

Introduction

Expressive language delay at 24 months old is a predictor of developmental language disorder at 4 years old (Dale, Price, Bishop & Plomin, 2003). However, at 24 months old there is wide variation of language skills (Fenson et al., 2007) and many children with expressive language delay at this age will resolve by age 5 years (Paul & Roth, 2011).

Despite ongoing research efforts to identify early predictors, even the strongest combinations of predictors cannot be used to predict individual outcomes with confidence at age 2 years (Rescorla, 2011).

Can we look closer at the interaction between parent and child to predict later language outcomes?



Image by Amber McAuley from Pixabay

The back and forth communication between adult and child is mutually supportive and provides the opportunity for language learning and advances in the child’s language (Camarata & Yoder, 2002).

- Adult responsivity:
- Responses which are prompt, sensitive and contingent to infant signals (Landry, Smith and Swank, 2006)
 - Responsivity is correlated with higher language outcomes over time (Tamis-LeMonda, Bornstein & Baumwell, 2001)

Could the quality and quantity of child responses to adult responsive utterances be an important predictor?

More child responses provides more opportunities for their parent to respond and therefore map new linguistic forms and promote language development.

Many children aged 24-30 months are minimally verbal, therefore both linguistic and non-linguistic (non-verbal and vocalisations) communication should be included.

Hypothesis
Non-linguistic and linguistic child responses (measured at 24-30 months) to responsive utterances from their parents will predict the children’s later language outcomes (measured at 36-42 months).

Method

- Participants**
- 80 children (65% boys)
 - A subset of the *Learning to Talk* participants (see Klee, Stokes and Moran, 2015 for details)

- Procedures**
- All children were assessed at the Child Language Centre, University of Canterbury. Other time points and measures were completed for the original study but are not reported here. The following assessments were administered:
- Time 1 (aged 24-30 months)
- Preschool Language Scales: Fourth Edition (PLS-4)
 - 20-minute language sample was video recorded of parent-child interaction whilst playing with a standard set of toys
- Time 3 (aged 36-42 months)
- Preschool Language Scales: Fourth Edition (PLS-4)

Data coding
An SLT student watched the middle 10 minutes of each video as many times as was needed to complete video coding using an Excel spreadsheet. Codes used are displayed in Table 1.

| Table 1: Adult and child video codes | |
|---|---|
| Adult | Child |
| Responsivity: <ul style="list-style-type: none">• Responsive• Not responsive | Response to adult responsive Q or D: <ul style="list-style-type: none">• Linguistic• Non-verbal• Vocalisation |
| Question (Q) | |
| Description/comment (D) | Length of linguistic utterance |

Results

Average ages:
Time 1: 26.79 months (sd: 1.7) and Time 3: 45.20 months (sd: 1.9)

Average PLS-4 expressive language standard scores:
Time 1: 109.68 (sd: 22.46, range: 65-150) and Time 3: 118.77 (sd: 16.16, range: 70-148)

| Table 2: Bivariate correlations between Time 1 child communication predictors and Time 1 and Time 3 expressive language scores | | |
|--|-------------------------|-------------------------|
| Time 1 Predictors (in response to adult responsivity) | Time 1 PLS-4 EC SS n=80 | Time 3 PLS-4 EC SS n=79 |
| Child total linguistic responses (L) | .55** | .55** |
| Child total vocalisation responses (NL) | -.40** | -.08 |
| Child total non-verbal responses (NL) | -.42** | -.09 |
| Child MLU linguistic responses (L) | .69** | .46** |

Note. **. Correlation is significant at the 0.01 level (2-tailed). PLS-4 EC SS = PLS-4 Expressive Communication Standard Score; MLU = Mean Length of Utterance; L = linguistic; NL = non-linguistic.

These results show moderate to strong correlations between both linguistic measures at 24-30 months and expressive language at Time 1 and Time 3 (p < 0.01).

The non-linguistic measures (vocalisation responses and non-verbal responses) were moderately negatively correlated with expressive language at Time 1 (p < 0.01), however, no correlation was seen at Time 3.

Conclusions

- Results did not confirm our hypothesis
- Early linguistic responses were predictive of concurrent and later language outcomes
- Early non-linguistic responses were not predictive of concurrent and later language outcomes
- Negative correlations between non-linguistic responses and concurrent expressive language results suggests that children who use more non-linguistic communication have reduced expressive language at 24-30 months. This likely reflects the typical progression from non-linguistic to linguistic communication in children.

Limitations
Inter-rater reliability for video coding is still underway.

Continuing Research

- It is possible that the wide range of linguistic abilities in the 24-30 month sample provided a confound in this study
- Non-linguistic communication might be a better predictor of later language outcomes in the late-talker group

This study will be repeated with a sample of late-talkers.

References

Camarata, S., & Yoder, P. (2002). Language transactions during development and intervention: Theoretical implications for developmental neuroscience. *International Journal of Developmental Neuroscience*, 20(3-5), 459-465.

Dale, P. S., Price, T. S., Bishop, D. V. M., & Plomin, R. (2003). Outcomes of early language delay: I. predicting persistent and transient language difficulties at 3 and 4 years. *Journal of Speech, Language, and Hearing Research*, 46(3), 544-560.

Fenson, L., Marchman, V. A., Thal, D. J., Dale, P. S., Reznick, J. S., & Bates, E. (2007). *MacArthur-Bates Communicative Development Inventories* (2nd ed.). Baltimore, MD: Brookes.

Klee, T., Stokes, S. & Moran, C. (2015). *Early factors in childhood communication disorders: Final project report*. Marsden Fund of the Royal Society of New Zealand.

Landry, S. H., Smith, K. E., & Swank, P. R. (2006). Responsive parenting: Establishing early foundations for social, communication, and independent problem-solving skills. *Developmental Psychology*, 42(4), 627-642.

Paul, R., & Roth, F. P. (2011). Characterizing and predicting outcomes of communication delays in infants and toddlers: Implications for clinical practice. *Language, Speech, and Hearing Services in Schools*, 42(3), 331-340.

Rescorla, L. (2011). Late talkers: Do good predictors of outcome exist? *Developmental Disabilities Research Reviews*, 17(2), 141-150.

Tamis-LeMonda, C. S., Bornstein, M. H., & Baumwell, L. (2001). Maternal responsiveness and children's achievement of language milestones. *Child Development*, 72(3), 748-767.