Clausal embedding in Washo: Complementation vs. modification

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Abstract

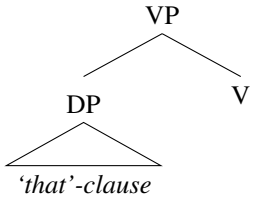
This paper concerns the embedding properties of two classes of verbs that are generally taken to differ with respect to the presuppositions they impose on their complement. Adding to this line of work, we contribute novel data from Washo, a highly endangered Hokan/isolate language spoken around Lake Tahoe in the United States, to the debate on why – and how – attitude predicates differ in the types of clauses they embed. The core of our claim is that the clausal embedding strategies of certain predicates follow from independent properties of clause types in the language. On the one hand, clausal complements of presuppositional verbs come in the form of clausal nominalizations, which are selected as thematic internal arguments. The DP-layer in these complements is responsible for encoding familiarity in a general sense (along the lines of Kastner 2015) both in complement clauses as well as in other constructions in the language such as the complements of perception verbs. Clauses embedded by non-presuppositional verbs on the other hand are not selected at all; they are instead adjunct modifiers, which follows from the fact that the attitude verbs they modify are always intransitive. This aspect of the analysis lends support to the property-analysis of 'that'-clauses (e.g., Moulton 2009, Elliott 2016), but only in certain instances of embedding. The overarching goal of the paper is to rethink the relationship between embedding verbs and their complements from a more global perspective of a given language, and to elucidate the distinction between complementation and modification as available modes of embedding.

1 Introduction

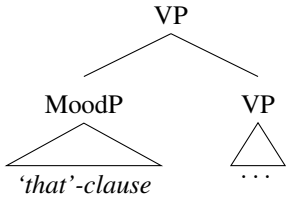
This paper concerns the embedding properties of two classes of verbs that are generally taken to differ on the basis of the presuppositions they impose on their complement. Often, this distinction in presuppositionality is reduced to the notion of factivity: Semantically, a factive predicate presupposes the truth of its complement, while non-factive predicates carry no such presupposition. On the syntactic side of this distinction, it has been widely demonstrated through a range of studies that presuppositional and non-presuppositional predicates behave differently with respect to how they embed clausal complements (i.a. Kiparsky & Kiparsky 1970; Zubizarreta 1982; Adams 1985; Rooryck 1992; Abrusán 2011, 2014; Kastner 2015). This paper contributes novel data from Washo (also spelled Washoe, Wáʻšiw), a highly endangered Hokan/isolate language spoken around Lake Tahoe in the United States, to the debate on why – and how – attitude predicates differ in the types of clauses they embed. As we will show, the distinction between presuppositional and non-presuppositional predicates in Washo is overtly signalled by the morphosyntactic shape of the clauses they embed, which correlates with independent characteristics of these clause types.

The core of our claim is that the clausal embedding strategies of certain predicates follow from independent properties of the language. As we show, Washo displays a general two-way distinction in embedded clause type: Clauses embedded by presuppositional verbs are nominalized, while clauses embedded by non-presuppositional verbs are bare and never nominalized. We argue that the shape of these clauses signals a further difference in mode of embedding: Clausal nominalizations are selected as complements, while bare clauses are verbal modifiers. The structural differences between clausal complementation and modification that we propose for Washo are schematized in (1) and (2), respectively.

(1) *Complementation*



(2) *Modification*



We argue moreover that the DP-layer in selected nominalizations, which contain an index-hosting projection idxP (Simonenko 2014, Hanink 2020), is responsible for encoding familiarity (in the sense of Heim 1982) in a general sense. This idea is generally in line with recent work by, e.g., Kastner (2015), who argues that presuppositional complements are selected either by a covert or overt D head before composing with the predicate itself; this DP then serves as the internal argument selected by the verb. Meanwhile, the adjunct status of clauses of the second type follows from the fact that the verbs that embed them are always intransitive. This aspect of the analysis lends support to the property-analysis of 'that'-clauses (e.g., Kratzer 2006, Moulton 2009, Elliott 2016, 2017), but only in certain instances of embedding, as it is shown not to extend to the complements of transitive predicates.

In our account, apparent factivity effects then fall out from independent interpretive effects of these different modes of embedding. Namely, for presuppositional complements, there is direct reference to an established proposition in the Common Ground; this reference is established via an assignment function, which maps an index to the individual whose content is specified by that proposition (along the lines of Moulton 2009), and is facilitated by the presence of a larger DP structure. The lack of presuppositionality with other predicates then follows from the absence of a DP layer in the adjuncts that modify them. The proposed analysis further accounts for the difference in mood markers found in these embedded clauses, assimilating this distinction to the distribution of mood elsewhere in the language. As we show, these markers reflect differences in the semantics of the embedded clause, and mirror the patterns observed in further types of embedded clauses as well, lending evidence to the proposed distinction in complementation vs. modification.

The outline of this paper is as follows. In Section 2 we present the data in question from two morphosyntactic types of embedded clauses in Washo. In Section 3 we propose a syntactic analysis of these embedded clause types: complement clausal nominalizations and bare adjunct clauses. In Section 4 we introduce the

ingredients of our semantic analysis, briefly summarizing previous work on attitude verbs and clausal embedding. In Section 5 we present our analysis and draw a broader connection to embedding in Washo, and Section 6 concludes.

2 Two strategies for clausal complementation

In this section we lay out the two distinct strategies that Washo employs for clausal embedding by verbs of both the presuppositional and non-presuppositional type. In the examples to follow, we adopt the taxonomy of verb types in Cattell 1978:77 in the description of a verb as presuppositional or non-presuppositional (see also Kastner 2015:159 and Bogal-Allbritten & Moulton 2017:215).[1]

(3) a. **Non-presuppositional**: The embedded clause introduces novel content.
believe, say, assume, think, claim, suppose, etc.

b. **Presuppositional**: The embedded clause refers to familiar content.
remember, regret, know, forget, realize, etc.

The clausal complements of presuppositional verbs exhibit two characterizing traits, both of which are exemplified below in (4) under the embedding verb *ašašé:s* 'know'.[2] First, they are always nominalized and bear the suffix *-gi/-ge*.[3] Second, they occur with the 'independent' mood suffix *-i*, which is the default mood in Washo; for example, this is the obligatory mood marker in matrix clauses, as shown in (5). To avoid confusion in the examples that follow, we also note here that the verbs 'know' and 'remember' in Washo are part of a small class of verbs that are inherently negative, i.e., the positive interpretation of this verb requires morphological negation by the suffix *-é:s*, and in fact 'remember' is simply the negated version of 'forget'.[4]

(4) *t'éliwhu lɬ:yuŋil ʔɬ:biʔayšge* *lášašé:si*
[t'eliwhu li:-uŋil ʔ-i:biʔ-ayʔ **-i** -š **-ge**] l-ašaš-e:s-i
man then-DFT 3.come-INT.PAST **-IND** -DS **-NM.ACC** 1/3-not.know-NEG-IND
'I know that the man came a long time ago.'

[1] Cattell (1978) also discusses a third class of verbs called 'response-stance' verbs, which include entries such as 'agree' and 'accept'. To our knowledge, Washo does not lexicalize any of the verbs in this class.

[2] Glosses: ACC: accusative; ADV: adverbial; ATTR: attributive; AUD: auditory evidential; CAUS: causative; DEP: dependent mood; DFT: defunctive; DIST: distal; DIST.FUT: distant future; DS: different subject; DU: dual; IN: intransitive; INCH: inchoative; IND: independent mood; INST: instrumental; INT.FUT: intermediate future; INT.PAST: intermediate past; NEAR.FUT: near future; NC: negative concord; NEG: negation; NM: clausal nominalizer; NOM: nominative; NMLZ: deverbal nominalizer; OBL: oblique; PL: plural; PLUPF: pluperfect; PRO: pronoun; PROG: progressive; PROSP: prospective; Q: question particle; REC.PAST: recent past; REFL: reflexive; SS: same subject; TR: transitive; UN: unexpressed object; VIS: visual evidential. A prefixed number indicates verbal or possessor agreement. Transitive verbs have a portmanteau prefix, indicated as SUBJ/OBJ. The orthography used is adapted from Jacobsen 1964; symbols deviating from the IPA are: L: [l̥]; M: [m̥]; š: [ʃ]; y: [j]; Y: [j̊]; stress is indicated by an acute accent. All data without a citation come from the authors' fieldwork. Examples labeled with 'Washo Archive' are taken from the corpus of examples available online at <washo.uchicago.edu>.

[3] The difference in the form of the suffix is a reflex of a nominative/accusative case distinction. We return to this in Section 3.1.

[4] Other members of this class include e.g., 'not believe' and 'not know how (to do something)'.

(5) *gawáyiʔ Múʔušuweʔi*
gawayiʔ ∅-Muʔuš-uweʔ **-i**
horse 3-run-hence **-IND**
'The horse is running away.'

Other examples of nominalizations exhibiting these traits follow in (6-8), embedded by the verbs 'remember', 'forget', and 'see', respectively.

(6) *Adele díme ʔ sú:bišge* *dihámup'ayé:si*
[Adele dimeʔ ∅-su:biʔ-i-š-ge] di-hamup'ay-e:s-i
Adele water 3/3-bring-IND-DS-NM.ACC 1/3-forget-NEG-IND
'I remember that Adele brought the water.'

(7) *hášayišge* *dihámup'ayi*
[∅-haʔaš-ayʔ-i-š-ge] di-hamup'ay-i
3-rain-INT.PAST-IND-DS-NM.ACC 1/3-forget-IND
'I forgot that it rained.'

(8) *ditugí:beweʔšda* *há:bišge* *lí:giyi*
di-tug-i:biʔ-uweʔ-i-š-da [∅-ha:biʔ-i-š-ge] l-i:gi-i
1-look-arrive-hence-IND-DS-ADV 3-rain-IND-DS-NM.ACC 1/3-see-IND
'I just looked around outside and I saw that it rained.'[5]

As will become important later in the paper, clausal nominalization is a robust strategy for subordination throughout the language. For example, the complements of perception verbs likewise come in the form of clausal nominalizations (9) (Hanink 2016), as do internally headed relatives (10) (Peachey 2006, Hanink 2020). We return to the significance of nominalization in the complements of presuppositional verbs and beyond in Section 5.2.

(9) *Complement of perception verb*
hášayišge *didámali*
[∅-haʔaš-ay **-i** -š **-ge**] di-damal-i
3-rain-INT.PAST **-IND** -DS **-NM.ACC** 1/3-hear-IND
'I heard it raining.'

[5] A reviewer asks whether Washo employs any strategy for indirect perception. Indeed, the language has both visual and auditory evidentials, as shown in (1) and (2), from Jacobsen 1964:626-628:

(1) *míyeʔiyeʔi*
m-iyeʔ**-iyeʔ**-i
2-arrive-**VIS**-IND
'You have come, I see.'

(2) *gá:c'iŋdelemi*
∅-ga:c'iŋ**-delem**-i
3-chop-**AUD**-IND
'It sounds like he's chopping, I hear him chopping.'

The precise nature of evidentials in Washo has not been studied in any detail, and differences between clausal embedding under perception verbs and the use of evidentials remains an open question for future research.

(10) *Internally headed relative*

mé:hu géwe	*ʔí:giyišge*	*lé:saʔ*	*lí:giyi*
[me:hu gewe	ʔ-i:gi **-i** -š **-ge**]	le:-saʔ	l-í:gi-i
boy	coyote 3/3-see **-IND** -DS **-NM.ACC**	1.PRO-also	1/3-see-IND

'I also saw the coyote that the boy saw.' Hanink 2016: 122

Changing gears, clauses embedded by non-presuppositional verbs differ from those embedded by presuppositional verbs in two ways. First, they surface with the 'dependent' mood marker *-aʔ*, rather than with the independent mood marker *-i* as above. (We return to arguments for the classification of these suffixes as mood markers in Section 5.) Second, they are never nominalized; as noted by Jacobsen (1964:663), this mood marker never co-occurs with nominalizing morphology. Both of these traits can be seen in the embedded clause in (11), which in this case is subordinate to the non-presuppositional verb *hámu* 'think':

(11)

béverli	*démlu dibegúweʔé:saʔ*	*hámuyi*
beverli	[demlu di-beguweʔ-e:s **-aʔ**]	∅-hamu-i
Beverly	food 1/3-buy-NEG **-DEP**	3-think-IND

'Beverly thinks that I didn't buy the food.' Washo Archive

These traits are further corroborated by the examples below, demonstrated alongside the verbs 'say', 'dream', and 'believe', respectively:

(12)

dip'áyt'igimuwet'aʔ	*ʔí:di*
[di-p'ayt'iʔ-gim-uweʔ-tiʔ-aʔ]	ʔ-i:d-i
1-play-go.out-hence-INT.FUT-DEP	3-say-IND

'She said I could go play.' Washo Archive

(13)

diyéʔešaʔ	*digumsuʔúšiʔi*
[di-ye-iʔiš-aʔ]	di-gum-suʔuʔuš-iʔ-i
1-fly-forward-DEP	1-REFL-dream-ATTR-IND

'I dreamt that I was flying.' Washo Archive

(14)

mɨtgí:bɨlé:si	*díme ʔ ʔilélegiʔetiʔaʔ*
∅-mɨtgi:bɨl-e:s-i	[dimeʔ ∅-ʔil-leleg-iʔ-etiʔ-aʔ]
3-disbelieve-NEG-IND	water 3-ATTR-red-ATTR-INCH-DEP

'He believes the water turned red.' Washo Archive

Beyond clauses embedded by non-presuppositional verbs, the dependent mood marker *-aʔ* is also found in certain types of adjuncts, namely clauses conveying concession or temporal simultaneity. An example of the latter is given in (15) below:

(15) *Temporal adjunct*

mé:hu ʔélšima? *ʔémc'iga?lamé:s-i*
[me:hu ʔ-elšim **-a?** -∅] ʔ-emc'i-ga?lam-e:s-i
boy 3-sleep **-DEP** -SS 3-wake.up-want-NEG-IND
'The boy doesn't want to wake up while he's sleeping.'

In Section 5.5, we return to the discussion of adjuncts in order to show that the use of the dependent mood marker in both contexts is not an accident, but rather falls out from the meaning of this morpheme.

