# Communicative Reception Reports as Hear-say: Evidence from Indexical Shift in Turkish

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## Introduction

There's a venerable tradition in linguistics and philosophy of analyzing the semantics of speech and belief reports. In recent years linguists in particular have shifted their attention toward less canonical types of attitudes (dreams, imagination, desire) and of reporting (free indirect discourse, quotatives, reportative evidentials), and toward cross-linguistic variation (e.g. with respect to logophoricity and indexical shift).

Continuing this trend, we focus on a very common but so far neglected type of reporting, viz. communicative reception reports:

(1)    John heard/read/learned (from Sue) that Mary is retiring soon.

What makes this class of reports interesting is their hybrid nature: they can be used as both speech and attitude reports. To bring out these two conceptually distinct uses, consider the following English *hear*-reports:

(2)    **Context**: Wonderwoman prevents a bus from driving off a bridge, but destroys multiple buildings in the process. The mayor says to Wonderwoman: "You destroyed the city."
  a.    Wonderwoman heard that she destroyed the city.
  b.    Wonderwoman heard that she was a hero.

In (2-a), the reception report is essentially a faithful report of what was actually said to Wonderwoman, i.e., of the mayor's speech act. This is the speech report use. By contrast, the report in (2-b) is linked to Wonderwoman's own interpretation of the mayor's words, it represents her internal thoughts as triggered by the speech act. This is the attitude report use.[1]

For the remainder of the paper we focus more specifically on reception reports in Turkish, where both a 'hear' and a 'say' component are overtly expressed. We will propose in this paper to take this surface structure literally, analyzing 'x heard that p' roughly as 'x heard LOG saying that p.' This LOG is a logophoric pronoun that can then can pick up the reported speaker, y, which would lead to a speech report interpretation, roughly: 'x heard y say that p.' Alternatively, LOG

[1]    We can sometimes bring out such attitude report uses in English more unambiguously with phrases like 'what he heard was . . .' or 'all that she could hear was . . .'. Interestingly, it seems that not only the speech report use but also the attitude report use in English allows direct quotation ('All that Wonderwoman could hear was "you saved the city," despite the mayor's actual words'). Presumably, this shows that the attitude report use is more like a thought report than a real belief report (cf. Maier 2017 for some discussion on the use of quotation in thought reports).

could pick up the matrix subject, x, which leads to an attitudinal interpretation, roughly: 'x heard and x says (*sub voce*, in thought) that p.' In section 4 We'll rely on a modified version of the event-based analysis of speech reporting to make this precise.

We'll provide empirical support for our decompositional analysis of Turkish reception reports by examining indexical shifting patterns under reception verbs. Schlenker (2003) and many other authors have observed that for various attitude and speech report constructions, and in various languages (including Turkish and other Turkic languages, cf. Sudo 2010; Özyıldız 2012; Şener & Şener 2011), first person pronouns in embedded clauses can be ambiguous, picking out the actual speaker, or the subject of the attitude verb, i.e., the speaker or attitude holder of a reported context (pace Kaplan 1989). We present novel data showing that first person pronouns embedded under Turkish reception verbs are three-ways ambiguous, picking out either the actual speaker, the matrix subject (i.e., the hearer), or the source (i.e., the producer of the reported speech act, explicitly represented in (3) by an ablative/*from*-phrase):

(3)   Ayşe Mercan'dan [ kahraman-ım diye ] duy-du.
      Ayşe Mercan.ABL   hero-COP.1S   DIYE   hear-PST.3S
      $\underbrace{\text{Ayşe}_1}_{\text{subject}}$ heard $\underbrace{\text{from Mercan}_2}_{\text{source}}$ that she$_{1/2}$ / I$_{\text{actual speaker}}$ was a hero.

By contrast, a second person under *duy*-, 'hear,' can only pick out the actual addressee, or the grammatical subject, i.e. the addressee of the original speech act:

(4)   Ayşe Mercan'dan [ kahraman-sın diye ] duy-du.
      Ayşe Mercan.ABL   hero-COP.2S   DIYE   hear-PST.3S
      Ayşe$_1$ heard from Mercan$_2$ that she$_{1/*2}$ was / you$_{\text{actual addressee}}$ were a hero.

