RJA 18 and 24 as Predictors of 36-month Language and Cognitive Outcomes in a Sample of Children at Risk Due to Cocaine Exposure

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Introduction

- Joint attention (JA) is the capacity of an infant to coordinate attention with a play partner in relation to an object. These skills, which normally originate in the first year of life, have been consistently linked to language outcomes in typically, at risk, and atypically developing populations.
- Why is JA educationally relevant? A previous study linked 18-month JA measures to teacher reports of school outcomes in the first grade in a high risk sample of children (Acra, 2005) and reported that higher RJA significantly predicted higher teacher rated social competence and lower teacher rated school problems in the first grade via its relation to cognitive and language development.
- The proposed study will investigate the relationship between measures of Responding to Joint Attention (RJA) at 18 and 24 months and 36 month language and cognitive outcomes. We were interested in seeing whether RJA measured at 24 months predicted the 36 month outcomes above and beyond the 18 month RJA measures.

Method

Participants

- A sample of 70 infants (41 females and 29 males) was taken from a much larger sample of infants who had prenatal cocaine exposure and were receiving early intervention.
- These infants had been assigned to one of three groups (CB = the group receiving services at the center, HB = the group receiving home visiting services, PC = the comparison group receiving primary care services).
  - Of the 70 infants in this sample, 34 were in the CB group, 21 were in the HB group, and 15 were in the PC group.
- The majority of the sample were African American and of low socio-economic status.

Procedure

- Language and cognition at 36 months were measured via the Reynell Developmental Language Scales (RDLS) and the Bayley Scales of Infant Development (BSID).
- RJA was coded in the context of the ESCS (Early Social-Communication Scales).
- During RJA trials the administrator tries to acquire the attention of the child vis-à-vis three pictures each placed on different sides of the play room (to the right, to the left, and behind the child).
- The administrator first sings a song to the child and then proceeds to gently tickle the child three times. The administrator then calls out the child's name as she (the administrator) points to her nose and then once again calls out the child's name three times while turning and pointing to the poster that is to the right of the child. This sequence is repeated for the left and behind trials.
- During each head turn trial, the administrator maintains her gaze on the referent object. The right, left, and behind trials are repeated at the end of the ESCS, so that the child has the opportunity to complete a total of six trials (two for each looking direction).

Coding

- The 18 and 24 month RJA trials were coded from video recordings for all 70 children.
- Trials were coded as correct if the child's first gaze or head turn was in the same direction as that of the administrator.
- For each child the number of correct trials was summed and divided by the total number of trials administered.

Results

Group Differences

Means and standard deviations for predictors and outcomes are presented in Table 1. Univariate ANOVAs were run to examine group differences on the outcome variables by gender and treatment group. The only significant group differences were for treatment group on expressive language $F(2, 64) = 4.79$, $p < .05$.

Table 1

Variables	Mean	Standard Deviation
RJA 18	76.63	24.74
RJA 24	86.14	19.87
RDLS-R 36	80.50	13.46
RDLS-E 36	79.20	17.69
BSID-MDI 36	86.53	11.67

RJA 18 Predicting Language and Cognition at 36 months

Linear regression analyses revealed that RJA at 18 months predicted both receptive language (β=.30), F (1, 68) = 6.822, $p < .05$ and cognitive abilities (β =.36), F (1, 68) = 10.147, $p < .01$ at 36 months. RJA 18 explained 9.1% of the variance in receptive language and 13% of the variance in cognition. After controlling for the effect of treatment group, RJA at 18 months was not predictive of expressive language.

RJA 24 Predicting Language and Cognition at 36 months

In order to examine the incremental variance that RJA at 24 months contributes to the prediction of receptive language and cognition at 36 months, two hierarchical linear regressions were run with RJA 18 included as the first predictor. After controlling for the effects of RJA at 18 months, RJA at 24 months did not significantly predict either receptive language or cognitive abilities at 36 months (see Figures 1 & 2)

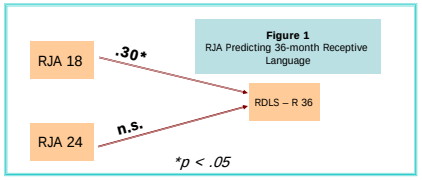

Figure 1
RJA Predicting 36-month Receptive Language

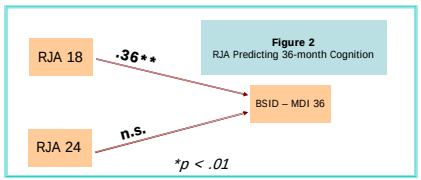

Figure 2
RJA Predicting 36-month Cognition

Discussion

In our preliminary study, RJA 18 was a predictor of both cognitive and receptive language. RJA 18, however, did not predict expressive language scores, after controlling for treatment group. Additionally, RJA 24 did not significantly predict any of the outcomes above and beyond RJA 18.

This study is part of larger effort that will aim to examine JA skills in a population of children at risk due to prenatal cocaine exposure. Further research in JA skills in a cocaine exposed population is warranted as future findings may help investigators further understand how JA skills manifest in this group of children who is at high risk for language delays. Such findings may in turn inform interventions designed to improve language outcomes and consequently school outcomes in this population.

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