e) = \lambda w'. \text{Rahul committed the murder in } w'$$

The individual x is assumed to get existentially closed off to compose with the Voice head by another EI. As a consequence, the Voice' projection ends up having the denotation as (37).

$$(37) \llbracket \text{Voice}' \rrbracket^{w,g} = \lambda z_e \lambda e_v. \exists x. \text{think}_w(x)(e) \wedge \text{EXP}_w(z)(e) \wedge \text{CONT}_w(e) = \lambda w'. \text{Rahul did the murder in } w'$$

Now, it's the time to apply an FA to reach at VoiceP. The T head then existentially closes off the event variable in VoiceP, yielding up the following interpretation of TP in w .

$$(38) \exists x \exists e. \text{think}_w(x)(e) \wedge \text{EXP}_w(\text{Anu})(e) \wedge \text{CONT}_w(e) = \lambda w'. \text{Rahul did the murder in } w'$$

Intriguingly, the existentially bound res-argument does not correlate to any lexical material, and the embedded clause is denoted by the content of the event of thinking. Thus, no presuppositional inference is drawn in this case either.

5.2 Composing *mone pOR*- 'remember', *mone ach*- 'have in memory' and *mone rakh*- 'keep in mind' with the finite clauses

We have shown earlier that these *mind*-verbs are presuppositional and, additionally, factive with the *je*-clause. Though the presuppositionality is semantically encoded in them, we argue that they are not inherently factive by themselves. These attitude verbs require their Theme arguments to pre-exist the events, but they cannot guarantee the truth of their contents. Let's consider the following sentences.

(39) *onu-r oi gujob-Ta mone pORe je rahul prem korto.*
 Anu-GEN that rumor-CLF mind.LOC fall.PRS.3 that Rahul love do.HAB.PST.3
 'Anu remembers that rumor that Rahul was in a relationship.'

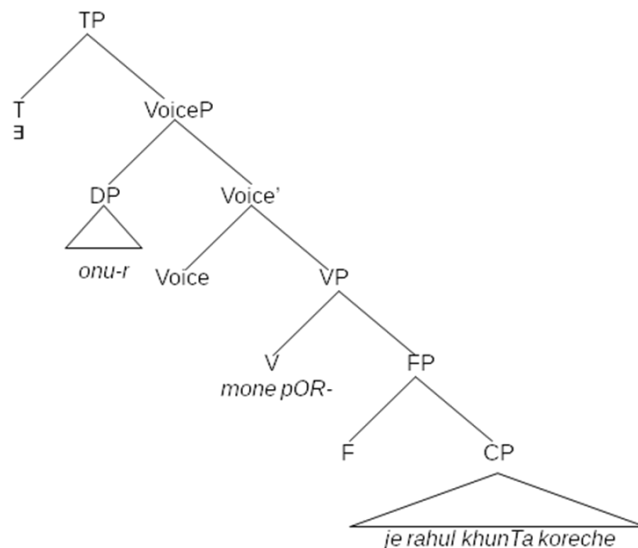
(40) *onu-r oi gujob-Ta mone ache je rahul prem korto.*
 Anu-GEN that rumor-CLF mind.LOC exist.PRS.3 that Rahul love do.HAB.PST.3
 'Anu has that rumor in her mind that Rahul was in a relationship.'

(41) *onu oi gujob-Ta mone rekheche je rahul prem korto.*
 Anu that rumor-CLF mind.LOC keep.PRF.PRS.3 that Rahul love do.HAB.PST.3
 'Anu has kept that rumor in her mind that Rahul was in a relationship.'

In (39)-(41), no factive inferences can be claimed to pop up, since the *je*-clause is modified by the content noun *gujob* 'rumor' that expresses doubtfulness towards the truth of the embedded proposition that Rahul was in a relationship. One cannot be certain about the truth of something which is a rumor. However, the concerned content noun *rumor* can be said to exist before the relevant event times. It means that the rumor that Rahul was in a relationship already existed beforehand, and the mental states of an attitude holder towards this are reported in these sentences. Thus, the presuppositionality is still available in the above three examples, though no trace of factivity comes to the fore due to the lexical semantics of the concerned content noun. Let's take the case of *mone pOR*- 'remember'. We argue that the semantics of it, as formulated in (21), can account for this phenomenon. Below is drawn the anatomy of the embedded *je*-clause, *i.e. je rahul prem korto* 'that Rahul was in a relationship' modified by the content noun *gujob* 'rumor'. The world variable is abstracted away in the following structure.

defined if the unique⁶ proposition p that is the content of x in w holds true in w . It returns true iff that individual has the property P . This operator gives the embedded clause a factive flavor. Now, we can propose the following LF of (6), excluding the *but*-clause after it.

