

Factivity Alternation of Attitude ‘know’ in Korean, Mongolian, Uyghur, Manchu, Azeri, etc. and Content Clausal Nominals

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Abstract

It was discovered in the literature (Lee 1978, 1999; Kiefer 1978, Özyildiz 2017, Lee 2017) that the epistemic attitude report ‘know’ in Korean, Turkish, and Hungarian reveal factivity alternation and this rare phenomenon has been recently investigated also in such Altaic languages as Mongolian, Uyghur, Manchurian, and Azerbaijan, as first reported here. The attitude report ‘know’ in most languages so far known typically selects for a factive complement (Kiparsky and Kiparsky 1970, Hintikka 1975 a.o.). One generalization made is that nominalized complements tend to convey a factive reading, while non-nominal ones tend not to (Kastner 2015, Moulton 2015 a.o.). This work demonstrates that for a clause selected by a cognitive epistemic attitude verb to have a factive reading, it bears a nominal (D) feature with a structural case, whereas a clause for a non-factive reading, it does not, in alternation languages and possibly beyond. This work shows that a nominalized clause with the internal type ‘pro-fact’ noun *-(u)n kes* in Korean (and in Japanese as well with *koto*), witness-based, is factively presupposed by itself and contradicted if predicated by negated veracious adjectives in a veridicality test. It is embedded also by a doxastic verb such as *mit-* ‘believe.’ The non-factive alternants of ‘know’ in all the languages logically belong to the doxastic category of ‘believe’, though with implication of evidential justification in distinction with the real ‘believe,’ undergoing neg-raising, revealing their anti-rogativity. Thus, more weight is given to complements typing than to attitude reports typing.

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1. Introduction¹

The epistemic attitude report verb in natural languages, let us call it 'know,' is reported to display several general properties. First, 'know' in most languages is typically factive with the form 'S knows that p,' where the proposition p is factively presupposed and an ensuing contradictory $\sim p$ cannot be conjoined with the sentence. It is in distinction to another cognitive but doxastic attitude report, call it 'believe,' in that 'S believes that p' can be followed by $\sim p$, as the following English examples illustrate the contrast between *know* vs. *believe*:

- (1) a. John knows that Mary **is smart**. #(In fact) Mary **isn't**.
 b. John believes that Mary **is smart**. (In fact) Mary **isn't**.

Second, the cognitive report verb 'know' displays that the factivity of the complement remains unchanged even if it is negated by ordinary sentential negation (not by external negation), as in 'S *doesn't know that q*', where *q* is simply presupposed to be true (Horn 2001). This kind of projected factive presupposition cannot be expected from the non-factive predicate *believe* in English and other languages with no 'know' factivity alternation to be discussed.

- (2) a. John doesn't know that Mary **is smart**. #(In fact) Mary **isn't**.

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b. John doesn’t believe that Mary **is smart**. (In fact) Mary **isn’t**.

Polarity reversal is not allowed for a factive complement, as in (2a), while it is for a non-factive complement, as in (2b). Accordingly, a factive predicate like *know* is not a ‘neg-raiser’ while a non-factive predicate like *believe*/*think* is cross-linguistically, as in (3). Another property is that predicates like *know* are question-embeddable (Hintikka 1975), whereas predicates like *believe* are anti-rogative, i.e., not question-embeddable, as in (4).

(3) John believes that Mary isn’t smart => John doesn’t believe that Mary is smart.

(4) a. John knows {whether Mary came/why Mary came}.

b. *John believes {whether Mary came/why Mary came}.

Negation in the embedded clause can be raised to non-factive predicates like *believe*, unlike *know*, in the matrix clause without affecting the core meaning of the sentence, as shown in (3).

In English, however, factivity is largely determined by verb selection although a non-factive interpretation of the verb *know* is possible in some special contexts of negation and non-veridicality such as interrogative sentences, as in *I don’t know that I can make it there on time; Do you know that he is reliable?* (Horn 2014) and the *before* context, as in *Everyone knew that stress caused ulcers, **before** two Australian doctors in the early 80s proved that ulcers are actually caused by bacterial infection* (Hazlett 2010). The English verb *know* tends to be ambiguous between factive and non-factive in negative and other non-veridical contexts only. Factivity alternation to be treated does not depend on such special contexts.

This paper explores factivity alternation of the cognitive (epistemic/doxastic) attitude report verb ‘know’ in Korean, Turkish, and Hungarian reported in one place for the first time in Lee 2017 (see Lee 1978, Kiefer

1978, Özyıldız 2017). In addition, this paper recently discovered at least four more Altaic languages with factivity alternation in ‘know’ (and ‘remember’). They are Mongolian, Uyghur, Manchu and Azerbaijan. We also add one more dialect Barguzin Buryat, alternating in ‘remember’ (Bondarenko 2019). This paper examines factivity alternants of the relevant verbs in these languages to see their typological characteristics and theoretical implications. The (epistemic) attitude report verb ‘know’ in the seven languages takes not only a factive complement clause but also a non-factive one. Furthermore, in a language like Korean, even cognitive verbs that are typically used as doxastic belief predicates may take both factive (internal type) and non-factive complements in appropriate contexts. We make the following two additional claims and discuss their theoretical implications as to the syntax and semantics of the constructions at issue: (i) Cognitive attitude verbs of ‘know’ (and ‘believe’ as well in Korean) may take either a nominalized DP clause for factivity or a CP/SC/PP predicational clause for non-factivity; and (ii) the non-factive alternants of ‘know’ in the seven languages undergo neg-raising and anti-roqativity (non-question-embeddability), analogously to doxastic belief verbs. Additionally, lexically negated forms of cognitive attitude verbs exclusively select for a factive complement clause.

The paper is organized as follows. In Section 2, it will be illustrated that ‘know’ in Korean, Mongolian, Uyghur, Manchurian, Azerbaijan, Turkish, and Hungarian selects not only a factive complement but also a non-factive complement and that the alternation has much to do with the complement types, nominal vs. non-nominal and with the functional status they bear. The unique internal complement nominalization type in Korean will be treated with a veridicality test. In Section 3, we show that cognitive attitude verbs in Korean may take a nominalized factive ACC construction (in adversity with the following clause) and a non-factive CP/SC/PP predicational clause at the same time and examine the syntactic and semantic aspects

of the constructions in question. Section 4 discusses the semantic aspects of the constructions. We provide a general semantics of cognitive verbs embedding factive vs. non-factive complements and specially address the semantics of neg-raisability and anti-roгатivity, which are impossible for factive ‘know’; and additionally the lexically negated forms of cognitive attitude verbs. Section 5 concludes the paper.

2. Factivity Alternation in Various Languages and Presupposition by Internal Complement Nominalization Type

2.1. Factive and Non-factive Alternants of ‘know’ in Korean, Mongolian, Uyghur, Manchurian, Turkish, Azerbaijan, and Hungarian

2.1.1 Factivity Alternation in Korean.

Keeping in mind that *know* and *believe* in English behave differently with respect to the factive vs. non-factive tests in the previous section, let us examine how the cognitive verb ‘know’ itself in the five Altaic languages and one Uralic language can have not only a factive but also a non-factive realization of the verb ‘know’ and their respective distinct complement clauses.² We also examine the Korean counterparts of English *know* and *believe*.

Let us first see how the Korean verb ‘know,’ i.e., *al-*, behaves. The epistemic cognitive verb *al-* typically takes a *kes* nominalized complement clause with an accusative case for a factive reading, like English *know*, as in (5a) below,³ or a *kes* nominalized complement clause with an oblique

2 The non-factive ‘complement’ clause will be ultimately analyzed not as a complement clause but as a sort of predicational clause, i.e., a non-argument clause.

3 The structural case *-ul* can be unrealized, being replaced by zero, *-to* ‘too, even,’ *-man* ‘only,’ *-kkaci* ‘even,’ *-cocha* ‘even,’ etc., in which case only a factive reading is possible. The locative *-ey* (*tayhay*) is also used for a factive reading.

directional case *-uro* ‘toward’ or a REPORTative *-ko* marked CP for a non-factive reading (barely acceptable), as in (5b) and (5c), respectively.

- (5) a. Mia-nun [Hia-ka ttena-n **kes-ul**] al-ko iss-ta (fctv).
 M-TOP H-NOM leave-ADNpst N-ACC ‘know’-ST-DEC
 ‘Mia knows that Hia left.’ [ADNpst: ADNominal with past feature;
 ST=*-ko* iss-: result state ; fctv=factive]
- b. Mia-nun [Hia-ka ttena-n **kes-uro**] al-ko iss-ta.
 M-TOP H-NOM leave-ADN(pst) N-toward ‘know’-ST-DEC
 (Lit.) ‘Mia knows toward it [i.e., believes with evidence] that Hia left.’
- c. ^{??}Mia-nun [Hia-ka ttena-ess-ta-**ko**] al-ko iss-ta.⁴
 M-TOP H-NOM leave-PST-DEC-C ‘know’-ST-DEC
 (Lit.) ‘Mia non-factively knows [i.e., believes with evidence] Hia left.’
 (C=REPORTative complementizer; not in the reportative evidential meaning)

Both factive and non-factive sentences in (5a) and (5b) apparently involve a nominalized complement clause, but the two have different structures: an ACC-marked phrase in (5a) vs. the nominalized complement ending with a DIRectional marker *-uro*, which typically functions as a small clause (SC) Relator (or the head of its complement) in the sense of den Dikken (2006) or PP.⁵ Being a categorially nominal element, *kes* is preceded by a

4 There are some speaker variations on the judgment of the sentences with *-ko*, like (5c).

5 Typically, the sequence [X-ACC Y-(u)ro] in Korean resultative constructions constitutes an SC (see Chung (2011) and Ko (2014)). The NOM in the non-factive complement can change to ACC by ECM as in a SC. Marcel den Dikken (p.c.) himself recommends me to categorize *-uro* as a P rather than as a Relator, as PPs can readily function as a predicate, while the complement of *-uro* could hardly be a predicate as a clause. If *-uro* is a P, however, then its complement will be an NP, not a clause (though possibly dominated underneath it), and a nominal category can generally function as a predicate. Furthermore, there is some room that a clause can function as a predicate at least in a language like Korean. For example,

clause with a prenominal or adnominal=ADN ending, as in (5a) and (5b).⁶ In contrast, the post-predicate final ending *-ko* is generally analyzed as a REPORTative complementizer that takes a full-fledged tensed clause, heading a CP, as in (5c).

(5b, c) can be followed by a statement that contradicts the embedded proposition, while (5a) cannot, confirming that the verb *al-* 'know' takes either a factive or a non-factive complement clause:

- (6) [#](5a) *kurena sasil-un Hia-ka an ttena-ess-ta*
 but in fact-TOP H-NOM NEG leave-PST-DEC
 ‘[#](5a) In fact, Hia didn't leave.’
- ^{ok}(5b)/^{ok}(5c) *kurena sasil-un Hia-ka an ttena-ess-ta*
 but in fact-TOP H-NOM NEG leave-PST-DEC
 ‘^{ok}(5b)/^{ok}(5c) In fact, Hia didn't leave.’

Also negation of the matrix predicate does not change the presupposed vs. non-presupposed reading of the embedded complement clause.⁷

- (7) a. *Mia-nun [Hia-ka ttena-n **kes-ul**] al-ko iss-ci **ani** ha-ta*
 M-TOP H-NOM leave-ADN-ACC know-ST-ci NEG do-DEC
 ‘Mia doesn't know that Hia left.’

the major subject in the double nominative construction is predicated by a clause. Whether the categorial status of *-uro* is P or R, the main idea in our discussion does not seem to be seriously affected.

⁶ The exactly same factivity alternation can be realized by another dependent noun *cwul-* with ACC *-ul* vs. DIRectional Postposition *-uro*. However, a factive clausal argument headed by this dependent noun form cannot be passivized, being limited syntactically. Both the factive forms *kes-ul* and *cwul-(ul)* appear in 15th century documents but the non-factive forms *kes-uro* and *cwul-lo* appear as late as in 19th century documents.

⁷ The use of a long form negation is intentional, as a short form negation of *al-* turns into a suppletion form of negative predicate, *moru-*, which is compatible only with a factive complement. See Section 4.4.

- b. Mia-nun [Hia-ka ttena-{-n **kes-uro**^{/?}-ess-ta-ko}] al-ko iss-ci **ani** ha-ta
 M-TOP H-NOM leave-ADN N-DIR/-PST-DEC-C} know-ST-ci **NEG** do-DEC
 ‘Mia doesn’t know toward it [i.e. believe] that Hia left.’

The nominalized complement clause with an accusative case in (7a) conveys a factive reading, while the other two convey a non-factive reading: in (7b).

The third diagnostic test, i.e., the neg-raising test, also indicates that neg-raising is allowed for the non-factive *kes-uro* clause and *-ko* clause, but not for the factive *kes-ACC* clause. For example, the sentence in (7a) does not have the same reading of the sentence in (8a), whereas the other two in (7b) basically convey the same non-factive reading of the second and the third sentence in (8b), respectively.

