



The longitudinal predictive significance of maternal sensitivity for infant attachment cognitions

Rylie Putrich, Madeline Patrick, Yanfei Yu, Chenyuan Li, Tingyan Liu, Kristy vanMarle, Ashley M. Groh, Yuyan Luo
University of Missouri-Columbia, USA



Introduction

One of the key mechanisms by which attachment is theorized to impact adjustment is internal working models (IWMs; Bowlby, 1973). However, little is known about the content and nature of IWMs in infancy (Luo et al., 2024; Sherman et al., 2015).

Only recently studies have explored infant attachment-relevant cognitions.

Johnson et al. (2007; 2010) reported links between infant performance in a VOE task (Margoni et al., 2024) and infant attachment. When watching a *separation* scenario, infants as a group did not expect responsivity. When grouped by attachment, however, secure infants held this expectation, and insecure infants did not. The findings were partially supported by Biro et al. (2015).

Jin et al. (2018) reported infant expectations for responsivity in a *comforting* scenario at 4, 8, and 12m. However, caregiving experiences were not assessed.

We examine the longitudinal predictive significance of caregiving experiences for attachment cognitions, using maternal sensitivity and two attachment-relevant scenarios (separation and comforting) in VOE tasks. We predict that infants' attachment cognitions will be informed by their history of caregiving experiences.

Method

Participants

- Mother-infant dyads living in Missouri, USA.

Measures

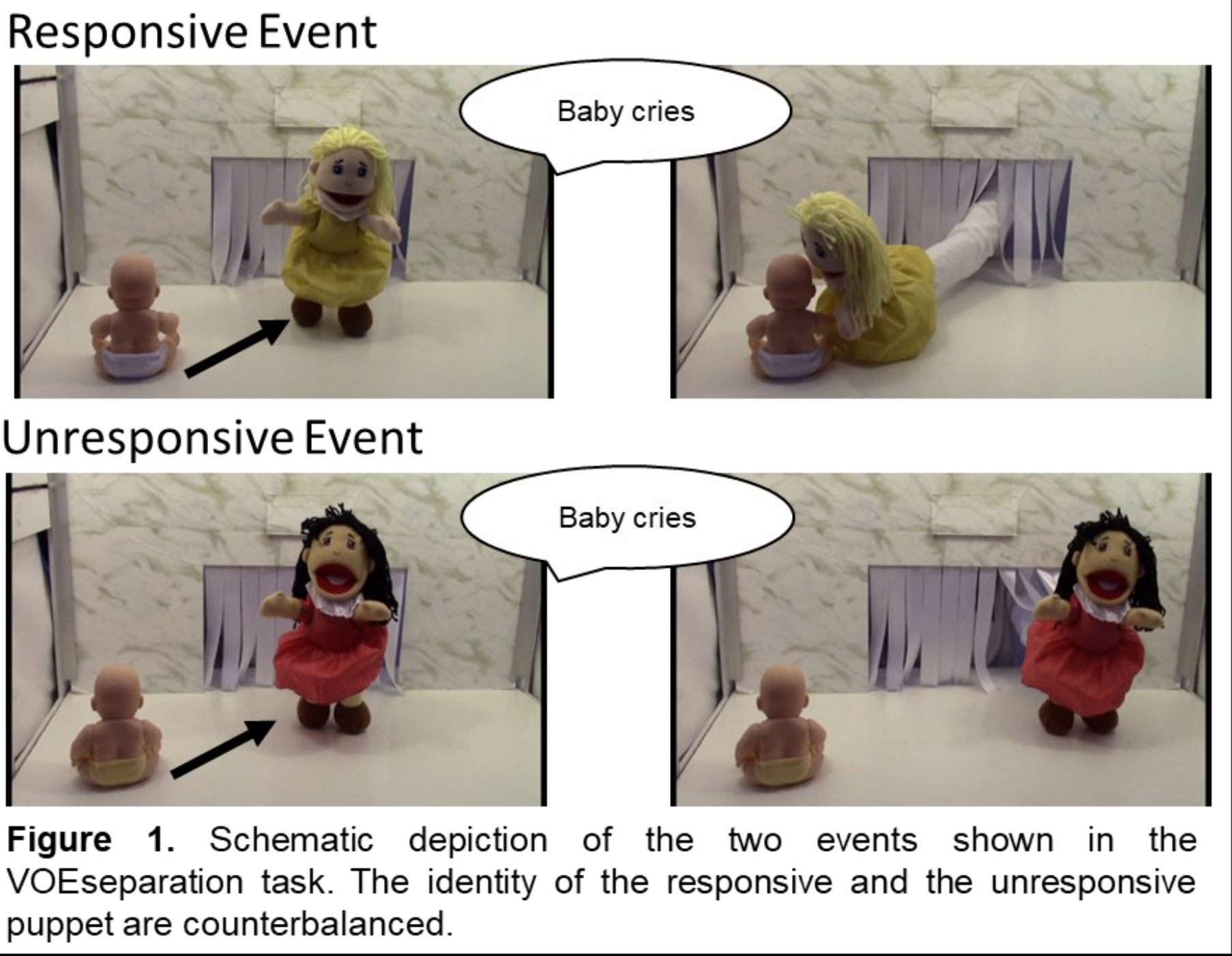
- Maternal Sensitivity (*M* infant age = 4m)**
 - Prompt, appropriate responding to infant distress and non-distress during play via coding system adapted from the NICHD Study of Early Childcare (Frosch & Owen, 2017).
- Attachment Cognitions (13-14m; order counterbalanced)**
 - VOEseparation* Infants watch events in which a female puppet leaves a baby, who begins to cry. The puppet returns to the baby (responsive event) or continues to move away (unresponsive), similar to Johnson et al. (2007; 2010).
 - VOEcomfort*. Infants watch events (Jin et al., 2018) in which a woman first folds laundry on a table. Next, a nearby stroller starts to shake, accompanied by baby cries. The woman goes to the stroller, bends over, and rocks it as if comforting the baby (responsive) or goes to a chair next to the stroller to collect laundry, ignoring the baby (unresponsive).