We believe that (3), under the reading where the first person shifts to the source Mercan, and (4), where the second person shifts to the subject Ayşe both correspond to the 'speech report' construal of the reception report; And that (3), under the reading where the first person shifts to the subject Ayşe, corresponds to the 'attitude report' construal.

We propose to derive the availability of two shifted readings for the first person in (3) vs. a single one for the second person in (4) in terms of this hybrid nature of reception reports, which we dub the 'hear-say' analysis.[2] Roughly, the idea is that the speech report reading is derived by binding the silent pronominal subject LOG of the 'say' component with the speech source, Mercan in (3) and (4). A context shifting 'monster' operator (👻) optionally occurring under 'say' has the effect of shifting the reference of first person indexicals to the author of the reported context of speech, i.e., to the speaker Mercan. This explains why the first person indexical in (3) shifts to the source argument, while the second person indexical in (4) shifts to the subject Ayşe (Mercan's addressee). The derivation of the speech report reading where the first person shifts to the source in (3) is schematically represented in (5).

(5)   Ayşe heard from Mercan$_2$ [ LOG-2 [ say [ 👻 [ I am a hero ] ] ] ]

The interpretation of the structure in (5) can be paraphrased as follows: Ayşe heard Mercan say that she (=Mercan) is a hero.

The attitude report reading is derived by binding the logophoric subject of 'say' with the grammatical subject of 'hear,' and subsequently interpreting 'say' as a silent, internal speech/thought act. The effect of the monster under 'say,' then, is to shift the reference of the first person pronoun to the grammatical subject Ayşe, who is now the author of the reported context of thought. This is schematized in (6).

(6)   Ayşe$_1$ heard from Mercan [ LOG-1 [ say [ 👻 [ I am a hero ] ] ] ]

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[2]  In the following we'll mostly ignore the unshifted readings that are always available.

Paraphrasing the interpretation of (6): Ayşe heard (something) from Mercan and she (=Ayşe) said/thought to herself that she (=Ayşe) is a hero.

Now, crucially, on the construal sketched out in (6), the second person in (4) should pick out Ayşe's addressee. But since her attitude is interpreted as a thought, and assuming that processes don't have addressees,[3] we predict this interpretation to trigger a presupposition failure and be blocked. This explains why the second person lacks one of the two shifted readings, compared to the first person.

## Background

Before getting into the details of our proposal for Turkish reception reports, in this section we set the stage by briefly reviewing existing semantics literature on indexical shift in general and in communicative reception reports in particular.

### Indexical shift

Indexicals are words like 'I,' 'you,' 'here,' and 'today,' that typically pick up their reference from the actual context of utterance. As Kaplan (1989) famously hypothesized, this behavior persists even when they are embedded under attitude or speech verbs, which intuitively makes available an additional utterance or attitude context with a first person speaker or agent distinct from the actual utterer. Thus, Kaplan observes, in English, 'I' in (7) never picks out Otto, the speaker of the reported speech act, but only me, the producer of the actual utterance token of (7).

(7)     Otto said that I am a fool

It is by now firmly established that there are languages,[4] where indexicals do *shift*. This means that they are able to pick up their reference from reported contexts (sometimes obligatorily, sometimes optionally). A classic example from Amharic showing a first person indexical referring to the reported speaker rather than the actual speaker is provided in (8):

(8)     ǰon   [ ǰəgna nə-**ññ**    ] yɨl-all                          Amharic, Schlenker (2003)
        John  hero  be.PF-1SO  3M.say-AUX.3M
        John$_1$ says that he$_1$ is a hero.        (Literally, "John$_1$ says that I$_1$ am a hero.")

Turkish also allows indexicals to shift, as shown in (9). Under *san-* ('believe') and *de-* ('say'), in (9), first person indexicals can pick out the attitude holder/speaker of the reported context. In addition, under *de-*, the second person can pick out the reported addressee. In (9-b), the embedded *wh*-word takes matrix scope rule out the possibility that the embedded material is being quoted.

