

Embedded clauses in Turkish: Different paths to composition

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1 Introduction

- **tldr** The syntactic and semantic properties of Turkish embedded clauses reveal two strategies of composing clauses with nouns and verbs—roughly, complementation and modification.¹
- **Turkish embedded clauses** The focus is on so-called *-DI(k)* nominalizations and (non-nominalizable) *diye* clauses. Other kinds of embedding play a supporting role.²

- (1) a. Nominalizations: Nominal syntax inside and out
[Biz-im gel-diğ-imiz-i] {düşün-üyor-lar, um-uyor-lar}.
1P.GEN arrive-NMZ-1P.POSS-ACC think-PRES-3P, hope-PRES-3P
They {think, hope} that we've arrived.
- b. *Diye* clauses: Root syntax inside + 'say complementizer'
[Biz gel-di-k diye] {düşün-üyor-lar, um-uyor-lar}.
1P.NOM arrive-PST-1P DIYE think-PRES-3P, hope-PRES-3P
They {think, hope} that we've arrived.

Ex. (1) shows a *similarity* in the distribution and interpretation of such clauses: Direct objects_{??}, under the same verbs_{??}, giving rise to the same_{??} truth conditions.

There are, however, syntactic and semantic differences between how the two clause types combine with surrounding material.

One place where nominalizations are grammatical and *diye* clauses are not is in subject position:

- (2) a. [Alinin geldiği] {doğru, belli}.
Ali.GEN arrive.NMZ.NOM true.COP obvious.COP
It's true/obvious that Ali arrived.
- b. *[Ali geldi diye] {doğru, belli}.
Ali arrived DIYE true.COP obvious.COP
(Intended:) It's true/obvious that Ali arrived.

One place where the opposite is true is with predicates with all saturated argument slots.

- (3) a. *Soru-yu [Alinin geldiğini] cevapladım.
question-ACC Ali.GEN arrive.NMZ.ACC I answered
(Intended:) I answered the question saying that Ali arrived.

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¹The view that embedded clauses are at least semantically modifiers is found, among others, in Kratzer (2016, 2018); Moulton (2015); Elliott (2017a,b). I cannot do justice to this body of work here. A detailed comparison between English and Turkish is required, which I leave for further research.

²Examples are given in Turkish orthography. In morpheme citation forms, capitals indicate alternating consonants or harmonizing vowels. Parentheses indicate segments that undergo deletion in certain environments. E.g., the first segment in *-DI(k)* is realized as [d] or [t], the second as [i] or [u], the third, as [k] or extra length on the preceding vowel.

- b. Soru-yu [Ali geldi diye] cevapladım.
 question-ACC Ali arrived DİYE I answered
 I answered the question saying that Ali arrived.

A detailed investigation of similar phenomena with verbs as well as with nouns will lead to the conclusion that both complementation and modification are required to compose clauses.

Resulting interpretive differences will be observed along the way.

(Disclaimer: During this talk, ‘modification’ is understood to mean adjunction in the syntax and predicate conjunction in the semantics. ‘Complementation’ means saturation of an argument of a function, with nouns, and the syntactic relation [YP X], with verbs.)

- **Theoretical framework** Following a fruitful method of analyzing the syntax and the semantics of attitudes, I follow Kratzer (2006, 2016), Moulton (2015), among many others in thinking that attitude verbs are transitive or intransitive predicates of eventualities:

- (4) a. $\llbracket \text{believe} \rrbracket = \lambda x_e \lambda e_v \lambda w_s . \text{believe}(x, e, w)$
 b. $\llbracket \text{sigh} \rrbracket = \lambda e_v \lambda w_s . \text{sigh}(e, w)$

And that, e.g., believing something means standing in the ‘believes’ relation to some object x with propositional content p . This relation is realized by means of functions such as the following:

- (5) $\lambda p_{\langle s, t \rangle} \lambda x_e \lambda w_s : x \text{ is a contentful entity} . \text{content}(x, w) = \{w' : p(w')\}$

Compare this with the traditional Hintikka view, where the action is in the attitude verb, and modal quantification is over attitude holders’ belief worlds (Hintikka, 1969).

- (6) $\llbracket \text{believe} \rrbracket = \lambda p_{\langle s, t \rangle} \lambda x_e \lambda w_s . \forall w' [\text{dox}(x, w) \rightarrow p(w')]$

Eventualities might also have content associated with them, or serve as modal anchors (Hacquard, 2006; Kratzer, 2013).

2 Background on embedded clauses in Turkish

- Perhaps the most obvious distinction between different Turkish embedded clauses is whether they look like genitive possessive NPs,³ or like root clauses—bare, or introduced by the morpheme *diye*.

In the generative literature, the former are referred to as ‘nominalizations’ and the latter as ‘tensed’ or ‘finite’ clauses.

- (7) a. Nominalizations and genitive possessive NPs
 (i) Ali [bizim gel-diğ-imiz-i] {sanıyor, düşünüyor}.
 Ali 1P.GEN arrive-NMZ-1P.POSS-ACC believes thinks
 Ali believes/thinks that we arrived.
 (ii) bizim el-imiz
 1P.GEN hand-1P.POSS
 our hand
- b. Root and embedded clauses with/without *diye*
 (i) Ali [biz gel-di-k] sanıyor.
 Ali 1P.NOM arrive-PST-1P believes
 Ali believes that we arrived.

³I mean to take no stance on the D/NP distinction.

- (ii) Ali [biz gel-di-k diye] düşünüyor.
 Ali 1P.NOM arrive-PST-1P DIYE believes
 Ali thinks that we arrived.
- (iii) Biz gel-di-k.
 1P.NOM arrive-PST-1P
 We arrived.

