1. Introduction
Language contact affects the lexicon, grammar and pronunciation [1]. There is little work on the impact of language contact on intonation change. In Asia Minor, Greek and Turkish speakers cohabited for centuries, until 1923 (The Treaty of Lausanne).

2. Research questions
Broaden: How does language contact shape intonation?
Here: Compare the polar and continuation tunes in Athenian Greek, Cappadocian Greek (AMG) and Turkish.

3. Materials and method
- Natural speech corpus: audio recordings of Athenian (312 utterances), AMG (737) and Turkish (484).
- $f_0$ was measured every 10 ms using ESPS get_f0. 10th-order polynomials $f_0 = 2a_nx^n$ were fitted to $f_0$ contours using GNU Octave polyfit function; pitch errors were inspected and corrected. Maxima and minima were calculated from the roots of the derivative of $f_0$.
- Phonological landmarks in the standard AM model [2, 3] were used as guidelines for delimiting regions of interest (r.o.i.): Polars: from the $f_0$ trough before /ml/ to the utterance end (Turkish); from the nuclear L* trough to the utterance end (Greek).
- Continuation rises: from the $f_0$ trough before the final lexical stress to the end (Turkish); from the $f_0$ minimum before the nuclear stress to the phrase end (Greek).
- $f_0$ contours in the r.o.i. were modelled as 4th-order orthogonal (Legendre) polynomials [4].
- Alignment measures. Polars: $\Delta t$ between first $f_0$ peak in r.o.i. and start time of relevant vowel. Continuation rises: $\Delta t$ between initial $f_0$ minimum (beginning of the near-final rise) and the beginning of the nuclear stressed vowel (Greek) or final lexical-stressed vowel (Turkish).
- Statistical significance of differences between the varieties was tested using t-tests.

4. Illustrations (median contours re c2)

4.1. Polar tunes
In Athenian L* LH- L% [5, 6], the nucleus aligns with a trough, e.g. [Baˈlɛtə ⟨eːnaŋ kəˈfe⟩] ‘Would you like a coffee?’
In Turkish, the nuclear word before the question particle /ml/ ends in a peak [7, 8], e.g. [bilˈjo muˈsun] ‘Do you know?'
Like Turkish, AMG aligns the nuclear syllable with a rise (LH), e.g. [moˈnaʃiʃ ta emaˈbəs aˈfə] ‘Did you learn these on your own?’

4.2. Continuation tunes
In Athenian L* L%= [9], the nucleus aligns with a trough and it is followed by a rise, e.g. [triˈaːda ⟨aˈtema muˈipane⟩] ‘Thirty people told me…'
In Turkish, the H* on the nuclear word is followed by a LH- [10], e.g. [maˈsaja oˈturməndan] ‘Before sitting at the table…'
In AMG, like in Turkish, the H* on the nuclear word is followed by a LH- [11], e.g. [duˈ safus ⟨iəhuməst⟩] ‘We sit in their shadow…'

5. Shape characteristics (based on the linear and quadratic polynomial coefficients)
 Athenian: downward slope, concave upwards rise from an L* near the end.
 Turkish: upward slope, concave downward pre-final rise-fall.
 AMG: Like Turkish, upward slope, concave pre-final rise-fall (near-final H peak).

6. Alignment
Athenian: The vowel is generally located at least 2 syllables before the final peak.
Turkish: The /ml/ vowel and the peak are tightly coupled; lexical stress is marginally earlier
AMG: The vowel in general is very near the final peak. The timing is similar to Turkish.

7. Discussion
The shape and alignment details of AMG tunes look more like Turkish than Athenian.

7.1. Polar questions
These are dissimilar in Greek and AMG. In Turkish, the nuclear peak aligns with the stressed syllable before the question morpheme (/ml/), but no such morpheme exists in Greek. In Athenian, there is a trough on the nuclear syllable. In continuation rises, there is a trough on the nuclear vowel in Athenian, but a peak in Turkish.
These findings suggest that in both poles and continuation rises, AMG resembles Turkish both in the nuclear shape and the location of the peak. Also like Turkish, AMG aligns an H pitch with the stressed syllable, as opposed to Athenian, where there is an L on the stressed syllable.

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