- (8) a. Mia-nun [Hia-ka an ttena-n **kes-ul**] al-ko iss-ta
 M-TOP H-NOM NEG leave-ADN N-ACC know-ST-DEC
 ‘Mia knows that Hia didn’t leave.’
 b. Mia-nun [Hia-ka an ttena-n **kes-uro**^{/?}-ess-ta-ko] al-ko iss-ta
 M-TOP H-NOM NEG leave-ADN N-DIR/-PST-DEC-C ‘know’-ST-DEC
 ‘Mia non-factively knows [i.e. believes] that Hia didn’t leave.’

To sum up, the Korean cognitive attitude predicate *al-* takes not only factive complement clauses but also non-factive alternants. When it takes a *kes* nominalized clause with an accusative case, a factive reading ensues, whereas a non-factive reading ensues when it takes a *kes-uro* clause or a *-ko* clause.⁸ It seems to be the case from above discussions that factivity

⁸ Shim and Ihsane (2015) claim that a *-ko* clause selected by a factive predicate produces a factive reading. The example that they take is the one like (i) below:

(i) (=Shim and Ihsane 2015, (4a))
 Kibo-nun [Dana-ka i chayk-ul ilk-ess-ta-ko] yukamsuleweha-ess-ta.
 K-TOP D-NOM this book-ACC read-PST-DEC-C regret-PST-DEC

does not directly depend on the types of predicates but rather on the types of complements.⁹

Interestingly, even when embedded under a doxastic predicate like *mit-* ‘believe’, the complement types determine the factivity in Korean. For example, replacing the matrix predicate in (5a), i.e., *al-* by *mit-* does not alter the presuppositional properties of the embedded clause [Note that even in English if the embedded clause has the lexical nominal head *the fact*, the *believe* sentence becomes factive, as in the translation of (9a)]:

- (9) a. Mia-nun [Hia-ka ttena-n **kes-ul** **mit-ko** iss-ta.
M-TOP H-NOM leave-ADN_{PST} N-ACC ‘believe’-ST-DEC
(Intended) ‘Mia believes the fact that Hia left.’
- b. Mia-nun [Hia-ka ttena-n **kes-uro** **mit-ko** iss-ta.
M-TOP H-NOM leave-ADN_{PST} N-as ‘believe’-ST-DEC
(Lit.) ‘Mia believes toward it that Mia left.’
- c. ^{?(?)} Mia-nun [Hia-ka ttena-ess-ta-**ko** **mit-ko** iss-ta.
M-TOP H-NOM leave-PST-DEC-C believe-ST-DEC
(Lit.) ‘Mia believes Hia as having left.’

‘Kibo regretted that Dana read this book.’

Crucially, the matrix predicate is *yukamsuleweha-*, an emotional factive predicate. However, the bracketed part in (i) cannot be an argument of the matrix predicate. It rather behaves like an adjunct clause, as it provides a reason for being regretful. Notice that it is very natural to add *hay-ese* at the end of the embedded clause, forming a typical reason adjunct clause ending, *-ko-hayse*. Furthermore, the bracketed part is compatible with a sheer intransitive verb like *wus-* ‘to smile’ and *wul-* ‘weep’, indicating their non-complement status. We speculate that such emotional factive constructions can have both the regular factive complement and the **factive** adjunct clause contracted. We are more concerned with the so-called cognitive report verb constructions in this paper.

9 Anti-rogative tests also support our claim that the non-factive ‘know’ –*kes-uro al-* cannot embed **wh**-word/clause, as in **Mia-nun [Hia-ka way o-n kes-uro/??-o-ess-ta-ko] al-ko iss-ta* ‘Mia non-f knows **why** Hia came’ (although Korean has independent interrogative clause endings even embedded).

The complement in (9a) conveys a factive reading, while those in (9b, c) do not. This indicates that, as far as Korean (as well as Japanese) is concerned, the complement type has a direct correlation with factivity. More concretely, irrespective of the types of the matrix predicates, a *kes* nominalized clause (internal type, to be discussed) with a structural case¹⁰ is constantly factive (see the contradiction caused by the denial of the subject clause in footnote 10(ii) and later discussion), whereas a *kes* nominalized clause with an oblique directional case marker and a REPORTative complementizer *-ko* clause constantly convey a non-factive reading.

2.1.2 Factivity Alternation in Mongolian, Uyghur, Manchurian, Turkish, Azerbaijan, and Hungarian.

A similar nominal vs. non-nominal alternation with respect to factivity is found in other languages. In Mongolian, as in (10), alternation occurs by the contrast between the presupposed nominalized complement marked by the structural case ACC *iig*, with the genitivised subject (like ‘Mia’s having left’) for factive (10a) vs. the REPORTative *gej* CP complement with the

10 A *kes* nominalized clause with a nominative case also produces a factive reading, as exemplified in (i), and it cannot be followed by a factive-cancelling predicate, as in (ii), as will be shown by a veridicality test shortly, using a negative veracious adjective, if a clausal Topic is used, the result is different; Topic has a conditional meaning (*subjonctif* employed in French):

- (i) a. [Hia-ka ttena-n kes]-i (Mia-eykey) al-li-e-ci-ess-ta
 H-NOM leave-ADN N-NOM M-DAT ‘know’-PASS-PST-DEC
 ‘That Hia left was known (to Mia).’
 b. [Hia-ka ttena-n kes]-i Mia-lul sulphu-key mantul-ess-ta
 H-NOM leave-ADN N-NOM M-ACC sad-KEY make-PST-DEC
 ‘That Hia left made Mia sad.’
 (ii) # [Hia-ka ttena-n kes]-i kecis-i-ta/mac-ci anh-ta
 H-NOM leave-ADN N-NOM falsity-be-DEC right-ci not-DEC
 ‘That Hia left was false/not right.’
 (iii) (Topic) [Hia-ka ttena-n kes]-un mac-ci anh-ta (margina)
 H-NOM leave-ADN N- TOP right-ci-not-DEC
 ‘That Hia left, so to speak, is not right.’ (In Japanese, Topic, predominant, is contradictory.)

raised ACC-marked subject, as in a small clause, for non-factive (10b), both complements being embedded by the same attitude verb *mede-* ‘know.’ This factivity or presuppositionality alternation is clearly parallel in other factive verbs like *sana-* ‘remember’ (10c,d), with the same contrast between ACC *iig* vs. REPORTative *gej*. The lexically negative verb *martakh-* ‘forget’ has no non-factive alternant, as in all alternation, and non-alternation, languages. See Bondarenko (2019) about the exact parallel in her treatment of the single alternation verb *hanaxa-* ‘remember’ in Barguzin Buryat, with the same contrast between ACC for factive and REPORTative COMP for non-factive. In Mongolian, the non-factive doxastic verb *itge-* ‘believe’ takes the same non-presupposed complement-forming REPORTative complementizer *gej* (10e), all coming from the verb ‘say’ in alternation languages. This parallel contrast appears in all other factivity-alternating Altaic languages we examine here. In other words, the determining factor is not the verb but its parallel contrast in complementation. Therefore, we need to pay closer attention to the decompositional approach by Kiparsky and Kiparsky (1972) for factives and further to the general properties of non-factives by distinct complementation. Examine factivity alternation in Mongolian first. All the non-factive alternant ‘know’ sentences in all the following languages can be followed by the adversative contrastive conjunction (‘But/In fact) plus the negation of the preceding embedded non-presupposed complement clauses, across-the-board, unlike their factive counterparts (e.g., (10b) can be followed by ‘In fact, Mia didn’t leave’ in Mongolian).

(10) a. Ken Mia –giin yav-san-iig mede-j baina (Mongolian, factv)

K M-GEN leave-N_{PST}-ACC know ST

‘Ken knows that Mia left.’ [-j baina: ST = result state]

b. Ken Mia-g yav-san gej mede-j baina

K M-ACC leave-PST REPORT know ST

‘Ken non-factively knows [believes] that Mia left.’

- c. Ken Mia-giin yav-san-iig sana-j baina.
 K M-GEN leave- N^{PST} -ACC remember ST
 ‘Ken remembers (recalls) that Mia left.’ (Mia’s leaving)
- d. Ken Mia-g yav-san gej sana-j baina
 K M-ACC leave-PST REPORT ‘remember’ ST
 ‘Ken non-factively remembers [i.e. thinks] that Mia left.’
- e. Ken Mia-g yav-san gej itge-j baina.
 K M-ACC leave-PST REPORT believe ST
 ‘Ken believes that Mia left.’ (D. Urtnasan e-mail 11-19-2019)

In Uyghur, in the same vein, a non-finite clausal nominalizer taking the ACC case, embedded by the verb *bil-* ‘know,’ is presupposed, with the GENitive subject, as in (11a), whereas the finite clause ending with the REPORTative complemetizer *däp* (< *di-* ‘say’-*p* CNV) is non-presupposed, constituting a non-factive ‘know,’ embedded by the same verb *bil-*. The embedded subject is raised to ACC-*ni*, as in (11b). The same REPORTative complemetizer *däp* occurs embedded by the non-factive attitude report *işin-* ‘believe,’ with the raised case of ACC from the embedded subject, as in (11c). A nominalized presupposed clause takes the subject position for the factive alternant of ‘remember’ in (11d) and its non-factive alternant is a non-factive verb construction of *äslä-* ‘remember’ in (11e). The verb *unut* ‘forget’ only takes the factive construction. [Consultants: Zemire Gulcalı, Mağfıret Kemal Yunusoğlu e-mail 11-19-2019]. In English, *remember* and *forget* can only take the CP of *that* clause, which should be presuppositional, implying that the embedded clause has a covert FACT (Kiparsky and Kiparsky 1972) to ensure factive presupposition, like the ACC-taking nominalized clauses in the alternation languages (the factive verb *forget*, however, can take an infinitival complement without presupposition, which led Schulz (2003) to take a composition approach between the complement type and the embedding verb.)

- (11) a. Kän Mari-ning kät-kän-i-ni bil-i-du (< bil-ä-du) (Uyghur, factv)
 K M- GEN go-_{PRT}N-3rdPOSS-ACC know-PRES-3rdSg
 ‘Ken knows that Mary left.’ [_{PRT}N: past participle Nominalizer]
- b. Kän Mari-ni kät-ti döp (< di-p) bil-i-du (**non-f**)
 K M-ACC go-PST3rdSg REPORT (< say-CNV) know-PRES-3rdSg
 (Intended) ‘Ken non-factively knows that Mary left.’
- c. Da, Sue-ni kät-ti döp (< di-p) işin-idu (< işän-ä-du) (‘believe’)
 D S-ACC go-PST3rdSg REPORT (say-CNV) believe- PRES-3rdSg
 ‘Da believes that Sue left.’
- d. Nur-ning u adäm-ni ur-yan-liq-i Adil-ning
 N-GEN that man-ACC beat-PCP-N-PSS.3 A-GEN
 yad-i-da / esidä (< äs-i-dä)
 memory-PSS.3-LOC
 ‘It is in Adil’s memory that Nur beat the man.’
- e. Adil, [Nur-ni adäm-ni ur-di döp (< di-p)] äslä-ydu
 A Nur-ACC man-ACC beat-_{PST.3Sg} say-CNV remember-_{PRES.3Sg}
 ‘Adil thinks (*remembers) that Nur beat the man.’ (M. K. Yunusoğlu)
- f. Adil, [Nur-ning u adäm-ni ur-yan-liq-i-ni]
 A Nur-GEN that man-ACC beat-PCP-N-PSS.3-ACC
 unut-ti / untu-p qal-di / kät-ti
 forget-PST.3Sg forget-CNV remain-PST.3Sg go-PST.3Sg
 ‘Adil forgot that Nur beat the man.’

How about in Manchu?¹¹ As in (12a), the factive alternant of the verb *sa-* ‘know’ embeds a nominalized clause ending with the structural ACC marker and with the embedded subject gentivized into *ni*. The non-factive alternant of *sa-*, on the other hand, takes a non-presupposed embedded clause ending with the REPORTative complementizer, coming from the verb *se-* ‘say’ (Do

11 Just two old native speakers are said to be alive and I relied on Classical Chinese documents translated into Manchu. Sangchul Park helped me search data.

and Chung 2019) (12b). The same REPORTative COMP is employed by the doxastic verb *gūni-* ‘think’ for a non-presupposed reading of the embedded clause, as in (12c).

