Factivity alternations in Turkish

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1 Factivity alternations in Turkish

- In Turkish, the availability of the factive inference depends on two factors:

– **Factor 1**: Embedded clause type
Given the attitude verb *bil-*, the factive inference is **not available with tensed clauses**, and **available with nominalized clauses**.

The syntactic factivity alternation

(1) a. **Tensed embedded clause + *bil***:
Tunc [Hillary kazan-di diye] biliyor
T. H. win-PST diye knows
Tunc 'believes' (lit. 'knows') that Hillary won.

b. **Nominalized embedded clause + *bil***:
Tunc [Hillary'nin kazan-digin-i] biliyor
T. H. win-NMZ-ACC knows
Tunc knows that Hillary won

(2) **Denial of embedded proposition**
ama kazanmadi.
but she didn't win.
} ✓after (1a); # after (1b).

– **Factor 2**: Position of focus
Given the attitude verb *bil-* taking a nominalized clause, the inference is **not available if embedded material is focused**, and **available if matrix material is focused**.

The prosodic factivity alternation

(3) a. **Prosodic focus on embedded verb**:
Tunc [Hillary'nin (kazandigini)$_F$] biliyor.
T. H. win.NMZ knows
Tunc 'believes' (lit. 'knows') that Hillary won.

b. **Prosodic focus on matrix verb**:
Tunc [Hillary'nin kazandigini] (biliyor)$_F$.
T. H. win.NMZ knows
Tunc knows that Hillary won.

(2) **Denial of embedded proposition**
ama kazanmadi.
but she didn't win.
} ✓after (3a); # after (3b).

– Summary of facts:

(4) Availability of factive inference as a factor of {clause type×focus position}, with *bil-*

Clause type	Position of focus	
	Embedded	Matrix
Tensed	Non-factive, (5)	Non-factive, (1a)
Nominalized	Non-factive, (3a)	Factive, (3b)

⇒ **Questions**: What do our assumptions need to be about [1, 2 & 3] to account for the factivity alternations?

1. the meaning of predicates like *bil-*?
2. the way they compose with different embedded clauses?
3. the syntax/semantics and prosody interface?

2 Additional data

- Focusing the matrix verb does not suffice to trigger the factive inference.

(5) A Hillary kazandi.
Hillary won.

B [Hillary'nin kazandigini] (biliyorum)$_{\text{F}}$.
Hillary win.NMZ I know
✓I know that Hillary won.

B′ #[Hillary kazandi diye] (biliyorum)$_{\text{F}}$.
Hillary win.NMZ I know
#I believe (lit. 'know') that Hillary won.

A's assertion makes the belief proposition CG.

A *bil-* report with a nominalized clause and matrix focus is perfect. Focus anywhere else is odd.
cf. *—Hillary won. —I know$_F$ that Hillary won.*
—Hillary won. —#I know that Hillary$_F$ won.

A *bil-* report with a tensed clause is odd. The most natural place for focus in this exchange is the matrix verb. The result is perhaps as acceptable as the English counterpart with stressed 'believe.'

⇒ Focus is an effect of the factive inference, not the cause.

- Negating non-factive *bil-* reports gives rise to meanings similar to negated belief reports, including neg-raising.

(6) Tunc [Hillary kazandi diye] bil**mi**yor.
T. H. won diye know.NEG
Tunc doesn't believe that Hillary won.

Can be used to provide evidence in favor of $\neg p$, and to disagree with the assertion that p.

Strong NPIs not licensed in emb. CP (Gajewski, 2005).

- When triggered, the factive inference projects.

(7) a. **Negation**
Tunc [Hillary'in kazandigini] bil**mi**yor.
Tunc Hillary win.NMZ know.NEG
Tunc does**n't** know that Hillary won. ⇝Hillary won.

b. **Polar question**
Tunc [Hillary'in kazandigini] biliyor **mu**?
Tunc Hillary win.NMZ know Q
Does Tunc know that Hillary won? ⇝ Hillary won.

c. **Antecedent of a conditional**
[(**Eger**) Tunc [Hillary'nin kazandigini] biliyor**sa**] cok mutludur.
if Tunc Hillary win.NMZ know.COND very happy.MOD
If Tunc knows that Hillary won, he must be very happy. ⇝Hillary won.

- The predicate *bil-* is not alone in participating in the alternations.

