Title: Maternal Characteristics Associated with Language Outcomes of Children Born at Less Than 32 Weeks Gestational Age

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Introduction: Prematurity is the most common cause of infant mortality and long-term neurological morbidity (Phillip, 1995). Premature infants are born at risk for developmental difficulties such as verbal memory deficits (Taylor et al., 2000a), attention-deficit disorder (Chandola et al., 1992), and learning disorders or other cognitive deficiencies (Litt et al., 2005). However, the most common negative outcome of low birth-weight is a language delay (Msall & Tremont, 2000). Several environmental factors have been examined in relation to low birth-weight infant outcomes, but the single best predictor of children’s cognitive and language abilities has been the child rearing environment (Pianta & Egeland, 1994). The purpose of the current study was to determine the impact of specific maternal characteristics (e.g., depression, language ability, parental self-efficacy, etc.) on both receptive and expressive language outcomes for children born weighing less than 1500 grams.

Method: Participants for this study were part of a cohort of infants delivered prior to 32 weeks gestation with a mean weight of 1192.91 grams or approximately 2 lbs. 6 oz. Two hundred two maternal/infant pairs completed the assessment. Primary caregivers were asked to complete a battery of measures that assessed their receptive language, vocabulary, and reading skills (Peabody Picture Vocabulary Test 3rd edition, PPVT-III, and the Wide Range Achievement Test-III, WRAT-III), any psychological problems or symptoms of psychopathology that they may be experiencing (Symptom Checklist-90-Revised and the Beck Depression Inventory-II), their perception of their child’s behavior (the Child Behavior Checklist-Revised and the Connor’s Rating Scales-Revised), and any parent-child relationship factors that could impact child development (the Parenting Stress Index-3rd edition). Each child was also given a battery of tests. The child was asked to complete the Wechsler Intelligence Scale for Children-IV (WISC-IV), specific subsets of the NEPSY (a developmental neuropsychological assessment), and the core battery of the Clinical Evaluation of Language Fundamentals, 4th Edition (CELF-IV). For children who were not yet six-years-old or were unable to complete the WISC-IV, the Differential Ability Scales (DAS) was given. The sequence of the three tests that each child completed was randomized to overcome any possible effects of fatigue.

Results: Structural equation modeling (SEM) SEM was used as a strictly confirmatory analysis. This approach means the model is tested using goodness-of-fit indices to ascertain if the pattern of variance and covariances in the data are consistent with a model specified by the researcher. The model was constructed with expressive and receptive language as the outcome variables and the other observed and latent variables were the predictor variables. After trimming all non-significant pathways, the fit of the trimmed model was excellent (e.g., GFI = 96, AGFI = .92, etc.). A chi-square-difference test in relation to the baseline model showed that the fit of the trimmed model was as good as the baseline model $\chi^2 (11, N=202) = 3.556, p > .25$. The final trimmed model shows that child’s intelligence quotient (IQ) and parental self-efficacy contribute directly to the child’s language outcomes. Child’s IQ exerts a direct influence on the child’s receptive language outcomes (standardized coefficient = .75) and expressive outcomes (standardized coefficient = .33). Parental self-efficacy has a direct effect on both expressive (standardized coefficient = .09) and receptive language outcomes (standardized coefficient = -.09). Maternal language, birth-weight, and maternal depression did not directly influence the child’s receptive or expressive language skills. However, there may be some indirect effect due to their relationship with IQ and parental self-efficacy.

Discussion: Parental self-efficacy did affect the child’s language outcomes and maternal depression was directly related to both maternal language ability and self-efficacy. For this reason, interventions that focus on decreasing maternal depression, increasing positive mother/infant interactions, and improving parental self-efficacy could lead to improvements in premature infants’ outcomes.

References/Citations:
