

THESIS PROJECT:
INTONATIONAL DEVELOPMENT AND YES-NO
QUESTIONS: EVIDENCE FROM PUERTO RICAN
AND
PENINSULAR SPANISH

Meghan Armstrong
Thesis director: Pilar Prieto

Presentation outline

1. Intonational development: prior claims
2. Goals
3. Yes-no question intonation in Peninsular and Puerto Rican Spanish
4. Why questions?
5. Preliminary findings
6. Hypotheses
7. Theoretical framework & methods
8. Thesis organization
9. Pending questions

Intonational development – previous claims

- At cooing stage: infants make robust generalizations to comprehend and reproduce intonational categories that will become relevant later for utterance segmentation and for specifying the meaning of the phrases in the larger discourse context (Beckman, 2003).
- Mampe et al. (2009) French and German infants with a mean age of 3.1 days show F0 contours characteristic of the salient contours in their respective languages (rising for French, falling for German) in their cries
- These studies conclude that acquisition of intonation starts very early, in fact *in utero*

Intonational development – previous claims

- Aspects of intonation are fully developed prior to the onset of first words (Bever, Fodor & Weksel 1971; Locke 1983)
- Production of intonation develops across linguistic stages (Galligan 1987; Marcos 1987; Snow 2006) – there is a dramatic shift in conjunction with linguistic shifts towards grammatical production
- Correlation between intonational development and lexical development (Frota & Vigário 2008; Prieto et al. submitted)

Intonational development – previous claims

- Contour-type matters: there are universals in the order of acquisition of rising vs. falling F0 contours (Crystal 1986; Loeb & Allen 1993; Snow 1994; Snow & Stoel-Gammon 1994; Lleó & et al. 2004; Fikkert & Chen 2007; Balog & Brentari 2008)
- Contour-type doesn't matter: Spanish- and Catalan-acquiring children favor rising contours for yes-no questions (Thorson et al, 2009)