(8) a. Tunc [Hillary kazandi diye] hatirliyor.
T. H. won diye remembers

b. Tunc [Hillary'nin (kazandigini)$_{\text{F}}$] hatirliyor.
T. H. won.NMZ remembers
Tunc remembers$_{\text{Non-Factive}}$ that Hillary won.

c. Tunc [Hillary'nin kazandigini] (hatirliyor)$_{\text{F}}$.
T. H. won.NMZ remembers
Tunc remembers$_{\text{Factive}}$ that Hillary won.

What does it mean to 'remember' non-factively?

Intuitively, there is a 'remembering event,' but Speaker cannot presuppose p.

⇒ **Generalization**: Verbs that we know of as "cognitive factives" participate in the FAs—the "equivalents" of "know, remember, learn, see."

- But **not all predicates participate in the alternations**.

(9) a. Tunc [Hillary kazandi diye] dusunuyor.
T. H. won diye thinks

b. Tunc [Hillary'nin (kazandigini)$_{\text{F}}$] dusunuyor.
T. H. won.NMZ thinks

c. Tunc [Hillary'nin kazandigini] (dusunuyor)$_{\text{F}}$.
T. H. won.NMZ thinks
Tunc thinks that Hillary won.

⇒ **Generalization**: Verbs that we know of as "non-factives" do not participate in the FAs.

- Ask about emotive factives if interested!

- Summary:

– Neither focus position nor embedded clause type is a sufficient condition for the factive inference.

– The (equivalents of the) verbs that participate in the FAs and the ones that do not seem to form natural classes in other languages.[1]

∗ No 'accidental homophony' between factive/non-factive Vs.
The factivity alternation is too regular.

∗ No 'inherently factive nominalizations' across-the-board.
There is no surface difference between a nominalization embedded under *bil-* and one embedded under *dusun-*.
While hypothesis is workable (Kratzer, 2006; Moulton, 2009, a.o.), I try to deal with the facts differently.

– The factive inference is a presupposition, when triggered.

3 Towards a proposal

- How is factivity derived in the first place?

The common logic is that the factive verb composes with **a single internal argument**, here p (though see Frana (2006) for a similar analysis of concealed questions based on composing 'know' with an individual predicate), and the truth of p at the evaluation world is obtained from the entry.

(10) a. $[\![\textbf{know}]\!] = \lambda p.\lambda x.\lambda w : p$ holds at $w.x$ believes p at w e.g., Percus (2006)

b. $[\![\textbf{know}_{\text{kratzer}}]\!](S)(p) = 1$ iff Kratzer (2002)
(i) There is a fact f that exemplifies p,[2]
(ii) S believes p *de re* of f, and
(iii) S can rule out relevant possible alternatives of f that do not exemplify p.

Any such account makes factive verbs veridical—which, applied to Turkish, would undergenerate. (No non-factive uses predicted.)

(11) $[\![\textbf{bil}_{\text{veridical}}]\!](w_0)([\![\textbf{Hillary won diye}]\!])(tunc) = 1 \Rightarrow$ Hillary won at w_0

(Wrong prediction: This sentence corresponding to this LF is not veridical.)

[1] Vincent Homer and Paul Pietroski were ones to push the importance of this 'translation problem.' See also Hazlett (forthcoming).

[2] **Exemplification**: A situation s exemplifies a proposition p iff whenever there is a part of s in which p is not true, then s is a minimal situation in which p is true (Kratzer, 2016).
Cheat sheet: 'Mud' exemplifies p ='there is mud' but not 'Mud & Moss.' All the subsituations of 'Mud' are ones where p is true. 'Teapots' exemplifies q ='there are three teapots': It is a minimal situation where q is true. 'Teapots & Scissors' does not exemplify q, it is not a minimal situation.

Is the factive inference *defeated* or is it *built from the bottom up*?
✓ Built from the bottom up.

- Analytical option #1: Perhaps clauses embedded under *bil-* when factivity is not observed are somehow non-actual: ***diye* could take on the denotation of a modal**.

Motivating observation:
The word *diye* derives from the root *de* for 'say.' Perhaps this meaning component is retained in *diye*'s uses as a 'complementizer.'

(1a) Tunc [Hillary kazandi diye] biliyor.
Tunc Hillary win.PST **SAY** know
Tunc (non-factively) knows that Hillary won.

Truth conditions based on internal factivity+modal:
$[\![(1a)]\!] = 1$ iff
Tunc knows that $\underbrace{\text{it is said that}}_{\textbf{diye}}$, Hillary won.