(46)



Here, the attitude verb *mone pOR-* ‘remember’ takes the FP as its argument instead of the CP. Following an FA, the FP gets the denotation as below.

$$(47) \llbracket \text{FP} \rrbracket^{w,g} = \lambda x_e: \exists! p \in \text{CONT}_w(x) [p = \text{CONT}_w(x) \wedge p(w)]. \text{CONT}_w(x) = \lambda w'. \text{Rahul committed the murder in } w' \quad (\text{FA, F, CP})$$

Thus, FP presupposes that the proposition which is the content of the individual holds true in w . The $\langle e, \langle v, t \rangle \rangle$ -type verb now composes with this FP of type $\langle e, t \rangle$ via Restrict, yielding up the interpretation of VP in w as the following.

$$(48) \llbracket \text{VP} \rrbracket^{w,g} = \lambda x_e \lambda e_v: \text{LB}(\tau(x)) < \text{LB}(\tau(e)) \wedge \exists! p \in \text{CONT}_w(x) [p = \text{CONT}_w(x) \wedge p(w)]. \text{remember}_w(x)(e) \wedge \text{CONT}_w(x) = \lambda w'. \text{Rahul committed the murder in } w'$$

Now, the individual variable needs to get existentially closed off to compose with the Voice head by EI. The Voice' projection looks like below.

$$(49) \llbracket \text{Voice}' \rrbracket^{w,g} = \lambda z_e \lambda e_v. \exists x: \text{LB}(\tau(x)) < \text{LB}(\tau(e)) \wedge \exists! p \in \text{CONT}_w(x) [p = \text{CONT}_w(x) \wedge p(w)]. \text{remember}_w(x)(e) \wedge \text{EXP}_w(z)(e) \wedge \text{CONT}_w(x) = \lambda w'. \text{Rahul committed the murder in } w' \quad (\text{EI, Voice, VP})$$

At this stage of derivation, the subject DP saturates the individual variable z in (49) to reach at the VoiceP whose event variable, then, gets existentially closed off by the T head. The TP in w looks as in what follows.

$$(50) \llbracket \text{TP} \rrbracket^{w,g} = \exists x \exists e: \text{LB}(\tau(x)) < \text{LB}(\tau(e)) \wedge \exists! p \in \text{CONT}_w(x) [p = \text{CONT}_w(x) \wedge p(w)]. \text{remember}_w(x)(e) \wedge \text{EXP}_w(\text{Anu})(e) \wedge \text{CONT}_w(x) = \lambda w'. \text{Rahul committed the murder in } w' \quad (\text{Factive reading})$$

The above interpretation of TP turns out to be factive because in addition to the res-argument's pre-existence, it presupposes that the proposition that is the content of the res

⁶ Thematic uniqueness rules out the possibility that an individual can have more than one proposition as its content at a single point of time.

holds true in the actual world. The same compositional technique will apply to *mone ach-* ‘have in mind’ and *mone rakh-* ‘keep in mind’ when they embed the bare *je*-clauses, giving rise to factive inferences. The sentences in (7), (8) exhibit that. By contrast, no such factive operator is involved in case of *mone hO-* ‘think’, because it is a non-presuppositional verb that does not give rise to factivity while embedding a *je*-clause.

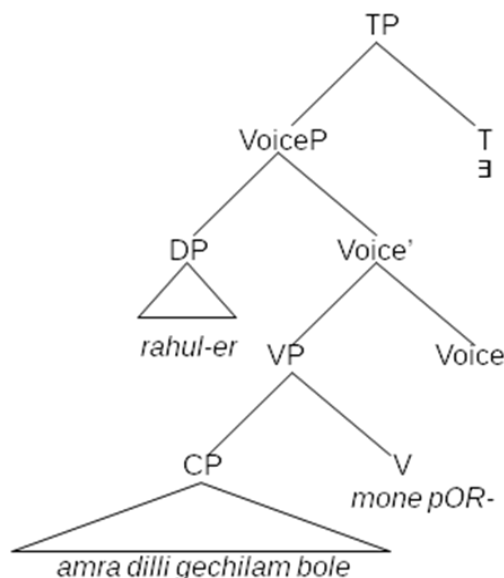
As for embedding the *bole*-clause, *mone pOR-* ‘remember’ does this. According to some native judgments, the following can be uttered under a context where Rahul remembers some stuff that had not occurred before in the actual world.

- (51) rahul-er amra dilli gechilam bole mone pORe, kintu amra
 Rahul-GEN we Delhi go.PRF.PST.1 BOLE mind.LOC fall.PRS.3 but we
 kOkhono dilli jai ni.
 ever Delhi go.1 PST.PRF.NEG

‘Rahul misremembers that we went to Delhi, but we never went there.’

It is quite evident that the above sentence is uttered to report the attitude holder’s false memory. Thus, *mone pOR-* can embed a *bole*-clause to indicate a case of false memory syndrome. Therefore, (51) denotes a non-factive use of Bangla *remember*. Keeping aside the *but*-extension, the following LF can be proposed to take care of (51).