Below, Table 1 summarizes the descriptive morphological differences between clauses embedded by presuppositional and non-presuppositional verbs in Washo, which differ both in the choice of mood marker and in the presence or absence of the nominalizing suffix *-gi/-ge*. This table will be updated in the following section after we justify the syntactic structures we propose for these clauses.

Table 1: Embedded clause characteristics by matrix verb type in Washo (to be expanded)

	nominalizer	**mood marker**
presuppositional	*-gi/ge*	*-i*
non-presuppositional	—	*-a?*

Going forward, both the presence of nominalizing morphology and the difference in mood markers will play an important role in the semantics we assign to the two types of clauses. In the next section, we offer the proposed corresponding syntactic structures for both embedded clause types, and argue for a difference in embedding strategy – complementation vs. modification – before moving on to the semantic analysis.

3 The syntax of clausal embedding

The aim of this section is to elaborate on the respects in which the morphological and structural properties of clauses embedded by presuppositional verbs differ from those embedded by non-presuppositional verbs. In nominalizations, we argue that the embedded clause is housed inside a larger DP structure in which the suffix *-gi/-ge* is the spell out of a syntactically-encoded index (e.g., Elbourne 2005, Schwarz 2009), which introduces the flavor of 'familiarity' of this clause type. Clauses embedded by non-presuppositional verbs differ in their lack of nominalization as well as in choice of mood marker. Crucially, we argue that these differences in morphosyntax correlate with whether the embedded clause is selected as the thematic object of the matrix verb (*-i*-marked nominalizations), or occurs instead as an adjunct modifier (*-a?*-marked clauses).

3.1 Clausal nominalizations are DPs

We begin with the discussion of clausal nominalizations. We adopt the claim that nominalized clauses are full CPs encased inside a DP layer (Peachey 2006, Hanink 2016). The hallmark of this clause type

in Washo is the presence of the nominalizing suffix *-gi/-ge* at the right periphery of the embedded clause, which Hanink (2020) argues is the spell out of an index-hosting head 'idx' within a larger DP structure. While Washo lacks a definite article, there is independent evidence, laid out in Hanink 2020, that Washo nominals do project a DP-layer (based on e.g., tests identified by Bošković (2008)). On Hanink's account, the semantic role of idx is to introduce familiarity within the DP in the sense of Heim 1982, building on Elbourne (2005) and Schwarz (2009). We propose in the next section that it is this index that gives rise to the presuppositional 'flavor' of certain clausal nominalizations, in that the index is able to pick out contextually salient propositional content via an assignment function.

Before moving to this discussion, we first provide evidence that clausal nominalizations are truly DPs, based on both their case and distributional properties. First, the suffix *-gi/-ge* is found elsewhere in the language in the form of a third-person pronoun, where its form co-varies with case: *gí:* is the nominative form of the pronoun (16a), while *gé:* is the accusative form (16b):[6]

(16) a. *gí:* *pélew* *ʔíʔwi*
gi: pélew ʔ-íʔiw-i
3.PRO.NOM jackrabbit 3/3-eat.TR-IND
'He's eating the jackrabbit.' Jacobsen 1979:151

b. *ʔló:t* *gé:ŋa* *ʔí:giyé:sayt'iʔi*
ʔlo:t **ge:**-ŋa ʔ-i:gi-e:s-ayt'iʔ-i
yesterday **3.PRO.ACC**-NC 3/3-see-NEG-PLUPF-IND
'She hadn't seen it yesterday.'

The case distinction in pronouns is moreover mirrored in clausal nominalizations in that the suffix *-gi* occurs when the argument resulting from the nominalization is the subject of the matrix verb, but surfaces otherwise as *-ge*. To exemplify this contrast, consider the use of *-gi* in the internally headed relative clause in (17). In this case, the entire nominalization refers to the stick that is being used to kill something; as this stick is the thematic subject of the matrix verb *gɬlgayi* 'break', the nominative form of the suffix surfaces:

(17) *máʔak t'í:yelilu* *geyúlihayišgi* *gɬlgayi*
[$_{DP}$ [$_{CP}$ maʔak t'-i:yeliʔ-lu ge-yuli-ha-i-š] **-gi**] ∅-gɬgay-i
stick NMLZ-be.large-INST 3/3UN-die-CAUS-IND-DS **-NM.NOM** 3-break-IND
'The big stick he killed it with broke.' Washo Archive

In all other cases, the accusative form *-ge* surfaces. The example in (18) shows a nominalized clause that acts as the object of the matrix verb, here 'see', in which accusative case is duly assigned.[7]

[6] For typical phonological reasons, the vowel is long and stressed only when *gi/ge* stands alone, i.e., in pronominal uses (Jacobsen 1964:309,312-313).

[7] A reviewer asks whether this example is ambiguous between an internally-headed relative, a presuppositional attitude, and perception reading. This is in fact the case, given that all three clause types are morphosyntactically identical. In general, the readings are disambiguated by context, unlike in languages in which word order differentiates relative clauses (e.g., Diegueño, Basilico 1996).

(18) *t'é:liwhu ʔíšmišge* *lí:giyi*
[DP [CP t'e:liwhu ʔ-išim-i-š] **-ge**] l-i:gi-i
man 3-sing-IND-DS **-NM.ACC** 1/3-see-IND
'I saw the man who was singing.' Washo Archive

Accordingly, the complements of presuppositional verbs are marked with *-ge*, as they act as objects of the matrix verb (in a way to be made more precise below). We note however that we do find cases where nominalized propositions may be subjects of copular clauses such in (19). This follows from the fact that, like the complements of presuppositional verbs, sentential subjects are familiar and must be nominalized (on a par with the obligatory definiteness marking observed in this construction in e.g., Hebrew, Greek, Persian and ASL, see discussion in Kastner 2015:178).[8] Bare clauses (with any mood marker) may not be subjects.

(19) *lemí:giʔé:biʔišgi* *t'áŋaw* *k'éʔi*
[DP [CP lem-i:gi-i:biʔ-i-š] **-gi**] t'-aŋaw k'-eʔ-i
1/2-see-come-IND-DS **-NM.NOM** NMLZ-good 3-be-IND
'That you came to see me is good.'

We note here that the language does not allow nouns to embed complements (e.g., constructions of the form 'the fact that . . . '), which have also been the focus of investigation in recent work on factivity and embedding (e.g., Moulton 2009, 2015, Kastner 2015, Elliott 2016).

Aside from the above case properties, the DP-status of clausal nominalizations is supported by their distribution. For example, they can be arguments of postpositions (see also Peachey 2006), which always select nominal complements. We show this below with the instrumental postposition *-lu*, which in (20) selects for the nominal argument *ditulíc'ik* 'my finger':

(20) *ditulíc'iklu* *digumc'í:geyi*
[DP di-tulic'ig] **-lu** di-gum-c'i:ge-i
1-finger **-INST** 1-REFL-scratch-IND
'I'm scratching myself with my finger.' Washo Archive

The same postposition can also select for a clausal nominalization, as in (21):

(21) *gó:beʔ lé:meʔáŋawigelu* *dip'ímeweʔgiši*
[DP go:beʔ l-e:meʔ-aŋaw-i-∅-ge] **-lu** di-p'im-eweʔ-giš-i
coffee 1-drink-well-IND-SS-NM.ACC **-INST** 1-go.out-hence-PROG-IND
'I keep going out because of the coffee that I drank.'
='*With all the coffee I drank, I keep going out*.' Hanink 2020:15

Taken together, the case and distributional properties of clausal nominalizations indicate that they are DPs. We now turn to lay out in more detail the assumptions we make about the structure of the DP in Washo.

[8] A reviewer suggests testing such subjects with the predicates 'a lie' or 'false'. To our knowledge, the noun 'lie' in Washo does not allow for sentential complements, and the language does not have a word for 'false'.

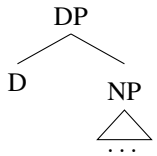
3.1.1 The structure of the Washo DP

In the approach we adopt going forward, familiarity in definite descriptions (in the sense of Heim 1982) is divorced from the semantics of the definite article, and is instead encoded by a head idx that projects its own phrase (Simonenko 2014, Hanink 2018, 2020) within the extended projection of N. This approach to DP structure builds on proposals by Elbourne (2005) and Schwarz (2009), the latter of whom argues that anaphoric/familiar DPs differ from non-anaphoric (e.g., merely uniqueness-encoding) DPs not only semantically but also syntactically: DPs with non-familiar referents lack an index in their functional structure. The semantic index associated with idx in familiar DPs is then interpreted along the lines of a pronoun, for example by the Traces and Pronouns Rule of Heim & Kratzer 1998 (22), allowing it to be mapped back to an antecedent or to pick out a referent deictically (e.g., on a demonstrative use; Elbourne 2008).

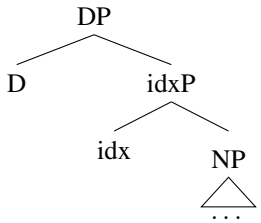
(22) **Traces and Pronouns Rule**
If α is a pronoun or trace, g is a variable assignment, and $i \in$ dom(g), then $[\![\alpha_i]\!]$ = g(i)

In the context of the current paper, we adopt in particular the following implementation of this type of account found in Hanink 2020, according to which idxP intervenes between the DP and NP-layers in order to give rise to an anaphoric or familiar meaning of the definite description.

(23) *Unique DP*



(24) *Familiar DP*



In (24), the meaning of idx is property-denoting, following an IDENT type shift (Partee 1986) of the individual-denoting index, while D has the Fregean/Strawsonian meaning of an ι-operator:

(25) a. $[\![\text{D}]\!]$: $\lambda P_{\langle e,t\rangle}$: $\exists!x(P(x)).\iota x_e[P(x)]$

b. $[\![\text{idx}_{[\text{ID:}\underline{i}]}]\!]^g$: $\lambda y_e[y = \text{g}(i)]$

The index then acts essentially as a modifier that combines with the NP via Predicate Modification (Heim & Kratzer 1998), contributing the anaphoric meaning to the entire DP:

(26) $[\![24]\!]^g$: $\iota x_e[[\![\text{NP}]\!](x)$ & $x = \text{g}(i)]$ $\equiv \exists!x([\![\text{NP}]\!](x))$

While we do not recreate all of her arguments here, Hanink argues that the distribution of *gi/ge* supports the proposal that this morpheme encodes familiarity. For instance, *gi/ge* is also observed in independent pronominal forms (27) (as mentioned above), as well as in the structure of demonstratives (28):

(27) *gí:* *pélew* *ʔíʔwi*
gi: pelew ʔ-iʔiw-i
3.PRO jackrabbit 3-eat.TR-IND
'He's eating the jackrabbit.' =(16a)

(28) *hádi**gi*** *pélew* *Mú:biʔi*
hadi-**gi** pelew ∅-Mu:biʔ-i
DEM-3.PRO jackrabbit 3-run-IND
'That jackrabbit ran.'

In particular, (28) likewise provides evidence that idx is a head separate from D in that it can occur with the overt D head *hádi-* (adopting the structure of demonstratives as proposed by, e.g., Elbourne (2008)). Going forward, we adopt this proposal for the structure of familiar DPs in Washo.[9]

3.1.2 The structure of CP

Turning now to the clausal level, we follow Peachey (2006) in the proposal that the syntax of embedded nominalizations contains a fully spelled-out CP structure. Evidence that the material below this nominal layer constitutes a complete, independent clause comes from various morphological clues. First, these clauses are able to host tense information, which we treat as a realization of T (though tense is optional; see Bochnak 2016 for a detailed analysis of tense and temporal interpretation in the language). This is exemplified in (29) with the presence of the intermediate past suffix *-ayʔ* :

(29) *hášayišge* *dihámup'ayi*
[$_{DP}$[$_{CP}$ ∅-haʔaš **-ayʔ** -i-š]-ge] di-hamup'ay-i
3-rain-**INT.PAST**-IND-DS-NM.ACC 1/3-forget-IND
'I forgot that it rained.'

Second, these clauses require the presence of the independent mood suffix, which, as discussed in the previous section, is always realized as *-i* in nominalizations, and is accordingly observed in (29). Here we adopt the assumption that mood markers are housed in their own projection, MoodP, which surfaces below CP (following e.g., Giannakidou 2009 for Greek). As mentioned above, we return to arguments for the classification of this suffix as a mood marker in Section 5. Finally, negation is also allowed in such clauses, as shown through the example in (30):[10]

(30) *Adele t'é:liwhu ʔí:giyé:sišge* *lášaší:si*
[$_{DP}$[$_{CP}$ Adele t'e:liwhu ʔ-i:gi-e:s-i-š]-ge] l-ašaš-e:s-i
Adele man 3/3-see-NEG-IND-DS-NM.ACC 1/3-not.know-NEG-IND
'I know that Adele didn't see the man.'

[9]Nothing especially crucial to the analysis hinges on the view that familiarity is introduced by idx. On Kastner's (2015) approach for example, familiarity is encoded by D in his Heimian approach. We adopt the idx view here because it works well for our purposes and has been independently argued to account for the morphology of *-gi/-ge*.

[10]A reviewer raises the question of whether is evidence for nominative case (assigned by T) in clausal nominalizations. While non-pronominals do not bear case in Washo, the subject Adele in (30) gives an example of an overt subject that accordingly controls subject agreement on the verb. This type of nominalization in Washo is formed from a full clause and is not deficient in any way.

Finally, evidence for a CP layer comes from the fact that nominalized clauses exhibit switch reference morphology (Jacobsen 1967) where appropriate. Switch reference is common in languages of North America (McKenzie 2015) and refers to grammatical markers that track whether the subjects of two connected clauses are coreferential. In Washo, the different subject suffix *-š* appears when the subject of an embedded clause differs from the one in the clause it is embedded in (the same subject marker is null) (Jacobsen 1964:665; Jacobsen 1998). Taking the same example again, consider (31). The subject of the embedded clause is the addressee, while the subject of the matrix clause is the speaker. As these subjects are not coreferential, the different subject marker *-š* appears at the edge of the embedded verb 'rain', as the final morpheme before the nominalizer *-ge*:

(31) *hášayišge* *dihámup'ayi*
[$_{DP}$[$_{CP}$ ∅-haʔaš-ayʔ-i **-š**]-ge] di-hamup'ay-i
3-rain-INT.PAST-IND **-DS** -NM.ACC 1/3-forget-IND
'I forgot that it rained.'