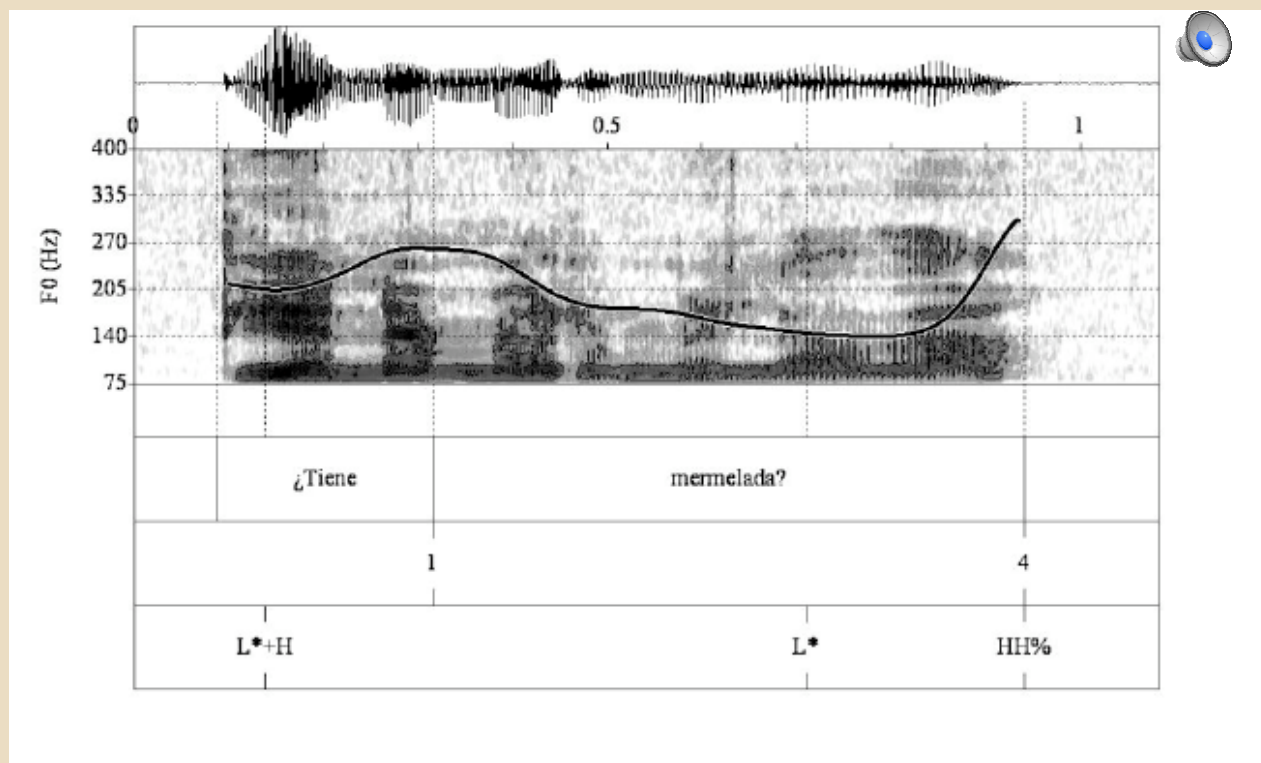
Intonational development – AM framework

- Small but emerging body of research of intonational development (Prieto & Vanrell 2007; Fikkert & Chen 2007; Frota & Vigário 2008; Prieto et al. submitted) within the Autosegmental-Metrical (AM) framework (Pierrehumbert, 1980; Ladd 1996/2008; Gussenhoven 2004; Jun 2005)
- Use of AM framework facilitates cross-dialectal and cross-linguistic study: what can a cross-dialectal study tell us about intonational development in toddlers?

Project goals

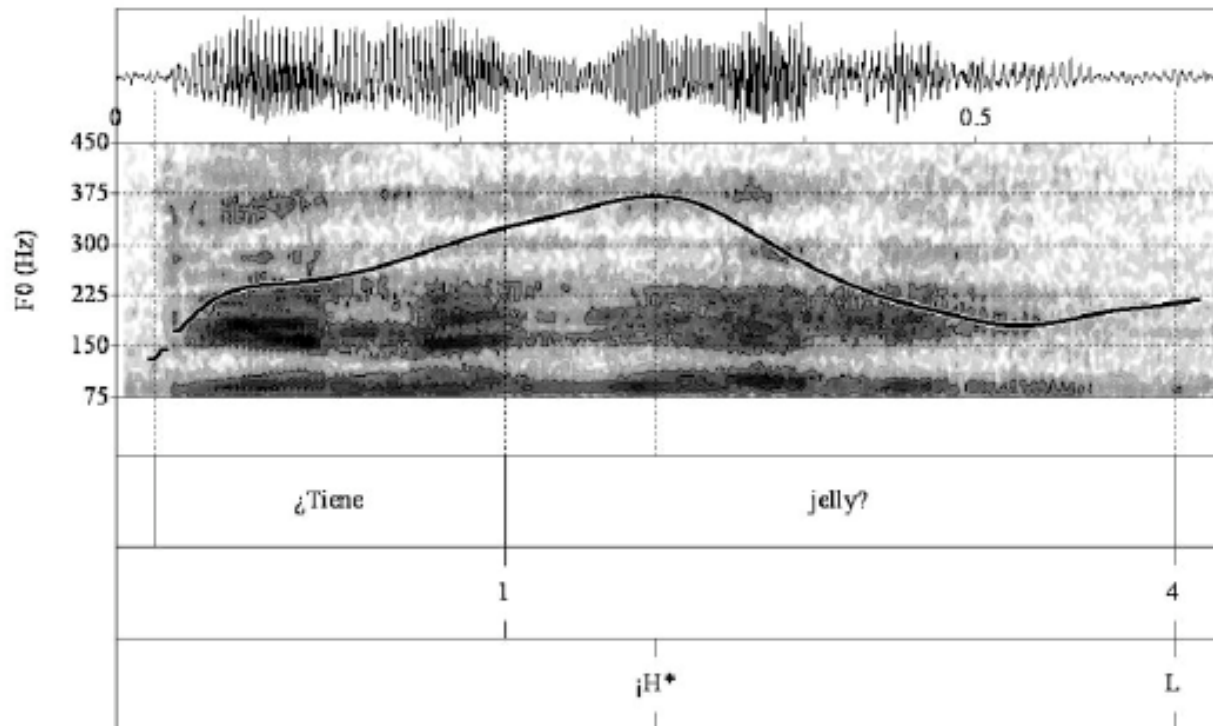
- Provide a principled account of how intonational grammar develops, specifically investigating **what can we learn from a cross-dialectal comparison of children who are capable of communicating intentions** (older than 9-10 months, c.f. Balog & Brentani, 2008)
- Compare the intonational development of yes-no questions for child acquirers of Peninsular Spanish (PS) and Puerto Rican Spanish (PRS) taking into consideration the input for these speakers (the child-directed speech of their caretakers)
- Exploit fundamental differences found between dialects at two levels for **yes-no questions**: 1.) the **phonological categories** found for each dialect as well as their **phonetic implementations** 2.) the **pragmatic meaning** encoded by the phonological categories for each dialect