(9)     a.    Seda [ *pro*-1S sınıf-ta     kal-dı-**m**    ] san-ıyor.                          Turkish
                    Seda   1S    class-LOC stay-PST-1S  believe-PRES.3S
                    Seda$_1$ believes that {I, she$_1$} flunked.        Adapted from Şener & Şener (2011)

        b.    Tunç Ayşe-ye [ *pro*-1S **sen**-i   nere-ye       götür-eceğ-**im** ] de-miş?
                    Tunç Ayşe-DAT    1S    2S-ACC where-DAT take-FUT-1S     say-EVID.3S
                    Where did Tunç$_1$ say to Ayşe$_2$ that {I would take you, that he$_1$ would take her$_2$}?
                                                                            Adapted from Özyıldız (2012)

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[3]  This reasoning mirrors Sudo's (2010). Alternatively, we could analyze thought as a form of talking to oneself, so the addressee and the agent coincide. This derives the observed pattern in (6) equally well.

[4]  For a more comprehensive discussion of the typology of indexical shift, see Deal (2016).

*Indexical shifting under reception verbs*

In the literature, there is little mention of indexical shifting under communicative reception verbs (see Deal's (2016) typology).

Polinsky (2015) lists Tsez *teq-*, 'hear,' and *t'et'r-*, 'read,' as two of many verbs that allow first person indexicals to shift to the 'attitude holder,' which is defined as 'the agent of speaking, the holder of a belief or attitude.' But, as we saw in section 1, in a reception event, these notions of being the 'agent of speaking' or the 'holder of a belief or attitude,' come apart. Recall the two reports of what Wonderwoman heard in (2). On what we called the speech report reading, where we report the event of speaking as directed at the hearer, we have a speech context, with a speaking agent, in this case the Mayor. But this is distinct from the 'holder of the attitude,' i.e., the subject of the attitude verb, in this case Wonderwoman. Further inquiry is necessary to determine whether Tsez exhibits the same pattern we observe for Turkish, i.e. whether both these arguments, the source and the subject, are available referents for shifted first persons, while only the latter is for second persons.

Sundaresan (2013, 2018) mentions that shifting a first person indexical to the subject of 'hear' is either impossible in Tamil (2013: exx. 361–362), or significantly harder than under speech verbs (2018: exx. 39–41).

The only paper (of which we are aware) that discusses reception verbs in any amount of detail is Sudo (2010), which illustrates that shifting is possible in Uyghur reception reports (note that Uyghur is a Turkic language). However, Sudo only finds a subset of the pattern observed in Turkish. In Uyghur, first person indexicals can only shift to the subject under reception verbs, not to the source. Additionally, 2nd person indexicals cannot shift to the subject, even if the subject was the addressee in the reported context, as illustrated below:

(10)     Adapted from Sudo (2010:p. 40, exx. 73–74):[5]

    a.   Ahmet$_1$ Aygül-din$_2$ [ *pro*-1s qaysi  imtihan-din öt-ti-**m**$_{1/*2}$      dep ] angla-di?
         Ahmet  Aygül-from  pro     which test-from     pass-PAST-1SG C     hear-PAST.3
         Which test did Ahmet$_1$ hear from Aygül$_2$ that (s)he$_{1/*2}$ passed?

    b.   *Ahmet$_1$ Aygül-din$_2$ [ pro-2s qaysi  imtihan-din öt-ti-**ng**$_{*1/*2}$     dep ] angla-di?
         Ahmet  Aygül-from  pro     which test-from     pass-PAST-2SG C     hear-PAST.3
         Which test did Ahmet$_1$ hear from Aygül$_2$ that (s)he$_{*1/*2}$ passed?