The nominalization vs. tensed/finite terminology can be misleading. Nominalizations also at least encode temporal information (future vs. not), though it might be tricky to distinguish this from aspect. Tensed/finite clauses may also sometimes be nominalized.⁴

As suggested by (1)/(7), some (and in fact many) verbs are compatible with both nominalizations and tensed/finite clauses. With some verbs, the choice of embedded clause doesn't necessarily give rise to any *obvious* truth- or use-conditional effects. Such differences do exist in general, sometimes subtly.

- More on nominalizations

There are many nominalizing morphemes/kinds of nominalizations. See at least Göksu (2018) and Demirok (2018) for targeted investigations of nominalizations.

-DI(k) nominalizations, which are the main focus here, roughly correspond to indicative *that* clauses in English. This, despite their sharing morphosyntactic properties with *poss ing gerunds* (Abney, 1987).

As a proof of existence, accept, e.g., the following contrast. The choice of nominalizer *-DI(k)* vs. *-mA* makes an interpretive difference, all else being equal. The interpretive difference is that the same predicate *doğru* is interpreted differently depending on the nature of the nominalization: 'is true' with *-DI(k)*, 'is right' with *-mA*.

- (8) a. Alinin gel-diğ-i doğru.
 Ali.GEN come-DIK.NMZ-3S.POSS true
 It's true that Ali came.
- b. Alinin gel-me-si doğru.
 Ali.GEN come-MA.NMZ-3S.POSS right
 It's right that Ali comes.

Relative clauses can only be formed on the basis of a nominalization. (The head noun is droppable, and the choice of the relativizing nominalizer is conditioned by the presence of a genitive subject within the relative clause: *-DI(k)*, when genitive, vs. *-(y)An*, when not. 'Complement' clauses only ever seem to be introduced by the former.)

- (9) a. [bizim ___ gör-düğ-ümüz] üzüm
 1P.GEN see-NMZ-1P.NOM grape
 the grape that we saw
- b. *[biz ___ gör-dü-k] üzüm
 1P see-PST-1P grape
 Intended: the grape that we saw

- More on tensed/finite clauses

For more than what is included here, see at least George and Kornfilt (1981); Zidani-Eroğlu (1997); Yıldırım-Gündoğdu (2017)

Tensed/finite clauses are often introduced by the elusive morpheme *diye*. This morpheme is derived from the root for the verb 'say,' *de-* and a linker morpheme *-(y)A*.

⁴For discussion about the size of various forms of Turkish nominalizations, see Göksu (2018). For closely related Uyghur nominalizations, Asarina (2011).

- (10) Ali [biz gel-di-k] *(diye) düşünüyor.
 Ali we come-PST-1P DIYE
 Ali thinks that we arrived.

But this is not always the case. Among the attitude verbs compatible tensed/finite clauses, exactly three (sometimes) resist the expression of *diye*: *san-*, ‘believe’ in the ‘think’ sense, *de-*, ‘say,’ *iste-*, ‘want.’

- (11) a. Ali [biz geldik] (*diye) {saniyor, dedi}.
 Ali we came DIYE believes said
 Ali {believes, said} that we arrived.
 b. Ali [biz gelelim] (*diye) istiyor.
 Ali we come.OPT.1P DIYE wants
 Ali wants us to come.

The appendix presents cases where *diye* is obligatory with these verbs. I leave these verbs aside for present purposes.

In many contexts, *diye* clauses translate as *that* clauses and provide propositional content associated with rumors, beliefs, desires. . .

But, they do many other things as well: They introduce purposes, causes, or reasons. They also specify linguistic properties associated with entities, such as words written on objects, sounds, or names.⁵

In some of these cases, the material that *diye* introduces is not always straightforwardly analyzed as a proposition, and it is quoted.

- (12) a. Semsiyeyi [yağmur yağıyor diye] açtım.
 umbrella rain precipitate DIYE I opened
 I opened the umbrella because it was raining.
 b. “Welcome to Sivas” diye bir t-shirt üretilebilirdi
 welcome to Sivas DIYE one t-shirt could have been made
 They could’ve made a t-shirt that said “Welcome to Sivas.”
 c. “çat” diye bir ses
 ONOMATOPEIA DIYE one sound
 a sound that goes “tʃat”
 d. “Ali” diye bir adam
 Ali DIYE one man
 a man called “Ali”

3 Two paths to composition with content nouns

- Both nominalizations and *diye* clauses can be used to specify the content of nouns.

- (13) a. [Ali-nin gel-diğ-i] dedikodu*(-su)
 Ali-GEN arrive-NMZ-3S.NOM rumor-SI
 the rumor that Ali arrived
 b. [Ali gel-di diye] bir dedikodu*(-su)
 Ali arrive-PST.3S DIYE one rumor-SI
 Literally: a rumor that Ali arrived
 Idiomatically: a rumor that says that Ali arrived
 c. haber, bilgi, düşünce, gerçek, soru, . . .
 news information thought fact question

⁵See Singh (1980) for a similar catalog of phenomena for Bangla *bole*.

Upshot: These two strategies display differences suggesting that. . .

- Nominalizations are syntactic and semantic arguments of the functional head *-sı*,⁶
- *Diye* clauses are intersective modifiers.

- The morpheme *-sı* is obligatory with nominalizations and ungrammatical with *diye* clauses.⁷

It appears on possessed nouns when the possessor is a third person, and on noun-noun compounds.