PS vs. PRS – question contours



Typical broad focus yes-no question, PS
¿Tiene mermelada?
Nuclear configuration: L* HH%

PS vs. PRS – question contours

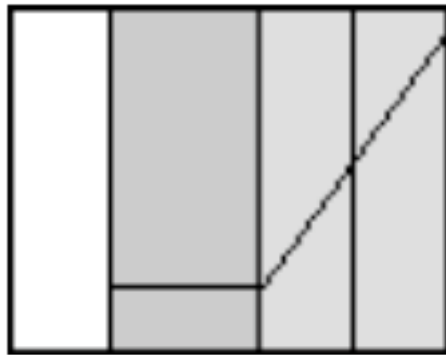


Typical broad focus yes-no question, PRS

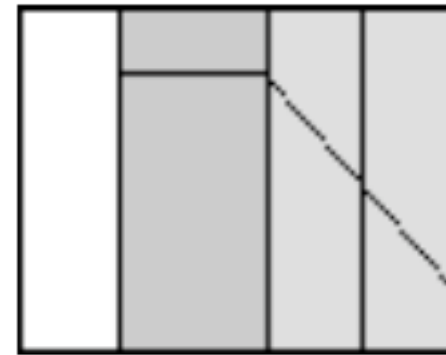
¿Tiene jelly?

Nuclear configuration: iH* L%

Broad focus yes-no questions: PS vs. PRS







L* HH% - PS



iH* L% - PRS

Forms & meanings for questions in PS and PRS

Meaning	Peninsular Spanish	Puerto Rican Spanish
Broad focus	L* HH%	iH* L% 
Broad focus - polite	H* M%	iH* H% 
Echo	L+iH* L% 	L+iH* L% 
Confirmation	H+L* L% L* H%	H+L* L%
Counter-expectation	L+H* HH% L* H%	L* HL% (incredulous)
Tags	L* HH%	L*HH%



= form-meaning pair shared between dialects



= scaling essential for phonetic implementation of category

What can questions tell us about intonational development?

- **The issue of contour direction and acquisition** (i.e. the still widely-held belief that rising contours are more difficult to acquire than falling ones)
- Fundamental difference between dialects helpful to observe any differences/parallels in acquisition of yes-no questions for children acquiring these dialects

What can questions tell us about intonational development?

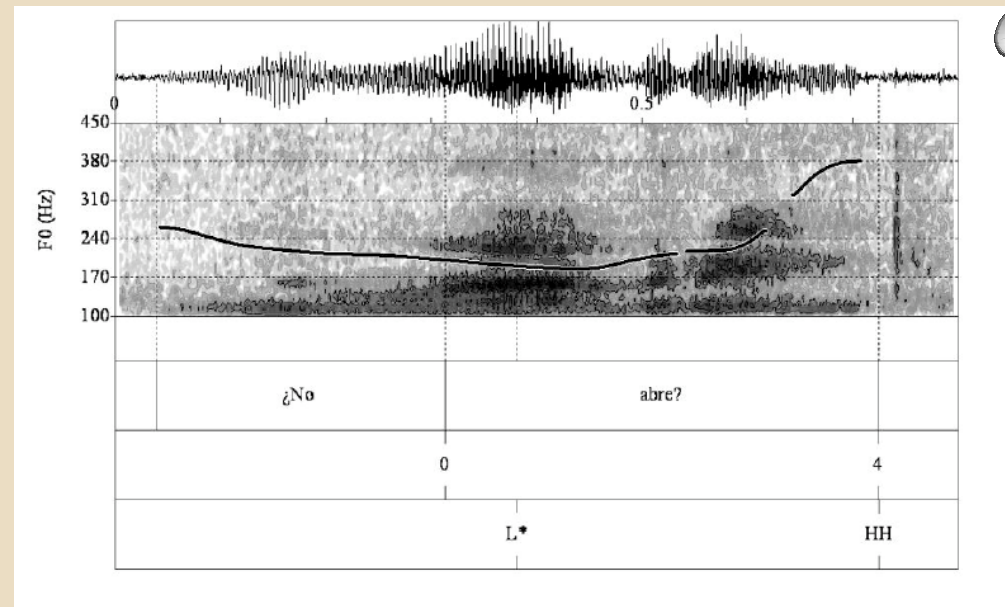
- **Phonetic implementation** – Toddlers have been shown to be less adult-like in the terms of tonal scaling for Catalan and Spanish monolinguals (Prieto et al., submitted) as well as Spanish-German and German-Spanish bilinguals (Lleó & Rakow, in press)
- In PRS, pitch height is exploited for utterance type – e.g. the height of the nuclear pitch accent makes the difference between a broad focus question and a narrow focus statement (with focus on the last word in the utterance) in PRS, echo questions in both dialects; rise vs. high rise in PS
- Compare scaling production for PS- vs. PRS- acquiring children – how do the actual phonological categories in the language variety affect a child's phonetic implementation?