Sudo concludes that in communicative reception reports, the hearing subject is an attitude holder, available for shifting, while the source, despite being a speaker, is not. In other words, first person indexicals under 'hear' must denote the hearer (Ahmet, in (10-a)), not the speaker (Aygül, in (10-a) or (10-b)). secnd person indexicals by definition should denote the individual that the first person is talking to, but the referent of our shifted first person, Ahmet, is not talking to anyone in (10), meaning that second person does not shift.

As shown in section 1 we find a different pattern in Turkish. In (3) we saw that first person indexicals can either shift to the subject or the source. In addition, we saw in (4) that second person indexicals can shift to the subject.

## A semantic framework for speech and attitude reports

*An eventuality-based model of attitude and speech reports*

We assume an eventuality-based model of attitude reports, where attitude verbs are modeled as predicates of contentful eventualities (Kratzer, 2006; Moulton, 2009; Hacquard, 2006, 2010). An example belief report is given in (11). The modal accessibility relation is encoded in a content function, which takes an eventuality and returns a propositional content,

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[5] Bear in mind that Sudo's finding is that null subjects *must* shift in Uyghur, which explains the ungrammaticality of certain readings that one might expect to be available otherwise. In Turkish null subjects can, but need not shift.

viz. the set of worlds that are compatible with what Darcy believes.

(11)     $[\![$Darcy believes that it is raining$]\!] = 1$ iff
$$\exists e[\text{belief}(e) \wedge \text{experiencer}(e) = \text{darcy} \wedge \forall w' \in \text{content}(e)[\text{rain}(w')]]$$
(ex. adapted from Hacquard 2006: ex. 208)

Compositionally, we'll assume that: (i) the verb introduces the eventuality, (ii) the (overt or covert) complementizer introduces the content argument (Kratzer, 2006), and (iii) a little $v$ introduces the agent or experiencer argument. We'll use semantic types $s$ for possible worlds, $t$ for truth values, $v$ for eventualities. Variables e, $e_1$,... range over both states and events, variables $i$, $i'$,... over indices, i.e., roughly, possible worlds.[6] Intensional Function Application is used to turn the complement clause into an intensional argument (i.e. from $t$ to $st$, required to get to (12-c)). Predicate Modification is used to conjoin two event (or other) predicates into a conjunctive predicate (used to get (12-d)).

(12)     Darcy [ $v$ [ believes [ THAT [ it is raining ] ] ] ]
   a.   $[\![$believe$]\!] = \lambda e.\text{believe}(e)$
   b.   $[\![$that$]\!] = \lambda p_{st} \lambda e_v. \forall i' \in \text{content}(e)[p(i')]$
   c.   $[\![$that it is raining$]\!] = \lambda e. \forall i' \in \text{content}(e)[\text{rain}(i')]$
   d.   $[\![$believes that it is raining$]\!] = \lambda e.\text{believe}(e) \wedge \forall i' \in \text{content}(e)[\text{rain}(i')]$
   e.   $[\![v]\!] = \lambda P_{vt} \lambda x_e \lambda e_v. \text{experiencer}(e) = x \wedge P(s)$

After composing with v and the subject terms we get an eventuality predicate, to which we apply Existential Closure to get the output in (11).

Speech reporting verbs are treated similarly, but now the contentful eventuality is an utterance event, and $v$ introduces an agent rather than experiencer argument[7] (Davidson, 2015; Kratzer, 2016; Maier, 2017).

(13)     Mary [ $v$ [ said [ that [ Sam is crazy ] ] ] ]
   a.   $[\![$say$]\!] = \lambda e.\text{say}(e)$
   b.   $[\![$said that Sam is crazy$]\!] = \lambda e.\text{say}(e) \wedge \forall i' \in \text{content}(e)[\text{sam-is-crazy}(i')]$

*Indexicals and monsters*

To deal with indexicals, the interpretation function is relativized to a context parameter $c$ and an index parameter $i$, in addition to an assignment $g$. To keep the definitions simple, we assume that context and index have a similar structure. Ignoring time/tense, both index and context can be thought of as world–individual pairs ($i = \langle w_i, a_i \rangle$, $c = \langle w_c, a_c \rangle$).