We follow Finer (1985) on the proposal that the different subject marker in Washo is hosted in C (see also Watanabe 2000, Arregi & Hanink 2018, 2021), constituting evidence for the presence of a CP layer in these nominalizations. As Arregi & Hanink point out, switch reference morphemes are the highest suffixes within the embedded clause (preceding only *gi-/ge-* in clausal nominalizations), lending evidence to the idea that they occupy C. We note that there are no other overt complementizers in the language.[11]

Taking these points together, we schematize the structure we adopt for clausal nominalizations in (32b), in which the entire clause is selected for by idx, a functional head in the extended projection of D.[12] The entire DP is then selected for by the matrix verb, as its complement (see Hanink 2020 for a treatment of the realization of case on these nominalizations). Note that because Washo is a largely head-final language, the structure is left-branching aside from the DP, in which nominal projections are neutrally head initial.[13]

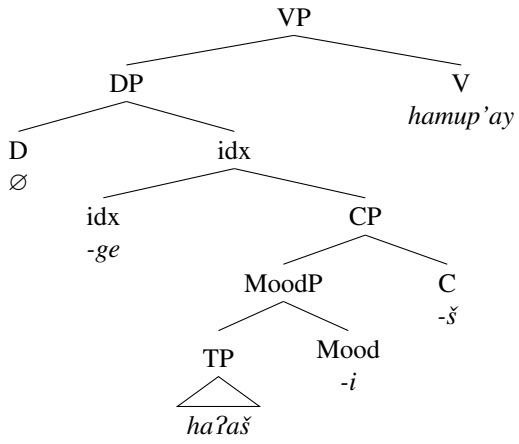
(32) a. *hášayišge* *dihámup'ayi*
[∅-haʔaš-ayʔ-i-š-ge] di-hamup'ay-i
3-rain-INT.PAST-IND-DS-NM.ACC 1/3-forget-IND
'I forgot that it rained.' =(7)

[11]Broadly stated, Arregi & Hanink (2018, 2021) propose that this C head agrees downward for the referential index value of the embedded subject, and upward for the referential index value of the superordinate subject. Morphological rules determine that C is realized with the same subject marker when these indices match, and with the different subject marker when they do not.

[12]For arguments that CPs may be directly embedded by D, see e.g., Pietraszko 2019.

[13]The suffixal nature of idx can be captured either through head movement or by Lowering (Embick & Noyer 2001) of idx to C.

b.



3.1.3 Presuppositional verbs select their complements

As indicated in the proposed structure for clausal nominalizations in (32b), the nominalization of the embedded clause results in the selection of a DP argument by the matrix verb, in this particular case *hámup'ay* 'forget'. This is consistent with the transitive nature of these verbs elsewhere in the language: Verbs in this class select thematically for an internal argument and are observed to mark case on the nominalizations they select for. This case-assigning behavior is mirrored in the case of non-clausal arguments, as in (33), where the object of 'know' is 'that man'.[14] While case-marking in Washo is never realized on bare nominals, it is the accusative form of the pronoun that surfaces as the direct object of 'see' in (34).

(33) *hádigi t'é:liwhu* *lášašé:si*
[DP hadigi t'e:liwhu] l-ašaš-e:s-i
that man 1/3-not.know-NEG-IND
'I know that man.'

(34) *ʔló:t* *gé:ŋa* *ʔí:giyé:sayt'iʔi*
ʔlo:t [DP ge:-ŋa] ʔ-i:gi-e:s-ayt'iʔ-i
yesterday 3.PRO.ACC-NC 3/3-see-NEG-PLUPF-IND
'She hadn't seen it yesterday.' =(16b)

We take the transitive status of the verbs that select them, as well as the case-marking of nominalized clauses (see, e.g., Picallo 2002) – both in nominative subjects and accusative objects – to be uncontroversial evidence of their status as arguments of the matrix verb.[15] In the next section, we turn to clauses embedded by non-presuppositional verbs, which differ from nominalized clauses in both this regard and in other behaviors.

[14]The form of *gi/ge* does not alternate for case on its demonstrative use, see Hanink 2018.

[15]We note moreover that the status of clausal nominalizations as true arguments is also consistent with the agreement prefix observed on the matrix verb. In transitive contexts, such prefixes come in the form of a portmanteau reflecting the person features of the subject and object in transitive contexts (see Douros 2019 for an analysis). For instance, just as in (33) and (34), the agreement prefix in (9) is *ʔ-*, reflecting a third person subject and an overt third person object (agreement with covert objects is different). A complicating factor here is that the portmanteau for any subject and third person object is identical to the corresponding intransitive prefix; as these verbs are not intransitive however we treat the agreement prefix as a portmanteau.

3.2 The structure of bare clausal embedding

Clauses embedded by non-presuppositional verbs differ first and foremost from their presuppositional counterparts in that they are not nominalized and therefore lack a DP layer altogether, though they also differ in two further ways. First, clauses embedded by non-presuppositional verbs lack a CP-layer. Instead, we treat these clauses as MoodPs headed by the dependent mood marker *-aʔ*, constituting a type of semi-reduced clause in the language (though not much hinges on this reduced status). More importantly, the behavior of clauses embedded by non-presuppositional verbs reveals that these *-aʔ* clauses are not complements at all, but are better understood as adjuncts. We therefore argue instead that these clauses are not selected but serve as verbal modifiers, much in line with recent proposals for English by e.g., Elliott (2016, 2017).

3.2.1 Motivating the lack of CP

The first piece of evidence for the lack of a CP layer in clauses embedded by non-presuppositional verbs comes from the fact that clauses embedded by non-presuppositional verbs are the only subordinate construction in the language where the switch reference marker *-š* doesn't surface in an embedded clause (noted also by Jacobsen 1964:639-641). As discussed above for the case of clausal nominalizations, the switch reference marker surfaces in any embedded clause whose subject differs from the one in the clause embedding it. This means that we should, in principle, expect the switch reference morpheme *-š* to surface in the following example, in which the subjects of the two clauses differ:

(35) *dip'áyt'igimuwet'aʔ* *ʔíːdi*
[MOODP di-p'ayt'iʔ-gim-uweʔ-tiʔ-aʔ] ʔ-iːd-i
1-play-go.out-hence-PROSP-DEP 3-say-IND
'She said I could go play.' =(12)

Though the subject of the matrix clause is some female individual and that of the embedded clause is the speaker, the different subject suffix does not appear. We therefore argue that these clauses do not contain a CP layer, thereby explaining the otherwise puzzling lack of switch reference morphology.

Corroborating this argument is the fact that, aside from *-i*-marked clausal nominalizations, there are other clauses that surface with the dependent mood marker *-aʔ*, but nevertheless *do* display switch reference morphology where expected. Such cases are found in the temporal adjuncts discussed above in Section 2, which convey a simultaneous reading. Adjuncts of this kind are exemplified below in (36) and (37):

(36) *t'éliwhu delkáykayiʔ* *k'éʔi*
t'eliwhu de-ʔil-kaykay-iʔ k'-eʔ-i
man NMLZ-ATTR-tall-ATTR 3-be-IND
daʔmóʔmoʔ delkáykayéːs *k'áʔaš*]
[CP daʔmoʔmoʔ de-ʔil-kaykay-i-eːs k'-eʔ-a **-š**]
woman NMLZ-ATTR-tall-ATTR-NEG 3-be-DEP **-DS**
'The man is taller than the woman.'
='The man is tall, while the woman is not tall.' Bochnak 2015a:64

(37) *lémluyaš* *ʔíme ʔlegi*
[$_{CP}$ l-emlu-aʔ **-š**] ʔ-imeʔ-leg-i
1-eat.IN-DEP **-DS** 3-drink-REC.PAST-IND
'While I was eating, he was drinking.' Jacobsen 1964

Such examples show that the different subject marker is not simply incompatible with the dependent mood marker for independent reasons; its absence in clauses embedded by non-presuppositional verbs is therefore a signal for the lack of C in the structure. We conclude this argument with the following minimal pair, which highlights the correlation between meaning difference and the appearance of switch-reference marking:

(38) a. *súkuʔ legít'iya* *digumsuʔúʔušlegi*
[$_{MOODP}$ sukuʔ le-git'i-aʔ] di-gum-suʔuʔuš-leg-i
dog 3/1-bite-DEP 1-REFL-dream-REC.PST-IND
'I dreamt that the dog bit me.' Washo Archive

b. *súkuʔ legít'iyaš* *digumsuʔúʔušlegi*
[$_{CP}$ sukuʔ le-git'i-aʔ **-š**] di-gum-suʔuʔuš-leg-i
dog 3/1-bite-DEP **-DS** 1-REFL-dream-REC.PST-IND
'I was dreaming while the dog bit me.' Washo Archive

Aside from switch reference, an additional piece of evidence for the lack of C comes from fronting behavior. One characteristic of clauses embedded by non-presuppositional verbs is that they generally remain in their clause-internal position, as exemplified by the typical SOV order in (39) (repeated), and (40):[16]

(39) *béverli* *démlu dibegúweʔéːsaʔ* *hámuyi*
beverli [$_{MOODP}$ demlu di-beguweʔ-eːs-aʔ] ∅-hamu-i
Beverly food 1/3-buy-NEG-DEP 3-think-IND
'Beverly thinks that I didn't buy the food.' =(11)

(40) *géwe* *dótighayaʔ* *hámuyaʔ*
gewe [$_{MOODP}$ ∅-dotig-ha-aʔ] ∅-hamu-aʔ
coyote 3/3-burn-CAUS-DEP 3-think-DEP
'Coyote thought he burned him [the lizard] to death.' Coyote and Lizard Story

This behavior differs from that of clausal nominalizations, which strongly prefer to front – a common trait of CPs and heavy NPs such as clausal nominalizations. To exemplify this, consider the following example in (41), in which the matrix clause subject *daʔmóʔmoʔ* 'woman' appears in a non-canonical position following the nominalization, rather than in its expected initial position in an SOV language such as Washo:

(41) *k'ák'aʔ dáː* *géːgelišge* *daʔmóʔmoʔ yáːmaʔ*
[$_{DP}$ [$_{CP}$ k'ak'aʔ daː ∅-geːgel-i-š] -ge] daʔmoʔmoʔ ∅-yaːm-aʔ
heron there 3-sit-IND-DS-NM.ACC woman 3/3-speak-DEP
'The woman spoke to a heron who was sitting there.' Jacobsen 1998:111

[16]The superordinate verb 'think' in (40) is part of a larger clause chain, which is why this verb is marked with dependent mood.

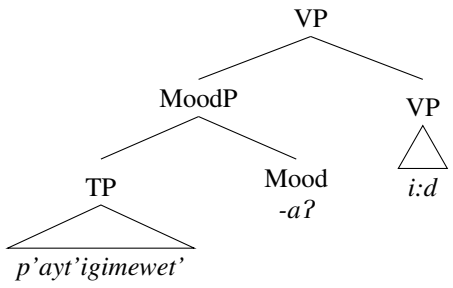
Other instances exemplifying the fronting of CPs include, for example, adverbializations of clauses formed with the suffix *-da* as in (42) and (43), which receive a serial interpretation:[17]

(42) *dewdíʔiš ʔélmu digé:gelida léšɨmgaʔlámigi Léʔi*
[ADVP [CP dewdiʔiš ʔelmu di-ge:gel-i-∅]-da] l-ešim-gaʔlam-i-∅-gi L-eʔ-i
tree under 1-sit-IND-SS-ADV 1-sing-like-IND-SS-NM.NOM 1-be-IND
'When sitting under a tree, I like to sing.'

(43) *ŋáwa ʔeʔíŋawišda t'ánuhe:š yúliyayt'iʔi*
[ADVP [CP ŋawa ∅-ʔeʔiŋaw-i-š]-da] t'anu-he:š ∅-yuli-yayt'iʔ-i
earth 3-move-IND-DS-ADV person-Q 3-die-PLUPF-IND
'Did anyone die in the earthquake?'
='When the earth moved, did anyone die?' Washo Archive

Taken together, the facts from switch reference and fronting behavior suggest that there is no CP layer within *-aʔ*-clauses embedded by non-presuppositional verbs. We therefore propose the structure in (44b) for this type of embedded clause, in which MoodP adjoins low, to VP:

(44) a. *dip'áyt'igimuwet'aʔ ʔí:di*
[di-p'ayt'iʔ-gim-uweʔ-tiʔ-aʔ] ʔ-i:d-i
1-play-go.out-hence-PROSP-DEP 3-say-IND
'She said I could go play.' =(12)

b.


3.2.2 Non-presuppositional verbs do not select

As the structure in (44b) makes clear, our proposal is that non-presuppositional verbs differ from their presuppositional counterparts in that the former do not subcategorize for a DP complement. In fact, they do not select for a complement at all, but are modified instead by MoodP adjuncts. This proposal is motivated by the behavior of non-clausal arguments of non-presuppositional verbs: The same verbs that embed MoodPs do not select complements elsewhere in the language. That non-presuppositional verbs do not select is demonstrated for example through the behavior of *wh*-questions in the language. In Washo, the *wh*-pronoun 'what' is *hút'aŋahé:š*, and is able to be selected for by the verb *iʔiw* 'eat' as in (45):

[17] The nominalization seen in (42) represents a strategy in Washo for expressing generic statements (Bochnak 2015b).

(45) *húť'aŋahé:š míʔwi*
[WH hut'aŋa-he:š] m-iʔiw-i
what-Q 2/3-eat.TR-IND
'What did you eat?'

However, in similar questions involving non-presuppositional verbs such as 'think' (46) and 'say' (47), the *wh*-pronoun *huŋa* 'how' is used instead, indicating that these verbs may not select for DP arguments.

(46) *húŋa ʔumhámuhe:ši*
[WH huŋa] ʔum-hamu-he:š-i
how 2-think-Q-IND
'What (=how) do you think?'

(47) *húŋa míthe:ši*
[WH huŋa] m-i:d-he:š-i
how 2-say-Q-IND
'What (=how) did you say?'

Crucially, the cut here follows precisely the adjunct vs. argument distinction of *wh*-words (Huang 1982), revealing that non-presuppositional verbs cannot select for argument *wh*-words such as 'what', but only adjunct *wh*-words, such as 'how'. The behavior of clausal embedding by both verb types is therefore mirrored in the domain of *wh*-questions as well.