What can questions tell us about intonational development?

- **Form/meaning associations:** Do children make adult-like form-meaning associations for questions in both dialects given what we know about the pragmatic uses of questions for both dialects (Prieto & Estebas-Vilaplana 2010; Escandell-Vidal 1998; Armstrong 2010a, Armstrong 2010b)?
- If child production is not found to be adult-like, can this be attributed to the child or does the behavior reflect non-canonical production in child-directed speech (CDS)?

Preliminary findings

- Evidence for non-canonical contour use in PRS
CDS: non-canonical L* HH% category found for
CDS yes-no questions



Non-canonical confirmation yes-no question, PRS

¿No abre?

Nuclear configuration: L* HH%

Preliminary findings

- This non-canonical usage was significantly more frequent at age 1;7 (1 non-canonical use every 1.93 minutes during 116 minutes of recording) than it was at 2;10 (1 non-canonical use every 22 minutes during 111 minutes of recording)
- Variability in the input: preliminary finding suggests that the input may include “moving targets” – how does the child respond to these?
- If there is variability in the input, what does this mean for child production? How does the child make generalizations when different contours are being used for the same meaning (i.e. children get both the canonical and the non-canonical contour in the input)

Hypotheses

1. Since it is possible that child-directed speech changes across the acquisition cline (variation in some of the input the child receives), we may indeed find changes in the child production across the cline that reflect the changes in the input (Estigarribia 2010)
2. The use of L*HH% for questions by PRS caretakers may be to keep utterance types separate (Estigarribia 2010; Snow 2006) (falling contours for both questions and declaratives) – no variation across the cline for PS?

Hypotheses

3. Based on similarities in contour distribution between child speech and CDS for PS and Catalan (Thorson et al 2009), child production should continue to mirror adult production across the cline (i.e. at different points)
4. Even though it has been found that toddlers are sometimes not adult-like in their production of scaling, it is possible that they may still produce relative differences in scaling in order to preserve meaning

Theoretical framework – intonational analysis

- Autosegmental-Metrical (AM) Framework (Pierrehumbert 1980; Jun 2005; Gussenhoven 2004; Ladd 1996/2008, among many others)
- Tonal prominences are designated as high (H) and low (L) tones (maybe be tonal or bitonal)
- Pitch movements associated with metrically strong syllables in an utterance = pitch accents
- Bitonal pitch accents: Starred tone (L* or H*) is primarily associated with the stressed syllable, while an additional high or low tone may be secondarily associated with either the pretonic or the posttonic syllables.

Theoretical framework – intonational analysis

- Pitch movements associated with boundaries = boundary tones, mark end of prosodic units – intermediate and intonational phrases
- Current Sp_ToBI system (Estebas-Vilaplana & Prieto, 2008) allows mid-level tones (M) as well and boundary tones with complex pitch movements.

Methods: Materials

- Peninsular Spanish: Ojea corpus and López-Ornat corpus (*CHILDES*): two PS- acquiring children, Irene (Oviedo dialect) and María (Madrid dialect) and their caregivers.
- Puerto Rican Spanish: Cross-linguistic Early Syntax Study (CLESS) (Lillo-Martin & Snyder 2002) from the University of Connecticut and the University of Puerto Rico at Río Piedras corpus (Hernández & Cabrera, 2002): two PRS-acquiring children, Ana (Mayagüez dialect) Cristina (San Juan dialect). The first child's data comes from the former corpus from Puerto Rico and the second from the latter.

