



**University of Michigan
C.S. Mott Children's Hospital**

A Pediatric Perspective on the Impact of Early Media Exposure

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I have no conflicts of interest to disclose

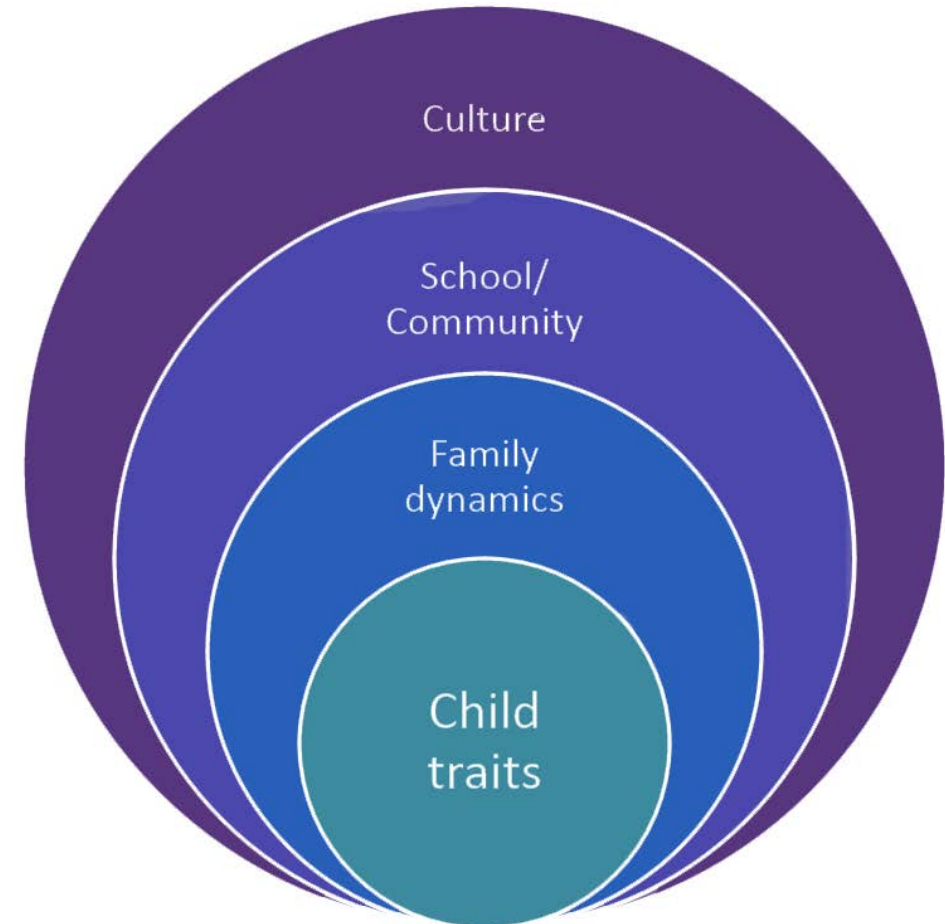


Outline

- Pediatric concerns about digital media and early childhood
 - Developmental behavioral pediatric lens
 - Exploring a differential susceptibility/transactional model
- Relevance for clinical care
 - AAP Media Policy Statement 2016
 - Future directions and gaps in understanding