- (12) a. [[kungming ni akū] be] sa-fi (三國誌 in Manchu 12:47a)
 K GEN there-is-notN ACC know-ANT.CVB
 ‘Knowing that Kungming is not there’
- b. sabu-ha-le niyalma fonji-re be bai-bu-rakv
 see-_{pst.ptcp}-PTL person ask-_{NPST.PTCP} ACC look-for -cause-_{npst.ptcp.neg}
 [wang xang ni banji-ha jui] seme sa-mbi¹²
 wang xang GEN be_ born-_{PST.PTCP} child REPORT know-_{NPST}
 (pst.ptcp=Past Participle; NPST.PTCP=Non-Past Participle; PTL=Particle)
 ‘Everyone who looks, without needing to ask, regards it as [know non-factively that it is] Wang Xang’s born child’
- c. usihūn gurun [[tere be enteheme dorō] seme] gūni-ha bihe
 low country it ACC eternally morality REPORT think-PST
 ‘Our (low) country thought that it is eternally morality.’ (老崇 in Manchu 1:18a)

In Turkish, factivity alternation of *bil-* ‘know’ is similarly shown by the contrast between the embedded ACC *i*-marked non-finite content clause with the genitive subject for factive (13a) and the embedded REPORTative complementizer *diye*-marked finite content clause (13b). The REPORTative COMP marker *diye* also derives from the verb root *de-* ‘say.’ In addition to *bil-* ‘know,’ verbs such as *hatırla-* ‘remember’ (but not its negative verb *elfelejt* ‘forget,’ as in other languages) and *öğren-* ‘find out’ are factivity

12 An embedded verb: *sabu-re ongolo jilgan be donji-ha-de uthai*
 see-_{NPST.PTCP} before sound ACC listen-_{PST.PCP}-DAT just
 [*imbe ji-he*] seme sa-mbi
 .Sg.ACC come-_{PST.PTCP} REPORT know-_{NPST}

‘Before (we) met, as soon as (I) heard the voice, (I) know that he came.’ (A Sibe speaker=Manchu expert, p.c. via Li Xiang and Dr. Chen e-mail Dec 2019.)

alternation verbs. Exceptionally, a doxastic verb *düşün-* ‘think’ takes a surface ACC case (identical in form to the structural case ACC) marker *i*, as in (13’a) (as well as the typical REPORTative form *diye*), but it takes an adverbial anaphor *öyle* in a natural discourse, not a DP anaphor, as in (13’b); To refer back to the factive complement of (13a) in a discourse, a DP anaphor *onu* ‘it+ACC’ or *bunu* ‘this+ACC’ or null argument (ellipsis) is used. This is expected from facts in many other languages (Ahn and Cho 2009). Also, refer to footnote (13) to see how it can not take an agentive phrase in a passive-like NOM-taking sentential subject construction unlike in the *bil-* ‘know’ construction (Jaklin Kornfilt p.c.).¹³ Another doxastic verb *inan-* ‘believe’ takes a dative complement at the surface in the constant non-factive reading as in *düşün-* ‘think.’

- (13) a. Da [Sue-nun git-tiğın-i] bil-iyor (Turkish, fctv)
 D S-GEN leave-pstN-ACC know-PRES.3Sg
 ‘Da knows that Sue left.’ (Sue’s having left)
- b. Da [Sue git-ti-diye] bil-iyor (non-f)
 D S-NOM leave-PST-REPORT know-PRES-3rdSg
 ‘Da non-factively knows that Sue left’
- (13’) a. Da [Sue-nun git-tiğın-i] düşün-üyor. (**non-factive**)
 D S-GEN leave-pstN-ACC think
 ‘Da thinks that Sue left.’ [Npst: Nominalizer with past feature]

13 This remains a puzzle for everybody. We suspect, however, that the ACC case in (13’a) is not a structural but a surface or pseudo-case. The structural ACC case, when moved to the front by passivization, becomes a structural NOM case and typically preserves the original factive presupposition, as in (12) below in the text. But here as in (13) in the text, the NOM-marked complement can be denied, showing that it can be without a factive presupposition (Gizem Turkmenoglu, Jaklin Kornfilt p.c., summer 2018). In the Topic/Subject position typically only a structural case survives. The passive-like form with the complement immediately preceding the verb ‘think’, i.e. *Sue’nun gittiği düşünülüyor* ‘It is thought that Sue left’ is possible but it cannot take an agentive phrase *Da tarafında* ‘by Da,’ which the factive *biliniyor* can take. This much it is defective.

- b. Eva **öyle** düşünüyor.
 E so think
 ‘Eva thinks so.’

We can derive a passive construction from the factive ‘know’ sentence in general. In Turkish, as in Korean, the nominalized structural ACC-marked THEME moves to the front to become a sentential subject with factive presupposition. Therefore, both the factive ‘know’ sentence of (13a) and its passive form cannot be followed by a contradictory statement, as shown in (14). But a nominalized subject with a nominative case can be denied, as in (13a), suggesting that it may not necessarily carry a factive reading.¹⁴ However, if the nominalizer is followed by a noun *gerçeğ(-i)* ‘fact,’ the clausal content becomes factively presupposed, and becomes odd if it is negatively predicated by *doğru* ‘right,’ veracious adjective, as in (15b).

- (14) [Sue-nun git-tig-i Ø] bil-in-iyor. (#Fakat Sue git-me-di)
 S-GEN leave-N NOM know-PASS but S go-NEG-PST
 ‘That Sue left is known. (#But Sue didn’t go.)’[NOM = Nominative]
- (15) a. [Sue-nun git-tig-i Ø] doğru değil.[-tik=past participle, Nominalizer]
 S-GEN leave-pstN-PSS NOM right not[PSS= possessive -i 3rd person]
 ‘That Sue left is not true.’
- b. #[Sue-nun git-tiğ - i]] gerçeğ-i doğru değil.
 S-GEN leave-pastN-PSS fact-Compd right not
 ‘The fact that Sue left is not [Compd=Compounding] right.’

14 Jaklin Kornfilt (p.c.) confirmed this prediction and the oddness of (15b). In (15a), *doğru* ‘right’ (a veracious adjective used for veridicality (to be explained) may be ethically interpreted. This ethical interpretation of veracious adjectives is common in most languages and we need special attention not to be misled because a presupposed fact can be ethically not right.

Let’s turn to another alternation language Azerbaijan, which has an unusual, historically changed, word order of Subject + Verb + Complement clause with the complementizer *ki*, adopted from Persian. In Azeri, the factive alternant of the verb *bil-* ‘know’ embeds a complement clause, as in (16a), and its non-factive alternant in (16b) shows the embedded clause identical to that in (16a) on surface. A difference lies in that the latter takes an adverbial cataphor *elä*, referring forward to the complement clause. It appears in the upper *bil-* ‘know’ clause, not in a discourse. The same cataphor distinction type of factivity alternation arises in Hungarian, to be discussed.

- (16) a. Äli bil-ir ki, Väli ged-ib (Azeri, fctv)
 Ä know- PRES that V go-CNVpst
 ‘Äli knows that Väli left.’
- b. Äli **elä** bil-ir ki, Väli ged-ib¹⁵
 Ä so know- PRES that V go-CNVpst
 ‘Äli non-factively knows [believes with evidence] that Väli left.’”

There is a close parallelism between Korean and other Alataic languages such as Mongolian, Manchurian, Uyghur, and Turkish, except Acerbaycanca in factivity alternation of ‘know’. In these languages, a nominalized complement requires a structural case, to convey a factive reading. Also even when preposed to the subject position due to passivization, the nominalized clause preserves its factive reading. In all these languages, the non-factive alternants typically take a finite CP/Small Clause ending with

15 Asıman Paşayev and several other native teachers with Masimli Leyla could provide the non-factive *ki* sentence (Dec 2019). Initially, a different construction, which is not so natural or colloquial, was elicited, as follows:
 Äli-nin bil-diyinä (< bil-dik-in-ä) görä Väli ged-ib (non-f)
 Ä-GEN know-PRT3rd-POSS-DAT according to V go-CNVpst
 ‘According to Äli’s knowing, Väli left.’ [Shabnam Shirinova 9-10-2019]

the REPORTative complementizer, derived from the verb of ‘say.’

Let us now turn to an Uralic language, Hungarian. In Hungarian an analogous alternation is ensured by the categorial status of cataphoric expressions. Consider (17). A definite DP cataphor (*azt* ‘it’ in ACC)¹⁶ is used in the main clause to refer forward to a factive complement in (17a). The complement clause must also be in ACC to agree with the cataphor in the same complex sentence. In contrast, in (17b), a CP cataphor (*úgy* ‘so’) is used to refer forward to a non-factive complement in (17b). The passive-like construction corresponding to the factive alternant of ‘know’ is (18), where *tudott* is an adjective, still with the structural NOM-marked cataphor before the complement clause. The CP cataphor *úgy* ‘so’ cannot form an analogous construction: **úgy^{so} tudott^{known} dolog^{thing} volt, hogy^{that} Peti elment^{left}].* (17a) or (18) cannot be followed by a contradicting utterance such as ‘(but) she didn’t leave’, because the complement is factively presupposed. In (18a, b, c), the position of the structural NOM-marked anaphor *az* is rather free: it is either before the complement clause (18a) or after it (18b), or appositive (18c).¹⁷ The structural NOM-marked anaphor *az* is expected to be required for its associated clausal complement to be factively presupposed in (18d). But most natives accept (18d), except a few, and (18e) is accepted by all.

- (17) a. Agi **(azt)** tudja, [hogy Emma elment]. **(factive)**
 A it-ACC know that E left
 ‘Agi knows it that Ema left.’
- b. Agi **úgy** tudja, [hogy Peti elment]. **(non-factive)**
 A so ‘know’ that P left
 ‘Agi so knows that Emma left.’

16 I discovered the structural ACC vs. NOM contrast associated with their respective complement clauses. Genoveva Puskas (p.c.) gladly agreed with me and confirmed it.

17 Genoveva Puskas (p.c.) provided this information including (18d, e) via e-mail on July 21, 2018. She didn’t accept (18d).

- (18) a. Az tudott dolog, [hogy Emma elment].¹⁸
 it-NOM known thing that E-NOM left
 ‘It is a known thing that Emma left.’
- b. [Hogy Emma elment], tudott dolog.
 that E-NOM left it-NOM known thing
 ‘That Emma left, it is a known thing.’
- c. Az, [hogy Emma elment], dolog.
 it-NOM that E-NOM left known thing
 ‘It, that Emma left, is a known thing.’
- d. Az, [hogy Emma elment], nem igaz.¹⁹
 it-NOM that E-NOM left not true
 ‘It is not true that Emma left.’
- e. Nem igaz, hogy Emma elment.
 not true that E-NOM left
 ‘It is not true that Emma left.’ (Genoveva Puskas, p.c.)

So far, we have discussed the structural conditions of factivity alternations of the verb ‘know’ in Korean and other Altaic languages, in addition to Azeri and Hungarian. The claim that nominalizations are responsible for the factive inference (Moulton 2009; Kastner 2015; Hanink & Bochnak 2017) seems to be on the right tract. The only modification we need is that the nominals involved should be structurally motivated and structural case-marked. The apparent Turkish ACC case counter-examples might not be

18 Genoveva Puskas (p.c.) also provided a passive construction with a different verb ismer ‘know’, as follows:

(i) Az Agi által ismert, [hogy Ema elment].
 it-NOMA to known that E left
 ‘It is known that E left.’

However, she adds, the active form of this verb does not have the az vs. u’gy alternation.

19 Henrik and Eszter Kiefer (couple) (Oct 30, 2018) and Ferenc Kiefer (Oct 31) said (18d) is all right, although Genoveva Puskas didn’t like it.

structurally motivated in this sense and the adverbial cataphor type for the non-factive alternant in Azeri and Hungarian and the DP cataphor for the factive alternant in Hungarian strongly suggest a decompositional, interpretation-oriented approach.

2.3. Factive Presupposition by Internal Factive Complement Nominalization in Korean (and Japanese) by a Veridicality Test

By a veridicality test with veracious adjectives (Martin and White 2005) *mac-* ‘right’ in Korean and *tadashii* ‘right/’correct’ in Japanese, it is shown that the internal (typically perceived or internalized) factive complement type nominalized by *-(u)n kes* in Korean and *koto* in Japanese (equivalent to ‘fact’) is factively presupposed by itself with no regards to whether or not it is embedded by the epistemic verb ‘know.’ If the predicate of veridicality is negated, as in (19) in Korean and in (20) in Japanese, it contradicts the already presupposed and therefore entailed subject proposition. This veridicality issue for complement subjects in Korean and Japanese has not been discovered so far and has not been attested in other languages so far. Examine the presupposed nominalized complement subjects in Korean (19) and Japanese (20) in contradiction and compare them with the English non-contradictory felicitous S in (21) (Anand and Hacquard (2014) and the contradictory infelicitous S with the complement subject prefaced by the lexical item *fact*, with *the*, forming a DP in (22). The contradictory infelicitous Ss in (19) and (20) with the internal factive complement type are contrasted with those in (23) in Korean and (24) in Japanese with the external [assertive or communicated] (factive) complement type, which are non-contradictory and felicitous. This external type in Korean and Japanese have a discourse move $\exists e$ [SAYING_w(e)]. This type has the post-finite clause adnominal (ADN) marker *-nun* and its nominal *kes* to make its factive use possible. It is also constantly factive, with structural case, if embedded by *al-* or *siru* ‘know,’ but not factive in veridical predication.

- (19) #[Mia-ka ttena -(u)n kes-i] mac-ci anh-ta
 M-NOM leave-ADN_{pst} **kes**-NOM right-C not-DEC
 (Intended) 'The fact that Mia left is not right.' (C=connector)
- (20) #[Mia-ga sat-ta-koto-wa] tadashi-ku-nai
 M-NOM leave-PST-**koto**-TOP right/correct-not
 (Intended) 'The fact that Mia left is not right.'
- (21) John isn't right/correct that Mary is the murderer.
- (22) #The fact that Mary is the murderer is not right/correct.
- (23) [Mia-ka ttena -ass -ta-(ko ha)-nun kes-i] mac-ci anh-ta
 M-NOM leave-PST-DEC-REPORT say-ADN **kes**-NOM right-C not-DEC
 (Intended) 'That Mia left is not right.'
- (24) [Mia-ga sat-ta-to -iu-koto-wa] tadashi-ku-nai
 M-NOM leave-PST-REPORT-say-**koto**-TOP right-not
 (Intended) 'That Mia left is not right.'