- (14)
- a. kadın-in doktor-u
woman-GEN doctor-SI
the woman's doctor
 - b. kadın doktor-u
woman doctor-SI
gynecologist (≈ doctor of women)
 - c. fizik öğretmen-i, Himalaya tuz-u, atom bomba-sı
physics teacher-SI Himalaya salt-SI atom bomb-SI
physics teacher, Himalayan salt, atom bomb

The omission of *-sı* indicates intersective modification between two nouns, an adjective and a noun, a relative clause and a noun. . .⁸

- (15)
- a. kadın doktor
woman doctor
female doctor
 - b. başarılı doktor
successful doctor
successful doctor
 - c. [___ gör-düğ-üm] doktor
see-NMZ-1S doctor
doctor that I saw

- *Diye* clause and content noun combinations are most naturally produced with the indefinite article *bir*, 'one/a,' intervening between the clause and the noun. This is also the unmarked order found with other intersective modifiers.⁹

- (16)
- a. [Ali geldi diye] bir dedikodu
Ali arrived DIYE one rumor
a rumor that Ali arrived
 - b. { ___ gördüğüm, başarılı } bir doktor
see-NMZ.1S successful one doctor
a doctor that I saw, a successful doctor

Nominalization and content noun combinations are markedly less natural with the indefinite article. But, if it must be expressed, it must precede the nominalization:

⁶The literature is not settled as to what *-sı* actually spells out. The morpheme's citation form is in fact *-(s)I(n)*. I simplify this here.

⁷There are possessives and compounds where *-sı* is omitted. With nominalizations, however, the morpheme is obligatory.

⁸Erratum, 07/13/2019: I mistakenly give 'successful' as an intersective adjective. I also realize that while the presence of *-sı* implies non-intersective modification, the converse is not true. I do not believe that this should affect the conclusions drawn here, though it does weaken the argumentation.

⁹I'm not sure why *diye* clause + nouns prefer indefinite, while nominalization + nouns prefer definite interpretations.

(17) (bir) [Ali-nin geldiği] (*bir) dedikodu-su
 one Ali-GEN arrive.NMZ.3S one rumor-SI
 a rumor that Ali arrived

- In fact, the nominalization and the content noun form a tight syntactic unit, which makes scrambling the clause away from the noun ungrammatical.

In contrast, the connection between a *diye* clause and a content noun is freer. Scrambling is possible.¹⁰

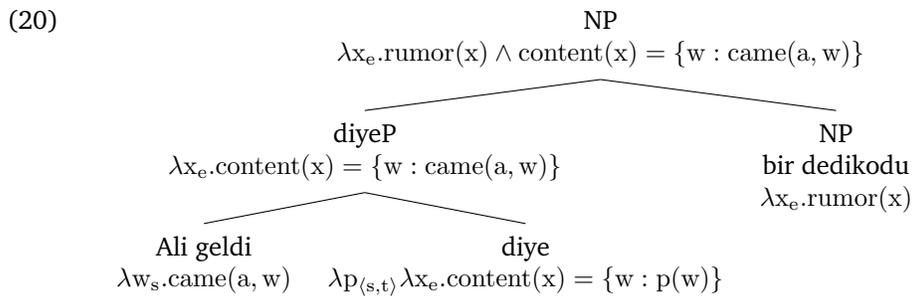
(18) a. *Ali-nin geldiği dün [___ dedikodu-su-nu] açıkladım.
 Ali-GEN arrive.NMZ yesterday rumor--SI-ACC explained.1S
 Yesterday, I explained the rumor that Ali had arrived.
 b. Ali geldi diye dün [___ bir dedikodu-yu] açıkladım.
 Ali arrived DIYE yesterday one rumor-ACC explained.1S
 Yesterday, I explained (lit.) a rumor that Ali had arrived.

The freedom observed in (18b) is observed between adjectives/relative clauses and head nouns too.

(19) [Ali-nin ___₁ gördüğü]₂ dün [___₂ bir doktor-u]₁ aradım.
 Ali-GEN see.NMZ yesterday one doctor-ACC called.1S
 Yesterday, I called a doctor that Ali saw.
 gap 1: Object gap in relative clause ‘a doctor’
 gap 2: Scrambled *diye* clause

- A natural analysis of *diye* clause and content noun combinations is to treat *diye* clauses as intersective modifiers, as in (20).

- Here, *diye* composes with a proposition *p* and returns a predicate of individuals whose content is equal to *p*.
- *Bir dedikodu* is treated as a predicate of individuals true of rumors.
- The *diyeP* and the NP nodes compose via predicate conjunction.



This way of composing clauses and content nouns mimics Kratzer (2016, 2018), Moulton (2015), Bogal-Allbritten (2016) others’ way of composing English *that* clauses with content nouns.¹¹

- Analyzing nominalization and content noun combinations requires taking a closer look at the syntax and semantics of Turkish noun-noun compounds.

Recall that these two constructions parallel each other morphosyntactically:

¹⁰The verb ‘explain’ in (18) makes it possible to tease apart whether the *diye* clause is composing with the content noun or the verb.

¹¹How to do NPs like “*çat!*” *diye bir ses*, “a sound that goes “tʃat!” in (12c)? One idea is that *diye* may also specify the *form* of things (rather than their content). This could be implemented compositionally by giving *diye* a further argument ranging over content, form, and perhaps other kinds of functions. I am indebted to Emar Maier (p.c.) for giving me this idea.

- (21) a. [Ali-nin geldiği] dedikodu-su
 Ali-GEN came.NMZ rumor-SI
 rumor that Ali arrived
- b. kadın doktor-u
 woman doctor-SI
 gynecologist (\approx doctor of women)

First, meanings like (21b) are not intersective. Rather, we need to generate a predicate of individuals true of doctors who treat women (not doctors that are women).

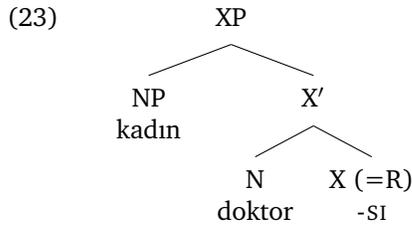
- (22) a. $\llbracket(21b)\rrbracket \neq \lambda x_e. \text{woman}(x) \wedge \text{doctor}(x)$
 b. $\llbracket(21b)\rrbracket \approx \lambda x_e. x \text{ is a doctor who treats women}$ (to be refined, in future work)

The relation between the N and the NP must be mediated some relation R, which the literature assumes is determined contextually.¹²

It isn't straightforward to define R in the general, or in the specific case of (21b). So I will be satisfied here with the following intuition. R must take the denotation of the N 'doctor,' and the NP 'women,' and return a predicate of individuals true of doctors who treat women, in (22b).

