



Dissociable Effects of Attention and Parent-Child Interaction on Language Acquisition

Scott H. Fraundorf¹, Brad E. Sheese², Lauren K. White³, Mary K. Rothbart⁴, & Michael I. Posner⁴

1: University of Illinois at Urbana-Champaign, 2: Illinois Wesleyan University, 3: University of Maryland, 4: University of Oregon



This study demonstrates dissociable effects of cognition and parent-child interaction on language acquisition. Longitudinal laboratory measures assessed attention and self-regulation in infants at 6 to 8 months and attention, parenting quality, and vocabulary at 18 months. Executive attention predicted productive vocabulary and parenting did not mediate this relationship.

INTRODUCTION

How does executive attention benefit language acquisition?

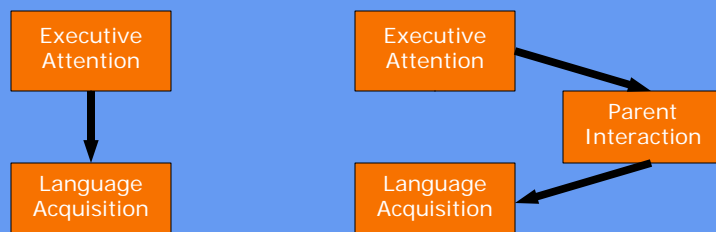
Past findings...

- Laboratory measures of executive attention at 6-8 mos. predict productive vocabulary at 18-21 mos. (Sheese et al., 2007)
- Parent reports of executive attention at 13 to 20 mos. predict productive vocabulary at 20 mos. (Dixon & Smith, 2000)
- Interesting because most cognitive measures do not strongly relate to language acquisition (Dale, 2000)

RESEARCH QUESTION & HYPOTHESES

What is the mechanism of this facilitation?

Two possibilities (Dixon & Smith, 2000):



Executive attention may directly help with attending to labels and mapping them onto world

No direct benefit, but executive attention helps with parent interactions needed for acquiring language

METHOD

Children ($N = 54$) visited the laboratory twice:
6 to 8 months 18 to 20 months

VOCABULARY ASSESSMENT (AT 18 TO 20 MONTHS)


- Productive vocabulary scale of the MacArthur CDI—Words & Gestures Short Form (Fenson et al., 2000)

PARENT-CHILD INTERACTION (AT 18 TO 20 MONTHS)


- Ten-minute free-play session
- Coded using scales from NICHD Study of Early Child Care (1993)

METHOD: SELF-REGULATION & EXECUTIVE ATTENTION


MASK PRESENTATION (AT 6 TO 8 MONTHS)

- View 3 mildly distressing animal masks for 45 s each 
- Assess frequency of distressed face response
- Distress predicts later executive attention, may indicate rudimentary attentional development (Sheese et al., 2007, 2008)

TOY PRESENTATION (AT 6 TO 8 MONTHS)

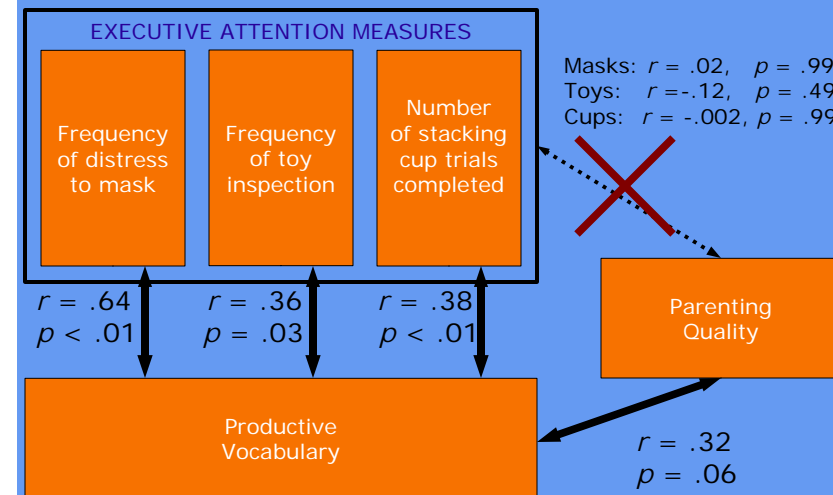
- Presented with 3 small toys for 45 s each 
- Assess time spent examining toys without physically interacting with them
- Also predicts later executive attention (Sheese et al., 2007, 2008)

STACKING CUP TASK (AT 18 TO 20 MONTHS)

- Can child assemble all cups correctly? 
- Requires planning & error detection
- Trials 1 & 2: 5 cups; Trial 3: 6 cups
- Adapted from DeLoache, Sugarman, & Brown (1985)

RESULTS

Correlations, partialling out age and gender...



CONCLUSIONS

- Both executive attention and parenting predict vocabulary
- But attention and parenting are uncorrelated!
- Parenting does NOT mediate the executive attention / language relationship
- Dissociable effects of cognition and parent-child interaction on language acquisition

ACKNOWLEDGEMENTS

This research was supported by Dana Foundation Grant for the Arts and National Institute for Mental Health grant HD 38051. Scott Fraundorf was supported by National Science Foundation Graduate Research Fellowship 20070532211.

Send questions or comments to sfraund2@uiuc.edu

REFERENCES

Dale, P. S., Dionne, G., Eley, T. C., & Plomin, R. (2000). Lexical and grammatical development: A behavioural genetic perspective. *Journal of Child Language*, 27, 619-642.

DeLoache, J. S., Sugarman, S., & Brown, A. L. (1985). The development of error correction strategies in children's manipulative play. *Child Development*, 56, 928-939.

Dixon, W. E., & Smith, P. H. (2000). Links between early temperament and language acquisition. *Merrill-Palmer Quarterly*, 46, 417-440.

Fenson, L., Pethick, S., Renda, C., Cox, J. L., Dale, P. S., & Reznick, J.S. (2000). Short-form versions of the MacArthur Communicative Development Inventories. *Applied Psycholinguistics*, 21, 95-116.

NICHD Early Child Care Research Network. (1993). The NICHD Study of Early Child Care: A comprehensive longitudinal study of young children's lives. ERIC Document Reproduction Service No. ED3530870.

Sheese, B. E., Fraundorf, S. H., White, L. K., Rothbart, M. K., & Posner, M. I. (2007). Language development and executive attention in infancy. Poster presented at the biennial meeting of the Society for Research in Child Development, Boston, MA.

Sheese, B. E., Rothbart, M. K., Posner, M. I., White, L. K., & Fraundorf, S. H. (2008). Executive attention and self-regulation in infancy, *Infant Behavior & Development*, doi:10.1016/j.infbeh.2008.02.001