

Speech perception tasks as an instrument for early diagnosis of developmental language disorders: a test-retest reliability study of the HPP procedure

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Introduction

- The Head-Turn-Preference paradigm (HPP) has been commonly used to assess speech perception in infants. However, only a few published studies have assessed the reliability of speech perception tasks (Houston et al.; 2007, Cristia et al.;2016).
- Infants are able to discriminate stressed from non-stressed syllables (Sansavini, Bertoncini & Giovanelli, 1997). Most German words have trochaic pattern (the stress is on the first syllable) and 6-month-old German infants already show a preference for the trochaic stress pattern (Höhle et al. 2009).
- The ability to process prosodic information might be crucial to detect word boundaries and might consequently affect later lexical development. Classical speech perception tasks might be potential predictors for later language development.

Main goal and hypothesis

- Assessment of the reliability of the HPP procedure, as well as the stability of the infants' pattern of preference, and how this consistency might be related to later language vocabulary outcomes.
- Expectation of (1) trochaic bias and (2) high correlations between infants' performance across the three sessions.

Methods and procedure

Participants: 38 German monolingual infants

Stimuli: 10 CVCV /gaba/ sequences, with trochaic or iambic pattern (used in Herold et al., 2008; Bijeljac-Babic, Höhle & Nazzi; 2016).

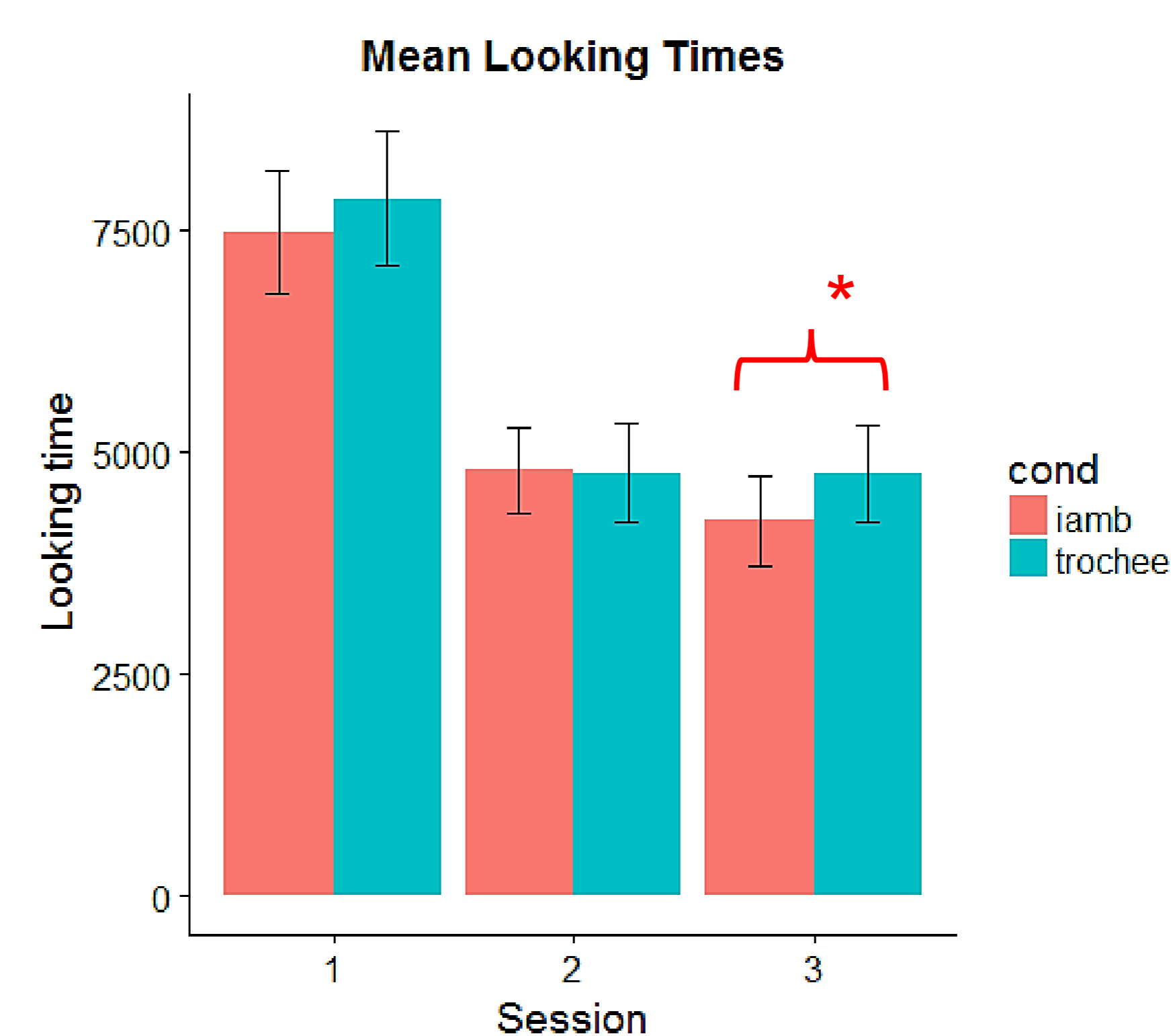
Procedure:
Headturn Preference Paradigm (HPP) as in Hirsh-Pasek et al.,(1987).
Language assessment test: ELFRA-1/2 parent questionnaire (Grimm & Doil, 2006)

