

A Tonal Exponence of Universal Quantification in Turkish

Introduction: Novel data from Turkish shows that universal quantification over situations can be expressed by a tonal morpheme. The key contrast is in (1a) and (1b). While the DP modified by the relative clause (RC) in (1a) only has a definite singular interpretation, (1b) has truth conditions on a par with (1c), where the RC is in the restrictor of the overt quantificational determiner *her* ‘every.’ The only difference between (1a) and (1b) is that the initial syllable of the predicate of the RC in (1b) bears a high tonal target (noted H \forall), whose occurrence is unpredicted by regular pitch accent placement and phonological phrasing in Turkish. Hence, we identify H \forall in (1b) as a tonal morpheme.

- (1) a. Ali [RC e₁ yika-dıĝ-ı] tencere-yi₁ tezgah-a koy-du.
‘Ali put the pot he washed on the counter.’
b. Ali [RC e₁ YI^{H \forall} ka-dıĝ-ı] tencere-yi₁ tezgah-a koy-du.
~ ‘Ali put every pot he washed on the counter.’
c. Ali her [RC e₁ yika-dıĝ-ı] tencere-yi₁ tezgah-a koy-du.
Ali every wash-REL-3SG pot-ACC counter-DAT put-PST
‘Ali put every pot he washed on the counter.’

Context 1: Ali washes a single pot and puts it on the counter. **Context 2:** Ali washes 5 pots and puts them on the counter. **Context 3:** Ali washes 5 pots and puts 3 on the counter.

- (1a): true and felicitous, (1a): (failure of unicity), (1a): odd (failure of unicity),
(1b) & (1c): odd (too weak). (1b) & (1c): true and felicitous. (1b) & (1c): false.

⇒ The DP in (1a) is a definite singular, and in (1b), like a universal quantifier over washed pots.

The phenomenon: In all new, broad focus contexts, (1a) is produced with ‘default’ intonation, schematized in (2a). A H(igh)* pitch accent aligns with the stressed syllables of the embedded verb, the head of the RC, and the direct object (DO). The DO bears main sentential stress, and material to the right of its stressed syllable is deaccented and dephrased. The RC, head included, is parsed as one intermediate phrase (ip), the DO and the verb as another. Intermediate phrases are marked at their right edge with a H- boundary tone (Kan 2009, Kamali 2011, İpek 2015, Güneş 2015). Ex. (1b), on the other hand, is produced with the exceptional prosody in (2b). The H* pitch accent aligned with the embedded verb’s stressed final syllable is not perceived. A high target (H \forall) is aligned with its *initial* syllable. The rest of the sentence has default intonation.

- (2) a. (... (y1.ka.dı.ĝı^{H*} ten.ce.^{H*}re.yi)^{H-}_{ip} (tez.ga.ha^{H*} koy.du^{L%})_{ip})_{Ip} (Definite)
b. (... (y1.^{H \forall} ka.dı.ĝı ten.ce.^{H*}re.yi)^{H-}_{ip} (tez.ga.ha^{H*} koy.du^{L%})_{ip})_{Ip} (Universal)

To our knowledge, the description of such a tonal contour has not been noted in the Turkish prosody literature, and no association is noted between prosody and universal quantification in the general prosody/semantics/pragmatics literature. The source of this exceptional high target is not phonological. Turkish has morphemes that trigger exceptional stress (Kornfilt 1996, a.o.), but none are in the structures presented here and account for the exponence of H \forall . Turkish has exceptionally lexically stressed words (Sezer 1983), these are not that. One might ask whether this exceptional prosodic contour might be due to information structural factors that override default intonation (e.g., givenness, narrow focus, etc.). This is likely not the case. For example, the perceptual and acoustic correlates of narrow focus are realized on a word’s stressed syllable, not its initial syllable. This is given in (3). Moreover, the construction in (1b)/(2b) does not have the semantics or the pragmatics of narrow focus and is felicitous as an answer to a broad focus question (*N’oldu?* ‘What happened?’).

- (3) Ali yıkadıĝI/#YIkadıĝı tencereyi tezgaha koydu, kırđıĝı tencereyi deĝil.
Ali put the pot he WASHED on the counter, not the pot that he BROKE.

Quantification over individuals? or over situations? Two plausible logical forms could be associated with (1b). For brevity, we discuss here the *truth conditions* that they derive. The ones in (4a) are derived if H \forall is a PF-signal of a universal quantifier over *individuals*—like segmental *her*

‘every’ in (1c). On the other hand, the truth conditions in (4b) are derived if $H\forall$ signals a universal quantifier over *situations* (Lewis 1975, Heim 1990, von Stechow 2004, Kratzer 2016, a.o.).

