Introduction

Early word segmentation abilities play a crucial role in language acquisition (word learning and syntax). These abilities are good predictors of later language outcomes (Newman et al. 2006).

Segmentation abilities in typically developing infants (TD) shown to vary across languages. They also depend on the context of the word in the utterance.

- Ability to segment monosyllabic words emerges at 7.5 months for English-learning infants (Jusczyk & Aslin, 1995), but at 6 months when word located at utterance edge, Johnson et al. (2014); only between 7-9 months for German infants (Höhle & Weissenborn, 2005) and at 6 months for Spanish/Catalan infants (Bosch et al., 2013).

Studies on early segmentation abilities of infants with Down Syndrome are rare.

- Suggests that these abilities are strongly delayed (at least for English, Mason-Apps et al., 2011).

Method

Participants

| TD: 5-6 months | 20 infants (11 boys, mean age 6m 3d, range 4m 19d – 7m 11d) |
| DS: 6 infants between 7m 25d and 20m 24d. Split into 2 groups, 7-11m and 12m+ |
| 7-11m, mean age 9m 20d, range 7m 25d – 11m 6d |
| 12m+, mean age 16m, range 12m 26 – 20m 24d |

Materials

Materials: 4 monosyllabic pseudo words: Ful, Queu, Pis, Sau.

Embedded in sentences either in the middle or at the end

2 passages constructed for each word, one for middle (word or lower phrase boundary) and one for end (higher phrase edge)

A Marta pôs o seu ful na mesa.
Fizemos a ful da carne.
Os vizinhos brincam com o teu ful.
Estão sempre a falar-nos do ful.
Eles viajaram muito de ful.
Quero adorar bolachas e ful.
Os anões adoram bolachas e ful.
O Teó desenho um ful.
Os anões adoram bolachas e ful.

Procedure

Visual familiarization (Altvater-Mackensen & Mani, 2013)

Listening times to each sequence type (familiarised End, familiarised Medial, Novel) were measured, averaged over the three blocks.

Results

5-6 months

Significant effect of item status (Familiar End, Familiar Medial, Novel) - F(2,38) = 13.24, p < .001, η² = .41

Paired T-Tests:
- Familiar End and Familiar Medial (t(19) = 3.38, p < .01)
- Familiar End and Novel (t(19) = 4.72, p < .001)
- Familiar Medial and Novel (t(19) = .91, p = .37)

8-9 months

Significant effect of item status (Familiar End, Familiar Medial, Novel) - F(2,38) = 18.72, p < .001, η² = .47

Paired T-Tests:
- Familiar End and Familiar Medial (t(19) = 3.44, p < .01)
- Familiar End and Novel (t(19) = 6.71, p < .001)
- Familiar Medial and Novel (t(19) = 2.12, p < .05)

Discussion

EP learning infants at 5-6 months are able to segment continuous speech only when the word is located at the utterance edge (in line with recent findings for English learning infants, but against those with Spanish/Catalan infants showing segmentation at 6 months).

At 8-9 months, EP infants able to segment words in the middle of sentences, but still demonstrate an advantage for words at the edge.

Preliminary findings with DS infants between 7-11 months showed an end effect, demonstrated by a novelty preference (Possibly delayed in comparison with TD infants).

After 12 months, DS infants show a mixed pattern with end and/or middle segmentation, approaching the TD pattern.

Suggests that DS infants able to use prosodic cues in early segmentation, similar to TD infants >> Potential impact on early intervention to support language development.