Indexicals get their reference from the context parameter:

(14)   a.   $[\![1s]\!]^{c,i,g} = a_c$
       b.   $[\![2s]\!]^{c,i,g} = \iota x[\,x$ is $a_c$'s addressee at $c\,]$

To capture indexical shifting, we follow one implementation of the 'operator based' approach. A monstrous operator (👻), optionally present at the left-periphery of the embedded clause (but below the complementizer in our current setup), overwrites the coordinates of the context with those of the index (Anand & Nevins 2004, who examples (15-b) and (16) are adapted from; Anand 2006; Sudo 2010, 2012).[8]

(15)     a.   Mercan [ $v$ [ says [ that [ 👻 [ I'm a hero ] ]]]]
         b.   $[\![$👻$\phi]\!]^{c,i,g} = [\![\phi]\!]^{i,i,g}$

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[6]  Below we'll add a mostly vacuous agent parameter, for purely technical reasons.

[7]  We could assume two different $v$'s or introduce a more flexible underspecified agent/experiencer predicate. Alternatively we could get rid of $v$ and introduce event arguments more generally with different thematic role operators.

[8]  The snippet that outputs the monster is found here: `https://gist.github.com/neic/9546556`.

The truth value of an utterance is derived by setting both context and index to the actual utterance context, i.e. the actual world and utterer of the sentence. Modal quantification, introduced here by the complementizer, manipulates only the index $i$ and hence typically leaves the interpretation of indexicals unchanged, unless 👻 intervenes and 'shifts' the context.

(16)     $[\![(15\text{-a})]\!]^{c_0,c_0,g} = \exists e[\text{say}_{c_0}(e) \wedge \text{agent}_{c_0}(e) = \text{mercan} \wedge \ldots$
$$\forall i' \in \text{content}_{c_0}(e)[a_{i'} \text{ is a hero in } w_{i'}]]$$

In the following we'll often suppress context and index parameters. For further discussion of indexical shifting in an eventuality-based model of attitude reports, see Deal (2016) and Sundaresan (2018).

## Proposal: decomposing Turkish hear-say

We've observed in section 1 that Turkish reception reports allow two kinds of monstrous context shift. More specifically, in addition to the always available non-shifted reading, first person indexicals embedded under 'hear' can either be interpreted with respect to the context of hearing (and hence refer to the hearing subject), or with respect to the context of speaking (and hence refer to the speaking source of the speech act heard). In addition we observed no such ambiguity arises for embedded second person indexicals. In this section we set out to derive these data from the hybrid speech/attitude nature of Turkish reception reports, using the theoretical tools from the previous section. With the general framework for attitude and speech reports in place, let's take a closer look at the syntax and semantics of reception reports in Turkish. Ex. (17) is repeated from (3).

(17)     Ayşe Mercan'dan [ kahramanım diye ] duydu.
          Ayşe Mercan.ABL  I'm a hero    DIYE   heard
          Ayşe₁ heard from Mercan₂ that she$_{1/2}$ was a hero.

We treat the main attitude predicate *duy-* 'hear' as a property of eventualities, just like 'believe' and 'say' above. Crucially, in (17) the embedded clause is introduced by the morpheme *diye*, often considered a kind of overt complementizer.[9] Morphologically, it is built from the root *de-*, 'say,' and a verbal linker *-(y)A*.[10] We propose to take both of these pieces to be interpreted quite literally, and compositionally. So, *de-* is interpreted as a regular speech predicate, i.e. a property of events. This means we now actually have two attitude predicates in (17), 'hear' and 'say'[11]:

(18)     a.   $[\![\text{duy-}]\!] = \lambda e.\text{hear}(e)$
          b.   $[\![\text{de-}]\!] = \lambda e.\text{say}(e)$

The challenge really is how to link up these predicates to derive the intuitive dual nature of reception reports, described in section 1, and consequently derive the peculiar shifting behavior.

To meet this challenge let's start by zooming in on the *de-* ('say') predicate and its arguments, before adding the linker (*-(y)A*)) and the *duy-* ('hear') predicate and then its arguments.

