

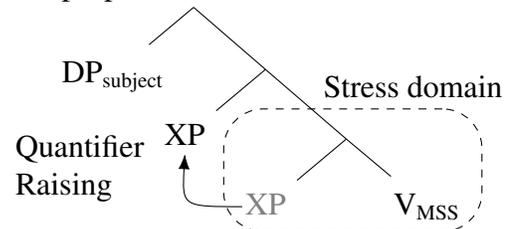
**Overt Quantifier Raising derives factivity and its prosody** Deniz Özyıldız · UMass, Amherst

**Introduction.** Turkish has attitude reports (ARs) that are unambiguously factive or non-factive. The prosody of factives differs from that of non-factives. *Some ARs are ambiguous* between the two readings, and *prosody disambiguates*. How, then, does the factive inference (FI) arise, and why does it interact with phonology? I propose that the non-factive pattern is basic, and that the FI is derived by composing the embedded clause with a morpheme Q, which overtly QRs and asserts it. QR is overt and results in a syntactic difference between non-factives and factives. The prosodic differences observed follow from the regular mapping from syntax to phonology.

**QR affects prosody.** My argument is based on the observation that QR affects default prosody. Main Sentential Stress (MSS) falls on the highest item in *v*'s spell out domain [8]. This means that in simple transitives, the direct object (DO) bears MSS, 1a. Even when string vacuous, QR is overt and affects prosodic structure. When the DO is a name or an indefinite (which need not QR), MSS falls on the DO. When the DO is a universal quantifier (which must QR), MSS is on the verb, 1b.

- (1) Psst, you wanna know something?  
 a. Ali {BORAYI, bir DAVETLIYI} optu.  
 Ali Bora a guest kissed  
 b. Ali her davetliyi OPTU.  
 Ali every guest kissed  
 ‘Ali kissed {Bora, a guest, every guest}.’

- (2) The proposal in a nutshell



The reason is that QR strands the verb in the stress domain as the sole overt word, which gets MSS.

**Factivity and prosody interact.** Ex. 3 illustrates an alternating AR: All new, broad focus utterances of 3a and 3b minimally differ, on the surface, in the position of MSS, which falls on the embedded object in 3a, and on the matrix verb in 3b. This makes an interpretive difference: 3b semantically presupposes the embedded proposition, 3a does not (see 5).

- (3) a. Ali [Bora'nin SIGARA ictigini] biliyor.      b. Ali [Bora'nin sigara ictigini] BILİYOR.  
 Ali Bora cigarette smoke knows      Ali Bora cigarette smoke knows  
 ‘Ali thinks that Bora smokes cigarettes.’      ‘Ali knows that Bora smokes cigarettes.’  
 Embedded MSS; non-factive; broad focus.      Matrix verb MSS; factive; broad focus.

ARs that are always non-factive have embedded MSS, in 4a, and ones that are always factive have matrix verb MSS, in 4c. In contrast with 3a/3b, which are perfect all new broad focus utterances, alternative positions of MSS in 4 require contexts licensing narrow (4b/4d) or verum focus (4b). Crucially, 4b does not ‘become’ factive, and 4d, non-factive as an effect of MSS position.

- (4) a. Ali [Bora'nin SIGARA ictigini] düşünüyor.      c. Ali [Bora'nin sigara ictigini] UNUTTU.  
 Ali Bora cigarette smoke thinks      Ali Bora cigarette smoke forgot  
 ‘Ali thinks that Bora smokes cigarettes.’      ‘Ali knows that Bora smokes cigarettes.’  
 b. #... DUSUNUYOR.      (narrow, verum)      d. #... SIGARA ...      (narrow)

**The prosody.** Native speakers perceive and produce these sentences with the word in caps as the ‘most prominent.’ Acoustically, the MSS-bearing word is preceded by a H(igh) tone aligned with the right edge of the word preceding it, an H\* pitch accent is realized on its stressed syllable, followed by a sustained Low. Syntactic constituents preceding MSS are parsed as prosodic units (phonological phrases). These prosodic structures are fully regular and cannot be linked to, e.g., factive tonal morphemes. The prosody of 3a/4a are default in the language, and cross-linguistically. The prosody of 3b/4c is exceptional [10, 7, 5, 8]. How to derive it and its association with the FI?