Why Pediatricians Care about Media

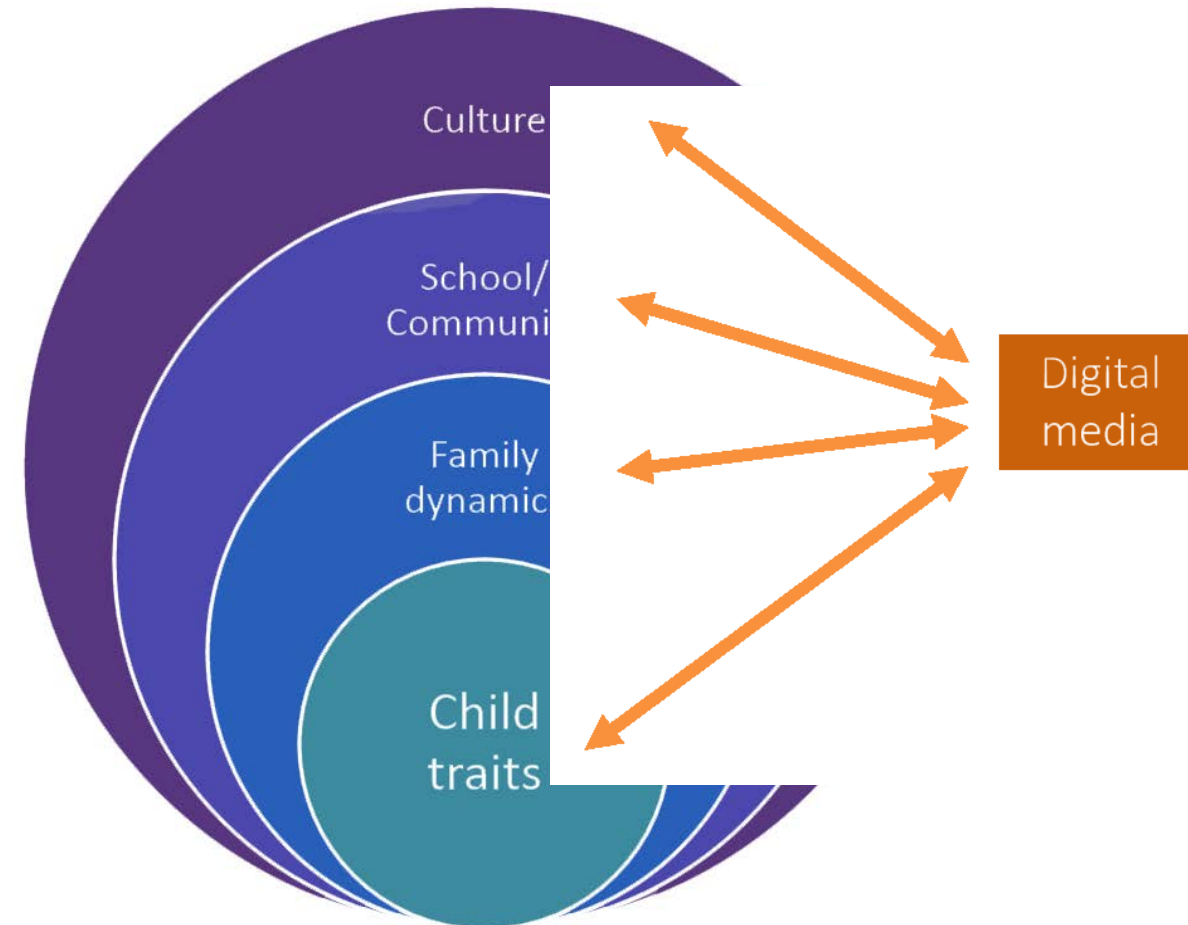
- Our practice involves caring for the child within its family, social and cultural environment.
- Media interacts with each of these aspects of the child and environment