A further piece of evidence that non-presuppositional verbs do not select for *-aʔ* clauses comes from reflexive agreement. Reflexivization in Washo is realized by the verbal prefix *gum-* (invariant for person and number). The presence of the reflexive prefix unsurprisingly removes the possibility of an additional internal argument, as the reflexive object must fill this thematic role. This effect is demonstrated in (48), which shows that the verb *yášu* 'wash' is reflexive in Washo, and thus cannot take a direct object. The notional 'object' is therefore expressed with the oblique case marker, *-a*; the reflexive prefix cannot co-occur with another internal argument unless this oblique case-marking is present.

(48) a. *dimáyaba digumyášuyášaʔi*
di-mayab **-a** di- **gum-** yašu-ašaʔ-i
1-foot **-OBL** 1- **REFL-** wash-PROSP-IND
'I'm going to wash my feet.' (='I'm going to wash myself on my feet.') Washo Archive

b. **dimáyap digumyášuyášaʔi*
di-mayab di- **gum-** yašu-ašaʔ-i
1-foot 1- **REFL-** wash-PROSP-IND
Intended: 'I'm going to wash my feet.'

Crucially, certain non-presuppositional verbs are also inherently reflexive in Washo, but may nevertheless embed *-aʔ* clauses. Take for example the verb 'dream', as in (49). The fact that the prefix *gum-* is present rules out the possibility that the *-aʔ* clause is selected as the object of the matrix verb (the example in (38b)

above moreover shows that this reflexive marking is also present when the matrix clause is accompanied by an adjunct, in which *dream* is intransitive).[18]

(49) *diyéʔešaʔ* *digumsuʔúšiʔi*
[MOODP di-ye-iʔiš-aʔ] di- **gum-** suʔuʔuš-iʔ-i
1-fly-forward-DEP 1- **REFL-** dream-ATTR-IND
'I dreamt that I was flying.' =(13)

The reflexive use of 'dream' in (49) can be contrasted moreover with the verb in (50), which lacks the reflexive prefix, and is therefore able to take the second person direct object in this case.

(50) *wá:laš disuʔúšlegi*
wá:laš di-suʔuʔuš-leg-i
bread 1/3-dream-REC.PAST-IND
'I dreamt of bread.' Washo Archive

This line of reasoning predicts moreover that without the reflexive, non-presuppositional verbs can select for nominalizations.[19] This prediction is born out, as shown by the contrast between (51) and (52). The verb 'dream' in (51) is reflexivized, and takes a reduced MoodP adjunct, while in (52) it is not reflexive and is able to select for a nominalized clause. Crucially, the two have different meanings: The embedded clause in (51) is interpreted as a 'that'-clause, while in (52) it is interpreted as an internally headed relative.

(51) Context: You were sleeping and you woke up suddenly. You say:

sísu šéšima ʔ *digumsuʔúši*
[MOODP sisu ∅-šešim-aʔ] di **-gum** -suʔuš-i
bird 3-sing.PL-DEP 1 **-REFL**-dream-IND
'I just dreamt the birds were singing.'

(52) Context: I ask you if you dreamt about the birds that were singing yesterday. You say:

sísu šéšmišgeŋa *disuʔúšé:si*
[DP[CP sisu ∅-šešim-i-š]-ge-ŋa] di-suʔuš-e:s-i
bird 3-sing.PL-IND-DS-NM.ACC-NC 1/3-dream-NEG-IND
'I didn't dream about the birds that were singing.'

In sum, clauses embedded by non-presuppositional verbs are not selected, but are better understood as VP modifiers, as represented in the structure in (44b). These types of clauses are therefore different from the complements of presuppositional verbs in both their size, in their choice of mood marker, and in their mode of embedding.

[18] A reviewer suggests that the lack of object agreement might be another diagnostic for the lack of selection here. However, as we pointed out in Section 3.1.3 (fn 15), the agreement prefixes for any subject over a third person object are identical to their intransitive variants. Agreement diagnostics (beyond reflexive agreement) are therefore unfortunately not helpful here.

[19] We also then predict that reflexive factive verbs could be modified by *-aʔ* clauses, or else would have some kind of oblique marking on the nominalized *-ge* clause. At this point, we do not know of any inherently reflexive factive verbs.

As a final note on the height of adjunction, we offer evidence from Condition C effects that the CP adjunct must attach low, below the subject, as schematized in the tree above in (44b). This line of reasoning builds on Clem's (2019) claims for the height of CP adjunction in Amahuaca: If the MoodP is generated below the main clause subject, we then expect reconstruction effects to trigger Condition C (see also Arregi & Hanink 2021 for this line of reasoning applied to other embedded clause types). This is borne out in Washo: In (53), the presence of the co-indexed R-expression inside the embedded clause triggers ungrammaticality.[20] (Due to the *pro*-drop in this sentence, it is not obvious whether the adjunct is center-embedded or fronted, however we indicate *pro* in initial position here to keep with the evidence of where the adjunct is first merged.)

(53) **t'é:liwhu Adele ga?lám-a? hámu-yi*
pro$_i$ [$_{\text{MOODP}}$ t'e:liwhu Adele$_i$ ∅-ga?lam-a?] ∅-hamu-yi
pro$_i$ man$_j$ Adele$_i$ 3/3-like-DEP 3-think-IND
Intended: 'She$_i$ thinks the man$_j$ likes Adele$_i$.'

3.3 Summary

To summarize, the aim of this section has been to show that there are clear syntactic differences between the clausal embedding strategies of presuppositional and non-presuppositional verbs in Washo. We have shown that presuppositional verbs select directly for full, nominalized clauses marked with independent mood *-i*, while clauses embedded by non-presuppositional verbs are smaller MoodPs, headed by the dependent mood marker *-a?*. Importantly, we have also shown that non-presuppositional verbs do not select for the clauses they embed; we have argued that MoodP in these cases is an adjunct to VP. Table 2 below expands on Table 1, giving a further classification of the differences between clauses embedded by both verb types.

Table 2: Embedded clauses by matrix verb type in Washo

	nominalizer	**mood marker**	**clause size**	**clause type**
presuppositional	*-gi/ge*	*-i*	CP	complement
non-presuppositional	—	*-a?*	MoodP	adjunct

Having laid out the syntactic properties of clausal embedding in Washo, we turn in the next section to the discussion of the semantic differences correlated with the two structures, where we offer a more complete picture of how the syntax and semantics work together in Washo in order to derive the difference between both types of embedded clauses with mechanisms that are independently required by the language.

[20] A reviewer asks whether MoodPs differ from clausal complements in barring extraction. As far as we know, Washo however does not permit extraction out of any clause type (e.g., relative clauses are exclusively internally headed (Jacobsen 1998, Peachey 2006, Hanink 2020), while *wh*-expressions remain *in-situ*, even in long-distance questions).

4 Clausal embedding and presuppositions

We show in this section that the interpretation of the two types of embedded clauses described above is directly related to the differences in their underlying structures. The differences in meaning of these clauses is conditioned both by the verbs that embed them, as well as the characteristics of the embedded clauses themselves. In this section, we lay out the background on approaches to the meanings of attitude verbs, and elaborate on how these assumptions can inform approaches to presuppositional effects in embedded clauses.

4.1 Decomposing attitude verbs

A version of the classical Hintikkan semantics for propositional attitude verbs (Hintikka 1969) is given in (54). Here, the attitude verb relates a proposition p, denoted by the complement clause, and an individual x, the subject. The relation encoded in *believe* is that p is true in all of x's doxastic alternatives.

(54) $[\![\textit{believe}]\!]^w = \lambda p \lambda x . \forall w' [w' \in \text{Dox}_x(w) \rightarrow p(w') = 1]$

This picture can be augmented to accommodate factive verbs by simply adding the presupposition that p is true in the evaluation world to the lexical entry directly. In this way, *know* can be modeled similarly to *believe* with an extra presupposition, as in (55).[21]

(55) $[\![\textit{know}]\!]^w = \lambda p \lambda x : \underline{p(w) = 1} . \forall w' [w' \in \text{Dox}_x(w) \rightarrow p(w') = 1]$

Thus, on this view, the attitude verb selects directly for its complement, and a factivity presupposition is built in directly to its lexical semantics.

More recently, however, a strand of research has developed that revises this classical view. In the work of Kratzer (2006) and Moulton (2009, 2015), attitude verbs are taken to relate eventualities to a piece of content. On a more extreme neo-Davidsonian view, Elliott (2016) analyzes propositional attitude verbs as simple predicates of events or states, with the content and holder of the attitude introduced separately. In his analysis, *believe* simply describes believing events (or states), as in (56).[22]

(56) $[\![\textit{believe}]\!]^w = \lambda s . \textbf{believe}_w(s)$

Given that the only argument position is for an event or state, the content of the belief, that is, the complement clause, must be integrated into attitude reports in a different way. There is also no room in this type of verb meaning for a factivity presupposition, which encodes a relation between the embedded proposition and the attitude holder, neither of which are arguments of the verb. Under this type of analysis, the composition of an attitude verb and its complement is accordingly more complicated than the analysis in (54)-(55). Let us begin to unpack this here.

[21] This semantics equates knowledge with true belief, which is much too simplistic (see e.g., Gettier 1963). See also von Fintel & Heim 2011 and references therein for discussion.

[22] In an even more extreme case, Bogal-Allbritten (2016) argues that the attitude verb *nisin* in Navajo does not even fully determine the relevant attitude.

Building on Kratzer 2006, Moulton (2009, 2015) argues that complement clauses, and more generally *that*-clauses in English, do not denote propositions (i.e., sets of possible worlds) directly; rather, they denote sets of individuals of a certain kind. Moulton takes examples like (57) as evidence for this view.

(57) The idea/story/rumor/fact is that Bob is a fraud. Moulton 2015:311

If the predication in (57) is equative (cf. Potts 2002), then subject DPs and *that*-clauses must denote the same type of object. Thus, if *that*-clauses denote sets of worlds, then content nouns should too. Moulton argues however that this conclusion is not on the right track: Content nouns should not be equated with the *proposition* that Bob is a fraud. Instead, Moulton proposes that *that*-clauses denote sets of individuals whose *content* is a certain proposition, as in (58).

(58) $[\![\textit{that Bob is a fraud}]\!]^w = \lambda x.\text{CONT}_w(x) = \lambda w'.$Bob is a fraud in w'

The link between the embedded proposition and its content is mediated by a function CONT_w (Kratzer 2006), which takes an individual x and returns the set of worlds compatible with the content of x, as in (59). A modal base is thus projected from an entity other than a world (Hacquard 2006, 2010, Kratzer 2006).

(59) $\text{CONT}_w(x) = \{w' : w'$ is compatible with the intentional content determined by x in $w\}$
Moulton 2015:312

The compositional glue is a functional head in the high periphery of embedded clauses that transforms propositions into properties of individuals. We refer to this head as F_{PROP} and give its denotation in (60). The result of combining F_{PROP} with the proposition denoted by the complement clause is a predicate of individuals whose content is equated with the proposition denoted by the clause, as in (61).[23]

(60) $[\![\text{F}_{\text{PROP}}]\!]^w = \lambda p_{\langle s,t\rangle}\lambda x_e[\text{CONT}_w(x) = p]$ (cf. Kratzer 2006, Moulton 2009, 2015, Elliott 2016)

(61) $[\![\text{F}_{\text{PROP}}$ [CP] $]\!]^w = \lambda x_e[\text{CONT}_w(x) = [\![\text{CP}]\!]]$

One extra step is needed in order to combine the meaning in (61), which is of type $\langle e, t\rangle$, with the attitude verb in (56), which is a predicate of events of type $\langle v, t\rangle$. Here we follow Lasersohn (1995) and Elliott (2016) in positing no model-theoretic type distinction between individuals and events/states. This move now makes it possible for the matrix predicate to combine semantically with the embedded clause via Predicate Modification (Heim & Kratzer 1998). The result is that a sentence containing an attitude ascription can be given the semantics in (62).[24] Stated in prose, (62) says that there is a state of believing, the holder of which is Abby, and the content of which the proposition that Bob is a fraud.

[23] Under this analysis, the meaning in (61) acts as the predicate in examples like (57), where the subject DP (e.g., *the idea*) denotes an individual, which saturates the type e argument slot of the *that*-clause.

[24] We assume that the external argument is introduced by a little-v head that denotes the **holder** relation (i.e., the subject is the holder of the state of believing).

(62) $[\![$*Abby believes that Bob is a fraud*$]\!]^w$
$= \exists s[\textbf{believe}_w(s)$ & $\textbf{holder}_w(s) =$ Abby & $\text{CONT}_w(s) = \lambda w'$.Bob is a fraud in $w']$

An important question that emerges from this view of attitude predicates is the relationship between the matrix verb and the clause it embeds. The reduction of attitude verbs to event predicates as well as the view of *that*-clauses as property-denoting leads to a view according to which clauses embedded by these verbs are always modifiers, and selectional relationships are not necessary. Elliott (2016) builds on this idea and makes the strong claim that *that*-clauses and DP arguments of the types in (63) and (64) differ fundamentally in that the latter are always selected, while the status of the former as modifiers means that they are not.

(63) Angela explained $[_{\text{CP}}$ that Boris resigned $]$.

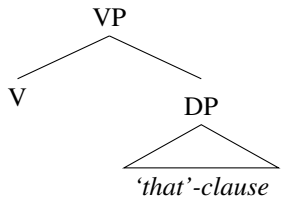
(64) Angela explained $[_{\text{DP}}$ the fact that Boris resigned $]$. Elliott 2016:171

This revised view also suggests that factivity distinctions are not to be found in the lexical semantics of attitude verbs, for these are simply predicates of events or states. On this decompositional view, factivity would need to be integrated through composition with the complement clause; Kratzer (2006) for example suggests that there are different flavors of complementizers that can encode presuppositions. We now turn to some recent ideas on how presuppositional distinctions can be tracked by syntactic structure.