Likewise, the internal factive type complements with the nominals *-(u)n kes* in Korean and *koto* in Japanese (as a non-alternating language) by themselves are factively presupposed unlike in most other languages such as Mongolian, Uyghur, Turkish, Hungarian and English and are contradicted by negated veracious adjectives in a veridicality test.

3. Factivity Alternations and Structural Ingredients

It is well known that English predicates like *know* differ from those like *believe* with respect to the factivity of their complement clause: The former take a factive complement, while the latter take a non-factive one, with the same CP *that* clause. As noted in Section 2, their Korean (Turkish, Mongolian and Hungarian) counterparts seem to behave differently. Korean attitude predicates like *al-* 'know' and *mit-* 'believe' take various forms of

dependent elements and the two verbs do not seem to show any difference with respect to the factivity or non-factivity of the embedded complement clause, just as *believe the fact that* --- becomes factive in English. The dependent clausal noun *kes* takes the role, as schematically represented in (25) and exemplified in (26) ((25a) and (26a) have the internal factive type, and the more complex external type will be discussed shortly):

(25) Three Types of Simplex Complements

- | | | |
|---|---------------------------------------|------|
| a. X [... kes ^N -ul ^{ACC}] | ‘know’/ ‘believe’ | (F) |
| b. X [... kes ^N -uro ^{DIR}] | ‘n-f know’/ ‘believe’ | (NF) |
| c. X [... ta ^{DEC} -ko ^C] | ^{?(?)} ‘n-f know’/ ‘believe’ | (NF) |

(26) a. Nominalized (DP) Complement

Mia-nun [Hia-ka ttena-n kes-ul] {al/mit}-ko iss-ta
 M-TOP H-NOM leave-ADN N-ACC ‘know’/‘believe’-ST-DEC
 ‘Mia knows/believes the fact that Hia left.’

b. Small Clause (SC) Complement

Mia-nun [Hia-ka ttena-n kes-uro] (calmos) {al/mit}-ko iss-ta
 M-TOP H-NOM leave-ADN N-DIR wrongly know/believe-ST-DEC
 ‘Mia (wrongly) non-factively knows/believes that Hia left.’

c. Full Clause (CP) REPORTative Complement

Mia-nun [Hia-ka ttena-ass-ta-ko] (calmos) ^{?(?)}{al/mit}-ko iss-ta
 M-TOP H-NOM leave-PST-DEC-C wrongly know/believe-ST-DEC
 ‘Mia <wrongly> n-f knows/believes that Hia left.’
 [ko C=REPORTative COMP; n-f=non-factively]

In addition to these three types of simplex complements, we observe in this section that there are two di-elemental complements (adversatively interpreted), as schematically represented in (27) and exemplified in (28) below:

(27) Two Types of Di-elemental Adversative Complements

- a. X [... kes^N-ul^{ACC}] [... ta^{DEC}-ko^{C₁*(?)}] n-f know'~/‘believe’ (F/NF)
 b. X [... kes^N-ul^{ACC}] [... kes^N-uro^{DIR}] ‘n-f know’/‘believe’ (F/NF)

(28) a. DP + CP

Mia-nun [Hia-ka ttena-n kes-ul] [Sia-ka ttena-ass-ta-ko]
 M-TOP H-NOM leave-ADN N-ACC S-NOM leave-PST-DEC-C
 (calmos) {^{?(?)}al/mit}-ko iss-ta
 wrongly ‘know’/‘believe’-ST-DEC
 ‘Mia (wrongly) n-f knows/believes that Sia left, despite the fact that Hia left.’

b. DP + SC/PP

Mia-nun [Hia-ka ttena-n kes]-ul [Sia-ka ttena-n
 M-TOP H-NOM leave-ADN N-ACC S-NOM leave-ADN
 kes-uro] (calmos) {al/mit}-ko iss-ta
 N-DIR wrongly know/believe-ST be-DEC
 ‘Mia (wrongly) n-f knows/believes that Sia left, despite the fact that Hia did.’

As shown above, a *kes*-marked complement is presupposed, as in (26a), while a *-uro* marked complement or a *-ko* marked complement is not, as in (26b) and (26c), respectively. Interestingly, when two expressions coexist, as in (28a) and (28b), only the preceding *kes*-marked complement is presupposed, while the *-ko*-marked or *-uro*-marked one is not. The former is admitted as a fact and adversatively connected to the latter so that it can be interpreted as *without knowing (the fact) that ---* or *despite the fact that ---*. It is an optional background VP-internal Topic and the following nonfactive complement is obligatorily rendered. There must be opposite features (argument, predicate or tense) between the two complements. This adversative construction also occurs in Turkish (Özyildiz 2017).

As far as languages like Korean are concerned, factivity does not (at least not exclusively) seem to be encoded lexically/selectionally on the matrix attitude predicate (Hintikka 1962; Percus 2006), but rather on

the complement clause (Kiparsky and Kiparsky 1970, Kratzer 2006).²⁰ If factivity were encoded (solely) on the matrix attitude predicate, the observed factivity alternations would not be expected.²¹ Furthermore, the simultaneous presence of the two types of complements, as in (27a) and (27b), should not be expected under the purely lexical approach to factivity.

The above data seems to indicate that the [... *kes*]-ACC type of nominalized complement clauses bear a factive reading, while the [... *-ko*] REPORTative or the [... *kes*]-*uro* inherent Directional type of complement clauses bear a non-factive reading. Then can it be said that the formal type of the complement clause solely determines factivity? The answer depends on the two distinct types of complements of *-(u)n kes*, i.e. internal vs. external. The internal type of the complement content is typically perception/witness-based or internalized, whereas the external type involves assertion/communication of the complement content. When we consider the following set of data, in which a nominalized complement is used but it has a richer structure compared with the simple structure in (26a).

- (29) a. Mia-nun [Hia-ka ttena-ass-ta-nun kes]-ul al-ko iss-ta
 M-TOP H-NOM leave-PST-DEC-ADN N-ACC know-ST-DEC
 ‘Mia knows that Hia has left’
- b. Mia-nun [Hia-ka ttena-ass-ta-nun kes]-ul mit-ko iss-ta
 M-TOP H-NOM leave-PST-DEC-ADN N-ACC believe-ST-DEC
 ‘Mia believes the fact that Hia has left’

The external nominalized complements in (29) have an overt tense *-ess* and the declarative marker *-ta*, preceding the adnominal *-nun* and the nominal *kes*. The combination *-ta-nun* comes from *-ta-ko ha-nun*

20 Or at best on the combination of the two, as pursued in Shim and Ihsane (2015) and Schulz (2003).

21 Unless accidental homophony is assumed for attitude predicates.

(*-ko* REPORTative; *ha-* ‘say’) by deletion of the REPORTative *-ko* and contraction of *ha-*. This type involves the discourse move of assertion/communication in the complement content, as discussed. The commonsensical knowledge such as ‘The Earth is round’ or ‘Bats are mammals’ typically take the external (factive) complement type, rather than the internal type, embedded by ‘know’ in Korean.

Noting that complementizer *-ko* can be overtly realized between the declarative ending *-ta* and the prenominal ending *-nun*, Shim and Ihsane (2015) claim that *-kes* selects a CP in the relevant structure. It is true that complementizer *-ko* can be overtly realized, but then the verb *ha-* ‘say’ has to be realized as well, as illustrated below:

- (30) Mia-nun [Hia-ka ttena-ass-ta-ko *(ha)-nun kes]-ul al-ko iss-ta
 M-TOP H-NOM leave-PST-DEC-C say-ADN N-ACC know-ST-DEC
 ‘Mia knows that (they say) Hia left.’[ST = (result) STATE]

Thus, their CP analysis of the relevant structure does not seem to be right. If embedded by *al-* ‘know,’ the complement content is factively presupposed, being in the Common Ground, although it may be via communication or declarative assertion because of the verb of saying (deletable if *-ko* is optionally deleted).²² The potentially factive nominalizer part of *-(u)n kes* with the Present Adnominal relator *-nun* and the form is *-nun kes* following the Declarative full clause form. The nominalized factive complement requires a structural case.

We indicate that the structure starts with a complex structure, and has undergone some sort of deletion or grammaticalization in which the complementizer plus the predicate in the higher clause (*ko+ha*) has been

22 This type, however, is distinct from the internal factive type without *-ta-ko ha-* the verb of saying in that the internal type can by itself be presupposed and can be contradicted by a negated veridical predication.

truncated. So, a discourse move of saying of public communication is involved in interpretation, being in the Common Ground, still constantly factive, if embedded by *al-*. But embedded by *mit-* ‘believe’, its factivity varies among speakers (and sometimes contexts).

(31) *ko+ha* Truncation: [... ta^{DEC} -ko^C ha^{say} -nun^{ADN} kes^N-ACC] ⇔
 [... ta^{DEC} -nun^{ADN} kes^N-ACC]

(32) a. Mia-nun [Hia-ka ttena-ass-ta-ko ha-nun kes-ul]
 M-TOP H-NOM leave-PST-DEC-C say-ADN N-ACC
 al/mit-ko iss-ta
 know/believe-ST-DEC

‘Mia knows/believes that (they say) Hia left.’

b. Mia-nun [Hia-ka ttena-ass-ta-nun kes-ul] al/mit-ko iss-ta
 M-TOP H-NOM leave-PST-DEC-ADN N-ACC know/believe-ST-DEC
 ‘Mia knows/believes that (they say <weak>) Hia left.’

Whether the truncation takes place or not, the complement clause necessarily conveys a factive reading, if selected by *al-* ‘know’. In contrast, when selected by *mit-* ‘believe’, the truncated form still can convey a factive reading, while a non-truncated complement seems to produce a non-factive reading, displaying a speaker variation. According to an experimental survey with a truncated form (Lee 2017), around 30 percent of the speakers have a factive reading, contra Shim and Ishane (2015), who report that (32b) produces an across-the-board non-factive reading.²³

23 When 49 subjects were asked whether ‘Hia left’ in the external nominalization type complement under the doxastic verb *mit-* is a fact, 30.6 % said ‘yes’ and 49.0% said ‘not certain’ (with 20.4% ‘no’). Although the majority (69.4%) leans to non-factive, we cannot ignore the responses by more than 30% (Lee 2017). Bogal-Allbritten and Moulton (2017) interestingly discuss the external type in contexts with reference to past saying, citing Shim and Ishane. If speakers highlight (being conscious of) the SAYING event, the sentences may be marginally acceptable. But the REPORTative complementizer is still preferred

(33) Factivity of External Nominalization Structures

	‘know’	‘believe’
Non-truncated form	[+factive]	[-factive](variation)
Truncated form	[+factive]	[+factive] ([-factive] by negated veracious Adj.)

One interesting fact that we observe about the external nominalization type is that, unlike the internal [...-(u)n kes]-ACC type of complement, this type can less felicitously be followed by an additional complement, either by the non-factive REPORTative [...-ko] type complement or by the non-factive DIRectional [... kes]-uro type complement. An adversative transition involves between the two complements (with *Hia* vs. *Sia* mismatch here). The external type here involves communicated information, which becomes the target of the attitude reports

- (34) a. #Mia-nun [Hia-ka ttena-ess-ta-nun kes]-ul
M-TOP H-NOM leave-PST-DEC-ADN N-ACC
[Sia-ka ttena-ass-ta-ko]} (calmos) {al/mit}-ko iss-ta
S-NOM leave-PST-DEC-C wrongly know/believe-ST be-DEC
‘Mia wrongly knows/believes that Sia left, despite Hia’s having left.’
- b. #Mia-nun [Hia-ka ttena-ass-ta-nun kes]-ul
M-TOP H-NOM leave-PST-DEC-ADN N-ACC
[Sia-ka ttena-nkes]-uro (calmos) {al/mit}-ko iss-ta
S-NOM leave-ADN N-DIR wrongly know/believe-ST-DEC
‘Mia wrongly knows/believes that Sia left, despite Hia’s having left.’

This external nominalization type can be followed by [... ta^{DEC}-nun^{ADN} kes^N-uro^{DIR}], an external non-factive element, but no clear factive reading from the external ACC is produced (rather the saying event often with

because the speaker knows the content is not a fact.

its content is presupposed and it is adversatively related to the following external non-factive element):

- (35) Mia-nun [Hia-ka ttena-ass-ta-nun kes-ul] [Sia-ka
 M-TOP H-NOM leave-PST-DEC-ADN N-ACC S-NOM
 ttena-ass-ta-nun kes-uro] (calmos) {al/mit}-ko iss-ta
 leave-PST-DEC-ADN N-DIR wrongly knows/believe-ST-DEC
 ‘Mia wrongly knows/believes that [they say] Sia left, despite the
 fact that [they say] Hia left.’

In this case, however, both elements have a ‘say’ or conveyed information reading, and neither conveys a factive reading. It is typically about Mia’s mishearing what is conveyed by the first complement.

We can summarize what we have discussed in relation to factivity in Korean as follows:

- (36) a. [... V-*n kes-ACC/NOM*] Type (DP) [+factive]
 b. [...*ta-ko*] Type (CP) [-factive]
 c. [... *kes-uro*] Type (SC) [-factive]
 d. [... *ta-nun kes-ACC*] Type [+factive] if embedded by *al-* ‘know’;
 [+/- factive] depending on speakers; [-factive] with NOM pred-
 icated by a negated veracious adjective.