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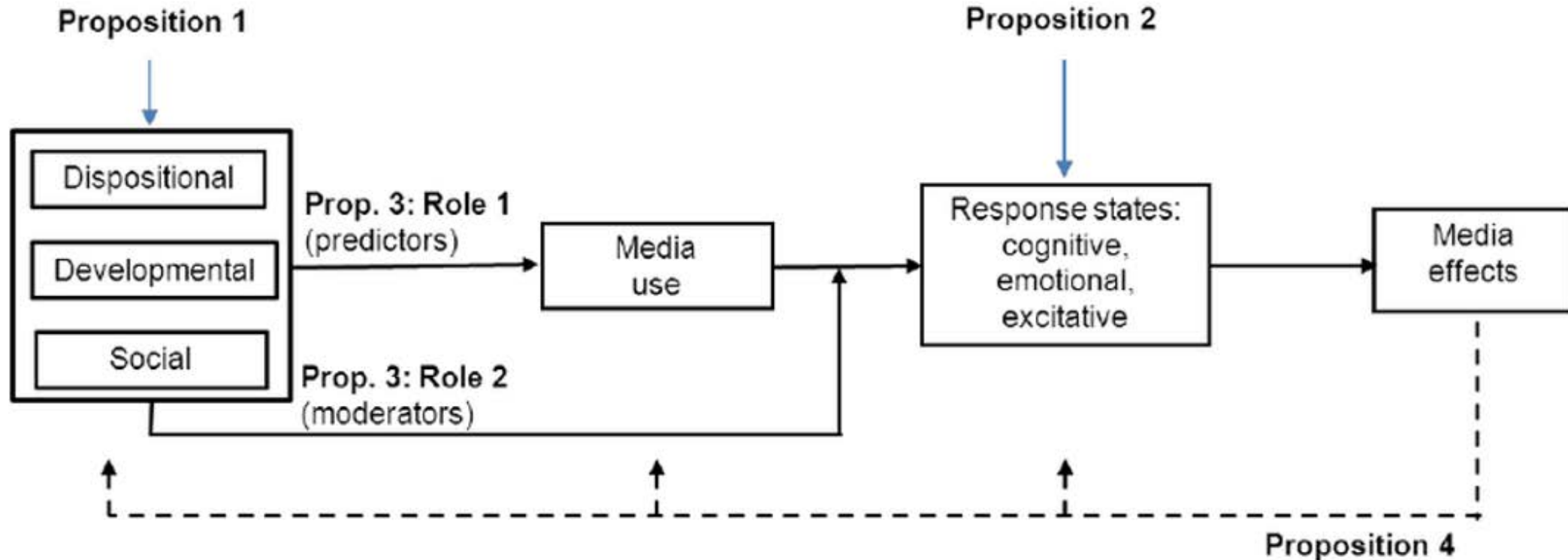
- Modifiable health behavior with implications for sleep, obesity, metabolic risk, mental health, family activities
- Comprises a large proportion of child waking hours
- Role as child advocates:
 - Marketing
 - Socioeconomic and health disparities
- Limitations of prior guidelines – media as ‘risk factor’