- (52)



Since the *bole*-clause denotes properties of eventualities of type *v*, it identifies the event argument of the attitude verb by EI to get at the denotation of the VP. An existential closure over the individual argument of VP now takes place in order to compose it with the Voice head by another EI, and the subject DP saturates the individual argument of the Voice’ projection. The T head then existentially closes off the event variable introduced by VoiceP. Consequently, the TP in *w* gets the denotation as in what is formulated below.

- (53) $[[TP]]^{w,g} = \exists x \exists e: LB(\tau(x)) < LB(\tau(e).remember_w(x)(e) \wedge EXP_w(Rahul)(e) \wedge$
 $CONT_w(e) = \lambda w'.we \text{ went to Delhi in } w'$ (Non-factive reading)

The presupposition component is still present in (53). But, the Theme or the res-argument of the attitude verb does not correspond to any lexical material. Hence, no factivity is popped

up.

Unlike *mone pOR-* ‘remember’, the other two verbs, *viz. mone ach-* ‘have in memory/mind’ and *mone rakh-* ‘keep in mind’ are not compatible with the *bole*-clause.

(54) *rahul-er amra dilli gechilam bole mone ache.
Rahul-GEN we Delhi go.PRF.PST.1 BOLE mind.LOC exist.PRS.3
Intended: ‘Rahul has it in his mind that we went to Delhi.’

(55) */??rahul amra dilli gechilam bole mone rekheche.
Rahul we Delhi go.PRF.PST.1 BOLE mind.LOC keep.PRF.PRS.3
Intended: ‘Rahul has kept it in his mind that we went to Delhi.’

We argue that these two *mind*-verbs give rise to factivity in a stronger way than *mone pOR-* does. Let’s execute the conditional-test, as suggested by Karttunen (1971), to claim this.

(56) jodi amar pOre **mone pOre** je rahul mitthe bolechilo, tahole ami
if I.GEN later mind.LOC fall.PRS.3 that Rahul lie tell.PRF.PST.3 then I
SeTa Sobaike bolbo.
that all.ACC tell.FUT.1

‘If later I remember that Rahul lied, then I will tell that to everyone.’

(57) jodi amar pOre **mone thake**⁷ je rahul mitthe bolechilo, tahole
if I.GEN later mind.LOC exist.PRS.3 that Rahul lie tell.PRF.PST.3 then
ami SeTa Sobaike bolbo.
I that all.ACC tell.FUT.1

‘If later I have it in my mind that Rahul lied, then I will tell that to everyone.’

(58) jodi rahul pOre **mone rakhe** je onu tar Sathe kharap bEbohar
If Rahul later mind.LOC keep.PRS.3 that Anu he.GEN with bad behavior
korechilo, tahole o ar onur Sathe kOtha bolbe na.
do.PRF.PST.3 then he anymore Anu.GEN with talk tell.FUT.3 NEG
‘If later Rahul keeps it in his mind that Anu misbehaved with him, then he won’t talk to her anymore.’

Native speakers of Bangla have agreed upon the fact that in (56) it cannot be surely asserted that Rahul indeed lied. In contrary to this, in (57) the truth of the embedded proposition that Rahul lied is guaranteed. So is the case with (58), where the truth of the embedded clause that Anu misbehaved with Rahul is presupposed under the conditional context. Therefore, it is derived that both *mone ach-* and *mone rakh-* are strong factives, whereas *mone pOR-* is not. Since Bangla strong factives are not fine with the *bole*-clause (Kidwai 2014), we find both the sentences in (54), (55) weird in our system.

6. Conclusion

This paper focused on certain Bangla attitude verbs that are intriguing in a sense that they are complex predicates, sharing the same preverb *mone* ‘in mind’, but differing from each other in terms of the light verbs they carry. We called them *mind*-verbs. These *mind*-verbs also

⁷ According to the traditional Bangla grammar, the verbal form *ach-* is an incomplete one because it cannot be used in progressive and perfective forms. The complete counterpart of it is *thak-* ‘exist’ which is surfaced, when used in an antecedent of a conditional statement.

differ from each other with respect to their ability to invoke presuppositionality. In this paper, we questioned if the light verbs have any role to play in the invocation of this attitudinal difference, and we came up with a compositional framework that can account for how the semantics of the concerned light verbs becomes instrumental in imposing (non)presuppositionality on the attitude reports. We put our focus on the restrictions that the light verbs impose on their arguments, when used as main verbs in sentences. Intriguingly, we noted that some but not all of them require their Theme arguments to pre-exist the actual events. This prior existence restriction, we argue, is imported from the light verbs and applied to the topic or the res-arguments of some *mind*-verbs. This restriction associated with the Theme arguments of some of the *mind*-verbs leads them to invoke presuppositionality (cf. Bondarenko 2019, in prep.), while the lack of this type of restriction in some explains the crux of non-presuppositionality.

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