**Factivity** → **Exceptional prosody**. While 3 makes it seem like the position of MSS conditions the availability of the inference, it is the latter that conditions the former: Non-factives, 3a, and factives, 3b, map onto *distinct semantic representations*. The embedded proposition is denied without contradiction after 3a, but not after 3b (in 5a). In contexts where the embedded proposition is true, 3b is perfect while 4b is odd (in 5b). And the factive inference can project (in 5c). These tests suggest that the factive inference, when available, is a semantic inference: The facts in 5a/5c can be handled with ordinary entailment [17, 15, 2]. Semantic presupposition is required to handle the anti-presupposition contrast in 5b [13].

**Semantic assumptions.** Attitude verbs uniformly have non-factive Hintikkan entries, like 6a. Embedded clauses denote regular propositions, as in 6b. This accounts for the non-factive reading. To derive the factive reading, I make use of a morpheme Q, defined in 6c.

- (6) a.  $\llbracket bil \rrbracket \approx \llbracket dusun \rrbracket \approx \lambda w_s. \lambda p_{st}. \lambda x_e. \forall w' [w' \in DOX_{x,w} \rightarrow p(w')]$   
 b.  $\llbracket \text{Bora'nin sigara ictigini} \rrbracket = \lambda w_s. smoke(w)(b)$   
 c.  $\llbracket Q \rrbracket = \lambda w_s. \lambda p_{st}. \lambda B_{st,t}. \exists s [s \leq w \wedge p(s) \wedge B(p)] \equiv p(w) \wedge B(p)$  if  $p$  is ‘persistent’ [11]

Q takes a proposition and a predicate of propositions: It asserts the existence of an evaluation-world situation satisfying the proposition (this will be the FI), and gives the proposition to the predicate.

**Compositions and the interface with phonology.** In non-factive ARs, the embedded clause composes with the verb while remaining within the stress domain. The CP is the highest constituent within that domain and receives MSS. Applying the same procedure within the CP singles out the embedded DO as the default MSS bearer.

- (7) a.  $[\lambda w_0 [\text{Ali } [_{vP} \text{CP V}]]]$       b.  $\llbracket 7a \rrbracket = 1$  iff  $\forall w' [w' \in DOX_{a,w_0} \rightarrow smoke(w')(b)]$

In factive ARs, Q composes with an evaluation world and an embedded clause to yield an object of type  $stt, t$ , in 8a. This cannot compose in situ with the verb (looking for  $st$ ). Similarly to what is assumed for object quantifier phrases, the QP raises (QRs), leaving a trace of type  $st$ . Ex. 8b gives the structure and truth conditions of 3b: The embedded proposition is asserted, and believed.

- (8) a.  $\llbracket QP \rrbracket = \llbracket Q \rrbracket(w)(\llbracket CP \rrbracket) = \lambda B_{st,t}. \exists s [s \leq w \wedge \llbracket CP \rrbracket(s) \wedge B(\llbracket CP \rrbracket)]$       type:  $stt, t$   
 b.  $[\lambda w_0 [ [ Q-w_0 CP ] [ \lambda 2 [ \text{Ali } [_{vP} \text{ } \phi_2 \text{ bil-}w_0 \text{ } ] ] ] ] ]$   
 c.  $\llbracket 8b \rrbracket(w_0) = 1$  iff  $\exists s [s \leq w_0 \wedge smoke(w_0)(b) \wedge \forall w' [w' \in DOX_{a,w_0} \rightarrow smoke(w')(b)]]$

QR forces the embedded clause to vacate the vP. MSS is assigned regularly within v’s spell out domain. It falls on the sole phonologically overt item there: the matrix verb. A factive *entailment* is derived in 8c, which can be ‘turned into a presupposition’ through familiar means [1].

**Discussion.** Why do some ARs alternate in factivity, while others do not? Verbs differ in whether they select QPs or CPs. Any proposal that exports the factive inference into the embedded clause has the same ‘issue,’ and benefits from the same solution [12, 6, a.o.]. • Some note that prosodic structure interacts with presupposition *projection*, none, to my knowledge, that it interacts with *triggering* [3, 1, 16]. • Is presupposed material discourse-given? Despite [9] suggesting the positive, presupposition and givenness seem independent [18, 14, 4]. My proposal is compatible with the latter: Presupposition is not associated with givenness to derive the prosody. Syntax mediates.

- (5) a. Denial      ✓ 3a, # 3b  
 ... ama sigara icmiyor.  
 ‘... but he doesn’t smoke.’  
 b. Anti-presupposition      ✓ 3b, # 4b  
 Bora sigara iciyor ve...  
 ‘B. smokes and...’  
 c. Projection       $\rightsquigarrow$  Bora smokes.  
 A. [B.’nin sigara ictigini] bilmiyor.  
 A. B. cig. smoke know.NEG  
 ‘A. doesn’t know that B. smokes.’

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