Developmental Behavioral Perspective

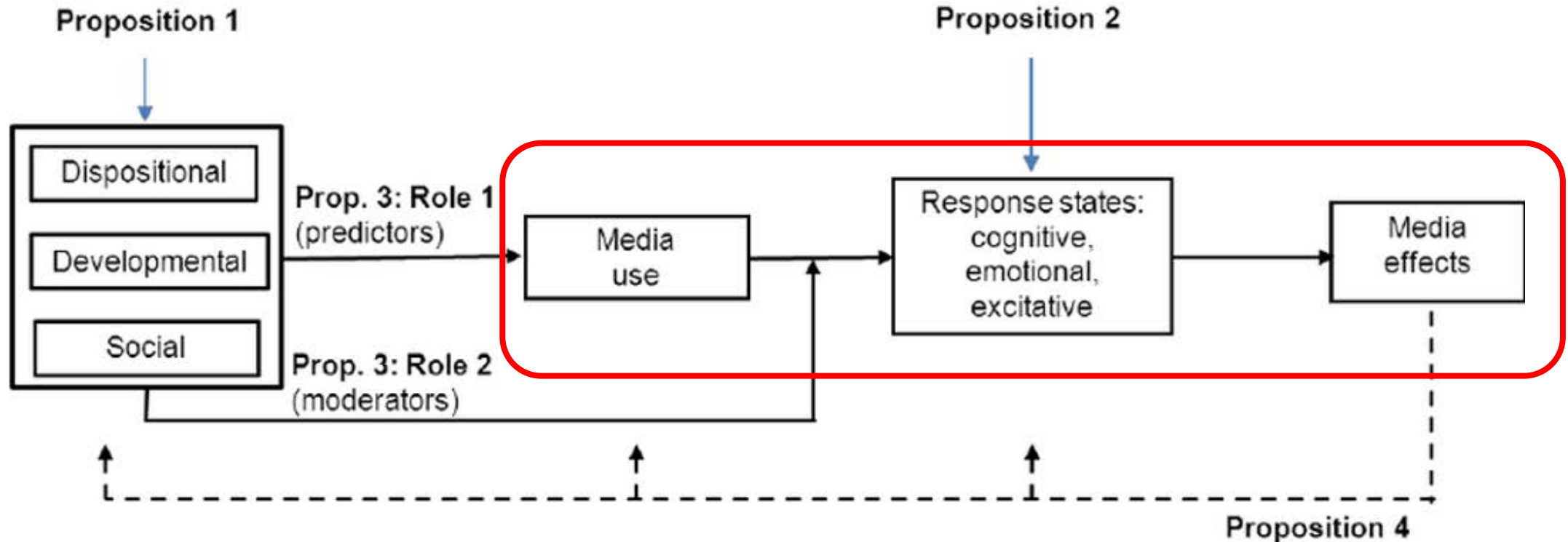
- Early childhood relationships as buffer to toxic stress and predictor of life course health outcomes (Shonkoff & Phillips, 2000; Gardner *Pediatrics*, 2011)
- [Pediatric training 2007-2014]: Explosion of mobile media
 - Portable, entering interpersonal spaces
 - Instantly accessible, brief and fragmented usage
 - Persuasive, interactive design that manages attention
- Conceptual framework: How does media interact with the dyad?

Differential Susceptibility to Media Effects Model (Valkenburg & Peter, *J Comm* 2013)



- Proposition 1: Media effects depend on three types of susceptibility--Dispositional, Developmental, and Social.
- Proposition 2: Three media response states mediate the relationship between media use and effects.
- Proposition 3: Differential susceptibility variables have 2 roles--they act as predictors and moderators.
- Proposition 4: Media effects are transactional.

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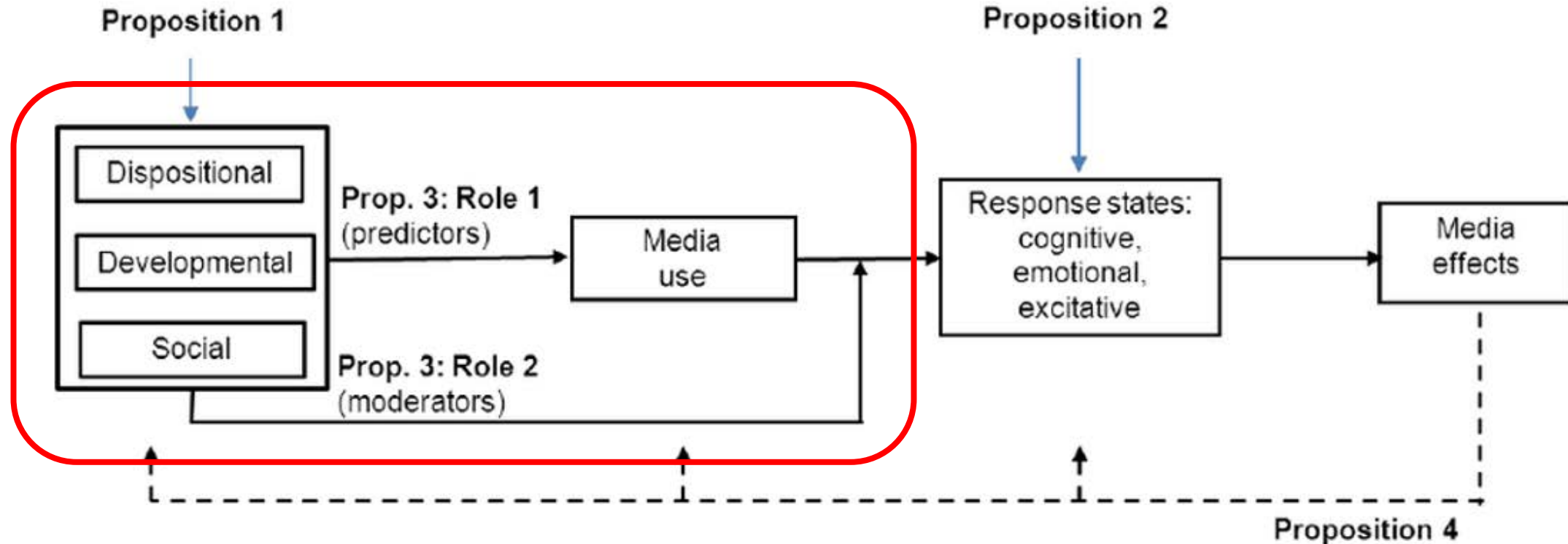
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Infant/Toddler Media Effects