As before, a little *v* combines with the predicate *de-* to introduce a subject argument, while a covert complementizer THAT introduces the complement clause. For reasons that will become apparent shortly we're assuming that the subject argument is saturated by a null pronominal

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[9] Similar objects are sometimes called 'say(-derived) complementizers' in the literature (Koopman, 1984; Koopman & Sportiche, 1989; Messick, 2017).

[10] In citation forms, capital letters indicate vowels that undergo harmony. Göksel & Kerslake (2004) call *-(y)A* the 'optative' suffix, because it is found in the optative paradigm.

[11] This situation is reminiscent of Kratzer's (2016) analysis of speech reporting constructions with (seemingly) intransitive manner of speech verbs like 'yell' or 'whisper.' According to Kratzer, there's a hidden [SAY]-feature, interpreted as a regular transitive saying verb, that takes the complement clause and then combines with the 'whisper' predicate (via a kind of Predicate Modification). In a way, then, *de-* (or *diye* as a whole) plays a similar role in our analysis as [SAY] plays in Kratzer's. We leave the deeper exploration of this parallel for a future occasion.

index n bearing a logophoric feature, interpreted as in (19-b). Putting these assumptions together, we get the structure in (19-a), interpreted as in (19-c): The set of events e that are events of g(n) saying that they are a hero. As we are interested in the shifted readings, we have already included our monstrous 👻 in (19-a)/(19-c).

(19)   a.   [ LOG-n [ $v$ [ [ THAT [👻 kahramanım ] ] di- ] ] ]
            [ LOG-n [ $v$ [ [ THAT [    I'm a hero    ] ] say ] ] ]

       b.   $[\![\text{LOG}]\!] = \lambda x_e : x$ is a logophoric center $. x$
            $[\![\text{LOG}]\!]([\![n]\!]) = g(n)$ defined iff $g(n)$ is a logophoric center

       c.   $[\![(19\text{-a})]\!]^{c,i,g} = \lambda e_v.\text{say}(e) \wedge \text{agent}(e) = g(n) \wedge \forall i' \in \text{content}(e)[a_{i'}$ is a hero in $w_{i'}]$
            defined only if $g(n)$ is a logophoric center

The net effect of adding the logophor and the monster is that the embedded first person indexical gets shifted and hence picks out the agent of saying, i.e. it now effectively refers to the logophoric subject $g(n)$.

Next, we turn to the second component of *diye*, the verbal linker *-(y)A*. Intuitively the linker functions roughly like a gerundive morpheme, so *diye* means something like '(while) saying.' Our proposed interpretation of the linker is more specific: It composes with two event descriptions $P$ and $Q$ and returns a set of $Q$-events that are 'directly causally linked' (notation: $e \sim e'$) to some $P$-event.[12]

(20)   $[\![\text{-(y)A}]\!] = \lambda P \lambda Q \lambda e.\exists e'[e' \sim e \wedge P(e') \wedge Q(e)]$

The notion of a direct causal relation between two events is supposed to include, among many other things, (i) the relation between the event of someone speaking and the event of someone hearing that speech act, and also (ii) the relation between an event of hearing some utterance and the internal event of mentally representing/interpreting the incoming speech signal.

In the derivation of (17), the linker applies to the event descriptions in (18-a) (the plain 'hear' predicate) and (19-c) (the 'say' predicate combined with its arguments).

(21)   a.   [ [ [ LOG-n [ $v$ [ [👻 kahramanım di- ] ] ] ye      ] duydu ]
            [ [ [ LOG-n [ $v$ [ [    I'm a hero   ] say ] ] ] LINKER ] heard  ]

       b.   $[\![(21\text{-a})]\!] = \lambda e.\exists e'[e' \sim e \wedge \text{say}(e') \wedge \forall i' \in \text{content}(e')[a_{i'}$ is a hero at $w_{i'}] \wedge \text{hear}(e)]$

The final step of the derivation is to introduce *duy*-'s individual arguments. For concreteness, we assume that $v$ here introduces an experiencer, and the ablative *-dan* introduces a source argument (the individual that caused the speech signal that was experienced).