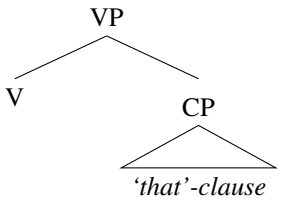
4.2 Embedded complement clauses

The idea that *that*-clauses are always modifiers in the sense described above is at odds with recent proposals regarding the syntax of clausal embedding. For example, Kastner (2015) proposes a direct syntax to semantics mapping in that presuppositional and non-presuppositional verbs have different selectional requirements: The former select a DP (65), while the latter select for a complement clause directly (66).

(65) *presuppositional verbs*:



(66) *Non-presuppositional verbs*:



Kastner argues that the difference in interpretation of presuppositional and non-presuppositional verbs reflects this difference in structure. Specifically, he adopts Heim's (1982) approach to familiarity and argues that the D head in (65) introduces a presupposition that there is a familiar entity in the discourse. Meanwhile, complements without D have no familiarity restrictions, as in (66). His evidence comes from well-known extraction asymmetries between presuppositional and non-presuppositional complements (Kiparsky & Kiparsky 1970), as well as morphological evidence from Hebrew that demonstrates the different categorial status of complements overtly: In presuppositional complements, the demonstrative *ze* 'this' introduces the

that-clause, as in (67), while in non-presuppositional complements, no such definite morphology is present, as shown in (68).[25]

(67) *Bill zoxer* [$_{DP}$ *et ze* [$_{CP}$ *še-dani ganav et ha-ugiot*]]
Bill remember ACC this COMP-Danny stole ACC the-cookies
'Bill remembers that Danny stole the cookies.' Hebrew: Kastner 2015:162

(68) *ani xošev* [$_{CP}$ *še-dani ganav et ha-ugiot*]
I think COMP-Danny stole ACC the-cookies
'I think that Danny stole the cookies.' Hebrew: Kastner 2015:164

A consequence of this analysis is that presuppositionality is not a semantic property of attitude verbs, but is rather derived from the presence (or absence) of D, which introduces a familiarity presupposition, in the embedded clause.[26]

Independent cross-linguistic support for the view that the 'nouny-ness' of the complement correlates with a presuppositional requirement of familiarity comes from Bogal-Allbritten & Moulton (2017), who build on Kim (2009) and argue for a notion of familiarity implicated in nominalized clauses in Korean, as in (69), in which the complement of factive 'know' is likewise nominalized:

(69) *John-un* [$_{DP}$ *totwuk-i tomangka-n-un kes-ul*] *al-ess-ta*
John-TOP thief-NOM run.away-IMPF-ADN KES-ACC know-PST-DEC
'John knew (the fact) that the thief was running away.' Korean: Kim 2009:347

This is similar to what we find in Hebrew and Washo insofar as nominalized clauses in these languages are to be found with presuppositional verbs only. The problem that arises then from the treatment of *that*-clauses and their cross-linguistic kin uniformly as modifiers (as on their property analysis) is how to account for the differences between clauses embedded by presuppositional and non-presuppositional verbs: There is no way to treat the embedded clause in (65) as a modifier, given its status as an individual-denoting DP.

While similar to Kastner's, our syntactic analysis of presuppositional vs. non-presuppositional complements in Washo is slightly different. Like Kastner, we propose that presuppositional complements are larger than non-presuppositional complements. The former come with DP material encasing a CP, in which the suffix *-gi/-ge* is the realization of the functional head idx, which encodes familiarity. Further, our non-presuppositional complements lack a DP layer. Crucially however, there are two important differences between our analysis and Kastner's. First, while Kastner does assume that there is a silent N head in the DP structure (see also Elbourne 2013), this is not motivated for Washo. Recall crucially that in Washo, there is no overt nominal: Clause-embedding nouns such as 'fact' or 'rumor' are unattested in the language. In Washo, nominalizing morphology is simply a suffix on the verb, and no noun is ever pronounced between

[25] On this basis, Kastner also rejects the approach in Sheehan & Hinzen 2011, which is that the clausal complements of presuppositional verbs are definite and referential *CPs*, which get their familiar flavor from C, not D.

[26] Note however, that a familiarity presupposition is not by itself enough to guarantee factivity, which requires the *truth* of the embedded proposition in the evaluation world. We return to the issue later in Section 5.3.

this morphology and the CP it embeds. Unless we want to rely on the claim that such a noun is always silently encoded in the structure – which is unattested in Washo – the treatment of the clauses embedded by presuppositional verbs as modifiers is untenable.

Second, the Washo data reveal not only a difference in size and shape, but also a difference in embedding strategy: Clauses embedded by presuppositional verbs are selected, while those embedded by non-presuppositional verbs are modifiers, contra Kastner's proposal. The picture that emerges from Washo therefore yields two important results. First, it provides novel and cross-linguistic support for Kastner's proposal that presuppositional verbs select for DPs. Second however, it challenges the view that non-presuppositional verbs select for embedded clauses at all, and in doing so lends evidence to a property analysis of *that*-clauses according to which certain (but not all) embedded clauses are not selected, along the lines of Elliott's (2016) proposal. Thus, there is evidence from Washo that both strategies – selection and modification – can co-exist as clausal embedding strategies.

In the next section, we derive the two modes of embedding that have been discussed for Washo. We show that presuppositionality derives from the familiarity presupposition introduced by the nominalizing layer, while the lack of presuppositionality effects in other embedded clauses is due to an alternate mode of embedding: modification. We show that these are the two strategies for embedding more generally throughout Washo, and sketch extensions to the analysis of other embedded clauses in the language.

5 Deriving clausal embedding in Washo

We present in this section an analysis of clausal embedding in which the syntax and semantics work together to derive the range of behaviors that we have discussed above. First, the DP material in clausal nominalizations contributes familiarity to the content expressed by the proposition denoted by the embedded clause. Embedded clauses without a DP later carry no such presupposition, and are adjuncts to the intransitive attitude predicates they modify. Second, the mood markers *-i* and *-aʔ* in Washo have different meanings, which reflect the different roles played by the clauses they occur in. These roles govern (in part) whether an embedded clause is a complement or a modifier of the verb that embeds it.

5.1 The semantics of independent and dependent mood markers

Let us begin with a modest proposal for the semantics of the mood markers *-i* and *-aʔ*, which appear in clauses embedded by presuppositional and non-presuppositional verbs, respectively. Before stating our proposal, we note that justification for the treatment of these suffixes as Mood comes not only from their relative position in the clause, but also from the fact that they are in complementary distribution with other clause-typing Mood markers in the language, for instance the imperative (*-∅*), optative (*-hi*), and horative (*-hulew*) moods (Jacobsen 1964:654-664).

First, given its wide distribution and default status for matrix clauses (e.g., (5), repeated in (70)), we propose that the independent mood marker *-i* denotes the identity function, i.e., it is semantically vacuous,

as shown in (71).

(70) *gawáyɨʔ Múʔušuweʔi*
gawayɨʔ ∅-Muʔuš-uweʔ **-i**
horse 3-run-hence **-IND**
'The horse is running away.' =(5)

(71) Independent mood marker
$[\![\text{-}i]\!] = \lambda x_{\alpha}[x]$

Meanwhile, we propose that the dependent mood marker *-aʔ* has the semantics of conjunction. Specifically, in the case of clauses that modify non-presuppositional verbs, *-aʔ* conjoins predicates of individuals, as in (72).

(72) Dependent mood marker
$[\![\text{-}a\text{ʔ}]\!] = \lambda P_{\langle e,t\rangle}\lambda Q_{\langle e,t\rangle}.\lambda x_e[P(x)\ \&\ Q(x)]$

This semantics explains two crucial characteristics of *-aʔ* clauses. First, it explains why clauses of this type cannot take on presuppositional interpretations: They lack the DP layer containing both D and the idx head found in the structure of clausal nominalizations. On our analysis, an $\langle e, t\rangle$-type embedded clause combines with the attitude predicate via the dependent mood marker, leaving no room for an intervening D to create an individual or contribute familiarity (as we will see in more detail below). Second, it explains why clauses with this mood marker cannot stand alone, i.e., why *-aʔ*-marking is restricted to subordinate clauses. In section 5.5, we show that the conjunction semantics of *-aʔ* can be generalized to conjoin other types of semantic objects, which provides an explanation for its distribution in other types of subordinate clauses, particularly adjunct clauses.

Our semantic analysis of these moods does not contain a modal or temporal component, as is common in the analysis of verbal mood in other languages (e.g., Farkas 1985, Giannakidou 2009, Matthewson 2010, Portner 1997, Quer 2001, Schlenker 2005, among others; see Portner 2018 for a recent overview). There are nevertheless conceptual similarities between our analysis of mood in Washo and mood distinctions found in other languages. First, as in many other mood systems, one mood (the independent mood *-i*) is treated as a default with a trivial semantic value (e.g., Portner 1997, Schlenker 2005). Second, we note that moods in Washo – not only the independent and dependent moods, but more broadly – have to do with clause-typing, which is a major function of moods cross-linguistically (dubbed "sentence mood" by Portner 2018). In this connection, the independent/dependent mood distinction that we find in Washo appears to find conceptual kin in what are known as the independent and conjunct orders in several Algonquian languages. Descriptively, the independent order is typically used in matrix clauses, while conjunct order is typically used in many types of subordinate clauses (see e.g., Brittain 2001).[27] Just like verbal moods in more familiar

[27] Though note that under Brittain's analysis, clauses in the conjunct order in Western Naskapi are analyzed as being larger than clauses in the independent order (CP vs. IP, respectively).

languages, the exact distribution of these orders is subject to cross-linguistic variation within the Algonquian family. Also similar to Washo, these orders stand in opposition to other orders such as the imperative. While a full analysis of mood marking in Washo is beyond the scope of this paper and requires further research, we believe that the foundations we have laid out here for the independent and dependent moods will carry over to a more detailed future analysis.

In the rest of this section, we detail the semantic composition of presuppositional and non-presuppositional embedded clauses in Washo, based on the syntax we put forward in section 3 as well as on the aspects of the semantic analyses of attitude predicates and *that*-clauses we introduced in Section 4.

5.2 Presuppositional complements and the role of nominalization

We now turn to the derivation of the clausal complements of presuppositional verbs. We adopt the idea introduced in Section 4 that the role of a functional element F_{PROP} is to turn the proposition-denoting embedding clause into a property of individuals whose content is expressed by that proposition. In our implementation, we treat F_{PROP} as an optional type-shift as in (73) (cf. Simeonova To Appear), which applies at the level of TP, instead of as an obligatory syntactic node in the clausal periphery.

(73) **F_{PROP} type-shift**

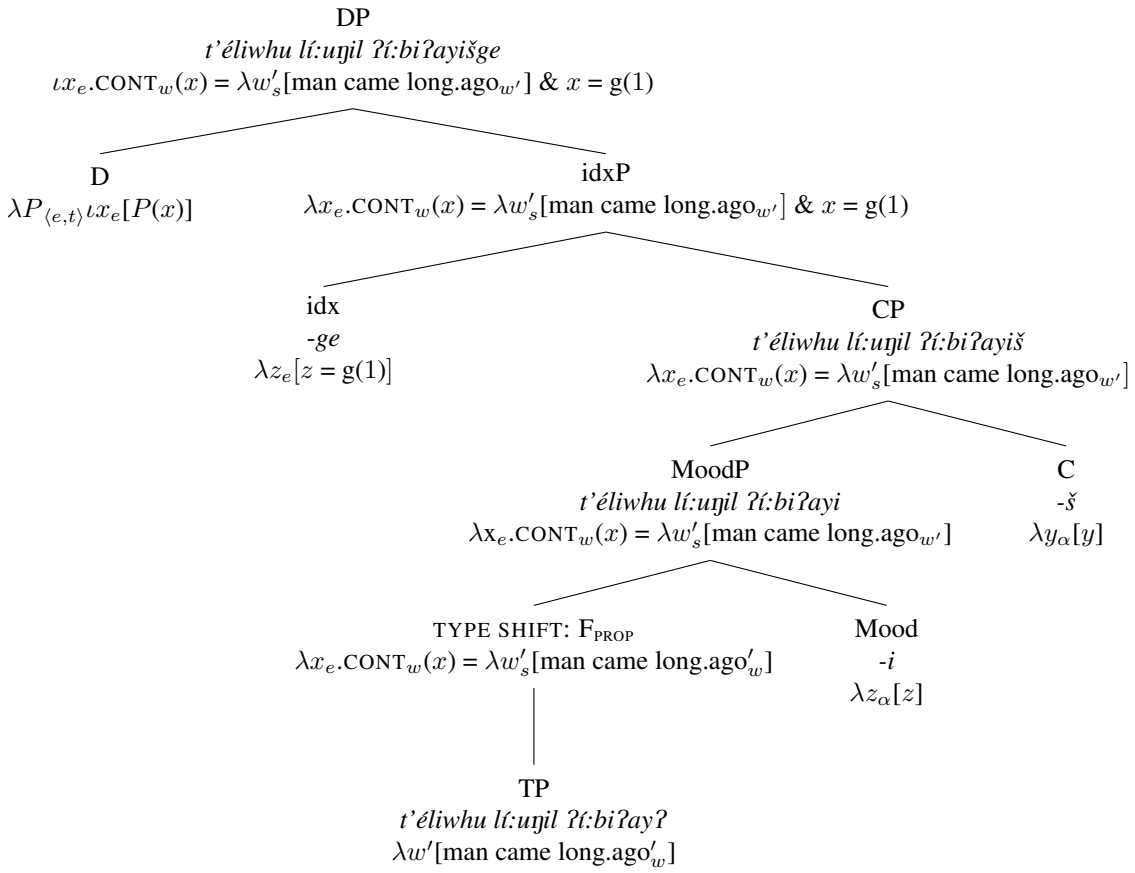
$P_{\langle s,t\rangle} \rightarrow \lambda x_e[\text{CONT}(x) = P]$

Adopting the assumptions about the structure of the DP and CP outlined in Section 3, the nominalizing DP-layer hosts a silent D head as well as the head idx, which is overtly realized as *-gi/ge*. This idx head selects for its complement clause directly. The derivation of a clausal nominalization embedded by the verb 'know' then proceeds as in (74). First, the embedded clause is formed and undergoes the F_{PROP} type-shift, returning a set of individuals whose content is specified by the proposition 'the man came long ago.' Second, this embedded clause composes with both Mood and C, both of which denote the identity function in this case. Third, the resulting property denoted by the CP undergoes Predicate Modification with idx, resulting in a property of individuals specified by this content that are likewise familiar. Finally, this property composes with D, resulting in the unique individual whose content is specified by the embedded proposition, and which is identical to the referent mapped to 1 by the assignment function g.