There is much work on the morphosyntax of noun-noun compounds (less on their semantics). Many authors commit to the surface syntactic constituency in (23), and Öztürk and Erguvanlı Taylan (2016) analyze -SI as "a valency marker signalling the introduction of an argument [into the structure]." This additional argument is either a possessor, or the first noun in the compound.

The syntax in (23) is one that most naturally corresponds to a semantic derivation based on composing the two nouns through the mediation of R.



Taking this structure and this kind of semantics to hold uniformly across noun-noun compounds, it follows that nominalized clauses are both syntactic and semantic arguments of a functional morpheme that relates them to content nouns.

- (24) a. Ali-nin geldiği dedikodu-su
 Ali-GEN arrive.NMZ rumor-SI
 the rumor that Ali arrived
- b.
-
- ```

graph TD
 XP --> NP["Ali'nin geldiği
λw_s.come(a, w)"]
 XP --> X_prime[X']
 X_prime --> N["dedikodu
λx_e.rumor(x)"]
 X_prime --> X["X (=R_content)
-SI
λf_{(e,t)}λp_{(s,t)}λx_e.f(x) ∧ content(x) = {w : p(w)}"]

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- $\lambda x_e. \text{rumor}(x) \wedge \text{content}(x) = \{w : \text{came}(a, w)\}$
- $\lambda p_{(s,t)} \lambda x. \text{rumor}(x) \wedge \text{content}(x) = p$
- $\lambda f_{(e,t)} \lambda p_{(s,t)} \lambda x_e. f(x) \wedge \text{content}(x) = \{w : p(w)\}$

<sup>12</sup>The lexical semantics of the two nouns, conventions, and lexicalization might also play a role in fixing R. Though there are further references, the exposition here is based on Kharytonava (2011), Kunduracı (2013) and Öztürk and Erguvanlı Taylan (2016).

The assumptions here are that one possible value of R includes a content function, and that nominalizations denote predicates of situations, that is, propositions.

- (25) a.  $\llbracket R_{\text{content}} \rrbracket = \lambda f_{\langle e,t \rangle} \lambda p_{\langle s,t \rangle} \lambda x_e. f(x) \wedge \text{content}(x) = \{w : p(w)\}$   
 b.  $\llbracket \text{Ali'nin geldiği} \rrbracket = \lambda w_s. \text{come}(a, s)$

- Composing a content noun with a nominalization or with a *diye* clause result in equivalent expressions. One main difference is in that the content function is contributed from within the *diye* phrase, but from outside of the nominalization. (Note that the function, being contributed by *diye*, is contributed from outside tensed/finite clauses as well.)

- That the content function comes from outside with nominalizations is supported by cases where they compose with an existential copula:

- (26) [Ali-nin geldiği] {ol-uyor, yok}.  
 Ali-GEN come.NMZ EXIST.PRES EXIST.NEG  
 Ali sometimes comes/Ali's not coming.

Here, the copula directly quantifies over situations that include Ali arriving.<sup>13</sup>  
 It is not possible to do this with *diye* clauses, or with bare clauses.

- (27) \*[Ali geldi (diye)] {ol-uyor, yok}.  
 Ali arrived DIYE EXIST.PRES EXIST.NEG  
 Ali sometimes comes/Ali's not coming.

Why?

- \* Bare clauses might be *too* big.
- \* Why doesn't (27) give rise to truth conditions that involve quantification over content nouns? They might not be the right syntactic kind of object to be sitting in a subject position. Elements of answer in the next section.
- The content function is contributed by the *diye* phrase.  
 Uniformity in composition, consistency with what has been proposed with *that* clauses.  
 The morpheme *diye* derives from the root *de-*, 'to say.' It might have retained some properties associated with the verb.  
 (I'm not sure I have a knockdown empirical argument for this.)

- One prediction that this difference in composition makes is that if bare clauses (i.e., ones not introduced by *diye*) can compose with content nouns, it should be through the noun-noun compound strategy.<sup>14</sup>

The reason is that bare clauses are analyzed as denoting propositions, which makes them similar to nominalized clauses, and they are not capped by a content function.

This prediction is borne out:

- (28) [Ali geldi] {dedikodu\*(-su), haber\*(-i), düşünce\*(-si)}  
 Ali arrived rumor-SI news-SI thought-SI  
 the {rumor, news, thought} that Ali arrived

The section on how clauses compose with verbs presents an additional parallel between nominalizations and bare clauses: Both can be case marked. *Diye* clauses, on the other hand, cannot be.

We have assumed that both nominalizations and root clauses denote propositions. This view is compatible with the possibility that there might be differences between them, in either their internal make up or how they compose with surrounding expressions.