Predicted presupposition: It is said that Hillary won.
✓**Not**: Hillary won.

– The issue with similar proposals is that they do not capture the intuitive truth conditions of (1a).
If you ask Tunc what the outcome of the election was, he would reply with the bare proposition (12a), not the modalized (12b).

(12) a. Hillary kazandi.
Hillary won.

b. Hillary kazandi deniyor.
Hillary won it is said
It is said that Hillary won.

A similar conclusion applies to *diye* introducing clauses embedded under *dusun*, for 'think.'

– The presence of *diye* in the structure is not required for non-factive attitude reports under *bil-*.

(13) Annem [ben-i Ankara'da] biliyor.
my mother 1s-acc in Ankara knows
My mother 'knows' that I'm in Ankara.

(We've also seen non-factive nominalizations under *bil-*.)

⇒ Although it is tempting to give *diye* a modal semantics derived from its connection to 'say,' this is not a straightforward solution to the challenge raised by the FA.

- Analytical option #2: The entry for *bil* introduces **two internal arguments**, which are predicates of situations (or simply, propositions).[3]

1. A RES DESCRIPTION p, from which a RES is recovered.[4]
This is an actual world situation.
An acquaintance relation holds between the attitude holder and the RES.
2. A BELIEF proposition q, which the RES satisfies in holder's belief worlds.
For example:

(14) a. $[\![p]\!] = \lambda s.\exists e[e \leq s \wedge win(e)(trump)]$ 'Trump wins'
b. $[\![p']\!] = \lambda s.\neg\exists e[e \leq s \wedge win(e)(trump)]$ 'Trump doesn't win'
c. $[\![p'']\!] = \lambda s.\exists s'[s' \in f_{\text{epistemic}}(s) \wedge (e \leq s' \wedge win(e)(trump))]$ 'Trump might win'

[3]The original version of the proposal made use of predicates of eventualities, following the same logic. I am indebted to various people who've objected to this, including (at least) Daniel Altshuler, Pranav Anand, Sam Carter and Rob Pasternak. The idea to use propositions came from Dylan Bumford, somewhere between Maryland and Brooklyn. Paloma and Simon were also in the car, whose contributions I am also grateful for.

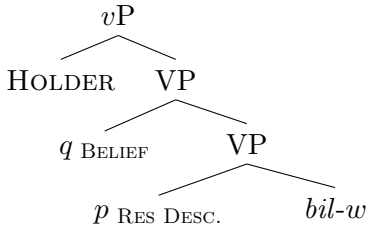
[4]**Note**: Although the LFs resemble beliefs about individuals, I am not committed to an analysis in terms of *res* movement.

The lexical entry

(15) For all $w \in D_s$, $p,\ q \in D_{st}$, $x \in D_e$

$[\![\textbf{bil}]\!](w)(p)(q)(x) = 1$ iff $\exists R_{\text{acquaintance}}[\ \underbrace{p(\iota s[R(x,s,w)])}_{\substack{\text{the } s \text{ that } x \text{ is}\\ \text{acq. with at } w \text{ is } p}} \wedge \text{DOX}_{x,w} \subseteq \{w' | \underbrace{q(\iota s'[R(x,s',w')])}_{\substack{\text{the } s' \text{ that } x \text{ is}\\ \text{acq. with at } w' \text{ is } q}}\}\ ]$

A minimal structure



- In other words:
  There is an acquaintance relation R such that

– the situation s that the attitude holder x is acquainted with at w is a p situation (at w), and
– for all of x's belief worlds w', the situation s' that x is acquainted with at w' is a q situation (at w').

- The derivation of the factive and non-factive alternants depends on how p and q are valued:

– Tensed clauses and nominalizations saturate the BELIEF argument q.

(1a) Tunc [[$_q$ Hillary kazandi diye] [p_7 biliyor]]
T. H. win.PST diye know

– The RES DESCRIPTION argument is interpreted like a pronoun.
– Only the BELIEF part is (usually) visible on the surface.

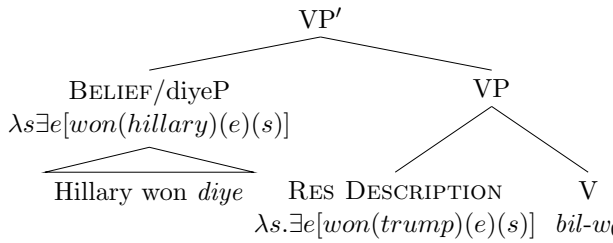
3.1 Deriving the non-factive alternant with tensed clauses

The RES DESCRIPTION and the BELIEF PREDICATE need not match.