Methods: Participants

Child	Age	Dialect
Irene	0;11 – 2;10	Peninsular
María	1;7 – 2;10	Peninsular
Ana	1;7 – 2;10	Puerto Rican
Cristina	2;2 – 2;10	Puerto Rican

Methods: Utterance identification

- Speech-like utterance: group of vocalizations separated by: 1.) turn taking, a 1 sec. pause (Balog & Brentari, 2008; Branigan, 1979) 2.) interjection of a non-speech-like vocalization (laughing, coughing – Stoel-Gammon, 1989)
- For categorization of **meaningful utterances**: follow Snow 2006 and Prieto et al. (submitted) based on 4 criteria: (1) some phonetic relation to an adult-based word, (2) appropriate use in context, (3) consistency, and (4) the parent's confirmation that the child's utterance was meaningful.

Methods: Pragmatic analysis

- “Pragmatic language skills have traditionally been difficult to measure consistently in young children. This challenge makes it difficult to establish links between early productive speech/language behaviors (e.g. intonation) and communicative intentions” (Balog & Brentari, 141).
- Establish a principled methodology for coding so that the communicative intention can be established by the coder ***independently of the intonational contour***

Pragmatic analysis: context evaluation

Gaze	Manual gesture	Facial gesture	Other physical gesture
<ul style="list-style-type: none">•Interlocutor? Discourse referent?•Checking or fixed gaze?	Reach, point, give, show (Capircia et al, 1996)	Describe (brow raise, furrowed brows, etc. – use Facial Action Coding System?)	describe


Pragmatic analysis: context evaluation

Information status	Discourse referent	Syntax/constructions	Response
(some combination of) discourse new, hearer new, discourse old, hearer old (Prince, 1981)	<ul style="list-style-type: none">•Present/not present•Attention to referent (interlocutor 1, interlocutor 2)	<ul style="list-style-type: none">•Is there some indication in the syntax or use of constructions which indicates utterance modality or question type (e.g. tags like ¿eh? and ¿verdad?	<ul style="list-style-type: none">•Is there a response to the question? What kind?

Transcription in Phon

Media Management

Media: ANA05.mov



10:00.948 -12:09.582

Play scene

Date/Participants

Session Date: 2010-07-07

Participants

Name	Age

Search Options

Record: 1 Speaker: 2

Orthography
[¿Fate?]

Gaze
[Looks between mother's eyes and object]

Manual gesture
[Reaches in direction of toy elephant while opening and closing palm]

Facial gesture
[N/A]

Other physical gesture
[N/A]

Information status
[discourse new, hearer new]

Discourse referent
[elephant]

Syntax/construction
[N/A]

Response
[Mother replies "¿Quieres el elefante?"]

Question type
[Request]