(22)   a.   $[\![\text{-dan}]\!]= \lambda x \lambda P_{vt} \lambda e.P(e) \wedge \text{source}(e) = x$

Adding *-dan*, $v$, and the respective individual arguments *Mercan* and *Ayşe*, and then applying Existential Closure, we obtain the truth conditions in (23).

(23)   $[\![(17)]\!] = \exists e \exists e'[e' \sim e \wedge \text{say}(e') \wedge \text{agent}(e') = g(n) \wedge \ldots$
       $\forall i' \in \text{content}(e')[a_{i'}$ is a hero at $w_{i'}] \wedge \text{hear}(e) \wedge \ldots$
       $\text{source}(e) = \text{mercan} \wedge \text{experiencer}(e) = \text{ayse}]$

This can be paraphrased as: there's an event of $g(n)$ saying that s/he's a hero, which is directly causally linked to an event of Ayse hearing something from Mercan. Note also that this is only defined if $g(n)$ is a logophoric center, i.e. a speaker or attitude holder. But what is the function of that logophoric variable n?

The final ingredient to deriving the observed shifting pattern for first persons revolves around the logophoric variable n. This pronoun, we propose, must be bound by a suitable

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[12] We thank Ömer Demirok for pointing out an issue with the original formulation of (20).

antecedent. ('Suitable,' here, means an antecedent that satisfies the logophoric presupposition from (19-b).) Both matrix arguments, the subject (an experiencer of a kind of attitude/communicative act) and the source (a speaker), are logophoric centers. When raised (by QR), both are potential binders. The full structure associated with (17) is sketched in (24), with indices 1 and 2 to indicate the two crucial logophoric binding possibilities.

(24)  [ Ayşe $\lambda 1$ [ Mercan $\lambda 2$ ... [ [ [ LOG-1/2 [ $v$ [ [ THAT 👻 kahramanım di- ] ] ] ye ]
      [ Ayşe     [ Mercan    ... [ [ [ LOG-1/2 [ $v$ [ [ THAT     I'm a hero    ] say ] ] ] LINKER ]
        duydu ] ] ]
        heard ] ] ]

As we've observed above, a shifted first person under 'say' effectively picks out the sayer, i.e. the subject. In this case the subject of 'say' is the logophor, which in turn can be bound by either the subject or the source of the matrix clause. Thus, we derive precisely the two observed shifting options.

This situation is roughly schematized in (25).

(25)  a.  1st person shifts to logophoric subject bound by the *source* of 'hear'
          Ayşe heard from Mercan$_2$ [ LOG- 2 [ say [ 👻 I am a hero ] ] ]

      b.  1st person shifts to logophoric subject bound by the *subject* of 'hear'
          Ayşe$_1$ heard from Mercan [ LOG- 1 [ say [ 👻 I am a hero ] ] ]

At this point we should take a step back and see what readings are actually predicted with these two resolutions. In (25-a) we get that there's an event of Ayse hearing something (a speech signal, say) originating from Mercan and that event is causally linked to an event of Mercan saying Mercan is a hero. The causal link in question is that between someone speaking and someone else hearing. In (25-b) we get something quite different: again, there's an event of Ayse hearing something from Mercan, but this time that event is causally related to Ayse herself saying that she herself is a hero. This, we propose, actually corresponds to the attitude report reading. Ayse's hearing a speech signal coming from Mercan and that causes her to interpret the sounds and form the thought that she herself is a hero. The *de-* 'say' here cannot be an actual verbalization, but is rather a *sub voce*, mental utterance—in other words, a thought event.[13]

We can now also see why the second person only allows one shifted reading, viz. that corresponding to the speech report reading (25-a). Recall that in (14-b) we've given the second person a standard semantics, referring to the addressee of $a_c$. If we bind the logophoric 'say' subject to Mercan, as in (25-a), we shift to the speech context, in which the addressee was Ayse. So a second person under 👻 can refer to Ayse, on a speech report reading. However, on an attitude report reading, where we bind the logophor to Ayse as in (25-b), the saying event is really the event of Ayse interpreting/thinking/talking to herself. A thought event like that doesn't really have an addressee, so the second person would be uninterpretable (i.e. on that potential reading, i.e. the attitude report reading with a monstrous operator). Alternatively, we could analyze thought as self-directed talk and duplicate the interpretation of the second person as referring to Ayse.