<sup>13</sup>The situations contributed by nominalizations must be large. They cannot compose with manner predicates like *hızlı*, 'quickly,' or temporal predicates like *dün*, 'yesterday.'

<sup>14</sup>I am grateful to Rajesh Bhatt for pointing this out to me.

## 4 At least two paths to composition with verbs

- Both nominalizations and *diye* clauses can compose with verbs.

- (29) a. Ayşe [ Ali-nin gel-diğ-in-i ] düşünüyor.  
 Ayşe Ali-GEN arrive-NMZ-3S-ACC think  
 Ayşe thinks that Ali arrived.
- b. Ayşe [ Ali gel-di diye ] düşünüyor.  
 Ayşe Ali arrive-PST.3S DIYE think  
 Ayşe thinks that Ali arrived.

**Upshot:** These strategies display differences suggesting that...

- Nominalizations are syntactic complements of verbs (though they might not necessarily saturate their semantic arguments),
- There must at least exist a VP adjunction/modification strategy for *diye* clauses.

- **Case morphology**

- Nominalizations are overtly marked for case. The accusative is seen in (29), the dative and the ablative in (30). (The list of similar facts is not exhaustive.)

- (30) a. [Ali-nin geldiğ-in-e] kızdım.  
 Ali-GEN arrive.NMZ-DAT I got mad  
 I got mad at the fact that Ali arrived.
- b. [Ali-nin geldiğ-in-den] korktum.  
 Ali-GEN arrive.NMZ-ABL I got afraid  
 I got afraid that Ali arrived.

- *Diye* clauses are not marked for case, or at least, not overtly.<sup>15</sup>

(I give the translations as ‘intended’ because there are subtle meaning differences between (30) and (31). E.g., (31a) has at least one reading where the *diye* is interpreted as a speech report.)

- (31) a. [ Ali geldi diye ]<sub>DAT?</sub> kızdım.  
 Ali arrived DIYE I got mad  
 Intended: I got mad that Ali arrived.
- b. [ Ali geldi diye ]<sub>ABL?</sub> korktum.  
 Ali arrived DIYE I got afraid  
 Intended: I got afraid that Ali arrived.

- Bare clauses can sometimes surface with case morphology. In the same frame, *diye* resists it.<sup>16</sup>

- (32) a. Ali Beste-ye benziyor.  
 Ali Beste-DAT looks.like  
 Ali looks like Beste.
- b. Ali gel-di-ye benziyor.  
 Ali arrive-PST.3S-DAT looks.like  
 Ali looks like he arrived.
- c. \*Ali gel-di diye(-ye) benziyor.  
 Ali arrive-PST.3S DIYE-DAT looks.like  
 Intended: Ali looks like he came.

<sup>15</sup>We do see non-overt accusative marking on pseudo-incorporated NPs. See, e.g., the sentence with the unmarked direct object in (36c).

<sup>16</sup>The structure of (32b) is likely more complicated than it seems. One argument against the hypothesis that the structure might involve a covert noun between the verb and the case marker is that overt nouns, e.g., ‘the situation,’ in that position give rise to interpretive differences: “Ali looks like (#the situation that) he arrived.”

• **Composition with saturated VPs**

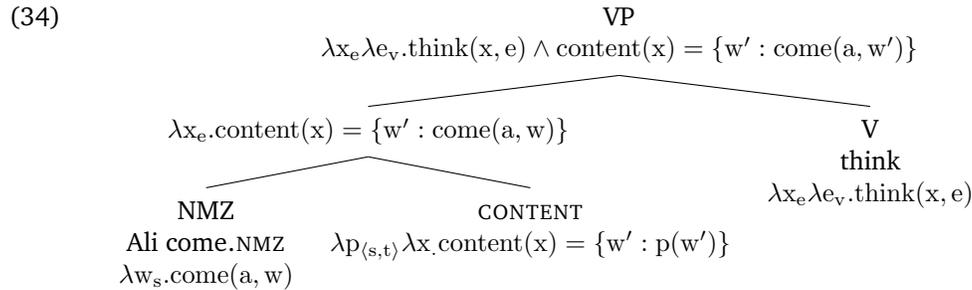
*Diye* clauses are happy composing with intransitive predicates as well as with predicates whose argument positions are saturated.<sup>17</sup>

- (33) a. Ayşe bir soru-yu cevapladı.  
 Ayşe a question-ACC answered  
 Ayşe answered a question.
- b. \*Ayşe bir soru-yu [Ali'nin gel-diğ-in-i] cevapladı.  
 Ayşe a question-ACC Ali-GEN arrive-NMZ-ACC answered  
 Intended: Ayşe answered a question by saying that Ali had arrived.
- c. Ayşe bir soru-yu [Ali geldi diye] cevapladı.  
 Ayşe a question-ACC Ali arrived answered  
 Ayşe answered a question by saying that Ali had arrived.

⇒ Nominalizations must be syntactic arguments, *diye* clauses may be adjoined.

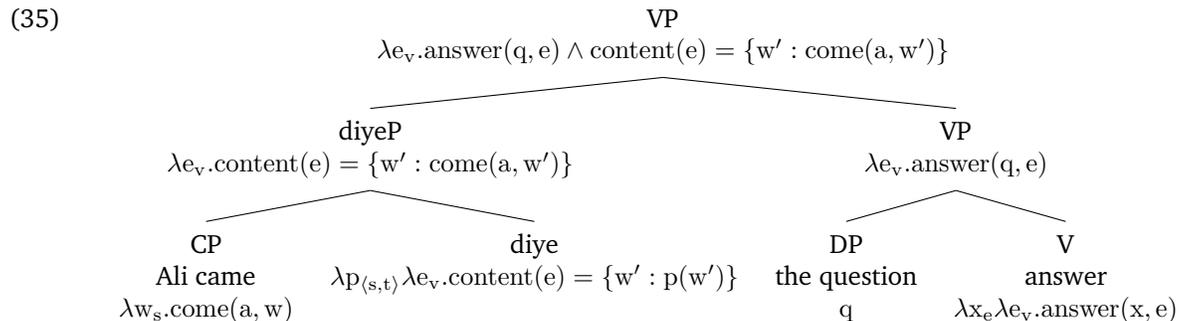
• **A sketch of two compositional strategies with verbs**

- Nominalized clauses (Kratzer 2016; 2018 *that*-clauses + transitive attitude predicates)
  - \* The nominalization composes with a function that takes a proposition *p* and returns a predicate of contentful individuals whose content is *p*.
  - \* This object is composed with a transitive attitude verb via Restrict (Chung & Ladusaw 2004).
  - \* The *x* argument is then closed off, an attitude holder added by *v*.



- *Diye* clauses

- \* *Diye* takes a proposition *p* and returns a predicate of contentful events with content *p*
- \* This object is composed with the VP via Predicate Conjunction.
- \* Hypotheses: Intransitive VPs should in general be able to compose with *diye* clauses. And the properties of the event should affect the interpretation of *diye* (utterance? belief?...)



<sup>17</sup>This example involves *diye* introducing speech content. Is it possible to find a good intransitive/saturated VP with which *diye* would introduce content that isn't speech related? I'm thinking about *hayal kur-*, 'imagine,' or *rüya gör-*, 'dream.' One example in further below is causativized 'think' with an accusative causee argument.

• **Case alternation #1: Accusative/dative with causatives**<sup>18</sup>

– The alternation

