

Factivity and two types of embedded clauses in Washo

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Intro: Differences between factive and non-factive embedded clauses have been noted in the literature since Kiparsky and Kiparsky (1970). Recent work argues that while factive complements are selected for by a silent D head, non-factive complements are selected for by the matrix verb directly (Kastner 2015). We provide novel evidence for this proposal from Washo (Hokan/isolate). In Washo, factive complements are formed through clausal nominalization by an overt D head, while non-factive complements are bare CPs. We propose that the two structures reflect the interpretation of these clauses: factive complements are interpreted as individuals that carry a presupposition contributed by a clausal nominalizer with the semantics of a definite article, while non-factive complements are interpreted as propositions. In doing so we show that the structure of factive complements is on a par with that of internally-headed relatives in the language.

Relative Clauses: Washo uses clausal nominalization to form individual-denoting internally-headed relative clauses (Hanink, To appear). In (1), the third-person pronominal suffix *-ge* turns the embedded clause into a nominal argument of the matrix verb by ι -binding the property-denoting relative clause, as shown in (2):¹

- (1) [mé:hu géwe ʔ-í:gi-yi-š-ge] lé-saʔ 1-í:gi-yi
 boy coyote 3-see-IND-SR-REL 1-also 1-see-IND
I also saw the coyote that the boy saw. *Hanink (2016)*

- (2) a. $\llbracket\text{-ge}\rrbracket: \lambda P \iota x [P(x)]$
 b. $\llbracket\text{me:hu gewé ʔi:giyiš}\rrbracket: \lambda x \exists e [\text{see}(x_{\text{coyote}})(e) \ \& \ \text{agent}(\iota z.\text{boy}(z))(e)]$
 c. $\llbracket\text{me:hu gewé ʔi:giyišge}\rrbracket: \iota x \exists e [\text{see}(x_{\text{coyote}})(e) \ \& \ \text{agent}(\iota z.\text{boy}(z))(e)]$

Factives vs. non-factives: The same strategy used to form relative clauses is used to form the complements of factive verbs, as in (3), where matrix *know* selects a non-relative nominalized clause. Non-factive verbs, such as epistemic *think*, embed a bare clausal complement instead, as in (4). These complements also surface with a different mood marker, *-aʔ*, which never co-occurs with the nominalizer *-ge* (Jacobsen 1964):

- (3) [Emily t' -išim-aṇaw k' -éʔ-i-š-ge] 1-ašaš-é:s-šemu-yi
 Emily NMZLR-sing-well 3-be-IND-SR-REL 1-not.know-NEG-really-IND
I really know that Emily is a good singer. *field notes*

- (4) Béverli [démlu di-begúweʔ-é:s-aʔ] hámu-yi
 Beverly food 1-buy-NEG-DEP 3.think-IND
Beverly thinks I didn't buy the food. *Washo archive*

Proposal: Building on Kastner (2015), we propose that factive verbs select for DPs, while non-factive verbs select for CPs. Kastner argues that the complements of factive verbs are *familiar* in the common ground; this presupposition is contributed by a D head (null in English) that introduces a complement clause with presuppositional force (cf. Adger & Quer 2001). Non-factive complements lack a D-layer and are not presuppositional. Washo lends novel support for this analysis in that it reveals an overt D head precisely in the proposed position of the null D in factive complements. To give an interpretation for both types of complements we follow Moulton (2009) and Elliott (2016) in assuming that a functional head F_{PROP} in the periphery of embedded clauses turns propositions into properties. F_{PROP} takes a proposition of type $\langle s, t \rangle$ and returns a property denoting the set of individuals with the CONTENT specified by the proposition, (5):

- (5) $\llbracket F_{\text{prop}} \rrbracket^w = \lambda p_{\langle s, t \rangle} \lambda x_e [\text{CONT}_w(x) = p]$

¹Gloss: DEPENDENT mood; INDEPENDENT mood; NEGATION; NMZLR: NOMINALIZER; POSSESSIVE; Q: QUESTION MARKER; SR: SWITCH REFERENCE; RELATIVE MARKER.