Thus, factivity seems to be encoded neither exclusively on the matrix predicate nor on the complement type. However, given that the last type is still under the process of grammaticalization, factivity is primarily dependent on the complement type rather than the matrix predicate type, particularly if we consider the constant internal factive complement type under whatever embedding attitude reports, assertive and response verbs. Another factive nominalizer is *-(u)m* but it cannot constitute a non-factive

alternant **(u)m-uro*. Still another factivity alternation nominalizer is *cwul-*, taking ACC for factive and DIR for non-factive, just like *kes*, embedded by *al-* 'know' exclusively but it cannot form a passive sentence, being unable to form a clausal subject.

In this section we address the syntax of the constructions in question. Ignoring the external nominalization type of complements, there are three simplex and two complex types of complements for the predicates like *al-* 'know' and *mit-* 'believe', as schematically summarized below:

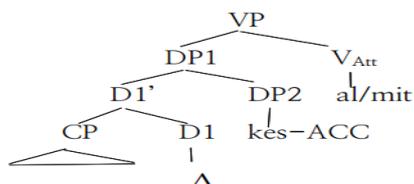
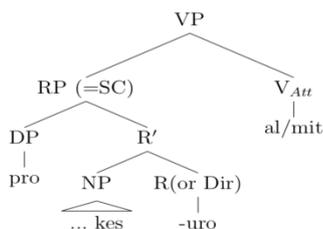
(37) Three Types of Simplex Complements

- a. DP Type: X [... *kes^N-ul^{ACC}*] *al-/mit-* (F)
- b. SC Type: X [... *kes^N-uro^{DIR}*] *al-/mit-* (NF)
- c. CP Type: X [... *ta^{DEC}-ko^C*] ^{?(?)}*al-/mit-* (NF)

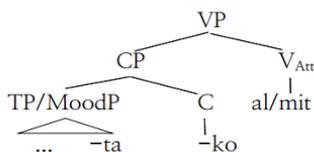
(38) Two Types of Complex (Di-elemental) Complements

- a. DP-SC Type: X [... *kes^N-ul^{ACC}*] [... *kes^N-uro^{DIR}*] *al-/mit-*
- b. DP-CP Type: X [... *kes^N-ul^{ACC}*] [... *ta^{DEC}-ko^C*] ^{?(?)}*al-/mi-ta*

When an attitude verb takes only one and unique overt argument or complement, as in (37a, b, c), then the structure will be simple. We provide the following structures for (37a, b, c) schematically:

(39) Simplex Type I: DP Complement²⁴(40) Simplex Type II: SC Complement²⁵

(41) Simplex Type III: CP Complement



24 The nominal *kes* may be taken as head of the higher DP, as follows, but we assume a null D (Δ), as in Kastner's (2015) structure; it is hardly realized with the head noun *kes*. In contrast, the non-factive complement structures in (37) and (38) are assumed to have *kes* as head of the NP; it is non-factive and has no definiteness or uniqueness requirement needed for a presupposed fact content. No D element can be realized with the NP in (40).

25 RP stands for Relator Phrase in the sense of den Dikken (2006). R may be a null element that selects a *-uro* directional phrase. See footnote 3 above as to the categorial status of *-uro*. Rather it can be treated as a Directional postposition to form a PP, which will then function adverbially.

The SC Complement in (40) instead can be analyzed as PP with the NP *kes* nominalized clause headed by the Directional postposition *-uro* ‘toward’ (atelic).

When it comes to the complex types, however, it is not so obvious how to build the VP internal structure. The availability of the constructions calls for a couple of important theoretical questions about the syntax (and semantics) of the structure. One is whether the two elemental structures in (38) can be generalized even to the cases where there appears to be a single internal argument like (37). In other words, is it possible to assume that even the structures in (37) have a di-elemental structure, where a null element is postulated for the missing part: for example, a null CP for (37a) and a null nominal clause for (37b, c)? Then the schematic structures for (37a, b, c) will be like (42a, b, c) below, but a non-presupposed meaningful CP/SC/PP starting out as a null element does not sound right [The factive presupposition by the ACC DP is the speaker’s, whereas the non-factive complement is the subject’s = attitude holder’s belief]:

- (42) a. X [... *kes*]-*ul* [_{CP/SC/PP} e] *al-/mit-* (factive)
 b. X [_{DP} e] [*...kes*]-*uro* *al-/mit-* (non-factive)
 c. X [_{DP} e] [*...ta*]-*ko* [?]*al-/mit-* (non-factive)

The first element (DP) can be considered as a situation argument, while the second element (CP or a small clause/PP) can be considered as a belief proposition in the real di-elemental structure (cf. Özyildiz 2017).

The idea of an underlying two elemental structure to derive the three different simple structures, suppressing the not-surfacing element, as in (37) and (42), cannot be well justified, as I already started out to see the structure as a Hanging Topic construction (Koppen et al 2014) of a factively presupposed adversative transition to the following non-factive clausal element embedded by a non-factive ‘know’ or ‘believe’ verb. Given

appropriate contexts, (nominalized) DP complements can be referred back to by a zero or pronominal anaphor in discourse but there is no non-factive CP complement suppressed. Consider (43) and (44), where factively presupposed complements and non-factive complements are respectively involved:

- (43) A: Mia-nun [Sia-ka ecey ttena-n kes-ul]
 M-TOP S-NOM yesterday leave-ADN N-ACC
 al/mit-ko iss-ta
 ‘know’/‘believe’-ST-DEC
 ‘Mia knows/believes it that Sia left yesterday.’
 B: Hia-to e/kukes-ul al/mit-ko iss-ta
 H-also e/it-ACC know/believe-ST-DEC
 ‘Hia also knows/believes it.’
- (44) A: Mia-nun [Sia-ka ecey {ttena-ess-ta-ko/ttena-n
 M-TOP S-NOM yesterday leave-PST-DEC-C/leave-ADN
 kes-uro}] al/mit-ko iss-ta
 N-DIR know/believe-ST DEC
 ‘Mia non-factively knows/believes that Sia left yesterday.’
 B: Hia-to *(kurehkey) al/mit-ko iss-ta
 H-also so know/believe-ST-DEC
 ‘Hia also non-factively knows/believes so/that Sia left yesterday.’

The elided or anaphoric DP in (43B) retains its factive reading. Similarly, the adverbial anaphor CP/SC in (44B) but not zero retains its non-factive reading. Cf. Ahn and Cho (2011).

In English, as discussed in Bolinger (1977, ch 4), both factive and non-factive verbs may take *it* in addition to a *that* clause, when *it* refers to some fact already broached.²⁶ This is similar to *believe the fact that ---*, which is

26 Stanly Dubinsky (p.c.) agrees with this. Accordingly, if the fact is not “already

interpreted as factive.

- (45) a. You shouldn't regret it that you were helpful. (=Bolinger 1977, 69, his [40])
 b. He won't believe it that the election hurt the M (=Bolinger 1972, 67, his [11])

Another important question worth inquiring with respect to the complex complement type is how the two elements are related to each other. direct dependents of the matrix predicate or they constitute a single complement unit. In other words, it is worth questioning whether attitude predicates like 'know' and 'believe' take a single internal argument or two internal arguments. Under the first option the accusative marked *kes* clause should belong to the embedded clause, although the function of the element is not

broached" (i.e. presupposed), as in a hypothetical, then *it* is anomalous:

(i) I hate (*it) that she left early, if she did indeed she did do so.

However, he disagrees that the presence of *it* is required when the complement is presupposed. He does not feel there to be a contrast in Bolinger's examples in (ii) below:

(ii) a. *I resent that she did that. (Bolinger 1977, 69, his [43])

b. I resent it that she did that. (Bolinger 1977, 69, his [44])

In fact, the string [*resent*] *it that* is far less frequently attested in corpora (COCA, COHA, or iWeb) than the string without *it*.

Although Bolinger (1977, 69) states that '*know*' does not normally take *it* in English (except in passive voice), there are some corpus examples containing *it*, as follows, drawn from COCA (thus, *it*-pronominalization as CP-split is not limited to emotive factives):

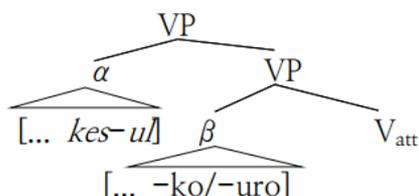
(iii) a. They didn't 'know' it that this had happened yet.

b. You put it in your mouth, you crunch down, you feel the crispiness of extremely frozen sour cream and you feel the creaminess of sour cream like you 'know' it that you put on your baked potato.

c. As usual I did my job. I asked the tough questions about Mrs. Obama because there was a perception and everybody knows it that she was not happy-go-lucky. In fact she told CBS News she is tired of being labeled an angry black woman. That's what she said. On THE FACTOR Ms. Johnson was given plenty of time to set the record straight as she saw it.

so obvious. Under the second option, however, the *kes* clause should be a matrix element, as schematically represented in (46), functioning as Topic, a direct dependent of the matrix attitude verb, along with the following *-ko* or *-uro* marked complement.

(46) Di-transitive Analysis



I will opt for the second option for the following reasons. First, the linear order of the two elements α and β is fixed simply because α is Topic, base-generated presumably, unlike other co-dependents in a language like Korean, where co-dependents in general have a free word order as in a dative construction. The accusative marked pro-fact DP nominal clause cannot follow the CP complement or the SC/PP complement:

- (47) *Mia-nun {[Sia-ka ttena-ess-ta-ko]/ [Sia-ka ttena-n kes-uro]}
 M-TOP S-NOM leave-PST-DEC-C S-NOM leave-ADN N-DIR
 [Hia-ka ttena-n kes]-ul (calmos) {al/mit}-ko iss-ta
 H-Nom leave-ADN N-ACC wrongly know/believe-ST-DEC
 ‘Mia knows/believes that Sia left, despite Hia’s having left.’

The **adversative** transition relation between the Topic DP and the following non-presupposed *-ko* or *-uro* marked element is supported by the following examples. If no opposition appears in the two propositional contents, the result is unacceptable (48). There must be opposition in

polarity (49), argument (50) or tense (51). The presupposed content in the DP Topic, in the Common Ground (CG), is known by the speaker, although the attitude holder happens to be not certain about the CG content. In certain contexts, the speaker may not be certain and the Topic may not show up. The example of the first person subject with the non-factive ‘know’ in (52) is such a case, where a contradiction or absurdity of speaker’s presupposition failure if with the DP arises because of the adversative relation.

- (48) [?]*Mia-nun [[Hia-ka ttena-n kes]-ul] [[Hia-ka ttena-n kes]-uro] al-ko iss-ta
M-TOP H-NOM leave-ADN **kes**-ACC H-NOM leave-ADN **kes**-DIR know
(Lit.) ‘Mia, despite Hia’s leaving, non-f knows she left.’ [No opposition]
- (49) Mia-nun [[Hia-ka an ttena-n kes]-ul] [[Hia-ka ttena-n kes]-uro] al-ko iss-ta
M-TOP H-NOM not leave-ADN **kes**-ACC H-NOM leave-ADN **kes**-DIR know
‘Mia, despite Hia’s not leaving, non-f knows she left.’ [**Polarity** opposition]
- (50) Mia-nun [[Hia-ka ttena-n kes]-ul] [[Sia-ka ttena-n kes]-uro] al-ko iss-ta
M-TOP H-NOM leave-ADN **kes**-ACC H-NOM leave-ADN **kes**-DIR know
‘Mia, despite Hia’s leaving, non-f knows Sia left.’ [**Argument** opposition]
- (51) Mia-nun [[Hia-ka ttena-ul kes]-ul] [[Hia-ka ttena-n kes]-uro] al-a
M-TOP H-NOM leave-ADN_{fut} **kes**-ACC H-NOM leave-ADN_{pst}
kes-DIR know
‘Mia, despite Hia’s planned leaving, non-f knows Hia left.’ [**Tense** opposition]
- (52) na-nun ([#][[Hia-ka an ttena-n kes]-ul]) [[Hia-ka ttena-n kes]-uro] al-a
M-TOP H-NOM not leave-ADN_{pst} **kes**-ACC H-NOM leave-ADN_{pst} **kes**-
DIR know
‘I, ([#]despite Hia’s not leaving), non-f knows Hia left.’

Likewise, polar opposites of predicates split between the preceding DP and the following clause in the di-transitive structures ((49) and (46)) are required for the **adversative** transition relation between the pro-fact Topic DP, taking the base-generated SPEC position of the first element, and the following CP or PP/SC: The future tense event can be presupposed, as in (51). If the speaker's presupposition is felt to be in conflict with the non-factive assertion part in (52), it may be slightly odd with the first person attitude holder subject but contexts may be provided for appropriate interpretation.