(16) **Context**: Trump won. Tunc watched a **prank** news report about the Trump victory. The report said that it was a Hillary victory.

a. Tunc [[$_q$Hillary kazandi diye] [p_7 biliyor]]
T. H. win.PST diye know

b. RES DESCRIPTION p: $\lambda s.\exists e[won(trump)(e)(s)]$
c. BELIEF PREDICATE q:$\lambda s.\exists e[won(hillary)(e)(s)]$
d. R=$\lambda x.\lambda s.\lambda w.x$ watched a news report about s at w



$[\![(1a)]\!] = 1$ iff
$\exists R[\exists e[e \leq \iota s[R(x,s,w_0)] \wedge won(trump)(e)] \wedge$
$DOX_{tunc,w_0} \subseteq \{w' | \exists e'[e' \leq \iota s'[R(x,s',w')] \wedge won(hillary)(e')]\}]$

(The situation s that Tunc is acquainted with at w_0 includes/exemplifies a a Trump victory and he believes of e that it includes/exemplifies a Hillary victory.)

3.2 Deriving the factive alternant with nominalizations

The RES DESCRIPTION and the BELIEF PREDICATE must match.

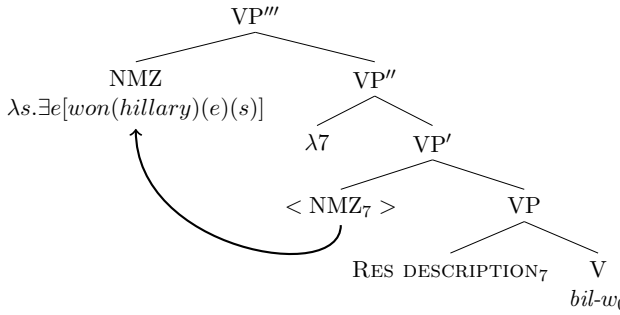
- The nominalized clause is generated in the belief argument slot.
- **The clause raises**, leaves behind a trace of the same type and **binds the res description argument**.
- Why do nominalizations raise? Perhaps for case—They are overtly marked for the accusative in this position.

(17) **Context**: Hillary won. Tunc watched a **truthful** news report about the Hillary victory. The report said that it was a Hillary victory.

a. Tunc [[$_q$Hillary'nin kazandigini] [$\lambda 7$ [q_7 [p_7 biliyor]]]]
Tunc Hillary win.NMZ knows

b. BELIEF PREDICATE q: $\lambda s.\exists e[won(hillary)(e)(s)]$

c. R=$\lambda x.\lambda s.\lambda w.x$ watched a news report about s at w



$[\![\text{VP}'']\!] = \lambda q.\lambda x.q(\iota s[R(s,x,w_0)]) \wedge$
$\text{DOX}_{x,w_0} \subseteq \{w'|q(\iota s'[R(s',x,w')])\}$

Plugging in $[\![\text{NMZ}]\!]$ and the attitude holder:

$[\![(1a)]\!] = 1$ iff

$\exists R[\exists e[e \leq \iota s[R(x,s,w_0)] \wedge won(hillary)(e)] \wedge$

$DOX_{tunc,w_0} \subseteq \{w'|\exists e'[e' \leq \iota s'[R(x,s',w')] \wedge won(hillary)(e')]\}]$

(The situation s that Tunc is acquainted with at w_0 includes/exemplifies a a Hillary victory and he believes of s that it includes/exemplifies a Hillary victory.)

- To derive the factive alternant, the RES DESCRIPTION argument has to be bound by the BELIEF PREDICATE argument.

Does anything force this binding relation?

Not in this system. This predicts that there should be non-factive nominalizations under *bil-*, which is borne out.

The prosodic factivity alternation

(3) a. **Prosodic focus on embedded verb**:
Tunc [Hillary'nin (kazandigini)$_F$] biliyor.
T. H. win.NMZ knows
Tunc 'believes' (lit. 'knows') that Hillary won.

b. **Prosodic focus on matrix verb**:
Tunc [Hillary'nin kazandigini] (biliyor)$_F$.
T. H. win.NMZ knows
Tunc knows that Hillary won.

(2) **Denial of embedded proposition**
ama kazanmadi.
but she didn't win.
} ✓after (3a); # after (3b).

In (3a), the res description argument is unbound; in (3b) it is bound, and covalued with the belief argument.