	Session 1	Session 2	Session 3	ELFRA-1 test
Age range	6;01-6;18	6;08-6;25	6;13-7;01	~12;0
Mean age	6;10	6;18	6;30	
Distance (in days)		+ 7,23 (range 6-10)	+8,39 (range 4-11)	

REFERENCES:

- Houston, Horn, Qi, Ting, and Gao (2007). Assessing speech discrimination in individual infants. *Infancy*, 12, 119–145
- Cristia et al.(2016). Test–Retest Reliability in Infant Speech Perception Tasks. *Infancy* 21, 648-667.
- Sansavini, Bertoncini & Giovanelli (1997). Newborns discriminate the rhythm of multisyllabic stressed words. *Developmental Psychology* 33(1), 3-11.
- Grimm, H. & Doil, H. (2006). ELFRA. Elternfragebögen für die Früherkennung von Risikokindern. Göttingen: Hogrefe.
- Herold, Höhle, Walch, Weber, & Obladen (2008). Impaired word stress pattern discrimination in very-low-birthweight infants during the first 6 months of life. *Developmental Medicine and Child Neurology*, 50, 678–683.
- Bijeljac-Babic, Höhle & Nazzi (2016). Early Prosodic Acquisition in Bilingual Infants: The Case of the Perceptual Trochaic Bias. *Frontiers in Psychology*, 7.
- Hirsh-Pasek, K., Kemler Nelson, D. G., Jusczyk, P. W., Wright Cassidy, K., Druss, B., & Kennedy, L. (1987). Clauses are perceptual units for young infants. *Cognition*, 26(3), 269-286.
- Höhle, B., Bijeljac-Babic, R., Herold, B., Weissenborn, J., & Nazzi, T. (2009). Language specific prosodic preferences during the first half year of life: Evidence from German and French infants. *Infant Behavior and Development*, 32(3), 262-274.