- **Cognitive/developmental delay** (Tomopoulos et al, 2010; Schmidt et al, 2009)
- **Language delay** (Zimmerman et al, 2007; Duch et al, 2013; Lin et al, 2015)
- **Externalizing behavior** (Tomopoulos et al, 2007; Christakis 2011)
- **Sleep** (Cheung, et al, 2017)
- **Executive functioning in preschoolers** (Nathanson et al, 2013; Linebarger et al, 2014; Nathanson & Beyens 2017)

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Dispositional, Developmental, and Social Predictors of Infant/Toddler Media Use

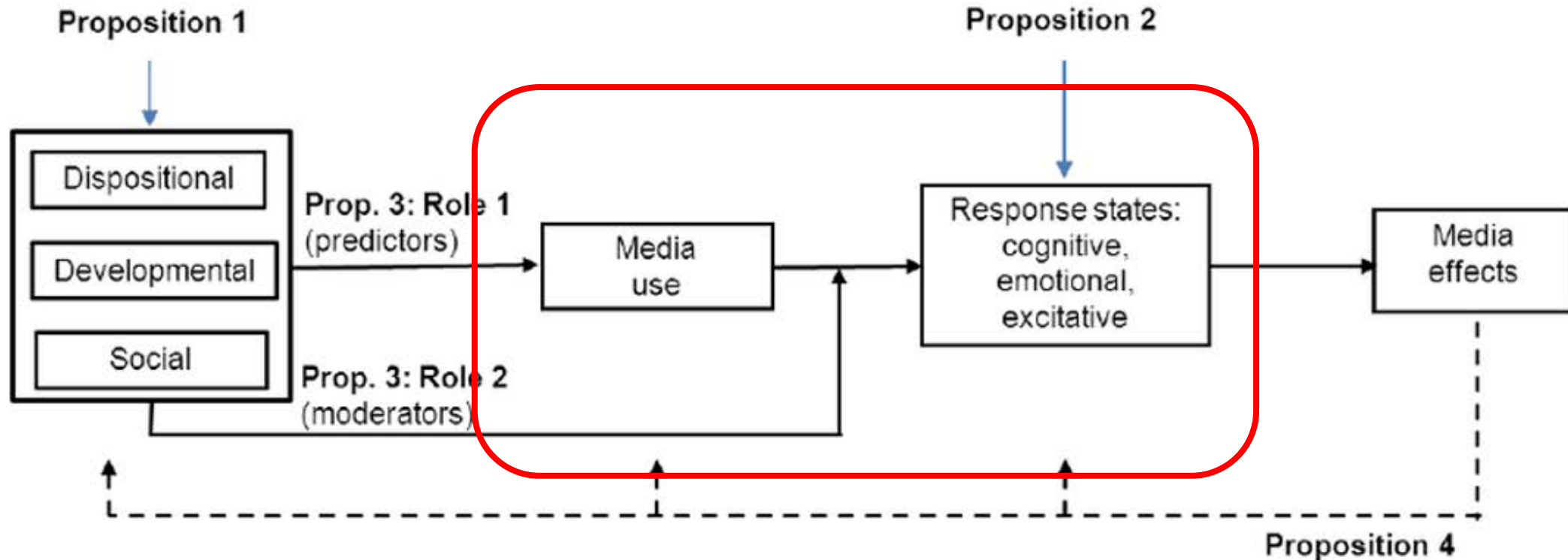
- Infants with more fussing/crying have higher duration of TV viewing (Thompson, et al. *Pediatrics* 2013)
- Infants and toddlers with regulatory problems more likely to exceed AAP guidelines at 2 years (Radesky, et al. *Pediatrics* 2014)
- Toddlers with social-emotional delays have:
 - 2.7 (95% CI: 1.3-5.7) higher odds for being given a mobile device to calm down when upset, 3.6 (95% CI: 1.5-8.7) when parent wants peace and quiet in the house (Radesky, *JAMA Pediatr* 2016).
 - More touchscreen use through family routines (Raman, et al. *Clin Pediatr* 2017)



