

# Modifying result states in Turkish

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## 1 The Initial Puzzle

- Turkish has a temporal modifier that exclusively targets RESULT STATES.

- We set aside its morphological complexity and label it RSM.

(1) 5 saniye -liğ -in -e  
5 second MEASURE 3SG.POS DAT  
5 second-RSM ← this is how we will gloss it  
≈ ‘for 5 seconds’

- RSM can inform us about the duration of a result state (2).

(2) YouTube **iki saat-liğine** çök-tü.  
YouTube two hour-RSM crash-PST.3SG  
Lit: ‘YouTube crashed for 2 hours.’  
⊨ *YouTube remained in a crashed state for two hours*

- Crucially, RSM is unacceptable with activities (3), which lack result states.

(3) Selin (**#iki saat-liğine**) koş-tu.  
Selin two hour-RSM run-PST  
‘Selin ran (for two hours)<sub>intended</sub>.’

- When an activity is delimited, RSM becomes acceptable (cf. Tenny 1994):

(4) Kutu-yu **iki saat-liğine** oda-n-a taşı-dı-lar.  
box-ACC two hour-RSM room-2SG.POS-DAT carry-PST-3PL  
Lit: ‘They carried the box to your room for 2 hours.’  
⊨ *the box ended up in the addressee’s room*

- Here is the puzzle:
  - The inchoative sentence repeated below in (5a) comes with an **actuality entailment regarding the duration**, as diagnosed by the follow-up in (5b).

(5) a. YouTube **iki saat-liğine** çök-tü.  
 YouTube two hour-RSM crash-PST.3SG  
 Lit: ‘YouTube crashed for 2 hours.’  
 ⊨ *YouTube remained in a crashed state for two hours*

b. #... ama bir saat sonra geri gel-di.  
 ... but one hour later back come-PST  
 ‘... but it came back after an hour.’

- In contrast, the causative sentence repeated below in (6a) does not have an actuality entailment regarding the duration.

\* This is shown by the felicitous follow-up in (6b).

(6) a. Melis kutu-yu **iki saat-liğine** masa-ya koy-du.  
 Melis box-ACC two hour-RSM attic-DAT put-PST.3SG  
 Lit: ‘Melis put the box on the table for 2 hours.’  
 ≠ the box remained on the table for 2 hours.

b. ... ama beş dakika sonra anne-si oda-sın-a götür-dü.  
 ... but five minute later mother-POSS room-POSS-DAT take-PST  
 ‘... but her mother took it to her room after five minutes.’

- Intuitively, in (6a), RSM seems to encode the **intended duration** for the result state.

\* (6a) ≈ Melis put the box on the table, wanting it to be there for 2 hours.

#### Preliminary Findings

RSM with inchoatives      ⇒      ‘actual duration’ entailment is present

RSM with causatives      ⇒      ‘actual duration’ entailment is absent

- Initial hypotheses on the absence of the actual duration entailment with RSM in causatives:
  - perhaps: CAUS brings in a possibility modal, so the result-state is non-actual, too?  
 (Koenig and Davis, 2001; Beavers, 2011; Beavers and Koontz-Garboden, 2020)
  - perhaps: RSM itself optionally has a richer/modal meaning? (Piñón, 1999)<sup>1</sup>
- We argue for an analysis of the latter kind.

<sup>1</sup>We would like to thank Fabienne Martin for bringing this work to our attention!

## 2 What role does (non-)culmination play?

- We have seen above that RSM cannot modify activities. Notably, RSM is able to modify both **potential** and **actual** result states.
    - i.e. it does **not** require an actual successful culmination. Rather, RSM is sensitive to the possibility of culmination. (Tatevosov, 2008; Martin, 2015; Alexiadou et al., 2017; Martin and Schäfer, 2017; Martin, 2019; Gyarmathy and Altshuler, 2020)
- (7) a. Kutu-yu **iki saat-liğine** çatı-ya fırlat-tı-lar.  
box-ACC two hour-RSM roof-DAT throw-PST-3PL  
Lit: ‘They threw the box onto the roof for two hours.’  
≈ they threw the box onto the roof, wanting it to be there for two hours  
≠ *the box ended up on the roof.*
- b. ... ama sert rüzgar-dan, kutu çatı-ya hiç ulaş-ma-dı.  
... but strong wind-DAT box roof-DAT never reach-NEG-PST  
‘... but because of the strong wind, the box never made it to the roof.’
- An actual result state (i.e. culmination) would be necessary for the **actual duration** entailment. But is it also sufficient?

