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Preterm children`s language abilities at different ages and their relations with other factors

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During the last few years the number of studies of language development in preterm children (PR) has had an surprising increment. Over time, the results of longitudinal studies carried out with PR children have offered interesting information on which factors play a determinant role in language acquisition. However, the panorama of studies is not without controversy. There have been differences in the research findings among investigations, probably due to differences in the characteristics of the samples studied.

The present symposium tries to go more deeply into the knowledge of oral and written language development of PR children and those factors which affect it.

The papers focus on children with different characteristics in terms of degree of prematurity, and age of assessment. In some cases, the data come from longitudinal studies which are still in progress.

The papers represent complementary and differing perspectives. The aim of the symposium is to stimulate discussion on the topic.

Presenters:

1. Bosch, L., Teixidó, M., Solé, J. (University of Barcelona)
2. Astra Schults & Tiia Tulviste (University of Tartu)
3. Miguel Pérez-Pereira (University of Santiago de Compostela), Manuel Peralbo & Alberto Veleiro (University of A Coruña)
4. Annalisa Guarini, Paola Bonifacci, Valentina Tobia, Mariangela D'Antuono, Nicole Trambagioli, Felicia Roga, Margherita Barbieri, Alessandra Sansavini (University of Bolonia)

1. Early word segmentation and mapping in preterm infants: data from an audiovisual task

Bosch, L., Teixidó, M., Solé, J.

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Typically-developing Spanish- and Catalan-learning infants can extract two simple (monosyllabic) word-forms from fluent speech by six months of age. However, when infants born preterm were tested with the same paradigm it was not until eleven months of age (corrected for gestation) that this auditory-only task could reliably be solved. At that age, preterm participants were eventually showing the expected novelty preference at test, the preference pattern found in younger full term infants (8-month-olds). Because an early ability to segment speech and extract possible words to be linked to referents is fundamental in the process of building a first lexicon, we decided to further analyze these segmentation and mapping abilities in a population of healthy preterm infants. Results from a sample of moderate preterm infants (33.8 mean gestation weeks) will be reported, as performance on the auditory-only task by a previously tested moderate preterm group had revealed clear gains in segmentation between 8 and 11 months of age. An audiovisual task was designed using natural language utterances in infant-directed speech, containing repetitions of two different words, and simple geometrical shapes as referents for these words. Critically, during familiarization the

shapes on the screen moved aligned with word onsets, favoring not only segmentation but also word-object mappings. At test, fixation time to target objects was measured while both objects remained static on the screen and repetitions of the two words were successively played for four test trials. Results from two groups of 9-month-olds (N=20 in each group) differing in gestational age at birth (full term vs. moderate preterm) revealed a highly significant difference ($p < .001$), with only full term participants showing mean target fixations significantly different from chance (60% vs. 49% in the preterm group). Factors responsible for preterm's failure to solve this double segmentation and mapping task will be discussed.

2. Estonian preterm and full term children's early vocabulary

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Child development, including language development can be influenced by preterm birth. The aim of the present study was to compare the size of early vocabulary, use of word categories, and mean length of utterance of Estonian preterm and full term children. The sample consisted of 40 preterm (corrected ages 16–25 months) and two matched groups of full term children. First full term group consisted of 120 children who were matched to the preterm children by age and gender. Second full term group consisted of 109 children who were also matched to the preterm children by age and gender but in addition to that they were matched by size of productive vocabulary. The data were gathered using the Estonian adaptation of MacArthur–Bates Communicative Development Inventory: Words and Sentences. Full term children who were matched by age and gender only had larger vocabulary as compared to the preterm children's vocabulary ($U = 1758.5$, $p = 0.01$). Poisson regression yielded that age, gender, and preterm birth explained significantly the variance in the vocabulary size. As to the use of word categories, Poisson regressions showed that the same three variables explained significantly variance in proportional use of social terms and predicates. Age alone had significant effect for proportional use of common nouns. Both, age and preterm birth had a significant effect on the proportional use of function words. MLU was shorter in preterm than in full term children ($U = 1125.0$, $p = 0.002$). Estonian preterm children's vocabulary was slightly smaller than full term children's vocabulary. There was a difference in the proportions of word categories used, as preterm children used more social terms, and less predicates, and function words. When the size of the vocabulary was matched the differences between preterm and full term children's language development did not appear.

3. Executive functions and language development in preterm and full-term children

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The present study aims to compare one group of preterm children (PR) and another group of full-term (FT) children in their executive functions (EFs) and cognitive and linguistic abilities, and to study possible predictors of language development.

Extremely and very preterm children were found to show deficits of small to moderate magnitude in certain EF tasks as compared to full-term children. It still must be determined if these deficits also affect low risk preterm children. Relationships between EFs and language development are well known, particularly those concerning working memory.