Acknowledgment

- Thank you to the families who participated in our study!
- Research was supported by the National Science Foundation (2017920, 2123485, 2201965), the National Institutes of Health (R01 HD108218), and the University of Missouri Research Council.



VOEseparation



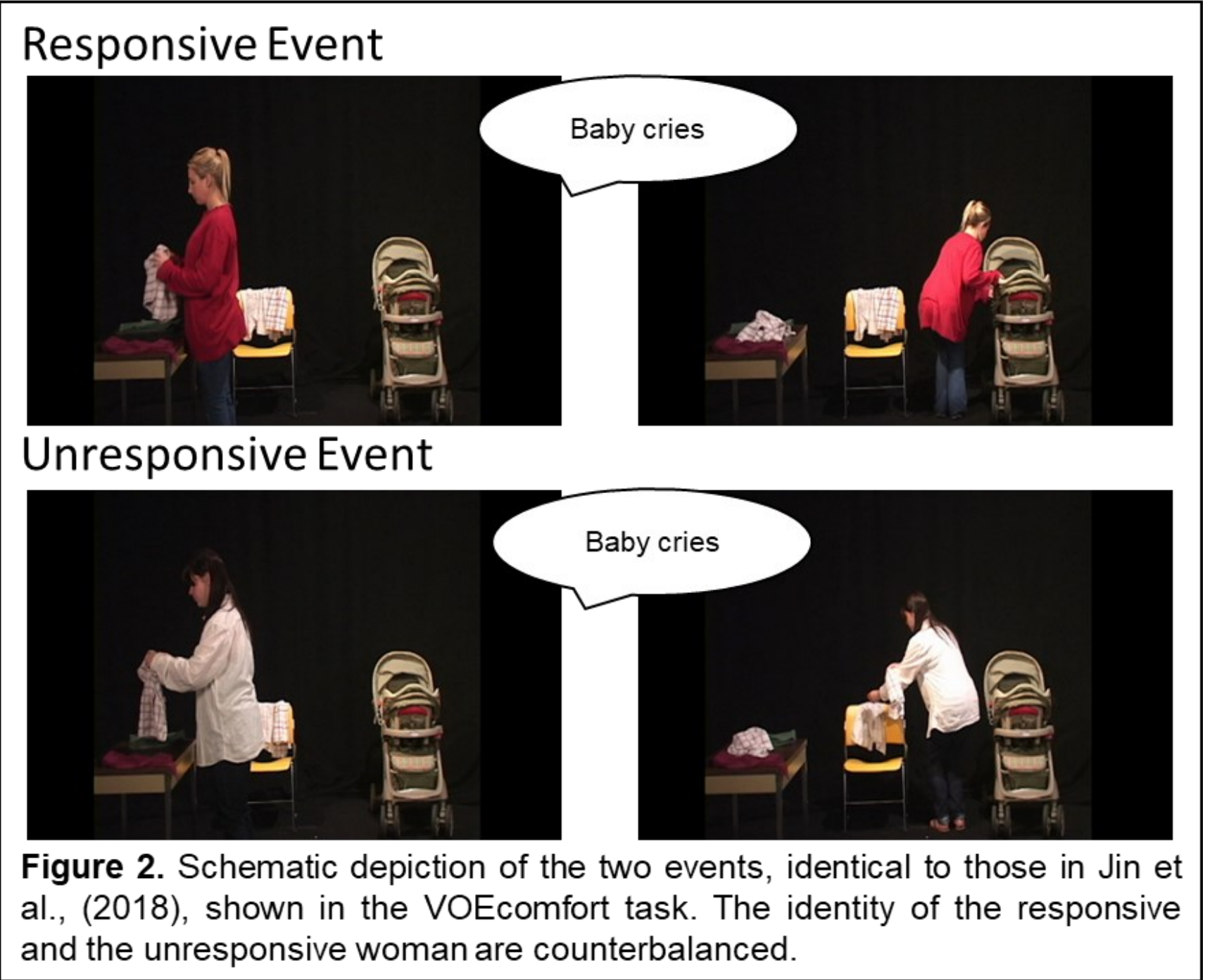
$N = 38$, half male; $Mage = 14$ months 6 days, $SD = 27$ days

