Introduction
Developmental change in acquisition of sound categories: non-native discrimination declines, native contrast discrimination maintained, improved or learned (Werker & Tees, 1984; Safran et al., 2006). Lexical stress discrimination develops after 6 months for learners of variable languages (but not fixed stress languages, Skoruppa et al., 2009, 2011). Lexical tone discrimination performed at 4-6 months whether distinction is native or not, only maintained at 9 months in the former (Mattock & Burnham, 2006; Mattock et al., 2008). Rising/falling Japanese pitch accent discriminated by French newborns (Nazzi et al., 1998), but by Japanese infants only at 6-8 months (Sogabe et al., 2006). There are few studies of developmental course of infants’ perception of linguistic intonation. Across languages, statements and yes-no questions are marked both by prosodic means: by the nuclear contour, and more specifically the boundary tone (declarative: H+L*L% vs. question: H+L*LH%), with longer durations of nuclear and post-nuclear syllables in questions (Frota, 2002). Perception tests showed that this prosodic contrast is perceived by adult native speakers (Falé & Faria, 2005).

The present study
We examined 5-6 and 8-9 month old infants’ perception of declarative and yes-no questions in European Portuguese – a language that marks this sentence type contrast only by prosodic means: by the nuclear contour, and more specifically the boundary tone (declarative: H+L*L% vs. question: H+L*LH%), with longer durations of nuclear and post-nuclear syllables in questions (Frota, 2002). Perception tests showed that this prosodic contrast is perceived by adult native speakers (Falé & Faria, 2005).

Research Question
Is infants’ discrimination of intonation maintained (akin to lexical tone discrimination), learned (akin to lexical stress or pitch accent discrimination) or neither (as in Soderstrom et al.’s results), in a language where intonation processing is crucial to sentence type distinctions?

Methodology
Participants
32 infants; 16 younger (M = 5 months 24 days), 16 older (M = 8 months 15 days)

Stimuli
Segmentally varied one-word utterances produced by a female native speaker in infant-directed speech.

Habitation trials stimuli:
- mala, lamo, melo, rono, rono, narr, narr

Test trials stimuli:

Acoustic data:
- Boundary tone difference L% for declaratives, mean±163 Hz; LH% for questions, mean±380 Hz.
- Longer duration of yes-no questions (236 ms longer on average)

Procedure
- Infants tested using the visual fixation paradigm (Stager & Werker, 1997)
- Habituated with lists of nonwords, half the infants habituated with declarative, half with question intonation
- Test phase presented infants with a list of different nonwords in both declarative and question intonation
- Presentation of test stimuli counterbalanced between infants (same/switch trial first)
- Look software was used (Meints & Woodford, 2008)
- Looking times recorded and compared

Results
- Significant difference between same and switch test trials (F(1,30) = 48.5, p < .001, n² = 62)
- No effect of group (F(1,30) = 3.78, p = .061, n² = 11)
- No interaction between trial and group (F(1,30) = 3.93, p = .057, n² = 12).
- However, age effect is borderline: older infants seem to become disinterested in the task quicker, as shown by younger infants displaying significantly longer average looking times to the first 4 habituation trials – 1 (30) = 2.78, p = < .01

Discussion
- Results show infants learning European Portuguese demonstrate a discriminate ability for the statement/question prosodic contrast as early as 5 months.
- This ability is maintained during the first year (akin to lexical tone development).
- Recent research has shown that this intonation contrast is used by 1 and 2 year olds when learning novel word-object pairs, at odds with native language word-level phonology (Frota et al., 2012), suggesting that it is a very salient contrast in the language.
- This early discrimination ability may facilitate the acquisition of the grammar of declarative sentences and yes-no questions, given the relation between intonation and the grammatical distinction in sentence type, in European Portuguese.

Figure 1: Test stimuli examples

Figure 2: Attention stimuli

Figure 3: Example participant, habituation phase

Figure 4: Average looking times (secs) to the same/switch test trials, across the two age groups

References