The *-ko* or *-uro* marked element in (28a,b) cannot undergo scrambling, which leaves the *kes-ul* marked element behind, as shown in (53), although the two can be fronted together as a chunk as far as the Top DP precedes, as shown in (54):

- (53) * {[Sia-ka ttena-ess-ta-ko]/[Sia-ka ttena-n kes-uro]} Mia-nun
 S-NOM leave-PST-DEC-C S-NOM leave-ADN N-DIR M-TOP
 [Hia-ka ttena-n kes]-ul (calmos) {al/mit}-ko iss-ta
 H-Nom leave-ADN N-ACC wrongly know/believe-ST-DEC
 'Mia non-f knows/believes that Sia left, despite Hia's having left.'
- (54) [Hia-ka ttena-n kes]-ul {[Sia-ka ttena-ass-ta-ko]/
 H-NOM leave-ADN N-ACC S-NOM leave-PST-DEC-C
 [Sia-ka ttena-n kes-uro]} Mia-nun (calmos) {al/mit}-ko iss-ta
 S-NOM leave-ADN N-DIR M-TOP wrongly know/believe-ST-DEC
 'Mia n-f knows/believes that Sia left, despite Hia's having left.'

No such restriction applies to a dative construction. Under the structure in (46), the ungrammatical status of the sentences in (53) can be accounted for by the Topic precedence principle. Notice that the restriction in (38) is reminiscent of the phenomenon that an embedded (small) clause cannot be scrambled, leaving behind an argument of the clause, as discussed in Chung

(2011) and Ko (2015), but here a simple noun argument is involved rather than a pro-fact DP of factive presupposition and adversative transition. Observe.

- (55) a. Mia-nun [Hia-ka Sia-rul sarangha-n-ta-ko] sayngkakha-n-ta.
 M-TOP H-NOM S-ACC love-PRES-DEC-C think-PRES-DEC
 'Mia thinks that Hia loves Sia.' (This meaning also applies to b.)
 b. *[Hia-ka sarangha-n-ta-ko] Mia-nun [Sia-rul] sayngkakha-n-ta.
- (56) a. Mia-nun [Hia-rul chencay-ro] yeki-n-ta.
 M-TOP H-ACC genius-as consider-PRES-DEC
 'Mia considers Hia as a genius.' (This meaning also applies to b.)
 b. *[chencay-ro] Mia-nun [Hia-lul] yeki-n-ta.

The coexistence of a (*kes-ul* marked) nominal projection and a (*-ko*-marked) CP projection, as in (28a), or the combination of a (*kes-ul* marked) nominal projection and an *-uro* marked projection, as in (28b) above, is reminiscent of Özyildiz's (2017) analysis of Turkish attitude constructions in the sense that attitude predicates are strikingly compatible with two elements. There are, however, certain important points that the approaches are in disagreement with. Özyildiz (2017), just like the current approach for the Korean counterpart, takes a sort of (46) for the structure projected from Turkish attitude predicates, in which α and β are co-dependents of the matrix attitude verb. But Özyildiz does not characterize the preceding nominalized element as topically adversative in relation to the following *diye* belief proposition. The former must constantly function as the so-called *res* (situation) argument but the nominalized clause is also taken as a belief proposition just like a REPORTative CP clause in his analysis. One empirical piece of evidence in favor of the current approach is the fact that a (DP) situation argument precedes a clausal (CP/SC/PP) complement, but not a nominalized (DP) complement of factive

presupposition. The topical DP situation argument must be adversatively related to the following element and the topical ‘that situation’ must be one in which ‘Hia didn’t leave’ is factively presupposed and it is compatible with its following non-factively known (believed) clausal content of Hia’s leaving (as in 57a,b) but not with its following factively presupposed content of Hia’s leaving, as in (57c), which creates a contradiction. Examine.

- (57) *Mia-nun ku sanghwang-ul* { a. √ [*Hia-ka ttena-ass-ta-ko*]
 M-TOP that situation-ACC H-Nom leave-PST-DEC-C
 b. √ [*Hia-ka ttena-n kes-uro*]
 H-Nom leave-ADN N-DIR
 c. * [*Hia-ka ttena-n kes-ul*]
 H-Nom leave-ADN N-ACC
- {al/mit}-ko iss-ta
 ‘know’/‘believe’-STAT be-DEC
 ‘*Mia* knows/believes (of the situation) that *Hia* left.’

The definite (abstract) noun DP, as in (57), or a definite anaphor *ku kes-ul* ‘that event-ACC’ must be adversatively related with the following clause. This adversativity is established in the previous context.

Turkish behaves just like Korean in this respect. Özyildiz (2017, 14) reports that an overt res argument is compatible with a REPORTative complement clause, but not with a nominalized complement, despite his assumption of its universal presence in the structure. Observe.

- (58) (=Özyildiz 2017, 14, his (20b, c))
- a. Tunç { o-nu, o durum-u} [*Hillary kazandı diye*] biliyor.
 Tunç 3S-ACC situation-ACC H won DIYE knows
 ‘Tunç believes of {that, that situation} that Hillary won.
- b. Tunç (*o-nu) [{*Hillary’nin, Trump’in*} *kazandı`gin-i*] biliyor.
 Tunç 3S-ACC H-GEN T-GEN won-N-ACC knows

(Intended) 'Tunç knows of that that {Hillary, Trump} won.'

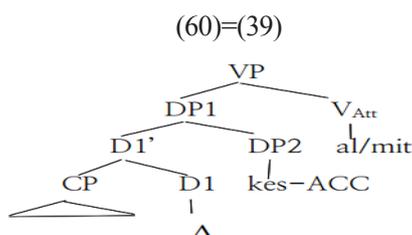
He attributes the ungrammatical status of the structure in (58b) to a case problem: The *res* argument and the nominalized complement compete for case and the latter wins, as it is 'the higher of the two at some level of representation.' Notice, however, that (57c) in Korean is also ungrammatical. It is not a consequence of case competition but because of the violation of the adversative topical relation of the preceding definite DP with another definite DP with the structural case ACC and factive presupposition. The adversative relation is covert with *bilmeyerek* 'not knowing' after the definite DP with ACC {*o-nu*, *o durum-u*}. Case conflict is contingent but presupposition conflict and adversativity failure must be the source. Korean does allow multiple accusative constructions.

One interesting point that distinguishes Korean from Turkish is that in Korean the nuclear pitch accent (bold-face or capital letters) is naturally realized on the factive matrix predicate as in Turkish. But if it is realized in an embedded structural case-marked presupposed position, the sentence constantly remains factive in Korean but it can be non-factive in Turkish (Özyildiz 2017 for Turkish).

(59) #Mia-nun [**Hilary**-ka iki-n kes-ul] al-ko iss-ciman
 M-TOP H-NOM win-ADN_{pst} **kes**-ACC know ST-but
 Trump-ka iki-ess-ta
 T-NOM win-PST-DEC
 'Mia knows that Hilary won, but Trump won.'

(60) Alp [HILARI'NIN kazandı'gını] biliyor, ama Trump kazandı
 A H win.NMZ know but T won
 'Alp {#knows, believes} that Hillary won, but Trump did.'

Being a Topic, it has a discourse referent (CG), which is assumed to produce a presupposed reading. Furthermore, a hanging topic here has an “adversative” transition relation with the belief proposition. Thus it typically has a binding relation. No such relation is established with the pro-fact DP embedded directly by attitude verbs, with no base-generated Topic Recall the relevant structure.



The current analysis differs from Özyildiz (2017) as to the semantic function of the adversative Topic nominalized clause: it is a belief proposition in his analysis, whereas it is a situation argument in ours, realized as a definite ACC DP with its factive presupposition at least on the part of the speaker in adversative transition to the following doxastic belief content held by the subject attitude holder. With no realization of this situation argument, the speaker may be ignorant of the real situation relevant to the the subject’s belief. Therefore, it can hardly be ‘universal,’ as Özyildiz claims.

4. Semantic Explorations: Composition of Complements and Attitude Verbs

4.1. Speculation on the Origin of Factive Reading

The nominalized complement with *kes*, as in (61), is constantly pre-factive, if followed by a structural case and embedded by a perception verb

in Korean. This complement type with a structural case we call **perceptual** is typically used for perceiving a scene or ongoing event by direct perception. In this case, the complement content is an event type and the nominal *kes* here is not interchangeable with *sasil* ‘fact,’ unlike the internal factive propositional type nominal *kes*, typically embedded by *al-* ‘know.’²⁷ It is pre-factive. This is just to show the origin of perceptual/internal type of factivity complementation. Here the embedded adnominalizer present tense is co-temporal with the matrix tense, as exemplified below:

- (61) Mia-nun [Hia-ka ttena-nun kes-ul] po-ass-ta.
 M-TOP H-NOM leave-ADN N-ACC see-PST-DEC
 ‘Mia saw Hia leave.’[‘evidential/perceptual’ in English (cf. Barwise & Perry 1983, Anand & Hacquard 2014)]

This evidential (via seeing, hearing, feeling) complement is covert in internally headed relative clauses (IHRC). An IHRC can be embedded under transitive action verbs such as *cap-* ‘catch’, as in (62) below. We posit a covert evidential verb *po-* ‘see’ or *kamciha-* ‘perceive’ with conjunction *-ko* ‘and’ right after *kes*. (cf. Chung 1999.) Then, the *kes* in the first conjunct is an appositive factive *kes* and the *kes* in the second conjunct becomes a concrete human *kes* and can license the body-part in the double object construction. It is a panoramic view. Otherwise, the selection restrictions for the concrete action verb will be infinitely many. This point is not captured by previous analyses. The embedded ADNominalizer’s tense is limited to present to depict an ongoing event or result state just like the ADN in the perceptual construction in (61).

27 In Japanese, for this perception complementation, a nominalizer *no* only is used instead of *koto*. The nominalizer *koto* is used for factive complements.

- (62) Hia-nun [kangdo-ka unhayng-eyse nao-nun kes-ul]
 H-TOP robber-NOM bank-from come-ADN N-ACC
 (tari-rul) cap-ass-ta
 leg-ACC catch-PST-DEC
 ‘Hia caught the robber coming out of the bank (by the leg).’

Two panoramically overlapped clauses are in one: The initial perception complement as a set of situations $\langle s, t \rangle$ (appositional with *kes*) undergoes transition to the second relative clause as a set of entities (modifying *kes*) ($\langle e, t \rangle$). Catching something without perceiving its situation is contradictory. The complement nominalizing dependent noun *kes* here was analyzed by Kim (2009) and basically adopted by Bogal-Allbritten and Moulton (2017), as (63). Individuals and situations are amalgamated in one *kes*. There is no full appreciation of complementation that requires complete arguments, which are provided in IHRC.

- (63) $[[kes]]^C = \lambda p x. R(p)(x)$ [x in the domain of ordinary individuals or situations; R a suitable relation defined iff x is familiar in C]

We propose a departure from this. The same internally nominalized complement with a structural case ACC *-n kes-ul*, without the embedded DEC ending comes to compose with the cognitive verb *al-* ‘know’, as in (5a), presupposing the complement *p*. This type of internal nominalized complement with a structural ACC-marked *-n kes-ul* or a structural NOM-marked *-n kes-i* is constantly factive with no regards to the embedding verb *al-* ‘know’ or *mit-* ‘believe.’ If embedded by *mit-* ‘believe,’ initially it sounds slightly odd, but in contexts where ‘believe or not’ is an issue, etc., the internal factively presupposed complement embedded by *mit-* ‘believe’ is acceptable.

4.2. On the Semantics of *kes*

The nominalized complement with *kes*, as in (5a), if followed by a structural case marker and composed with ‘know’ *al-* (and other verbs such as ‘remember’ and ‘forget’) is posited to form a definite DP (Kastner 2015) with a covert definite determiner Δ . This Δ plus *kes* selects for a CP as its complement. But the nominalized complement with *kes*, as in (5b), if followed by a directional case marker and composed with ‘know’ *al-* (and other verbs such as ‘remember’) forms the same nominal category, but they do not function as an argument but as a (clausal) predicate or adverbial PP (the postposition may head just an NP, as in (40)). Notice that the complement in (5a) can be replaced by a DP anaphor *ku kes-ul* ‘it,’ whereas that in (5b) can have a CP anaphor/pro-form *kurehkey* ‘so’ in the following discourse. This also happens in Azeri and Hungarian, where the matrix ‘know’ clause has the contrast between DP anaphor and the CP anaphor referring forward to the ambiguous identical complement clause. Complement types differ in Korean and Turkish commonly for alternation. The complement in (5a) with factive presupposition is in the Common Ground as a discourse referent, whereas that in (5b) is a proposition as a set of situations $\langle s, t \rangle$. The meaning of the complement nominalizer *kes* is (64) with its factive presupposition, supposing it takes structural case, embedded by attitude verbs. We refine acquaintance relation to accommodate it in the definition of internally factive *kes*. This *kes*, a dependent noun, for us, is equivalent to *fact* (that’s why we call it a pro-fact noun) but not to *rumor*, which fails to meet the following compositional definition.

- (64) $[[[kes R]]^{g^C} = \lambda w \lambda p t s \lambda x. R(x)(p)(s)(w)]$ (Cf. Kim 2009). [s is in the domain of situations; R is a suitable **<witness-based-perceptual/internalized>** acquaintance relation²⁸ defined iff s is <unique and

28 Lewis (1979) posits ‘a suitable relation of acquaintance,’ Goldman (1967) ‘causally connected in an “appropriate” way’ and Kratzer (2012) reinterprets

familiar> in C; x is an entity (attitude holder); p is a complement proposition; w is a maximal evaluation situation] Otherwise, i.e. if not <perceptual>, not <unique and familiar>, then non-factive (5b). Alternatively (rather structurally), if the complement clause is headed by the Directional Postposition (DirP)-*uro* (by a look-forward step of processing), then the clause content is not factively presupposed,²⁹ otherwise, it is factively presupposed.