$Munresponsive = 41.84$ s, $SD = 13.68$
 $Mresponsive = 43.35$ s, $SD = 10.95$

$Munresponsive$ proportion = .49, $t(37) = 1.138$, two-tailed $p > .250$.

Consistent with Johnson et al. (2007; 2010), results so far suggest that after 12m, infants as a group do not expect responsivity in an attachment-relevant *separation* scenario.

VOEcomfort



$N = 20$, half male; $Mage = 14$ months 6 days, $SD = 43$ days

$Munresponsive = 40.62$ s, $SD = 13.00$
 $Mresponsive = 29.55$ s, $SD = 8.46$

$Munresponsive$ proportion = .57, $t(19) = 4.692$, two tailed $p = .0002$.

Results so far replicate and extend those of Jin et al. (2018) and suggest that, after 12m, infants as a group expect responsivity in an attachment-relevant *comforting* scenario.

Correlations with Maternal Sensitivity

Correlations between infants' *Munresponsive* proportion scores in VOE tasks at 14m and maternal sensitivity composite scores (distress and non-distress) during toy play assessed at 4m.

	Maternal sensitivity during toy play
VOEseparation	-0.25 ($N = 35$)
VOEcomfort	0.17 ($N = 17$)

Results so far suggest that infants with more (vs. less) sensitive mothers at 4m look shorter at the unresponsive (vs. responsive) event in VOEseparation, but longer at the unresponsive (vs. responsive) event in VOEcomfort at 14m.

Discussion

We offer two possible explanations for the results so far, which will be determined upon completion.

First, infants with more (vs. less) sensitive mothers might find the unresponsive event in VOEseparation aversive, but the unresponsive event in VOEcomfort surprising. Second, attachment expectations examined in VOEcomfort may be more stable than those in VOEseparation. It is thus possible that similarly positive associations between maternal sensitivity and the two VOE tasks might be found if maternal sensitivity (and/or attachment) were measured at 12mo, as in previous work (Biro et al., 2015; Johnson et al., 2010).

References

Biro, S., Alink, L. R., Huffmeijer, R., Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2015). Attachment and maternal sensitivity are related to infants' monitoring of animated social interactions. *Brain and behavior*, 5, e00410.

Bowlby, J. (1973). *Attachment and Loss: Vol. 2. Separation*. New York: Basic Books.

Frosch, C., & Owen, M. T. (2017). *The NICHD Study of Early Child Care Mother-Infant Interaction Scales*. Unpublished Coding Manual.

Jin, K., Houston, J. L., Baillargeon, R., Groh, A. M., & Roisman, G. I. (2018). Young infants expect an unfamiliar adult to comfort a crying baby: Evidence from a standard violation-of-expectation task and a novel infant-triggered-video task. *Cognitive Psychology*, 102, 1-20.

Johnson, S. C., Dweck, C. S., & Chen, F. S. (2007). Evidence for infants' internal working models of attachment. *Psychological Science*, 18, 501-502.

Johnson, S. C., Dweck, C. S., Chen, F. S., Stern, H. L., Ok, S. J., & Barth, M. (2010). At the intersection of social and cognitive development: Internal working models of attachment in infancy. *Cognitive Science*, 34, 807-825.

Luo, Y., vanMarle, K., & Groh, A. (2024). The cognitive architecture of infant attachment. *Perspectives on Psychological Science*.

Margoni, F., Surian, L., & Baillargeon, R. (2024). The violation-of-expectation paradigm: A conceptual overview. *Psychological Review*, 131, 716-748.

Sherman, L. J., Rice, K., & Cassidy, J. (2015). Infant capacities related to building internal working models of attachment figures: A theoretical and empirical review. *Developmental Review*, 37, 109-141.