Social Predictor: Parent Media Use

- Parent characteristics that predict child media use:
 - Maternal mental distress (Thompson & Christakis, *Amb Pediatr* 2007; Pempek & McDaniel, *JCFS* 2016)
 - Parent media practices (Jago et al., *Am J Prev Med* 2012; Wartella et al., *Parenting in the Age of Digital Technology* 2013)
- Possible mechanisms:
 - Media as correlate of parent mental health, life stressors
 - Role modeling, concept formation
 - Relationship-based factors: Withdrawal from parenting stress (Radesky et al, *JDBP* 2016; Oduor 2016; McDaniel & Radesky, in preparation); **decreased reflective capacity about parent-child relationship** (Radesky et al, *JDBP* in press).

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Child-computer interaction

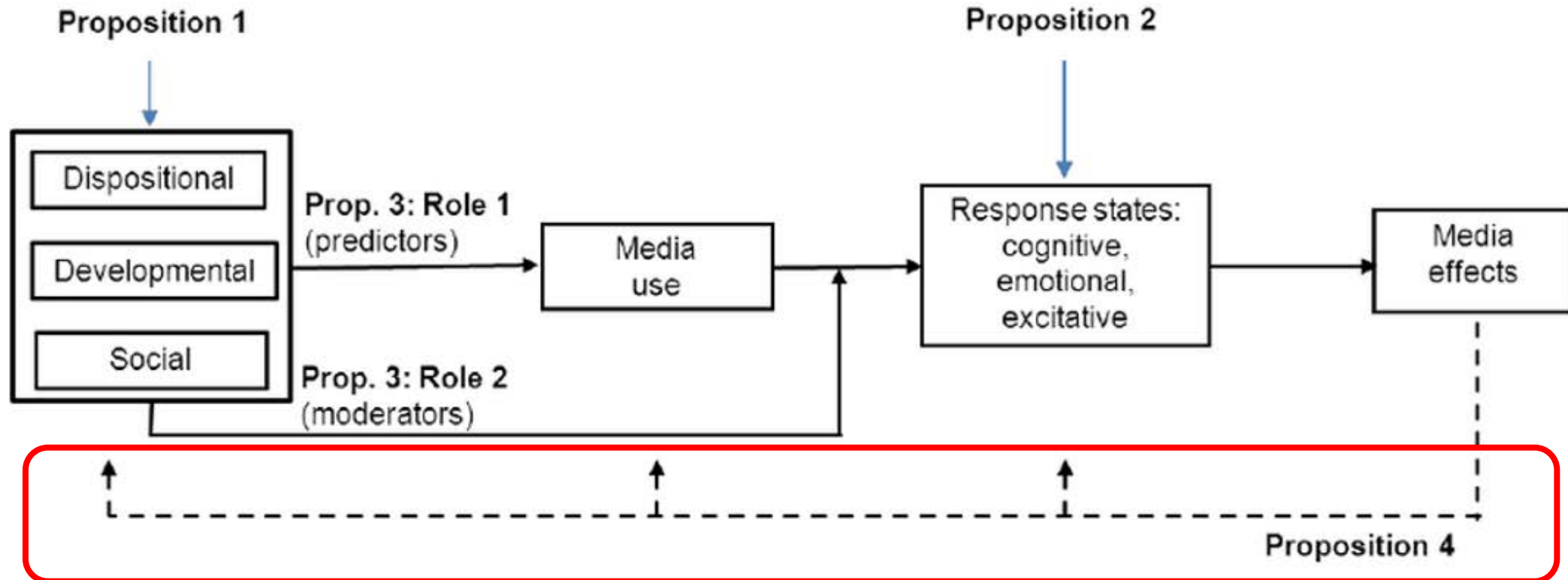
- Child-interface interaction
 - Child characteristics X content/enhancements/gamified design
 - Information processing and learning
 - Natural rewards of mastery, solitude, sensory curation