In the case of a full clause *-ta-nun kes* complement DP, if it takes a structural case and is embedded by the epistemic attitude verb *al-* ‘know,’ it is constantly factive, with the same compositional condition as (64) but with just one more condition added, i.e. that a communicative discourse move event of saying by an arbitrary PRO that provides the speaker’s public contextual evidence for the complement content is involved in the pro-fact noun *kes*, accommodated in CG, but not in the nominal head of *somwun* ‘rumor’ or *cwucang* ‘claim,’ which cannot compose with any factive complement and the contents of the same saying event cannot be accommodated in CG (Kim 2006 has no treatment of the non-factive PP/SC *kes-uro* at all, nor *ta-nun kes-ul* in detail). The finite clausal *-ta-nun kes* complement DP, if embedded by a doxastic verb, cannot be presupposed necessarily (speaker/context variation; it must be embedded by the epistemic verb *al-* ‘know.’).

Summarising the relevant structures, the factive structure is as (65) and the non-factive ‘know’ structure is as (66).

the relation as the attitude holder’s believing *p de re* of some fact **exemplifying** (embodying) p.

29 With the REPORTative C, as in (5c), slightly odd if embedded by *al-* ‘know’ but felicitous if embedded by such doxastic verbs as *mit-* ‘believe,’ the sentence becomes non-factive. This C(omplementizer), coming from SAY, as in all Altaic languages, shows that its complement content is not factive (with a superficial exception *to* embedded by *siru* ‘know’ in Japanese, forming another factive complement, though it is commonly used as non-factive with ‘believe’ verbs).

(65) $[_{VP} [_{DP1} [_{DI} CP D_1(=\Delta)] [_{DP2} [_{NP} N(=kes)\text{-ACC}] \dots]] V]$

(66) $[_{VP} [_{KP} DP1 [_{RP} e_1 [_{R'} [_{DirP} [_{Dir'} [_{DP2} \dots]\text{-uro}] R]]] V]$

(66') $[[\text{Directional } \text{-uro}]] = \lambda\pi.\lambda x.[\text{TOWARD}(\pi, x)]$: The property $\pi <_{s,t}$ denoted by its complement to be directed atelically toward its original specifier Theme *res*, therefore $[\text{DirP}](66) \neq > [\text{DP}](65)$. (Belief does not entail knowledge) [This is rather metonymical and the point is that if the inherent Directional Postposition *-uro* as a weak or expletive postposition (see Adger and Ramchand (2003), is at the head in combination, the possibility of selecting for a pro-fact noun *kes* DP is excluded and become void of factive presupposition.]

In English, you may misinterpret the meaning of *know* as factive before you hit *before* in:

(67) Medieval Koreans knew that Chinese characters were the best *before* Hangul (the Korean alphabet) was invented.

And then you may re-interpret it in a non-factive *know* reading. In Korean and all other alternation languages, the explicit non-factive alternant 'know' must be used here in (67). But all the Altaic alternation languages except Azeri you see/hear the complement first, either the ACC-marked DP factive or the $[\text{---REPORT } C]$ non-factive mostly and then the last attitude verb part because of the general COMP V order. However, in Korean, a more legitimize non-factive, *-n kes-uro*, the DIRectional Postposition, appears with *-n kes* in it, identical to the form of the factive nominal. Up to the point of the same *-n kes* form, the reader/hearer may move along the garden path and the issue will be resolved when the DIRectional Postposition *-uro* appears in processing.

Consider an example sentence again. With this multi-structural

configuration, the speaker (and possibly others) has the factive presupposition of the *res* argument at the front, but asserts that the attitude holder lacks such a presupposition. Thus, there is no presupposition contradiction.

- (68) a. Mia-nun [Hia-ka ttena-ci anh-un kes-ul]_{Theme-res}
 M-TOP H-NOM leave-CI NEG_{do}-ADN N-ACC
 [Hia-ka ttena-n kes-uro] al-ass-ta
 H-NOM leave-ADN N-toward know-PST-DEC
 'Despite the fact that Hia didn't leave, Mia knew non-f that Mia left.'
- b. Ali [Da-nm yarın gideceğın-i], [Ø dün gitt-i diye] bil-iyor-du.
 A D-GEN tomorrow goN-ACC already go-PST REPORT know-ST-PST
 'Although Da will leave tomorrow, Ali n-f knew that Da already left.' (Turkish, Beyza Mercan p.c.)
- c. Bat [Mongol yal-s(a)n-iig] Yapon yal-san ge-j ^{??}mede/bodo -j baina
 B M win-_{pst} VN-ACC Y win-_{pst} VN REPORT know/think -ST
 'Although Mongol won, Bat n-f knows/thinks that Japan won.'
 (VN-verbal noun) (Mongolian, D. Urtnasan p.c.)
- d. Batu-ning Mongyuliyä-ning ut-qin-i-ni Yaponiyä ut-ti däp yad-i-da
 BGEN MGEN win-_{pst} N-ACC Japan win-PST REPORT remember-NLoc
 'Batu n-f remembers that Japan won, not knowing Mongolia won.'
 (Uyghur)
- e. Aki-wa Mongoru-ga katta-koto-o Nihon-ga katta-to
 A-TOP M-nom won-**koto**-ACC J-NOM won-C
 omot-tei-ta/shinji-tei-ta/kioku-si-tei-ta
 think-ST-PST/believe-ST-PST/remember-ST-PST
 'Aki thought/believed/n-f remembered that Japan won, not knowing Mogol won.'
 (Satomi Ito p.c.)

Likewise, exactly the same presupposed ACC DP is adversatively (e.g. *medehgui* 'not knowing' in M, *bil-mäy* 'not knowing' in Uyghur, *sir-a-nai-de* 'not knowing' in J, all insertable right after ACC DP with no difference in interpretation) followed by a non-factive clausal content embedded by alternatively non-factive verbs such as 'know' or 'remember,' fairly universally in Altaic alternation languages and even in the non-alternating *suru* 'know' language Japanese with doxastic verbs 'believe', 'think' or factivity alternating verbs such as *kioku-suru*. This presupposed ACC DP adversative construction has not been reported in the literature. It occurs with factivity-alternating verbs such as 'know,' 'remember,' 'understand' and doxastic verbs 'believe'/'think' (in Korean, Turkish, Uyghur, etc. Mongolian also belongs to this group (but 'know' is slightly odd, although it has factivity alternation of 'know.' It has *sana-* 'remember,' *oilgo-* 'understand,' alternating between factive and non-factive. In their non-factive use, as in (68c), they can co-occur with the adversative ACC DP.)

We can consider taking composition between the verb and its complement (cf. Özyildiz 2017) for the Korean nominalized complement with *kes* (see (64) above), but starting from the middle point of a non-factive *de re* belief relation about situations for the denotation of *bil-* or *al-* 'know' does not sound desirable. The attitude holder's possible universal doxastic alternatives may be considered *à la* Hintikkka. The non-factive alternant of *al-* 'know' is available if it is directed toward the ultimate *res*, not reaching it. In that case, no factive presupposition arises from the PP and its NP cannot contribute anything for the *res*, remaining as belief ingredients, with the implication of 'regard --- as.' The non-factive alternant of *al-* 'know' is available if it is directed toward the ultimate *res*, not reaching it. In that case, no factive presupposition arises from the PP and its NP cannot contribute anything for the *res*, remaining as belief ingredients, with the implication of 'regard --- as.' In the case of factive, the *res* situation [_{res} Δ Hia leaving] is hit by the proper acquaintance relation *R*, as in (64), rather

than by the belief [_{dox} Hia left]. to match each other. The attitude holder's <perceptual/ internalized> acquaintance relation must be ascertained via full evidential justification for truth. The *R* is familiar (definite), EXEMPLIFYING *p* (Kratzer 2016). With the DirP, because of lack of full evidential justification, the *res* situation and the belief may mismatch and the non-factivity 'know' may result. However, unlike Hintikka's 'knowledge entails belief but not vice versa,' *know that p* does not seem to entail *believe that p* because the *p* in the former is presupposed while the *p* in the latter is not. Consider Vendler's puzzle: *Ken knows the rumor that p* \neq \Rightarrow *Ken knows that p*; that *p*, headed by *the rumor* involves the external SAYING event in Korean and Japanese, as in *Mia-ka ttena-ss-ta* (-ko **ha/iu** in J)-*nun somwun* 'the rumor such that it is **said** that Mia left' (therefore, non-factive, if not headed by 'the fact' or *-n kes* in K or *koto* in J to mean a conveyed fact under 'know.' Cf. [[the rumor]]= $\lambda p\lambda j$ [said_j(p)](Liefke 2019), where *said* is introduced to show that the *p* is non-factive). There must be a way of representing the factively presupposed content like (64) as commonly defined as: [[know]](*w*_s)(*p*_{st})(*x*_e) is defined iff *p* is true at *w*, and true iff *x* believes *p* at *w*, (although the definition has no clear indication of the internal, presuppositional state of *p*). In English, *know that p* may entail *know the fact that p*, whereas in Korean, [*p-n kes-ul*] *al-ta* may entail [*p-n kes-ul*] *mit-ta*. Then, how is the non-factive *al-* 'know' different from a real doxastic verb *mit-* 'believe'? The answer must lie in the Gettier problem that counters the traditional definition of knowledge: Justified True Belief (JTB), or cases of true belief that fall short of knowledge of some fact, for example in the ignorant attitude holder's accidentally true judgment about which road leads to Larisa (Plato, c. 380 BCE/1976), etc. Her accidental true belief is **toward** the goal of reaching the knowledge of which road leads to Larisa and at that time the non-factive *-uro al-* 'know toward,' rather than *mit-* 'believe,' is employed in Korean. However, unlike Turkish and Hungarian, as well as English, doxastic belief verbs such as *mit-* 'believe'

can embed a nominalized complement of internal type pro-fact *kes* (and *koto* in Japanese). Because the pro-fact *kes* and *koto* nominalized complements can independently have a factive presupposition, they can be embedded by ‘believe’ type attitude verbs and cannot be veridically denied, as we saw.

The contextual data from Sejong Korean Corpus show that the attitude holder provides at least a piece of evidence for a non-factive ‘know’, but not necessarily for ‘believe’. Note an explanation of the use of the non-factive ‘know’-*uro al-ta* case from corpus data.

As soon as a conversation turn unit marker which indicates the utterance is finished appears, *e ---*, the next speaker starts to talk, non-factively knowing that the previous speaker has finished his/her utterance. So, the adversative topical element [--- *an kkuthna-n kes-ul* ‘despite the fact that the previous speaker’s utterance has not ended’] is covert in front or overt after *-ciman* ‘but,’ the adversative marker. See its Korean excerpt:

- (69) [hyencay hwaca-uy palhwa-ka kkuthna-n kes-uro al-ko
 previous speaker-POSS utterance-NOM finish-ADN **kes**-DIR ‘know’ and
 mal-ul sicakha-ciman]
 talk-ACC start-but
 ‘Although the current speaker non-factively knows that the
 previous speaker’s utterance ended and starts his/her utterance’

Therefore, the utterances of the previous speaker and the next [current - addressee] speaker overlap since the previous speaker continues his/her utterance, not obeying the turn-end marker. In the Korean corpus example, it is used to indicate that because the unit marker appeared, the addressee thought the speaker’s turn was finished, and thus the addressee started to talk, which is a piece of evidence to justify the use of *al-* ‘know’. Here, *-uro* is used instead of *-ul* because the verb *al-* ‘know’ with *-uro* has a

distinctive implicational meaning that the information is not confirmed and may be falsified (it was falsified when the speech was not finished and the overlap occurred). However, it must be noted that the speaker witnessed the evidence via the turn unit completion marker. That is why *al*-‘know’ with *-uro* has been employed rather than a weaker doxastic verb *mit*-‘believe.’ On the other hand, if the ACC marker *-ul* had been used in this context, the sentence would not contribute to the coherence of the discourse. Since *-ul* is used for confirming the truth of the complement’s information, the sentence becomes contradictory. This example clearly shows that *al*-‘know’ with *-uro* implies the complement’s information is uncertain, which could be found to be false. The speaker often uses the NF verb *-uro al*-‘know’ after realizing she was mistaken, with the turn unit marker example being one such case.³⁰

When you ‘know’ that p, you make an assertion that p (Hintikka 1972). If one has a piece of evidence, one often uses *al*-‘know’ with *-uro* (DIRrectional) to justify one’s position, often defensively, making an excuse. That’s why this use mostly accompanies a reason or excuse. The non-factive ‘know’ gives the impression of more reliability surrounding the speaker attitude holder than an unsupported use of simple ‘believe.’ This is the case with all alternating languages.

