COMMUNICATION AND LANGUAGE DELAYS IN PRETERM CHILDREN: EARLY SCREENING AND PARENT-COACHING INTERVENTION

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Theoretical background

Preterm birth (defined by a gestational age- GA- <37 weeks) is a frequent phenomenon: 10-12% on international estimates (Blencowe et al., 2012) and 7% on national estimates (Sansavini & Faldella, 2013). The interaction among biological, environmental and social risk factors that characterize preterm infants may cause delays in several psychological domains, with a wide heterogeneity of individual profiles (Sansavini, Guarini & Caselli, 2011; Vohr, 2014).

With respect to communication and language, long-term adverse effects of preterm birth have been shown: communication and language delays characterize about one-fourth of preterm infants at 24-30 months, and increase to one-third at preschool age persisting up to school age and adolescence (Barre et al., 2011; Sansavini et al., 2010, 2011; van Noort-van Der Spek 2012), frequently resulting in learning and relational difficulties (Aarnoudse-Moens et al., 2009; Guarini et al., 2010; Rose et al., 2011). Early screening and evaluation are thus needed to identify those preterm infants with communication and language delays, who could benefit from an intervention within daily contexts. In Italy, screening projects for communication and language delays between 2 and 3 years of age have been scarce so far (Bello et al., 2014) and not specifically addressed to preterm children. Early screening (Zubrick et al., 2007) and the consequent lowering age of the first assessment is recommended for decreasing the risk that language difficulties will reverberate on school abilities and psychosocial well-being (Leonard, 1998; St Clair et al., 2011) and for implementing more effective and shorter interventions (Roberts & Kaiser, 2011). The effectiveness of early interventions relies also on a scaffolding role played by the adult (McCauley & Fey, 2006). In particular, “dialogic joint reading”, when the parent takes inspiration from the child's interests, sustaining and encouraging his/her active participation in “reading” and talking on a joint focus, has been demonstrated as a privileged context for language improvement for children with language delays (Girolametto et al., 1996; Pile et al., 2010). The above interventions have been conducted in English speaking countries, whereas are lacking on the Italian population and have never been specifically proposed for preterm children.

Aims/Hypotheses

Aim 1: Identifying preterm children with communicative-linguistic delays at 30 months through the implementation of an on-line screening with reference to Italian normative data and a comparison group of at term children. It is hypothesized to find lower linguistic scores and a significant higher percentage of children delayed in communication and language at 30 months in the preterm than in the at-term comparison group. The identification of children screened as delayed will be confirmed by a communication and language assessment, combining innovative and standardized tools.

Aim 2: Implementing a pilot randomized parent-coaching intervention to reduce communication and language delays of preterm and at term children. It is hypothesized that preterm children delayed in communication and language may benefit from a parent-coaching intervention, as expected for linguistically delayed at term children, with an improvement in language developing trajectories after the intervention with respect to those delayed not included in the intervention.

Methods

Participants

Fifty preterm children (gestational age <37 weeks) and a control group of 100 full-term children born at the Obstetric Clinics of the University Hospital in Bologna, balanced by gender, parental education level and exposure to the Italian language (with at least one Italian native-speaker parent). Data on health status and medical complications will be taken from the medical records.

Tools and Procedure

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**T1- 30 months. On-line screening.** The Primo Vocabolario del Bambino- PVB- Words and Sentences questionnaire (Caselli et al., 2015) filled in online by the parents. A vocabulary size ≤ 10th percentile will identify children at risk for language delay.

**Pre-intervention.** Children identified as at risk (expected: 25-30% of the preterm children, Sansavini et al., 2011, and 10-15% of the at-term children, Caselli et al., 2015) will be assessed with several linguistic measures to confirm language delay, and with an audiological examination and the Bayley III scales (Bayley, 2006) to ascertain absence of auditory deficits and cognitive delay. Linguistic measures: PiNG test (Bello et al., 2010) to evaluate lexical comprehension and production. This test will be computerized and presented through a touch screen; eye-movements will be also recorded through an eye-tracker to obtain a measure of lexical processing (Marchman et al., 2016). Sentence Repetition Test (PRF, Devescovi & Caselli, 2007) to evaluate mean length of utterance –MLU. An interview to obtain the linguistic biography of the infant and the Abilità socio-conversazionali del bambino- ASBC- questionnaire (Bonifacio et al., 2013) to evaluate pragmatic skills will be administered to the parents. A 5 minutes joint reading episode will be recorded to analyze parents' communicative strategies and spontaneous child linguistic measures (Gherardi et al., 2007).

**31-33 months. Intervention for parents of children with language delay.**

By applying a randomized procedure, parents of half of the children identified as delayed in language will be offered a standardized parent-coaching intervention to promote language (Girolametto et al., 2017). The intervention will be conducted by a psychologist and a speech therapist and will include 6 group meetings of 2 hours each with parents at a weekly frequency. Parents will document joint reading activities with their children through a daily diary and two videotapes and will receive weekly feedback by the psychologist and the speech therapist.

**T2- 33 months- Post-Intervention, and T3- 36 months –Follow-up.**

A linguistic evaluation will be carried out using the same tools as in the pre-intervention phase for all children assessed as delayed at the pre-intervention. Children whose language delays will not be recovered will be sent to speech therapy services.

A formal approval by the Hospital Research Ethical Committee and parental informed written consent for participation to the study will be requested.

**Statistical analyses**

**Aim 1-** to verify whether the two groups (preterm vs at term) differ on PVB lexical size an ANOVA, and on linguistic delays (no delay vs delay) a chi-square analysis, will be conducted. **Aim 2-** to verify whether children with language delay modify their linguistic measures (PVB lexical size, PiNG measures, MLU, ASCB scores, child measures at the joint reading episode) from T1 to T2 and T3 in function of condition (intervention vs no intervention) and birth status (preterm vs at term), repeated measure ANOVAs will be conducted; to model individual growth trajectories on the above linguistic measures in terms of rate of growth from T1 to T2 and T3 growth curve analyses will be conducted (Sansavini et al., 2014).

**Expected results and Implications**

Providing an on-line screening through the PVB questionnaire will facilitate the identification of preterm and at term children delayed in language and the tracing of their linguistic profiles, expecting significant lower scores and a higher percentage of language delays in preterm children. Implementing a pilot randomized parent-coaching intervention will allow to verify whether it modifies the profiles of the children delayed with an improvement in lexical, morphosyntactic and pragmatic skills with respect to those delayed not included in the intervention, for both preterm and at term children. These findings will allow for the preterm population a better knowledge on language delays, the extension of the online-screening at regional and national levels, and new evidences on the effectiveness of parent-coaching intervention to reduce language delays. Eventually, this model could be extended to other populations at-risk for language delays.