Composition of factive complements proceeds as in (6), where the property formed through F_{PROP} is ι -bound by the D head *-ge*, which has the meaning of a Strawsonian definite article just as it does in (2a):

- (6) a. $[[\text{Emily } t' \text{ i\text{š}ima\eta}aw \text{ k' } e\eta \text{ i\text{š}}]]^w$:
 $\lambda p \lambda x [\text{CONT}_w(x) = p]$ ($\lambda w' [\text{Emily is a good singer}_{w'}]$)
 $= \lambda x. \text{CONT}_w(x) = \lambda w' [\text{Emily is a good singer}_{w'}]$ *property formation*
- b. $[[\text{Emily } t' \text{ i\text{š}ima\eta}aw \text{ k' } e\eta \text{ i\text{š}ge}]]^w$:
 $\lambda P \lambda x [P(x)]$ ($\lambda x. \text{CONT}_w(x) = \lambda w' [\text{Emily is a good singer}_{w'}]$)
 $= \iota x. \text{CONT}_w(x) = \lambda w' [\text{Emily is a good singer}_{w'}]$ *ι -binding*

It is for semantic reasons that factive complements are identical to relative clauses in Washo – both require a D head to ι -bind a property-denoting CP before it composes with the matrix verb. The individual argument in (6b) may now be selected by the matrix verb and result in the meaning in (7) (Elliott 2016). There is a knowing state, whose agent is the speaker, and whose theme is the proposition that *Emily is a good singer*:

- (7) $[[\text{Emily } t' \text{ i\text{š}ima\eta}aw \text{ k' } e\eta \text{ i\text{š}ge} \text{ la\text{š}a\text{š}e:s\text{š}emuyi]]^w$:
 $\exists s [\text{knowing}_w(s) \wedge \text{AGENT}_w(s) = \text{speaker} \wedge \text{THEME}_w(s) = \iota x [\text{CONT}_w(x) = \lambda w' [\text{E. is good singer}_{w'}]]]$

Non-factive complements on the other hand lack a D-layer and are interpreted as full propositions. In this account, they simply express the content of the thinking state held by the subject, who in this case is Beverly:

- (8) $[[\text{Béverli } démlu \text{ dibegúwe}\eta' \text{ e:sa}\eta \text{ hámuyi}]]^w$:
 $\exists s [\text{thinking}_w(s) \wedge \text{AGENT}_w(s) = \text{Beverly} \wedge \text{CONT}_w(s) = \lambda w' [\text{I didn't buy the food}_{w'}]]]$

The difference in mood markers then comes down to selection: factive verbs select a D head that in turn selects for the marker *-i*, while non-factive verbs directly select for CPs headed by *-a?*:

- (9) a. *factive*: $[_{VP} \text{ a\text{š}a\text{š}} [_{DP} [_{CP} i] \text{ ge}]]$ b. *non-factive*: $[_{VP} \text{ hámu} [_{CP} a?]]$

Embedded interrogatives: The syntax of embedded questions supports the proposal that a nominalizing D head is required to encode a presupposed complement. While embedded *wh-in-situ*-questions are presuppositional (Karttunen 1976) – in (10), the presupposition is that there is *a kind of tree that Ryan likes* – embedded *if*-clauses lack this presupposition, as in (11). The contrast below therefore mirrors the factivity contrast above: The presuppositional embedded question in (10) has the syntax of a factive complement, while the question introduced by *if* in (11) parallels a non-factive with no overt complementizer. This contrast lends concrete cross-linguistic support for the presuppositional difference between [+/- factive] embedded interrogatives (Broekhuis & Nye 2013) and provides a natural extension to Kastner's (2015) proposal.

- (10) $[\text{Ryan } dewd \text{ i}\eta \text{ i\text{š}} \text{ hu}\eta \text{ a-hé:š } t' \text{ e}\eta \text{ galá:m-i-š-ge}] \quad \text{1-a\text{š}a\text{š}-\acute{e}:s-i}$
 Ryan tree which-Q kind like-IND-SR-REL 1-not.know-NEG-IND
I know which kind of trees Ryan likes. *field notes*
- (11) $[\text{di-}\eta \acute{a}:m \quad \text{z í:g in} \quad \text{hé:š } \eta \text{ i}\eta \text{ w-a}\eta] \text{ di-hamuguyú:g-i}$
 1.POSS-son chicken Q 3-eat-DEP 1-wonder-IND
I wonder if my son ate the chicken. *Bochnak (To appear)*

Conclusion: Washo contributes data from an understudied language to recent proposals that factive complements are presuppositional and require a D shell, while non-factive complements are not. Factive clauses are shown to be syntactically similar to relative clauses, unlike non-factives, in that both require a nominalizing D-head to ι -bind a property. The account is also shown to extend to differences in embedded interrogatives.

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