When verbs with variable transitivity—e.g., *ye-*, ‘eat,’ in (36a)—are causativized, the causee may surface either in the accusative, in (36b), or in the dative, in (36c).

This alternation is conditioned by whether the causativized predicate has an internal theme argument, which gets the accusative, or not.

Example (36d) shows that modifiers of a predicate do not trigger the dative.

(36) Context: *Sabah n’oldu?* “What happened this morning?”

- a. Ali { $\emptyset$ , elma, elma-yı} ye-di.  
Ali apple apple-ACC eat-PST.3S  
Ali ate apples/the apple.
- b. Ali-yi  $\emptyset$  ye-dir-di-m.  
Ali-ACC eat-CAUS-PST-1S  
I made Ali eat.
- c. Ali-ye {elma, elma-yı} ye-dir-di-m.  
Ali-ACC apple apple-ACC eat-CAUS-PST-1S  
I made Ali eat apples/the apple.
- d. Ali’yi {saat dokuzda, çok, hızlı} ye-dir-di-m.  
Ali-ACC at nine a lot quickly eat-CAUS-PST-1S  
I made Ali eat at nine o’clock/a lot/quickly.

It is possible to elicit the dative in contexts that force the verb to have a pro dropped object.

(37) Context: *Elma yedin mi?* “Did you eat apples?”

- Ali’ye  $\Delta$  ye-dir-di-m (ama ben yemedim).  
Ali-DAT eat-CAUS-PST-1S but I didn’t  
I made Ali eat some (but I didn’t).

– Applying the test to attitude verbs.

- \* Accusative nominalizations trigger the dative. This judgment is crisp, and it further corroborates the hypothesis that nominalizations must be arguments.

(38) {Can-a, \*Can-ı} [ Ali-nin geldiğini ] düşün-dür-dü-m.  
Can-DAT Can-ACC Ali-GEN arrive.NMZ.ACC think-CAUS-PST-1S  
I made Can (✓DAT, \*ACC) think that Ali had arrived.

In French, one Romance language with the accusative/dative alternations, *que*-clauses also pattern like arguments in triggering the dative (thanks to Vincent Homer for discussion).

- (39) a. Je {l’ai, \*lui ai} fait manger.  
I 3S.ACC=AUX 3S.DAT AUX made eat.INF  
I made him (ACC) eat.
- b. Je {\*l’ai, lui ai} fait manger des nouilles.  
I 3S.ACC=AUX 3S.DAT AUX made eat.INF some noodles  
I made him (DAT) eat some noodles.
- c. Je {l’ai, \*lui ai} fait penser.  
I 3S.ACC=AUX 3S.DAT AUX made think.INF  
I made him (ACC) think.

<sup>18</sup>Yıldırım-Gündoğdu (2017) uses the test in this section on communication verbs like *bağır-*, scream, and concludes that *diye* clauses pattern like modifiers, at least with those verbs. Göksu (2018) uses the same test to show that nominalizations of various kinds pattern like arguments.

d. Je {\*l'ai, lui ai} fait penser que tu viens.  
 I 3S.ACC=AUX 3S.DAT AUX made think.INF QUE 2S come  
 I made him (DAT) think that you're coming.

\* *Diye* clauses require some discussion. A verb like *bağirt-*, 'make scream,' is reported by Yıldırım-Gündoğdu (2017) to accept only accusative causees with *diye* clauses. My own intuition is more subtle, though the contrast is there.

(40) Mehmet {Ahmet-i, \*Ahmet-e} [ Ayşe bayıldı diye ] bağirttı  
 Mehmet Ahmet-ACC Ahmet-DAT Ayşe fainted DIYE scream.CAUS  
 Mehmet made Ahmet scream that Ayşe fainted. (Yıldırım-Gündoğdu, 2017)

The predicate may also be used transitively, e.g., in (41). Then, the causee is in the dative.

(41) Mehmet {\*Ahmet-i, Ahmet-e} adını [ Ayşe diye ] bağirttı  
 Mehmet Ahmet-ACC Ahmet-DAT his name.ACC Ayşe DIYE scream.CAUS  
 Mehmet made Ahmet scream his name as "Ayşe."

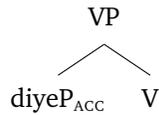
With the predicate *düşündür-*, 'make think,' the accusative is accepted by everyone I asked. Some people also accept the dative.<sup>19</sup>

(42) {Can-a, %Can-ı} [ Ali geldi diye ] düşün-dür-dü-m.  
 Can-DAT Can-ACC Ali arrived DIYE think-CAUS-PST-1S  
 I made Can (✓DAT, %ACC) think that Ali had arrived.

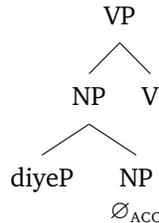
- The observation that *diye* clauses may occur with *accusative* causees is expected under the hypothesis that there is an adjunction strategy with *diye* clauses.

The observation that *diye* clauses may occur with *dative* causees is challenging for the hypothesis that they must be adjoined. This observation is consistent with three hypotheses:

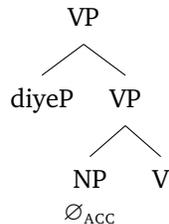
(43) H1 · Complement *diye*P<sub>s</sub>: the *diye*P gets ACC, triggers DAT on causee



H2 · NP modification: *diye*P modifies a null NP that gets ACC & triggers DAT on causee



H3 · NP + Adjunct *diye*P



<sup>19</sup>A quick google search reveals approximately 3600 hits for *düşündürdü beni*, 'made me (ACC) think,' and 1900 for *düşündürdü bana* 'made me (DAT) think.'

Hypotheses (43) and (43) are weakened by the following contrast between *diye* clauses with passivized predicates (grammatical), and *diye* clauses as subjects of copular clauses (ungrammatical).

• **Case alternation #2: Accusative/nominative with passives**<sup>20</sup>

- Nominalizations get promoted to subject when the verb is passivized, in (44).