- (4) a. **Universal quantification over individuals**
 $\forall x: (\text{pot}(x) \ \& \ \text{Ali-wash}(x)) \rightarrow \text{Ali-put-on-counter}(x)$
‘For each thing x , if x is a pot that Ali washed, Ali put x on the counter.’
- b. **Universal quantification over situations**
 $\forall s: \text{Ali washed a pot in } s \rightarrow \exists s': s < s' \ \& \ \text{Ali-put-on-c}(s')(\text{the } x: \text{Ali-wash}(x) \ \& \ \text{pot}(x) \ \text{in } s)$
‘For each minimal situation s such that Ali washed a pot in s , there is a situation s' such that s is part of s' and Ali put in s' the unique pot he washed in s on the counter.’

To generate (4a), the DP that contains $H\forall$ is analyzed as ‘every pot Ali washed,’ except that ‘every’ is spelled out by the tonal morpheme $H\forall$. In (4b), however, the DP that contains $H\forall$ must be a singular definite description, just like the DP in (1a). This DP picks out the unique pot that Ali washed in a given situation. The difference with (1a) is that in (1b), a universal quantifier over *situations* binds into this definite description. Hence, keeping the interpretation of the DP constant, we obtain that the unique pot that Ali washed is able to vary across these situations. • We push for quantification over situations. First, $H\forall$ does not exactly pattern like *her* ‘every’ quantifying over individuals. Second, $H\forall$ associates with propositions, that is, predicates of situations. We speculate that what $H\forall$ does is to signal where to contextually recover material serving to restrict the quantifier (i.e., salient situations quantified over). In (4b), these would be situations in which Ali washed a pot.

i. Association w/ ‘almost’: In ex. (5a), with *her* ‘every,’ the quantifier phrase (QP) associates with *neredeysel* ‘almost.’ In ex. (5b), with $H\forall$, ‘almost’ is infelicitous with the intended interpretation.

- (5) a. Ali neredeysel **her** [RC e_1 gör-düg-ü] insan₁-dan para istiyor
Ali almost every see-REL-3SG person-ABL money wants
‘Ali asks almost everybody he sees for money.’
- b. #Ali neredeysel [RC e_1 **GÖR** ^{$H\forall$} -düg-ü] insan₁-dan para istiyor
Intended: ‘Ali asks almost everybody he sees for money.’

ii. Scope wrt Negation: The QP in (6a) preferentially scopes below sentential negation. But in (6b), the universal obligatorily takes wide scope. This is indicated by the observation that the sentence has no true reading if there is a person that Ali sees and asks for money. This scope restriction is fully predicted by the logical form that generates (4b), where the universal takes widest scope.

- (6) a. Ali **her** [RC e_1 gör-düg-ü] insan₁-dan para iste-mi-yor
Ali every see-REL-3SG person-ABL money want-NEG-IMPF
‘Ali does not ask everybody he sees for money.’ (not > every)
- b. (?) Ali [RC e_1 **GÖR** ^{$H\forall$} -düg-ü] insan₁-dan para iste-mi-yor
~ ‘Whenever Ali sees a person, he does not ask them for money’ (*not > every)

iii. Association with Propositions: In all of the cases we have considered so far, $H\forall$ targets the predicate of a RC. However, $H\forall$ can also optionally associate with a *propositional* restrictor (7b), i.e. a conditional antecedent (Lewis 1975, Heim 1990, von Stechow 2004, Kratzer 2016, a.o.). Note that (7b) and its counterpart with *hep* ‘always’ in (7a) have identical truth conditions. The quantifier *her* ‘every,’ however, has no acceptable attachment site in conditional sentences (7c).

- (7) a. Bi sınav-a çalış-tı-ysa-m, **hep** o sınav-ı geç-ti-m
an exam-DAT study-PST-COND-1SG always that exam-ACC pass-PST-1SG
‘If I studied for an exam, I **always** passed it.’
- b. Bi sınav-a **ÇA** ^{$H\forall$} lış-tı-ysa-m, o sınav-ı geç-ti-m
~ ‘If I studied for an exam, I always passed it.’
 $\forall s: \text{I studied for an exam in } s, \rightarrow \exists s': s < s' \ \& \ \text{I passed in } s' \ \text{the exam in } s$
- c. (***her**) bi sınav-a (***her**) çalış-tı-ysa-m, (***her**) o sınav-ı geç-ti-m