Results and conclusions

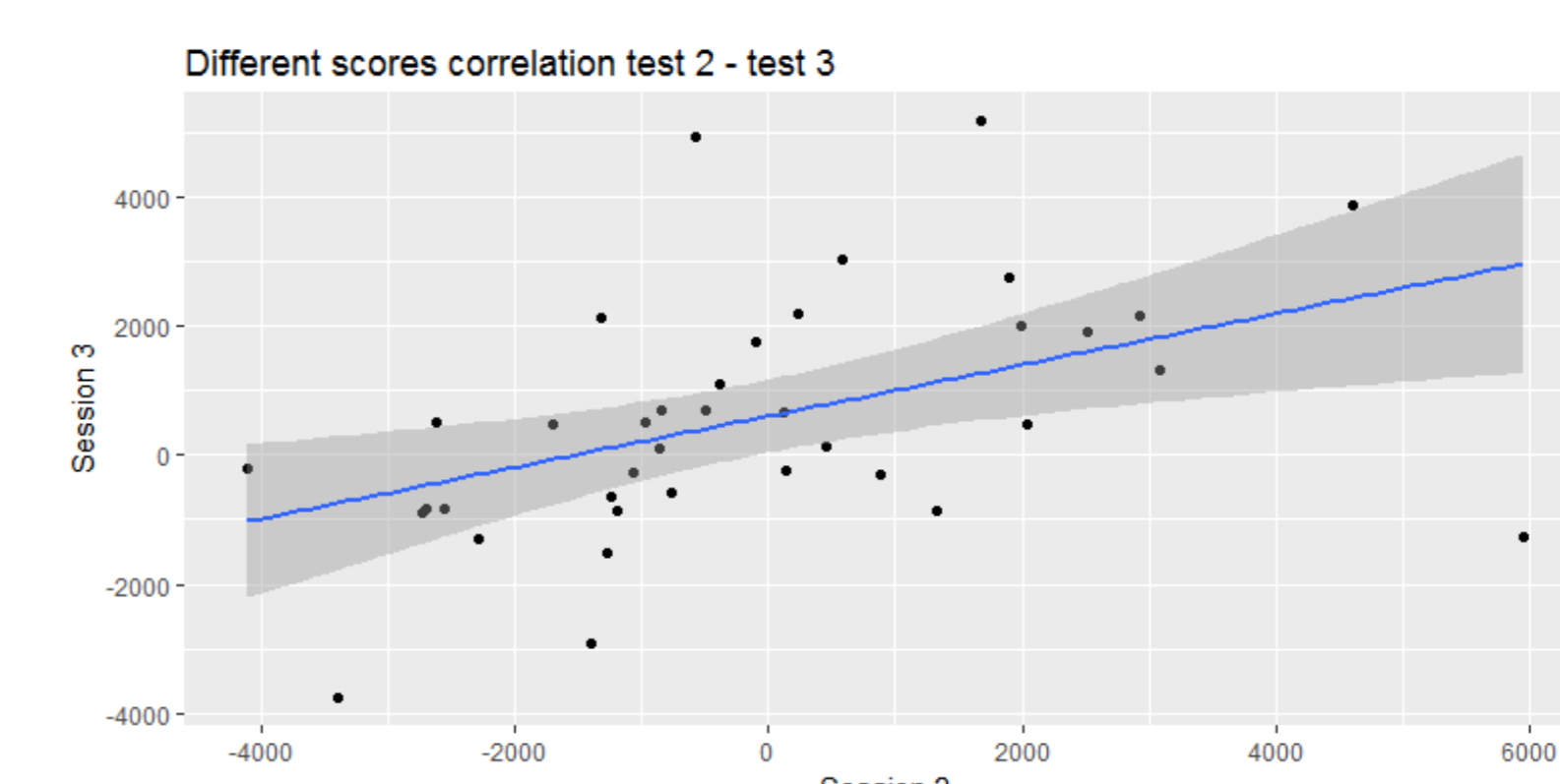


- Significant preference for the trochaic bias only in the third session

→ age distribution in the groups?

- Correlation between the looking times in all the test sessions

Raw scores	IAMBS		TROCHEES		Difference scores		TROCHEES - IAMBS	
	Rho	p-value	Rho	p-value	Rho	p-value	Rho	p-value
Session 1 – 2	0.32	0.024*	0.42	0.004*	0.19	0.127		
Session 2 – 3	0.47	0.0015*	0.53	0.0003*	0.50	0.0003*		
Session 1 – 3	0.31	0.028*	0.31	0.025*	0.07	0.31		



- No correlation found between looking times and ELFRA-1 (n= 35) (ELFRA-2 on-going, 24 months).
- Decrease in looking times between Session 1 and the other two.
- High reliability of the procedure: high correlations between tests in raw scores, but there was a less clear pattern with difference scores.

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