(44) [ Ali-nin gel-diğ-i ] düşünülüyor.  
 Ali-GEN arrive-NMZ-3S.NOM think.PASS  
 It is thought that Ali arrived.

*Diye* clauses may also occur with a passivized attitude predicate. (Again, we don't see case.)

(45) [ Ali geldi diye ] düşünülüyor.  
 Ali arrived DIYE think.PASS  
 It is thought that Ali arrived.

- Compare this situation with (46), where we attempt to place nominalizations and *diye* clauses in the subject position of a copular predicate.

The sentence is grammatical with a nominalization, ungrammatical with a *diye* clause.

(46) a. Ali-nin geldiği {doğru, belli, kesin}.  
 Ali-GEN arrive.NMZ.NOM true.COP obvious.COP certain.COP  
 It is {true, obvious, certain} that Ali arrived.  
 b. \*Ali geldi diye {doğru, belli, kesin}.  
 Ali arrived true.COP obvious.COP certain.COP  
 Intended: It is {true, obvious, certain} that Ali arrived.

- According to H1 ( [ <sub>VP</sub> *diye*P V ] ), the *diye*P should have been promoted to subject in (45).  
 ⇒ *Diye*Ps can be subjects.  
 ⇒ The ungrammaticality of (46b) is unexpected.<sup>21</sup>
- According to H2 ( [ <sub>VP</sub> [ *diye*P ∅<sub>NP</sub> ] V ] ), if *diye*Ps can modify null NPs, they should distribute like any other NP modified by *diye*.  
 ⇒ The ungrammaticality of (46b) is unexpected.  
 Compare (47) with (46).

(47) [Ali geldi diye] dedikodu doğru.  
 Ali arrived DIYE rumor true  
 the rumor that Ali arrived is true

- We are left with H3: [ <sub>VP</sub> *diye*P [ <sub>VP</sub> NP V ] ]  
 Further research must determine whether the covert NP in (47) is a dummy (an expletive? existentially closed?). And whether there may be a syntactic or semantic relationship between it and the *diye*P.

These puzzles are raised in Demirok et al. (2018) and Shimoyama and Goodhue (2019).

<sup>20</sup>Turkish is a language with impersonal passives. I'm told by Rajesh Bhatt (p.c.) that this might make a difference for the conclusion drawn from this section.

<sup>21</sup>Perhaps *diye*Ps can only occur as derived subjects? Can't be directly merge as subjects?

## 5 Conclusions

- At least two ways of composing clauses with both nouns and verbs.
- How successful in explaining language internal phenomena: Wild distribution of *diye* clauses, alternations in factivity, the distribution and interpretation of embedded questions (ask me).
- Cross-linguistic excursions
- Theoretical implications: Good news for a 21<sup>(s, t)</sup> century approach to attitudes? What about Uegaki's (2015) puzzle of content nouns?

## References

- Abney, Steven P. 1987. The english noun phrase in its sentential aspect. Doctoral Dissertation, Massachusetts Institute of Technology.
- Asarina, Alevtina. 2011. Case in Uyghur and beyond. Doctoral Dissertation, MIT.
- Bogal-Allbritten, Elizabeth. 2016. Building meaning in Navajo. Doctoral Dissertation, University of Massachusetts, Amherst.
- Demirok, Ömer. 2018. A semantic characterization of Turkish nominalizations. In *Proceedings of WCCFL 36*.
- Demirok, Ömer, Deniz Özyıldız, and Balkız Öztürk. 2018. Attitude sensitive complementizers in Laz. Poster presentation at North East Linguistics Society (NELS) 49.
- Elliott, Patrick. 2017a. An algebraic theory of attitudes. In *Proceedings of LENLS 14*.
- Elliott, Patrick. 2017b. Elements of clausal embedding. Doctoral Dissertation, UCL.
- George, Leland, and Jaklin Kornfilt. 1981. Finiteness and boundedness in Turkish. In *Binding and filtering*, ed. F. Heny, 105–127. MIT Press: Cambridge, Mass.
- Göksu, Duygu. 2018. Typology of Nominalizations Formed with {-DİK}, {-mA}, {-(y)Iş}, and {-Im} in turkish. In *Proceedings of Tu+2 (Indiana University Linguistics Club Working Papers, vol 18 no 2)*.
- Hacquard, Valentine. 2006. Aspects of modality: Mit dissertation.
- Hintikka, Jaako. 1969. Semantics for propositional attitudes. In *Philosophical logic*, ed. J.W. Davis et al. D. Reidel, Dordrecht.
- Kharytonava, Olga. 2011. Noms composés en turc et morphème -(s)I. Doctoral Dissertation, University of Western Ontario.
- Kratzer, Angelika. 2006. Decomposing attitude verbs. Talk presented at the workshop in honor of Anita Mittwoch. The Hebrew University of Jerusalem.
- Kratzer, Angelika. 2013. Modality for the 21st century. In *19th International Congress of Linguists*, 181–201.
- Kratzer, Angelika. 2016. Evidential moods in attitude and speech reports. URL [https://works.bepress.com/angelika\\_kratzer/10/](https://works.bepress.com/angelika_kratzer/10/).
- Kratzer, Angelika. 2018. Constructing Attitude & Speech Reports. Slides from a seminar at UCL.
- Kunduracı, Aysun. 2013. Turkish noun-noun compounds: A process-based paradigmatic account. Doctoral Dissertation, University of Calgary.