(74) **Nominalized complement:**

a. *t'éliwhu lí:yuŋil ʔí:biʔayšge* *lášaší:si*
[$_{DP}$[$_{CP}$ t'eliwhu li:-uŋil ʔ-i:biʔ-ayʔ-i-š]-ge] l-ašaš-e:s-i
man then-DFT 3.come-INT.PAST-IND-DS-NM.ACC 1/3-not.know-NEG-IND
'I know that the man came a long time ago.' =(4)

b.



Diverging from Kastner (2015) and related claims in Bogal-Allbritten & Moulton 2017, we take the presence of idx to be responsibility for encoding familiarity of the content expressed by the embedded clause, which is present in nominalized complement clauses, but absent in embedded bare clauses (as the index only co-occurs with D, and only presuppositional verbs select for DPs), cf. Section 3.2.2. The main idea is that the assignment function will map the index (1, in the above example) to the salient individual whose content expresses the same proposition as the nominalized clause. The result is that the complement of the verb is an individual of type e, rather than a proposition of type ⟨s, t⟩. It can now combine with the transitive matrix verb via function application, just like any other individual-denoting DP would.[28] The truth conditions for (74) are given in (75).[29]

(75) $\exists s[\text{knowing}_w(s) \,\&\, \text{HOLDER}_w(s) = \text{speaker} \,\&\, \text{THEME}_w(s) = \iota x[\text{CONT}_w(x) = \lambda w'[\text{man came long ago}_{w'}]] \,\&\, x = g(1)]$

In parallel, examples in which 'know' selects for a simple anaphoric DP work as follows. Consider again the example in (76), repeated from (33):

[28] In Elliott's (2016) Neo-Davidsonian account, this argument is introduced as the specifier of the thematic role head THEME.

[29] Of course any theory of anaphora/familiarity ultimately needs to be grounded in a dynamic semantics (e.g., Heim 1982, Groenendijk & Stokhof 1991). As this is not the focus of our paper, we include here only static denotations.

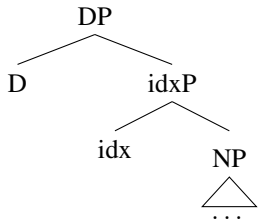
(76) *hádigi t'éliwhu lášašé:si*
[$_{DP}$ hadigi t'eliwhu] l-ašaš-e:s-i
that man 1-not.know-NEG-IND
'I know that man.' =(33)

For an example such as (76), the theme of the matrix verb 'know' is not the unique, familiar content of a proposition, but rather some salient man in the discourse that is mapped to from the index 2:

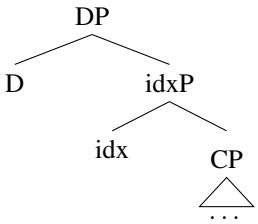
(77) $\exists s[\text{knowing}_w(s)$ & $\text{HOLDER}_w(s) = \text{speaker}$ & $\text{THEME}_w(s) = \iota x[\text{man}(x)$ & $x = \text{g}(2)]]$

Adopting this analysis for clausal nominalizations unifies both the structure and interpretation of simple anaphoric DPs as in (78) as well as the nominalized complements of factive verbs, as in (79).

(78) *Familiar DP*



(79) *Presuppositional complement*



5.3 Presuppositionality and factivity

At this point we return to the notion of factivity as generally described in the literature. In our analysis, idx is only present in factive clauses, and so the presence or absence of D can explain the presence or absence of factivity, and furthermore unifies the other uses of anaphoric/familiar DPs such as demonstratives. However, factivity does not reduce to mere familiarity alone: Factivity as we typically know it presupposes the truth of the complement. But there are many individuals, familiar or not, whose propositional content is not a fact, for instance, rumors. We consider two established options for encoding factivity in the structure proposed above, and discuss problems for each of these options.

5.3.1 Factivity is not just familiarity

In effect, Kastner (2015) assimilates factivity to familiarity: Factive complements are familiar, and their truth is presupposed. His account however does not derive this directly, as there is nothing in the semantics of D that enforces this latter characteristic. We could in principle stipulate a presupposition that x is a fact in the definition of D (or of C, as in Kratzer 2006, or through a silent head FACT, as in Elbourne 2013), but in addition to being an *ad hoc* fix, it is not clear that we want such a presupposition generally associated with clausal nominalizations or with D more generally.

Recall that clausal nominalizations are also used in Washo for internally-headed relatives (80a-80b), as well as so-called perception readings in the language (81a-81b), shown below.

(80) *Internally-headed relatives*

a. *mé:hu géwe ʔí:giyišge* *lé:saʔ* *lí:giyi*
[$_{DP}$[$_{CP}$ me:hu gewe ʔ-i:gi-i-š]-ge] le:-saʔ l-í:gi-i
boy coyote 3/3-see-IND-DS-NM.ACC 1.PRO-also 1/3-see-IND
'I also saw the coyote that the boy saw.' =(10)

b. *máʔak t'í:yelilu* *geyúlihayišgi* *gɬlgayi*
[$_{DP}$ [$_{CP}$ maʔak t'-i:yeliʔ-lu ge-yuli-ha-i-š]-gi] ∅-gɬlgay-i
stick NMLZ-be.large-INST 3/3UN-die-CAUS-IND-DS-NM.NOM 3-break-IND
'The big stick he killed it with broke.' =(17)

(81) *Perception readings*

a. *háʔašayišge* *didámali*
[$_{DP}$[$_{CP}$ ∅-haʔaš-ayʔ-i-š]-ge] di-damal-i
3-rain-INT.PAST-IND-DS-NM.ACC 1/3-hear-IND
'I heard it raining.' =(9)

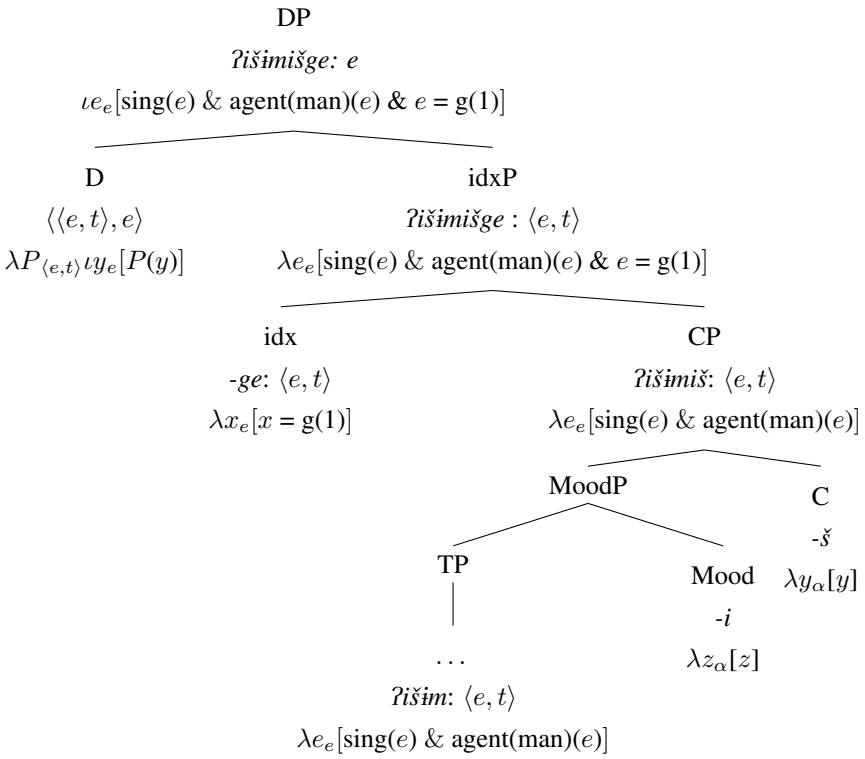
b. *t'é:liwhu ʔtšmišge* *didámali*
[$_{DP}$[$_{CP}$ t'e:liwhu ʔ-išim-i-š]-ge] di-damal-i
man 3-sing-IND-DS-NM.ACC 1/3-hear-IND
'I heard the man's singing.'

All of the above clausal nominalizations make use of a DP-layer, but we do not necessarily want to build factivity into their meaning. Instead, the referents that all of these nominalizations pick out (i.e., individuals or events) are simply *familiar* to interlocuters in a given context. That is to say, a semantics invoking familiarity is not limited to simple anaphoric DPs and the complements of presuppositional verbs alone.

For instance, Hanink (2018, 2020) argues that the function of *-gi/-ge* in clausal nominalizations giving rise to perception/events readings such as those in (81) is likewise to pick out a referent in the immediate context through the introduction of idx into the structure of the DP. Building on a proposal for event nominalizations in Northern Paiute of the kind in (81) put forward by Toosarvandani (2014), Hanink argues that the role of idx in the perception reading is to map the index it introduces to a familiar event through the assignment function, while the role of the D layer is to ι-bind the *event* variable introduced by the verb, returning an individual meaning for the whole DP. As proposed by Toosarvandani, the key to achieving this meaning is to leave the event variable in the proposition denoted by the vP unbound, as in (82), with the crucial result that existential closure of the event variable does not take place.

Consider the example in (81b) as derived in (82). First, the property denoted by the embedded clause does not undergo existential closure, leaving an event variable unbound. Second, this property undergoes Predicate Modification with [[idx]], which denotes the property of being anaphoric, just as it does in the clausal complements of presuppositional verbs under the present proposal, as well as in simple anaphoric DPs in e.g., Schwarz's (2009) analysis of German and Hanink's (2020) analysis of Washo demonstratives. Finally, D ι-binds this property, with a resulting meaning of a unique singing event that is equivalent to a familiar event in the context. Crucially, no reference to factivity is required for familiarity to be achieved.

(82)



Hanink (2020) further argues that index-encoding idx is required in internally headed relatives in order to derive the correct meaning of an individual (rather than a proposition), though for reasons of space we do not discuss this construction in any detail here.[30] Crucially however, we argue that the clausal complements of presuppositional verbs are just like event nominalizations of this kind, in that both pick out an individual via an assignment function. In the case of the former, the index refers to an event. In the case of the latter, it refers to a familiar individual whose content is described by some proposition.

5.3.2 Factivity is not lexically specified

Kastner proposes moreover that factivity may be lexically specified. Given that, in our analysis, factive verbs in Washo already differ in their argument structure from non-factive verbs (only the former select an individual-denoting direct object), they plausibly could also be special in lexicalizing a factivity presupposition directly, just as the classical Hintikkan-style analysis would have it.

We do however find contexts where a proposition that is false in the actual world can appear as a nominalized complement of a factive verb, such as those in (83-84).

[30] See also Kim (2009), who describes nominalizations in Korean that may likewise encode events, relative clauses, or the complements of factive verbs.

(83) Context: Talking about a world in which Hillary Clinton was elected president while living in Washo Country.

	Hillary Clinton P'au Wa L'u ʔáŋališge	*Adele hámup'ayé:s-i*
[DP[CP	Hillary Clinton P'au Wa L'u ʔ-aŋal-i-š]-ge]	Adele ∅-hámup'a-é:s-i
	Hillary Clinton P'au Wa Lu 3-live-ATTR-IND-DS-NM.ACC	Adele 3/3-forget-NEG-IND

'Adele remembers that Hillary Clinton lives in Pau Wa Lu.'

(84) Context: Playing make-believe with a child in a world in which the sun is blue.

	dí:beʔ delp'ílp'iliʔ	*ʔéʔišge*	*lášašé:si*
[DP[CP	di:beʔ de-ʔil-p'ilp'il-iʔ	ʔ-eʔ-i-š]-ge]	l-ašaš-e:s-i
	sun NMLZ-ATTR-blue-ATTR	3-be-IND-DS-NM.ACC	1/3-not.know-NEG-IND

'I know that the sun is blue.'

To be sure, these contexts involve make-believe, where a speaker's beliefs about the actual world are suspended to make room for what is happening in the make-believe world. Perhaps then we could keep a factivity presupposition in the lexical semantics of the verb, but tied to the evaluation world, which may not necessarily be the actual world. Converging evidence to reject this approach come from recent work on Korean (Bogal-Allbritten & Moulton 2017), which shows that the familiarity presupposed in nominalized clauses may be just that – familiarity – and not factivity.

Furthermore, if we build factivity directly into certain attitude predicates, then we have to assume that they are ambiguous between a factive and non-factive meaning. That is, while we might want to encode a presupposition of truth to the meaning of 'see' in (85), we surely do not want this presupposition to be encoded in the meaning of the same verb in (86).

(85)

ditugíbeweʔšda	*há:bišge*	*lí:giyi*
di-tu-gib-eweʔ-i-š-da	[DP[CP ∅-ha:biʔ-i-š]-ge]	l-i:gi-i
1-look-arrive-hence-IND-DS-ADV	3-rain-IND-DS-NM.ACC	1/3-see-IND

'I just looked around outside and I saw that it rained.' =(8)

(86)

hádigi daʔmóʔmoʔ	*lí:giyi*
[DP hadigi daʔmóʔmoʔ]	l-i:gi-i
that woman	1/3-see-IND

'I see that woman.'

Given that the complements of such verbs are always DPs, we can maintain a unified denotation for verbs such as 'see' or 'know' if we do not build a factive presupposition to their meaning in cases in which it is not warranted, as in (86), but rather appeal to the familiarity introduced by both DP complements. Consider a similar argument for Turkish made by Özyıldız (2017), who shows that the same predicate can give rise to both a factive and non-factive interpretation, depending on the shape of the clause it embeds. As in Washo, a nominalized embedded clause results in a presuppositional (factive) interpretation, which is absent with a non-nominalized clause.