< Record: 1 of 1 > Tier Management

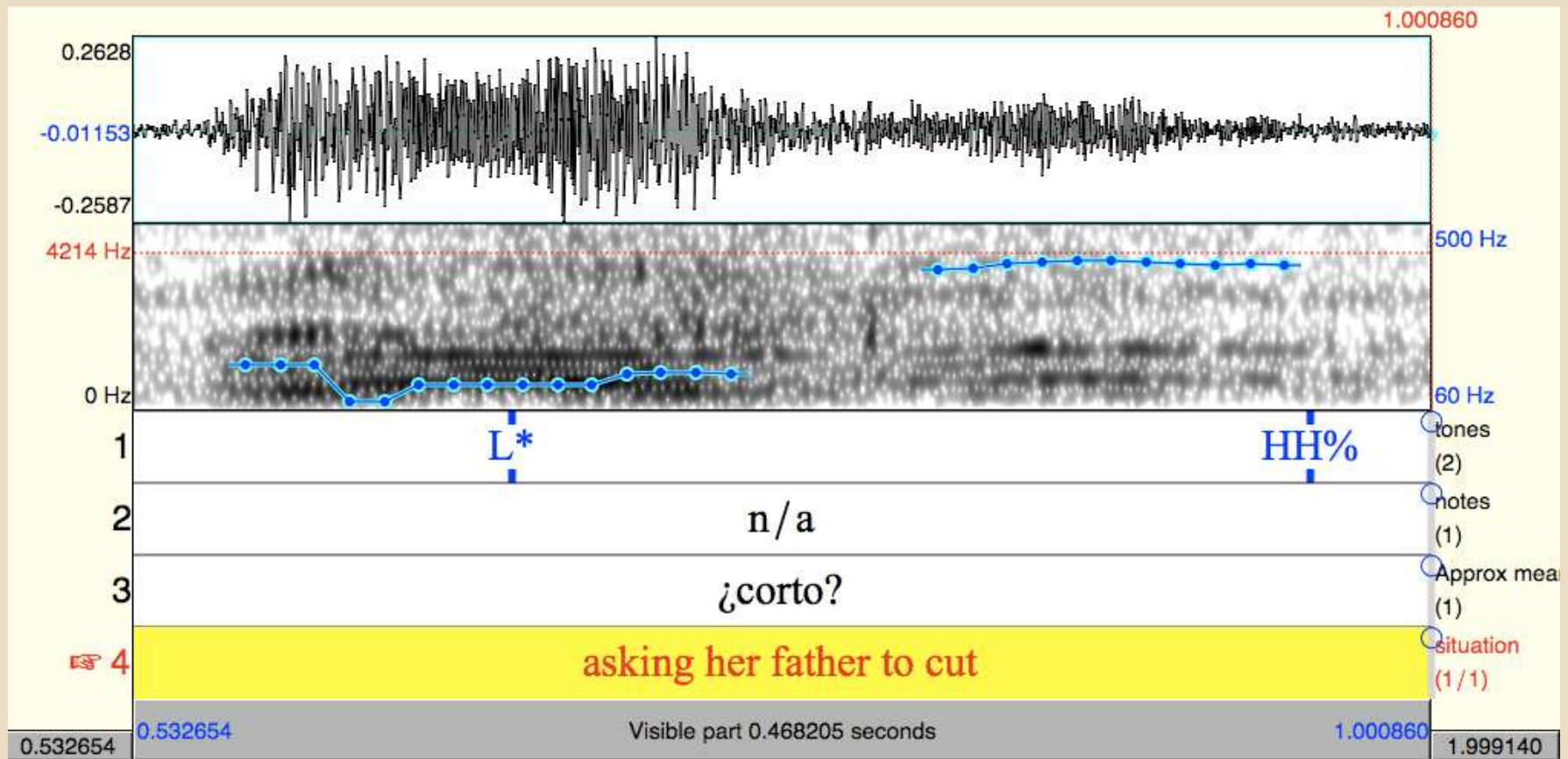
Methods: pragmatic analysis

- The composite of the contextual evaluation will allow for a decision regarding question category:
- Broad focus yes-no questions
- Narrow focus yes-no questions
- Confirmation-seeking questions
- Questions used to make offers
- Questions used to make requests
- Echo questions
- Counter-expectation questions

Methods: intonational analysis

- AM framework
- Child speech and CDS will be prosodically labeled using Praat (Boersma & Weenink, 2010) based on most recent accounts of Peninsular and PRS for adult speech (Prieto & Estebas-Vilaplana, 2010; Armstrong, 2010).
- Any differences in phonetic implementation will be noted in the Praat textgrid

Methods: intonational analysis



Thesis organization

- Chapter 1: review literature and lay out goals
- Chapter 2: contrastive analysis of yes-no questions in Peninsular and Puerto Rican Spanish
- Chapter 3: theoretical framework and methods
- Chapter 4: analysis of CDS
- Chapter 5: analysis of child data
- Chapter 6: conclusions

Open issues

- Theoretical framework for acquisition – lexical acquisition?
- Perception experiment

Perception experiment

- Soderstrom et al (2010)- do infants use intonation early in development to discriminate declaratives from questions (American English)?
- In a single-screen habituation task (4.5 – 24 mo. olds) – both declarative group and question group had a question preference
- When low-pass filtered – familiarity preference – marginal increase in looking to same
- Question biased when stimuli are heard as language?

Perception experiment - ideas

- Goal: show when infants are able to make form meaning mappings for questions
- Possibilities: use habituation or MMN to assess how infants/toddlers relate gestures or facial expressions related to questions
- Perhaps larger situational contexts?
- Look at how question-like gestures are associated with question intonation vs. declarative intonation
- Use other languages that have similar vs. different question contours – e.g. American English vs. Brazilian Portuguese



□ Gràcies/Gracias/Obrigada/Thank-you!