- Moulton, Keir. 2015. CPs: Copies and Compositionality. *Linguistic Inquiry* 46:305–342.
- Öztürk, Balkız, and Eser Erguvanlı Taylan. 2016. Possessive constructions in turkish. *Lingua* 182:88–108.

- Rawlins, Kyle. 2013. About ‘about’. In *Proceedings of SALT 23*, ed. Todd Snider.
- Shimoyama, Junko, and Daniel Goodhue. 2019. Main clause phenomena under TO-embedding in Japanese. Presentation at RelNomComp.
- Singh, Uday N. 1980. Bole an unresolved problem in bengali syntax. *Indian Linguistics* 41:188–195.
- Uegaki, Wataru. 2015. Content nouns and the semantics of question-embedding. *Journal of Semantics* 33:623–660.
- Yıldırım-Gündoğdu, Hilal. 2017. Against *diye* clauses as complements of verbs of communication. In *Proceedings of the Second Workshop on Turkic, Turkish, and the languages of Turkey (Tu+2)*.
- Zidani-Eroğlu, Leyla. 1997. Exceptionally case-marked nps as matrix objects. *Linguistic Inquiry* 219–230.

## Appendix

- The verbs *san-*, *de-* and *iste-* sometimes resist the expression of *diye*, preferring to combine with bare clauses.

The three following facts suggest that these verbs and *diye* are not inherently incompatible: There are environments where *diye* must be expressed with these verbs.

Fact #1: Scrambling

- (48) a. [ Ben geldim \*(diye) ] Ali \_\_\_ sanıyor.  
 I came DIYE Ali \_\_\_ believes  
 Ali believes that I came.
- b. Ali \_\_\_ sanıyor [ ben geldim \*(diye) ].  
 Ali \_\_\_ believes I came DIYE  
 Ali believes that I came.

Fact #1': Information structure (possibly related to string vacuous movement)

- (49) Ali [ ben geldim \*(diye) ] SANIYOR.  
 Ali I came DIYE believe  
 Ali does believe that I came.

Fact #2: Nouns formed on these verb roots are compatible with *diye* (more on these later—there is a confound here that the *diye* clause looks like a modifier)

- (50) a. ben geldim \*(diye) bir {sanı, deyim}  
 I came DIYE one belief saying  
 (Lit.) a belief/saying that I came
- b. ben geleyim \*(diye) bir istek  
 I come.OPT.1S DIYE one desire  
 (Lit.) a desire that I come

- Do we ever see the relation R involved in noun-noun compounds make reference to content elsewhere than with nominalizations? Potentially, in examples like (51) which have one reading paraphrased with ‘about’ (Rawlins, 2013).

- (51) a. doktor dedikodu-su  
 doctor rumor-SI  
 a rumor about doctors

- b. doktor soru-su  
doctor question-SI  
a question/an issue about doctors

- Are *diye*+NP constructions (subject) relative clauses?

- (52) a. Hypothesis: *diye* is in fact *diyen*, ‘say.SUBJREL’  
Objection: Contrasts like the following are unexpected.  
Ali geldi {diyen, \*diye} bir adam  
Ali arrived say.SUBJREL DIYE a man  
Intended: a man who says that Ali arrived
- b. *diye* is composed with an elided verb whose subject is extracted *diye* VERB.SUBJREL  
Objection: Contrasts like the following are unexpected.  
Ali geldi {diye düşünen, \*diye} bir adam  
Ali arrived DIYE think.SUBJREL DIYE a man  
Intended: a man who thinks that Ali arrived

- The lexical semantics of the content noun really seems to determine how the content is to be interpreted. With ‘lie,’ as false, with ‘fact,’ as true.

- (53) a. Ali’nin geldiği {yalan-ı, gerçeği}  
the {lie, fact} that Ali arrived  
b. Ali geldi diye bir {yalan, gerçek}  
a {lie, fact} that Ali arrived

- A note on copular clauses

Based on the hypothesis that (54) is equative, Moulton (2015) makes the argument that *that* clauses must denote predicates of contentful individuals (which is what *rumor* denotes).

(54) the rumor is that Ali came

Nominalizations and *diye* clauses pattern differently in copular constructions: Nominalizations are (?) equative, *diye* clauses, predicational.

What are the cross-linguistic consequences for how *that* clauses vs. nominalizations compose?

- A couple of wrinkles?

- *dedir-*, ‘make say’ (potentially also *istet-*)

These are two predicates that resist the expression of *diye* in pre-verbal position. The morpheme is required when the clause is scrambled away from the verb, however.

- (55) a. Ali seni seviyorum (\*diye) dedi.  
b. Ali dedi seni seviyorum \*(diye).

This predicate takes dative causees:

(56) Ali’ye/%Ali’yi seni seviyorum dedirttim.

- The causatives of factives have been lexicalized

- (57) a. *bildir-*: ‘inform’ (lit. ‘make know’)  
b. *hatırlat-*: ‘remind’ (lit. ‘make remember’)  
c. *öğret-*: ‘teach’ (lit. ‘make learn’)  
d. *anlat-*: ‘explain/recount’ (lit. ‘make understand’)

These uniformly take dative causees, regardless of whether their clause is nominalized or a *diye* clause. My suspicion here is that these verbs have all lexicalized into communication predicates, that they no longer have a causee argument, but rather an addressee. Addressees occur in the dative in Turkish.