(87) a. *Tunç* [*Hilary'nin kazan-dığın-ı*] *biliyor*
Tunç Hilary win-NMZ-ACC knows
'Tunç knows that Hilary won.' → Hilary won.

b. *Tunç* [*Hilary'nin kazan-dı diye*] *biliyor*
Tunç Hilary win-PST DIYE knows
'Tunç knows that Hilary won.' ↛ Hilary won. Turkish: Özyıldız 2017:397

Based on the fact that the same attitude predicate can give rise to different truth conditions, Özyıldız argues that factivity cannot be tied to the verb, but is instead better understood as the result of the entire composition of the predicate with the clause it embeds (see also Schulz 2003). A similar conclusion is drawn by Bondarenko (2019, 2020), who analyzes a factivity alternation in Buryat (Mongolic). In this language as well, a nominalized complement of the verb *hanaxa* yields a presuppositional interpretation 'remember', while a CP complement yields a non-presuppositional interpretation 'think'. Thus, we find converging cross-linguistic evidence that nominalized complements correspond with presuppositional interpretations of attitude reports.

5.3.3 Deriving default factivity

In sum, our analysis for presuppositional complements uses the same ingredients that are independently motivated in the language for other types of clausal complements like relative clauses and event nominalizations. The only difference between a presuppositional complement and the other types of nominalizations is that the former additionally includes the F_{PROP} type shift, in order for the resulting individual DP to refer to the content of the proposition, rather than to the proposition itself. While this analysis elegantly accounts for the morphological similarity of these constructions in Washo, it does not directly derive factivity, which is typically encoded as a presupposition of the matrix verb under traditional accounts of propositional attitudes. However, given examples like (83-84), as well as recent developments in the analysis of other languages that behave similarly (e.g., Korean, Turkish, Buryat), we believe this to be the correct result.

We propose instead that any flavor of factivity that may be present in such clauses is instead derived by a default presupposition projection algorithm, such as the one proposed by Schlenker (2021) for factive verbs and other presupposition triggers. Schlenker notes that classical lexicalist theories of presupposition run into problems both in cases where a presupposition trigger does not uniformly trigger the relevant presupposition (for instance, like our (83) and (84) above), and in cases where a presupposition projects in the absence of a lexical trigger (e.g., in the case of certain gestures). Here we simply sketch the analysis as it pertains to factivity, but also note that Schlenker's system is intended to apply to all presuppositions generally, and so could be extended to the familiarity presupposition introduced through definites as well.

The presupposition-generating algorithm proceeds as follows. First, we consider the possible entailments of an expression E. Then, we consider the probability that such an entailment is already believed by an agent prior to the utterance of E. If such a probability is higher than a certain threshold in the most likely

or plausible contexts, that entailment of E will be presupposed. While what counts as a likely or plausible context remains sketchy, the upshot is that presuppositions crucially need not be lexicalized in particular expressions, but rather arise as a result of the way that the entailments of expressions interact with the context (i.e., either the context of utterance or local linguistic context).

5.4 Non-presuppositional modifiers

We now turn to instances of clausal embedding by non-presuppositional verbs. Structurally speaking, clauses embedded by non-presuppositional verbs in Washo lack a nominalizing DP-layer (as well as a CP-layer, but this does not play a role in our account). Given that the function of the nominalizing D head is to transform properties into individuals, it then follows that the absence of D in non-presuppositional clauses means that these clauses denote properties.

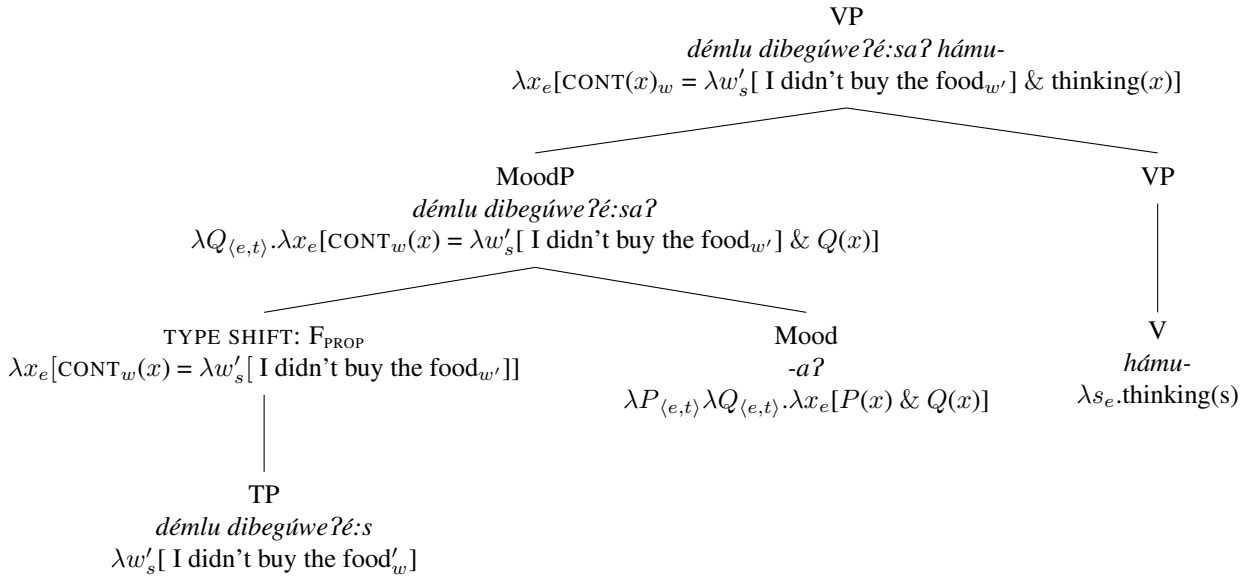
Following our analysis of embedded clauses in the previous section, we apply the F_{PROP} type shift at the TP level, transforming a proposition into a property of individuals. This property then combines with the dependent mood marker *-aʔ*. Given the conjunction semantics we proposed for *-aʔ* in (72), the result is a function from properties of individuals to properties of individuals. Assuming that events and individuals are both type of type e (as introduced in Section 4.1), this meaning can combine directly with the matrix verb it modifies via Function Application. The composition of non-presuppositional clauses thus proceeds as in (88).[31]

(88) **Non-presuppositional modifier**

a. *Beverly* *démlu dibegúweʔéːsaʔ* *hamuyi*
Beverly [$_{\text{MOODP}}$ demlu di-beguweʔ-eːs-aʔ] ∅-hamu-i
Beverly food 1-buy-NEG-DEP 3-think-IND
'*Beverly thinks that I didn't buy the food.*' =(11)

[31] A reviewer notes that MoodP could combine with VP via Predicate Modification without assigning a conjunction semantics to *-aʔ*. We find that giving *-aʔ* a semantic contribution is able to better explain why *-i* cannot appear in adjunct clauses (which would otherwise be expected, since we argue that it is semantically vacuous), as well as why *aʔ*-marked clauses cannot stand alone.

b.



After adding in the attitude holder argument and existentially closing the matrix event variable, we arrive at the truth conditions in (89). The content of the attitude is equated with the attitude event itself via the conjunction semantics of the dependent mood.

(89) $[\![$*Beverly démlu dibegúwe?é:sa? hámuyi*$]\!]^w$ =
$\exists$s[thinking$_w$(s) & HOLDER$_w$(s) = Beverly & CONT$_w$(s) = $\lambda w'$[I didn't buy the food$_{w'}$]]

A reviewer notes as well that Elliott's (2017) semantics for clausal modification predicts that these clauses should not stack recursively: F_{PROP} is defined in terms of equality, and so the stacking of "contents" of multiple propositional should result in contradiction. This prediction appears to be correct for Washo: When eliciting coordination in this construction, speakers provide an adjunct instead that indicates temporal simultaneity (more on this in Section 5.5). Note that the switch reference marker *-š* is present on the most deeply embedded verb 'run away' in (90), which indicates that this clause is a full CP rather than a MoodP modifier (as discussed in Section 3.2.1); it is a descriptive fact about Washo that clauses headed by the dependent marker *-a?* cannot be coordinated, though we do not address the syntax of coordination here.

(90) *súku? Mu?úšuwa?aš bú:ši ?élšima? digumsu?úši*
[$_{MOODP}$[$_{CP}$ suku? ∅-Mu?uš-uwe?-a?-š] bu:ši ?-élšim-a?] di-gum-su?uš-i
dog 3-run-hence-DEP-DS cat 3-sleep-DEP 1-REFL-dream-IND
'I dreamt the dog ran away while the cat slept.'
Elicited: 'I dreamt the dog rain away and the cat slept.'

5.5 The mood marker difference generalized

We now step back and discuss how the semantics for the mood markers *-i* and *-a?* that we proposed in section 5.1 can be leveraged to account for their distribution beyond clauses embedded by presuppositional

and non-presuppositional verbs. In particular, the dependent mood *-aʔ* appears in several types of adjunct clauses, and we sketch how our account can be extended to those cases.

Recall that for the independent mood *-i*, we propose that it denotes the identity function, i.e., it is semantically vacuous. For presuppositional complements, it simply passes up the meaning of an F_{PROP}-type-shifted TP, which later combines with the idx head *-ge* and then D; see (74). A similar situation obtains in the case of internally-headed relative clauses and event nominalizations, modulo the absence of F_{PROP}; see e.g., (80a-80b) and (81a-81b), respectively. Recall as well that outside of complement and relative clauses, the independent mood *-i* occurs as a default mood marker in matrix clauses, as in (91). This fact makes sense in view of our proposal that *-i* introduces no semantic content.

(91) **Matrix use of independent *-i***:

ʔémluyi
ʔ-emlu-**i**
3-eat-**IND**
'*She's eating*.' adapt. from Jacobsen 1996

This meaning for the independent mood stands in contrast to the dependent mood marker *-aʔ*, which we have proposed denotes conjunction of properties. This semantics immediately explains why dependent *-aʔ* doesn't occur in matrix clauses: The application of *-aʔ* to a clause does not deliver a propositional type. Given that modification generally involves a conjunctive semantics (Heim & Kratzer 1998), we can understand why the dependent *-aʔ* occurs in many types of adjunct clauses. In particular, two types of adjunct clauses that we focus on here are (i) "concessive" or "contrastive" adjunct clauses, exemplified in (92); and (ii) temporal adjunct clauses, where the *-aʔ*-clause receives a "simultaneous" interpretation (often translated by speakers as "when" or "while" in English), exemplified in (93). As we already noted in Section 3.2.1, unlike *-aʔ*-marked clauses embedded by non-presuppositional verbs, both types of adjunct clauses exhibit switch reference morphology when the subjects of both clauses are different, telling us that these adjunct clauses are full CPs.

(92) **Concessive adjunct clause**

	rí:noya	*léyeweášaʔuŋilaš*	*dipú:lul*	*Múʔušéːseteiʔaygi*
[$_{CP}$	ri:no-a	le-iyeweʔ-ašaʔ-uŋil-**aʔ**-š]	di-pu:lul	∅-Muʔuš-e:s-etiʔ-ayʔ-**i**
	Reno-OBL	1-go-PROSP-PAST-**DEP**-DS	1-car	3-run-NEG-INCH-INT.PAST-**IND**

'I was going to go to Reno, but my car broke down.' Washo Archive

(93) **Simultaneous temporal adjunct clause**

	lémluyaš	*ʔímelegi*
[$_{CP}$	l-émlu-**aʔ**-š]	ʔ-íməʔ-leg-**i**
	1-eat.IN-**DEP**-DS	3-drink-REC.PAST-**IND**

'While I was eating, he was drinking.' adapt. Jacobsen 1964

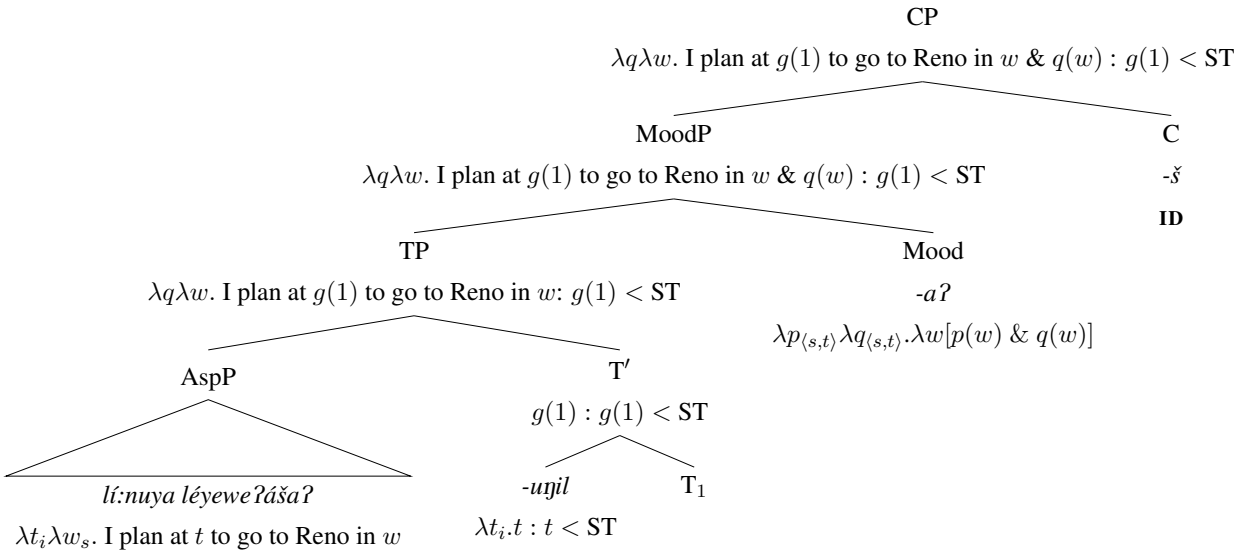
Let us first consider in more detail the concessive adjunct clauses like in (92). The main clause contains the independent mood *-i*, while the adjunct clause contains the dependent mood *-aʔ*, as well as switch reference morphology. As (92) also shows, both clauses contain their own tense (*-uŋil* 'past') and aspect (*-ašaʔ* 'prospective') layers.

We propose that concessive adjunct clauses adjoin high in the main clause structure, at TP. At this height in the structure, the main clause denotes a proposition. Given our analysis of the semantics of *-aʔ* as generalized conjunction, the adjunct clause itself should also denote a proposition. This is of course plausible since the adjunct clause also contains its own tense. These two propositions are conjoined by the version of *-aʔ* in (94).