By seriously thinking through the decomposition of *diye* as consisting of a say-verb and a gerundive-like linker, we were able to correctly predict the two shifted readings for first persons in communicative reception reports, and the one shifted reading, referring to the matrix subject, for the second person variant.[14] This solves the puzzle we set out to solve.

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[13] Note also that the causal link in the attitude report reading, (25-b), seems to go in the opposite direction than in the speech report reading. Our definition of the linker, in terms of $\sim$ is deliberately underspecified for the causal order, in order to account for this. Ultimately, more needs to be said about the nature of this underspecified causal linking relation $\sim$.

[14] A relationship between complementizers that contain the verb 'say' and the licensing of indexical shift

## Conclusion

We have proposed a syntax and semantics for clausal embedding in Turkish that accounts for the dual behavior of communicative reception reports in Turkish and captures the observed indexical shifting pattern schematically indicated in pseudo-English (26):

(26)    Ayse$_1$ heard from Mercan$_2$ that I$_{1,2,\text{actual speaker}}$ / you$_{1,*2,\text{actual addressee}}$ be a hero

Our analysis has two crucial ingredients to capture this indexical shifting pattern. The first has to do with the embedded clause introducer *diye*, which is decomposable into the root *de-* 'say' and a linking element *-ye*. We argue that the 'say' component projects a pronominal subject, which is interpreted as a logophoric pronoun that has to be bound. As such, either matrix argument can be indexed with the subject, and, in the presence of a monster, that argument is in turn treated as the author of the reported context. We thus capture the pattern in (26) with the (simplified) structure below:

(27)    Ayse $\lambda1$ Mercan $\lambda2$ ... [ hear [ LINKER [ LOG-1/2 [ say [ THAT 😋 I/you be a hero ]]]]]

In other words, in our analysis, first person indexicals shift to the subject of 'say,' which is bound by one of the matrix arguments. If bound by the the source, we get a speech report reading, and the shifted first person will end up referring to the source argument, i.e. the reported speaker. A shifted second person will simply refer to the reported addressee, which coincides with the matrix subject, the hearer. If the logophor is bound by the matrix subject, we get an attitude report reading, where 'say' can only mean 'say (silently) to oneself.' In that case the shifted first person will end up referring to the hearing subject, and a shifted second person is either uninterpretable (since thoughts have no addressee), or it refers to the self as addressee of internal speech.

The analysis put forth in this paper has further implications on the typology of indexical shift. The Turkic languages (Sudo (2012) on Uyghur; Podobryaev (2014) on Mishar Tatar; Şener & Şener (2011) and Özyıldız (2012) on Turkish) appeared anomalous (cf. Deal (2016)) in that they give the illusion that indexicals can shift under most or even all attitude verbs, while other languages exhibit much stronger lexical restrictions on which verbs can shift which indexicals. Assuming the present analysis, all shifting is restricted to occur under a single attitude verb, *de-* 'say,' which happens to combine with most attitude and speech verbs.

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was noted in Sudo (2010) and Podobryaev (2014), but their status as verbs is not pursued as a tenable analysis. Sudo writes: "[I]t is a possibility to analyze '$\phi$ *dep*' as a tenseless controlled clause that means while saying $\phi$, but this analysis is inadequate for attitude verbs such as *angla-* 'hear.'" Messick (2017) on the other hand gives special treatment to "say" complementizers, but does not use this fact to propose a distinct structure for complementation. A syntactic analysis along these lines can be found in Khanina (2007), but she does not provide a compositional semantics and stipulates a type of nominalization not found elsewhere in Mishar Tatar, as noted by Podobryaev (2014).

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