**Test:** Is the actual duration inference cancellable iff the culmination inference is?

- **FACT:** The actual duration inference is still easily cancellable [see: (8b)] when the actual culmination inference cannot be cancelled [see: (8c)]

- (8) a. Kutu-yu **iki saat-liğine** masa-ya koy-du-m.  
box-ACC two hour-RSM table-DAT put-PST-1SG  
‘I put the box on the table for 2 hours.’
- b. ... ama beş dakika sonra annem odasına götürdü.  
‘... but my mother took it to her room after five minutes.’
- c. #... ama kutu hiç masanın üzerinde olmadı.  
‘... but the box was never even on the table.’

**finding:**

Actual duration entailment can be absent even with actual result states!

**interim conclusion:**

The absence of actual duration entailment is not due to a possibility modal in CAUS, which would predict the absence of actual duration entailment only when culmination itself is cancellable.

### 3 RSM is ambiguous, and intentions matter in one of its reading

- We have seen that actual culmination is not sufficient for the actual duration entailment.
  - Both (9) and (10) entail an actual result state. But only (9) has the duration entailment.

- (9) YouTube **iki saat-liğine** çök-tü.  
YouTube two hour-RSM crash-PST.3SG  
Lit: ‘YouTube crashed for 2 hours.’  
⊨ S<sub>1</sub>: YouTube being in crashed state  
⊨ S<sub>1</sub> was 2-hour-long
- (10) Melis kutu-yu **iki saat-liğine** masa-ya koy-du.  
Melis box-ACC two hour-RSM attic-DAT put-PST.3SG  
Lit: ‘Melis put the box on the table for 2 hours.’  
⊨ S<sub>2</sub>: the box being on the table  
⊭ S<sub>2</sub> was 2-hour-long

We argue: RSM itself is ambiguous between a PLAIN reading and a MODAL reading.

- When there is no **intentional** causer as in (9), we have the PLAIN reading.
- When there is an **intentional** causer as in (10), the MODAL reading is possible.

- Prediction: Under intentional causation, too, RSM can have the PLAIN reading. That is, it *can* describe the **actual** duration of a result state, i.e. distinct from the one the agent intended.

Context: Hackers hack YouTube, intending to shut it down *permanently*. But cyber security employees of YouTube manage to restore it 2 hours after the hack.

- (11) Hacker-lar YouTube-u **iki saat-liğine** çök-ert-ti-ler  
Hacker-PL YouTube-ACC two hour-RSM crash-CAUS-PST-3PL  
Lit: ‘Hackers crashed YouTube for 2 hours.’  
⊨ S<sub>1</sub>: YouTube being in crashed state  
⊨ S<sub>1</sub> was 2-hour-long

- Prediction: When the causer cannot have intentions, only the PLAIN reading is possible.

- (12) Volkanik patlama bu şehri **bin yıl-lığına** küllerin altına göm-müş.  
volcanic eruption this city thousand year-RSM ashes.GEN under bury-EVID.3SG  
Lit: ‘The volcanic eruption buried this city under ashes for a thousand years.’  
⊨ S<sub>3</sub>: city being buried under the ashes  
⊨ S<sub>3</sub> was thousand-year-long

## 4 Refining the proposal: dispositions, not intentions.

- There are subtle contexts where RSM has its MODAL reading, even though the actual result state it modifies is not due to intentional causation.

Context: All by accident, I pressed a switch button on a spacecraft, causing the Mars passengers in the resting cabins to cryogenically freeze. That button, when pressed, freezes any human in the cabins, and automatically unfreezes them three months later. Luckily, we didn't have to wait that long. A crew member was able to unfreeze them shortly after they got frozen.

- (13) Mars yolcularını kazara üç ay-lığına don-dur-du-m.  
 Mars passengers.ACC by.accident three month-RSM freeze-CAUS-PST-1SG  
 Lit: 'By accident, I froze the Mars passengers for 3 months.'  
 $\models S_4$ : Mars passengers being frozen  
 $\not\models S_4$  was 3-month-long.

– In this context,

- \* there is an actual result state
- \* there is no intention to cause that result state
- \* and interestingly, RSM has its modal meaning, describing a non-actual duration.

- We argue that the relevant notion is DISPOSITION (which subsumes agentive intentions for animates and physical tendencies for inanimates). (Copley, 2018; Copley and Martin, 2014)
  - the button in the example is programmed to freeze people in the cabins for 3 months.
  - And the RSM is picking up on this disposition.

## 5 A compositional implementation

- We argue that RSM phrases in Turkish are ambiguous and can freely spell out either of the structures below. (cf. nanosyntactic notion of superset (Starke, 2009; Caha, 2009) et seq.)