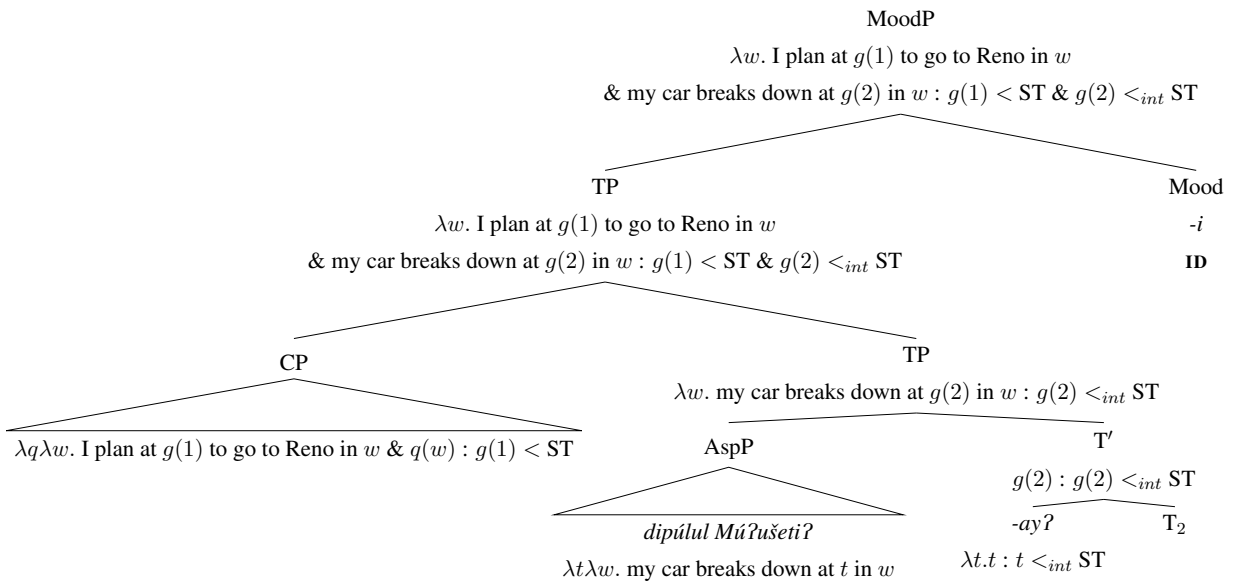
(94) $[\![\text{-}a\text{ʔ}]\!] = \lambda p_{\langle s,t\rangle}\lambda q_{\langle s,t\rangle}.\lambda w[p(w)\ \&\ q(w)]$

Our full analysis of the sentence in (92) is given below in (95) and (96). Unlike attitude complement clauses, we do not posit an instance of the F_{PROP} type shift in this case: These clauses to not make reference to an object with propositional content, and no type shift is necessary for the composition. To facilitate a comparison with simultaneous temporal adjunct clauses below, we fully spell out our assumptions about tense here. Following Bochnak (2016), we assume that tenses modify a reference time pronoun located in T. Like other free variables, the reference time pronoun receives its value from the assignment function g. It saturates the temporal argument of AspP, returning a proposition. The general past marker *-uŋil* restricts the value of the temporal pronoun to a time prior to the speech time; the intermediate past *-ayʔ* restricts this value to a time in the intermediate past of the speech time.

(95) *Composition of concessive adjunct*



(96) *Composition of matrix clause with concessive adjunct*[32]



We note that our semantics on its own does not derive an interpretation of "concession". We tentatively propose that such an interpretation comes about pragmatically, plausibly due to the incompatibility of the content of both clauses holding simultaneously (i.e., I go to Reno vs. my car breaks down).

Turning now to simultaneous temporal adjuncts, we observe that these adjunct clauses do not and cannot contain their own tense. This is true whether the main clause contains a past or future tense, as shown in (97) and (98).

(97) Context: This morning I came to the Senior's Center to do fieldwork, and you were sitting outside when I arrived.

	lé:bi(#leg)aš	*baŋáya ʔumgé:gelegi*
[CP	le-i:biʔ(#-leg)-aʔ-š]	baŋaya ʔum-ge:gel-leg-i
	1-come-REC.PAST-DEP-DS	outside 2-sit-REC.PAST-IND

'When I arrived, you were sitting outside.'

(98)

	Friday-lu	*ʔumóndegí:biʔaš*	*ʔumó:ni*	*dimɬitgabigi*
[CP	Friday-lu	ʔum-mondeʔ-gi:biʔ-aʔ-š]	ʔum-mo:ni	di-mi:lit-gab-i-gi
	Friday-INS	2-play.cards-come-DEP-DS	2-money	1/3-win-DIST.FUT-IND-NM.NOM

'When you come to play cards on Friday, we will win all your money.'

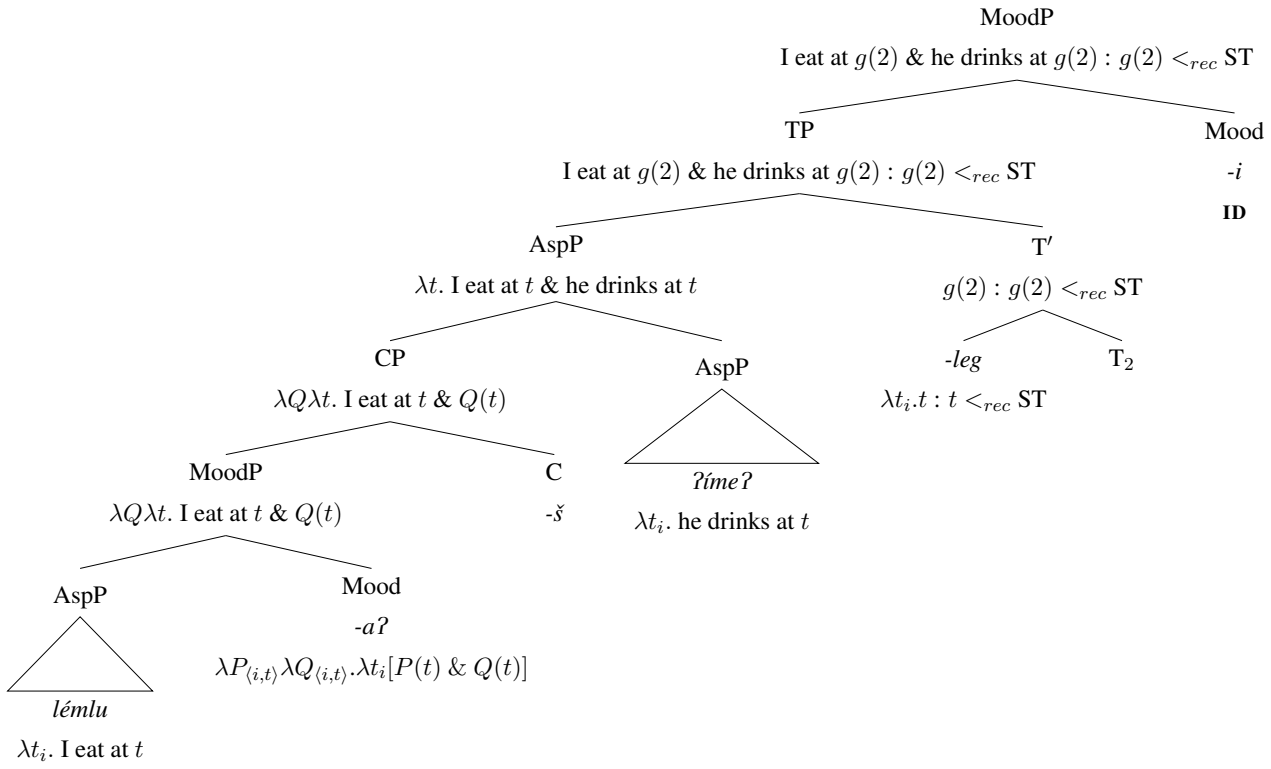
We propose that simultaneous adjunct clauses attach to AspP in the main clause. Since AspP denotes a predicate of times (e.g., Kratzer 1998), the dependent marker *-aʔ* thus conjoins predicates of times for this type of adjunct clause, as in (99). This means that the material that *-aʔ* embeds also denotes a predicate of

[32]There is not definitive evidence for a CP-layer in matrix clauses in Washo, and so we omit it here. Note that C denotes the identity function and, if present, would not affect the truth conditions.

times. We propose that in this case, the Mood head *-aʔ* directly embeds an AspP, which has two welcome consequences. First, we get the correct semantic type (i.e., *-aʔ* conjoins two predicates of times), and second, this explains why simultaneous adjunct clauses cannot host a tense morpheme.[33] We get temporal simultaneity from the fact that the temporal variable from the main clause will be filled in for the temporal argument of both clauses after they are conjoined. Just as with concessive adjunct clauses, we do not posit an instance of the F_{PROP} type shift for simultaneous adjunct clauses.

(99) $[\![\text{-}a\text{ʔ}]\!] = \lambda P_{\langle i,t\rangle}\lambda Q_{\langle i,t\rangle}.\lambda t_i[P(t)\ \&\ Q(t)]$

(100) *Composition of matrix clause with simultaneous adjunct*



Note that this analysis predicts that such clauses may stack (without an overt coordinator, cf. the discussion of MoodP stacking above in Section 5.4). We also predict this in the case of simultaneous adjuncts, given that the meaning of the dependent mood morpheme should allow for recursion. This prediction is borne out, as exemplified in (101):

[33] This solution requires Mood to directly embed AspP in this case only, whereas it generally embeds TP. The alternative would be to have Mood still embed TP, but then λ-abstract over the temporal variable, in order to create a predicate of times. This solution, however, doesn't explain why an overt tense is not possible in such clauses, and requires an otherwise unmotivated λ-abstraction.

(101) Context: Coyote and Lizard are having an argument about what shape human hands should be.

dá:	*gišam*	*gumt'éšuyaʔ,*	*t'á:gɨmlu*	*gumLiʔdúwaʔaʔ,*	*má:maŋaʔ*
da:	gišam	∅-gum-t'ešuy-aʔ-∅	t'a:gɨm-lu	∅-gum-Liʔduwaʔ-aʔ-∅	∅-má:maŋ-aʔ
there	around	3-REFL-be.jealous-DEP-SS	pinenut-INST	3-REFL-argue-DEP-SS	3-disagree-IND

'...While there, they argued about pinenuts, they disagreed, they were jealous.'

Coyote and Lizard Story

Our analysis also makes predictions about the same type of Condition C effects discussed for MoodP adjuncts to non-presuppositional verbs in Section 3.2.2. In that section, we offered evidence from reconstruction that these adjuncts are base-generated low, below the matrix subject. Given our proposals above for the height of attachment of concessive and simultaneous adjuncts (at different heights, but both higher than the base position of the main clause subject), we predict that the same reconstruction effects should not be found: A Condition C violation should not be incurred in cases where an R-expression in these adjunct types precedes a co-indexed pronoun in the main clause. At the moment, we do not have the relevant data to test these predictions. (See Arregi & Hanink 2021 for tentative results involving simultaneous adjuncts that in fact runs counter to our claims here; Condition C effects in Washo are however far from understood and research is ongoing). Nothing crucial to the core of our proposal hinges on this, however. The main take away point is that the dependent Mood marker *-aʔ* has the general meaning of conjunction, regardless of the attachment site of the *-aʔ*-marked clause.

To sum up, our analysis of the dependent mood marker *-aʔ* as denoting generalized conjunction can help shed light on why this marker can be used in certain complement clauses and adjunct clauses. Note that for the adjunct clauses, we do not include the relations of contrast or simultaneity anywhere in the semantics directly. We believe this is a good thing, since it can account for the wide range of uses of *-aʔ*-marked clauses. We suggest that the more specific interpretations come about pragmatically, though we do not propose a full analysis here.[34] Building these meanings into *-aʔ* directly would not explain why these meanings are not present in *-aʔ*-marked clauses embedded by non-presuppositional verbs. The generalized conjunction semantics of the dependent mood may also help to explain why *-aʔ*-marked clauses appear with a fairly high frequency in narratives: *-aʔ*-marking just denotes conjunction (albeit with a subordination syntax), but has a a variety of pragmatic functions, expressing various discourse relations. While we leave a full analysis of all the functions of *-aʔ*-marking in Washo to future research, we believe our analysis already goes a long way to account for many of the uses of *-aʔ*-marked clauses in the language.

[34] Interestingly, English *while* also has both concessive and simultaneous readings:

(1) a. While George R R Martin's books are long, the writing style is highly engaging. (concessive)
b. While we were in Reno, it started to snow. (simultaneous)

6 Conclusion

We have argued in this paper for a language-wide distinction between complementation and modification as two distinct modes of clausal embedding in Washo. This distinction is most clearly visible in the embedding strategies of two classes of verbs that are largely taken to differ according to presuppositionality: While presuppositional verbs directly select for DP complements in the form of clausal nominalizations, non-presuppositional verbs do not select but are instead modified by the (non-nominalized) clauses they embed. We have argued that this is explained by independent factors in the language, in a way that ties in neatly to the morphosyntactic shape of the embedded clause, selectional properties of attitude predicates, and the semantics of the independent and dependent mood markers in the language.

The emerging picture yields two important results contributed by the data from Washo. First, while it is in line with Kastner's (2015) proposal that presuppositional verbs select for DPs, it challenges the view that non-presuppositional verbs select for embedded clauses directly: We argue instead that embedded clauses in this context are better understood as verbal modifiers. Second, the status of the MoodP in Washo as an adjunct to non-presuppositional verbs supports Elliott's (2016) claim that attitude verbs are intransitive – but only in the case of this verb class – and is untenable for describing on the other hand the way in which presuppositional predicates embed clauses.

This picture has larger consequences for theories of clausal embedding across verb types. First, it is crucial that selection does play a role for some verbs, contra strong theories of clausal complementation (e.g., Kratzer 2006, Moulton 2009) where embedded clauses are not selected, and also contra Elliott (2016), for whom clausal embedding by verbs is always adjunction. The Washo evidence suggest that presuppositional verbs select for their complements both syntactically and semantically, while non-presuppositional verbs do not select in any way, but are simply good candidates for modification. Secondly, the behavior of clauses embedded by presuppositional verbs is not a product of factivity directly, though it is related through reference to familiarity. Other languages that make similar (though possibly slightly different) distinctions that support this state of affairs come from recent work on e.g., Korean, Turkish, and Buryat, suggesting wider-reaching implications from this work.

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