4 Remaining issues

- Potential evidence for the syntactic reality of the RES DESCRIPTION:

(18) Tunc **o-nu** [Hillary kazandi diye] biliyor.
T. **that**-ACC H. won diye knows
≈ Tunc knows that as a Hillary victory.

- Why can some verbs not be 'factivized'?

  Hypothesis: They do not introduce a RES DESCRIPTION argument.

  This could be related to the ability to select non-propositional DP arguments ('✓know/*think the answer').

5 Justified belief

The focus of this section is reports with **tensed clauses under *bil-***.
When non-factive, they describe situations of **justified belief**.

- Simplified treatments of knowledge reports: (Percus, 2006, a.o.)

  Knowledge is plain belief/thought with an added truth requirement.

  (19) a. $[\![\textbf{think}]\!] = \lambda p.\lambda x.\lambda w :$ $.x$ thinks p at w
  b. $[\![\textbf{know}]\!] = \lambda p.\lambda x.\lambda w : p$ holds at $w.x$ thinks p at w

  Expectation: 'know' minus the truth requirement equals plain belief.

- Turkish has *bil-*, which participates in the alternation, and *dusun-*, which translates 'think' in some contexts, and which does not.[5]

  Is non-factive *bil-* felicitous in the same contexts as *dusun-*? **No**!

- Non-factive *bil-* is stronger than *dusun-*:
  The former is licensed in fewer pragmatic contexts.[6]

  (20) THE HYPOCHONDRIAC: Dilara is a hypochondriac.
  According to her, she has an ear infection.
  a. #Dilara [kulaginda iltahap var] diye biliyor.
  Dilara in her ear infection exists diye knows
  b. ✓Dilara [kulaginda iltahap var] diye dusunuyor.
  thinks
  Dilara {#*bil*, ✓*dusun*} that she has an ear infection.

  (21) THE JUSTIFIED HYPOCHONDRIAC: Someone tells Dilara that she has an ear infection.
  a. ✓Dilara [kulaginda iltahap var] diye biliyor.
  Dilara in her ear infection exists diye knows
  b. ✓Dilara [kulaginda iltahap var] diye dusunuyor.
  thinks
  Dilara {✓*bil*, ✓*dusun*} that she has an ear infection.

- Two additional contexts:

  (22) a. THE OCCASIONAL DRINKER: I once saw Tunc have a glass of rakı. A few days later, the host of a dinner party asks me: **What about Tunc, does he drink?**
  b. ✓[Iciyor diye] biliyorum.
  he drinks diye I know
  I *bil* that he drinks. ✓Visual evidence

  (23) a. THE REASONABLE GUESS: Looking for the toothbrush in the bathroom. I can't find it. **I must have left it in my suitcase!**
  b. #[Cantamda biraktim diye] biliyorum.
  in my bag I left it diye I know
  I *bil* that I left it in my bag.
  # Reasonable guess

[5] The predicate *san-* translates 'believe.' I use *dusun-* for the purposes of exposition.
[6] 'S p diye bil-' does entail 'S p diye dusun-.'

- Generalization: **Justification licenses non-factive *bil-* reports**.

(24) a. LICENSORS: Inferences based on hearsay, lies, visual and auditory evidence.

b. NON-LICENSORS: Inferences based on internal thought processes, guesses, wishes, reasonable or otherwise..

- Whose perspective to take into account when evaluating justification: Attitude holder? Speaker?

- Licensing conditions on some Turkish attitude reports

			requirement	
		belief	*justification*	*truth*
attitude	factive *bil*	yes	yes	yes
	non-factive *bil*	yes	yes	no
	think/believe	yes	no	no

- Accounting for justification?

Hypothesis: Encoded in the acquaintance relation.

(25) a. Good acquaintance relation, licenses *bil-* report
$[\![\mathrm{R}]\!] = \lambda x.\lambda e.\lambda w.x$ heard a news report about e at w

b. Bad acquaintance relation, does not license *bil-* report
$[\![\mathrm{R}']\!] = \lambda x.\lambda e.\lambda w.x$ made a guess about e at w

c. No acquaintance relation, does not license *bil-* report

6 One last datum

(26) a. Prem Ahuja wasn't the wicked seducer the world knows him to be. (Recovered online)
b. Prem Ahuja [is]n't the wicked seducer the world knows him to be.
c. Prem Ahuja isn't [a] wicked seducer #but the world knows [that he is].

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