- (14) a. MODAL reading
- ```

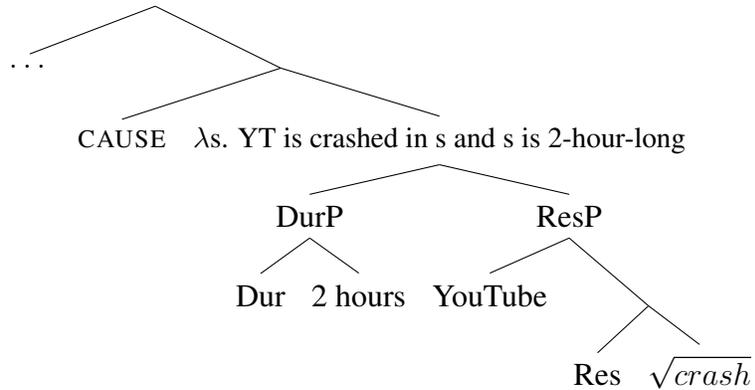
  DisP
  /  \
 Dis  DurP
      /  \
    Dur TimeP
  
```
- b. PLAIN reading
- ```

  DurP
  /  \
 Dur TimeP
  
```

- Both are adjoined as a sister to a RESULTP that denotes a set of states.
  - The composition below draws from Ramchand (2008) and Beavers and Koontz-Garboden (2020), in particular.

- Deriving the PLAIN reading  
: actual culmination  $\rightarrow$  actual duration of the result state

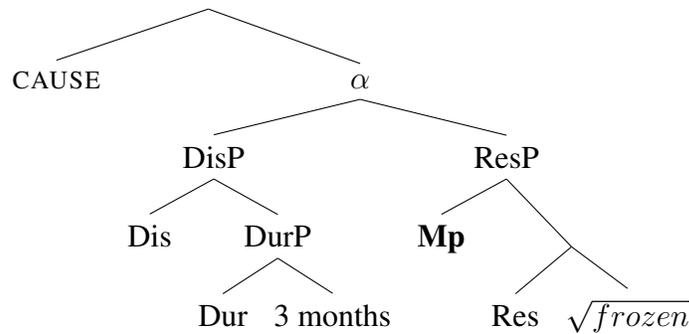
- (15) a. Turkish Lit: ‘Hackers crashed YouTube **for 2 hours**<sub>PLAIN</sub>.’  
 $\models S_1$ : YouTube being in crashed state  
 $\models S_1$  was 2-hour-long
- b.  $\exists e \exists s: \dots e \rightarrow s$  & YT is crashed in  $s$  &  $s$  is 2-hour-long



- Deriving the MODAL reading  
: non-actual duration despite actual culmination

- (16) a. Turkish Lit: I froze the Mars passengers for 3 months.  
 $\models S_4$ : Mars passengers being frozen  
 $\not\models S_4$  was 3-month-long.

b.



- (17)  $[[\alpha]]^{w,c} = \lambda s. \mathbf{Mp}$  is frozen in  $s$  &  
 $\forall w'$ :  $w'$  is compatible with the dispositions of  $X_{\text{disp-holder in } c}$  in  $w \rightarrow$   
 $\exists s'$  in  $w'$  such that  $\mathbf{Mp}$  is frozen in  $s'$  and  $s'$  is 3 month long

- We tentatively suggest that a contextually relevant disposition holder ( $X_{\text{disp-holder in } c}$ ) is retrieved, which, remarkably, doesn't have to be syntactically present.
  - We believe it to be likely that whose dispositions matter is pragmatically resolved.

## Appendix

### Lexical Entries

- (18)  $\llbracket \text{Dur} \rrbracket = \lambda t. \lambda s. s \text{ is } t\text{-long.}$
- (19)  $\llbracket \text{Dis} \rrbracket^{c, w} = \lambda P_{\langle s, t \rangle}. \lambda Q_{\langle s, t \rangle}. \lambda s. Q(s)=1 \wedge \forall w': w' \text{ is compatible with the dispositions of } X_{\text{disp-holder in } c} \text{ in } w \rightarrow \exists s' \text{ in } w' \text{ such that } P(s)=Q(s)=1$
- (20)  $\llbracket \text{res} \rrbracket = \lambda Q. \lambda x. \lambda s. x \text{ has the property } Q \text{ in } s$
- (21)  $\llbracket \text{CAUS} \rrbracket = \lambda P_{\langle s, t \rangle}. \lambda e. \exists s: e \rightarrow s \ \& \ P(s)=1$

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