4.3. Neg-Raising for Non-factive Alternant--A Survey Experiment

Neg-raisability was born out by survey experiments in Korean and consultations with a dozen native consultants of Turkish and Hungarian. First, a survey on neg-raising for non-factive alternants, as in (1), was conducted in Seoul in 2017 with 49 subjects. The subjects are all native Koreans, speaking standard Korean. The data were collected by giving the subjects two sentences involving 'neg-raising alternation' and asking them to reply with Yes or No to the question, "For both the higher neg S

30 In our corpus, the occurrence rate of *-uro al-ta* NF DIR ‘know’ (90%, 18 out of 20) is far higher than that of *-ul al-ta* factive ACC ‘know’ (10%, 2 out of 20). The rarity of the latter may be this: when you ‘know’ that p, you make an assertion simply saying that p.

and lower neg S, is it possible that the complement content is not the case? Because the embedded neg meaning (‘Hia didn’t leave’) is consistent with the higher verb neg (‘didn’t n-f know’), the response with “Yes” supports neg-raisability. Examine the higher neg S in (A) and lower neg S in (B) (In parallel, A' and B' in Uyghur show neg-raising.)

- A. Mia-nun [Hia-ka ttena-n kes-uro] al-ko iss-ci anh-ta
 M-TOP H-NOM leave-ADN **kes**-DIR know-not
 ‘Mia does not n-f know that Hia left.’
- B. Mia-nun [Hia-ka an ttena-n kes-uro] al-ko iss-ta
 M-TOP H-NOM not leave-ADN **kes**-DIR know
 ‘Mia n-f knows that Hia didn’t leave.’
- A.' Alim [Arzu-ni kät-ti döp] bil-mä-ydu (see A)
 A A -ACC leave-PST REPORT know-not-PRS.3Sg
- B.' Alim [Arzu-ni kät-mi-di döp] bil-i-du (see B)
 A A -ACC leave-not-PST REPORT know-PRS-3Sg
 (Uyghur: Adilä Ablimit p.c., via Zhong Zhencao)

One subject didn’t reply and another subject replied with both Yes and No. These two were excluded. The survey result from 47 is shown in Figure 1 below.

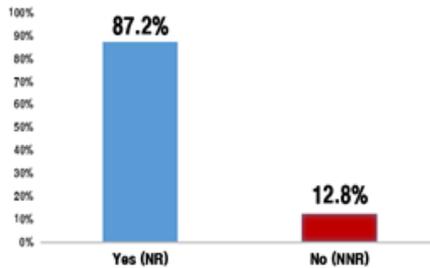


Figure 1. Neg-raisability in the non-factive alternant of *al-* ‘know’, *-uro al-* [NR=Neg-Raisable; NNR=Non-Neg-Raisable.] Neg-Raisability is strongly supported.

The result shows that more than 4 out of 5 subjects (87.2%) replied with 'Yes'(neg-raisable) to the question while only a small proportion of the subjects (12.8%) replied with 'No'. The proportional difference (74.4%) suggests that most of the (native) Koreans support neg-raisability of the non-factive 'know' sentence. The subjects with 'No' response must have linked the non-raisability to the possibility that the neg-raised high neg sentence is different from the low neg sentence in pragmatic meaning, since non-neg-raisability is universally recognized in factive 'know' sentences.

Also, if a verb is neg-raisable, the verb is anti-rogative i.e. it does not embed questions, as in (70).

- (70) *Mia-nun [Hia-ka way ttena-n kes-uro] al-/mit-nun-ta³¹
 M-TOP H-NOM why leave-ADN N-toward know/believe-PRES-DEC
 'Mia non-factively knows/believes why Hia left.'

In contrast to an external factive type, e.g. *-ta (-ko ha)-nun kes-ul*, if the structural case ACC is replaced by the postpositional/inherent case DIRectional *-uro*, its result becomes non-factive and its interpretation involves *-ha* 'say' more vividly to be true or false with respect to the

31 The factive *al-* can embed an interrogative clause with its ending (*ttena-* 'leave' *assPST*)-*nunci* 'whether' (with 'why' or not as yes/no Q). Theiler et al (2018) argue that such selectional restrictions are derived from properties of the relevant verbs. They assign the same semantic type <<s, t>, t> to declarative (traditionally proposition <s, t>) and interrogative complements. Anti-rogativity is explained in terms of logical analyticity of excluded middle presupposition for anti-rogative verbs of neg-raising like *believe*, criticizing Uegaki's (2016) approach. On the basis of the responsive predicate (factive) *know* vs. the anti-rogative 'believe,' Uegaki (ibid) posits the former as question-taking with the stipulation of type-shifters mapping entities to questions and propositions, thus making *know*-type verbs select for questions and *believe*-type propositions. However, as hinted in our account, by a covert *fact*, or *kes* in Korean and *koto* in Japanese, as the head of factive complements, the Vendler (1972) contrast (between a. *John knows the rumor that p* vs. b. *John believes the rumor that p*, with b only entailing p) is naturally resolved; if the head is a dependent pro-fact N *kes/koto* or lexical N *fact*, its clause is factively presupposed, embedded either by 'know' or 'believe.'

information conveyance rather than p itself for most natives.

4.4. Lexical Negation and Cancellation of Non-factive Reading

Interestingly, in several factivity alternation languages, cognitive epistemic verbs like ‘remember’ (*kiekha-* in Korean) and ‘understand’ (*ihayha-* in Korean) that are close in meaning to ‘know’ are commonly factivity alternation attitude verbs, whereas the negative counterpart of ‘remember’, i.e. ‘forget’ (*ic-* in Korean) (‘not remember any longer’) is commonly not a factivity alternation attitude verb but a constant factive verb in the alternation languages.

(71) Mia-nun [Hia-ka ilpon-ey ka{-n kes-ul/-n kes-uro/
M-TOP H-NOM Japan-to go{-ADN N-ACC/-ADN N-toward/
-ass-ta-ko}] kiekha-n-ta
-PST-DEC-C} remember-PRS-DEC
‘Mia remembers (the fact)/regards/thinks that Hia went to Japan.’

(72) Mia-nun [Hia-ka ilpon-ey ka{-n kes-ul/*-n kes-uro/
M-TOP H-NOM Japan-to go{-ADN N-ACC/-ADN N-toward/
*-ass-ta-ko}] ic-ess-ta
-PST-DEC-C} forget-PST-DEC
‘Mia forgot (the fact)/*regards/*thinks that Hia went to Japan.’ (But not ‘Mia non-factively forgot Hia went to Japan.’)

In this connection, the lexically negative verb *moru-* ‘do not ‘know’ in Korean is also always factive and takes only the structural ACC-marked case.

Why do lexically negative counterpart verbs take only factive complements? The characteristic of these verbs is that their meaning does not include any cognitive activity whatsoever because the positive cognitive activity is inherently negated. Thus, the suppletion form negation or lexical

negation leaves the projected presuppositional complement content intact. In contrast, the complement SC (---*kes-uro*) of the non-factive alternant verb *kiekha-* ‘remember’ or *al-* ‘know,’ as part of the assertive verbs of non-factive belief/thinking, can lie within the scope of verb negation.³²

Emotive factive predicates like *hwuhwoyha-* ‘regret’ in Korean, and their Turkish and Hungarian counterparts have no non-factive alternants either, because emotions are typically caused by various moods and facts and their presuppositions are deeper, further from at-issue and attitude holders’ emotion expressions are far or separated from their ‘not-at-issue’ presupposed embedded *p* (cf. Djärv *et al*’s 2018 experiments)], unlike cognitive (factive) verbs like ‘know,’ which are also called semi-factives.

4.5. The Social Meaning of the Non-factive *kes-uro*

One also often uses the non-factive *kes-uro* out of politeness, as even if one actually knows, this is used to mitigate one’s face. For instance, if the hearer as a senior firmly believes that Mia is too poor to be admitted to a college, and the speaker knows that she has been actually admitted, the speaker may use the NF *al-ta* with *-uro*, avoiding the factive *al-ta* with ACC (or even the declarative assertion), as not to oppose the hearer. Native Korean speakers take advantage of this factivity alternation in order to ‘hedge’ their face-threatening behavior. The same happens in Hungarian, Turkish, Uyghur and other alternation languages. (See Lee and Sperlic (2019) for its experimental studies in Korean and Turkish.)

- (73) a. Mia-ka iphak-ha-n kes-uro al-ko iss-umni-ta
 M-NOM enter-ADNpst **kes**-DIR know-ST DEF-DEC
 ‘(I) n-f know that Mia has been admitted.’ [DFR=deferential]

32 In *She forgot to water the flowers*, the infinitive involves modality unlike a *that* complement. The same happens in Korean: with an embedded *de se* subject the same *-l kes -ul* can be modal but the same form can be used for futurity to arouse presupposition embedded by *ic-* ‘forget’ or *al-* ‘know.’

- b. Mia mäktäp-kä kir-di däp bil-i-män.
 M school- DAT enter-PST REPORT know-PRS-1Sg
 ‘(I) n-f know that Mia entered the school.’ (Uyghur, M. K. Yunusoğlu p.c.)

5. Closing Remarks

In this paper, we have seen factive and non-factive alternants for cognitive attitude verbs like ‘know’ in Korean, Mongolian, Turkish, Uyghur, Manchu, Azeri, and Hungarian. The categorial status of the complement clause (rather than the type of the matrix attitude verbs) has to do with the factive vs. non-factive reading of the complement clause embedded by an attitude verb, supporting the broad decompositional line of Kiparsky and Kiparsky (1970), Kratzer (2006, 2016), Moulton (2015), Kastner (2015), Hanin & Bochnak (2017). More specifically, we have found that a projection of a DP nominal feature with a structural case, an element that functions as an argument, tends to convey a constantly factive reading. Particularly in Korean (and Japanese in this respect), the internal factive type with a pro-fact dependent noun (*-n kes* (*koto* in Japanese) ensures the factive presupposition of its clausal argument, creating a contradiction if veridically negated. This internal pro-fact argument can be embedded by the doxastic type of belief verbs, retaining its factive presupposition.³³

33 However, even such internal pro-fact DPs with *-n kes* in Korean, *koto* in Japanese and *the fact that p* in English, if embedded by *mit-*, *shinjiru* or *believe*, permit a very loose kind neg-raising anyway, unlike those embedded by the verb ‘know.’ Most native speakers including Larry Horn (e-mail) interpret *I deny the fact that I am involved* as *I deny the claim that I am involved* but *I can’t (don’t) accept the fact that my husband is dead* as presupposing the fact, and *I can’t believe that I passed* as being presuppositional in the complement with some mirativity. Kastner (2015) reports a Google search showing that *believe the fact that p* was relatively common in downward-entailing environments, though unaccepting the *believe the fact p*, marking it with ?? (with Larry Horn, Michael Barrie, unlike Elliot (2017), who argues that an S with *believe the p* and an S

Di-elemental complements can be taken by cognitive attitude verbs in a language like Korean, Japanese, Mongolian, Uyghur, and Turkish, in which case the first element is a topical DP, while the second element is a CP or a PP/small clause. The representative non-factive example of the second element small clause in Korean is *-(u)n kes-uro al-ta* ‘know’ towards *-(u)n kes*, not reaching the state of full ‘knowledge’ (atelicly ‘know’). The di-elements may be direct dependents of the matrix predicate, where the DP functions as a base-generated (hanging) topic in the sense of Koppen *et al* (2014) but in Korean and other factivity alternation Altaic languages, the presupposed proleptic ACC DP necessarily occurs with its **adversative** transition relation.³⁴ Being a topic, they semantically or informationally constitute a common ground, accounting for the factive presuppositional reading of the element by the speaker at least but with the adversativity condition of opposite predicates. The non-topic pro-fact argument DP, directly embedded by the attitude reports of *al-* and *mit-*, on the other hand, cannot be preceded by a topic DP because of presupposition contradiction. This leads us to conclude that cognitive attitude verbs like ‘know’ and ‘believe’ take a complement consisting of a *res* (situation) argument as a base-generated topic and an adversatively related doxastic proposition that is a sort of comment on the *res* argument.

In a majority of the languages, the cognitive epistemic verb ‘know’ typically embeds a factively presupposed complement only. In contrast, the doxastic verb ‘believe’ typically embeds a non-factive complement only. This typicality does not hold universally; the internal pro-fact content clausal nominal is constantly factively presupposed and the external type encompassing a SAY information conveying element though combined with a pro-fact nominal tends to be presuppositional with some contextual

with *believe the fact p* Strawson-entail one another (von Stechow agrees, e-m) and other linguists.

34 The ACC DP may be marked with the [+Adversative] feature for a proper interpretation.

variation in Korean and Japanese. Also, the clausal nominal complement with factive alternant verbs in alternation Altaic languages (with GENetive subject in some) is prevalent. In contrast, the CP with the finite clause final complementizer employed for the non-factive alternant 'know' in all those Altaic languages is commonly a REPORTative complementizer (grammaticalized from the verb SAY). The verb SAY is universally non-factive ('No SAY verb is factive or semi-factive' (Grimshaw 2015)). In languages where complement typing is important, it is natural to expect a SAYing complementizer to evoke non-factive alternants of 'know,' 'remember,' and 'understand,' creating factivity alternation. The SAYing REPORTative complementizer also occurs in South Asian and Southern and/or Eastern Indo-Aryan languages (Bayer 1998)), as a final or in-situ CP with no need to bother about movement as in Indo-European (Moulton 2015). This CP can be embedded by any assertive (expressing content ideas) and speech act verbs of asking, commanding, proposing (in Altaic languages) and even **promising** (in Korean).

Clause-typing by compositionality helps better understand factivity alternation and its related issues such as the distinction between the super status of factive 'know' and the weaker doxastic attitude reports.

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