Child-computer interaction

- Dyad-computer interaction
 - Parents engage in less dialogic reading during enhanced e-books (Lauricella, Barr & Calvert, 2014), less verbal interaction with digital toys (Sosa, 2016)
 - Design-related themes: Solitary spaces; parent as bystander to play; less reciprocity; tablet manages child's attention

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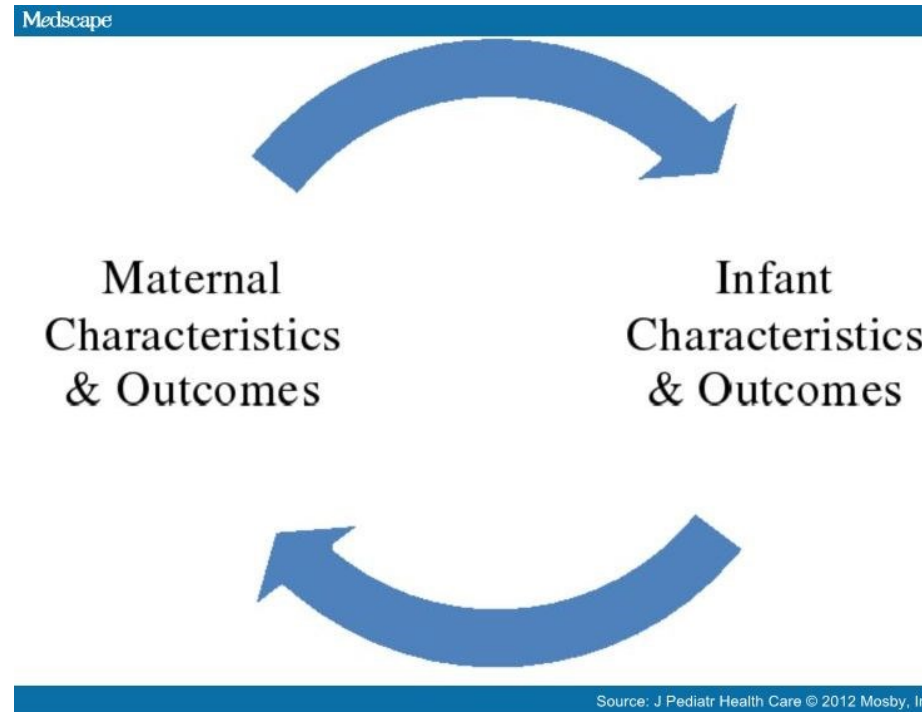
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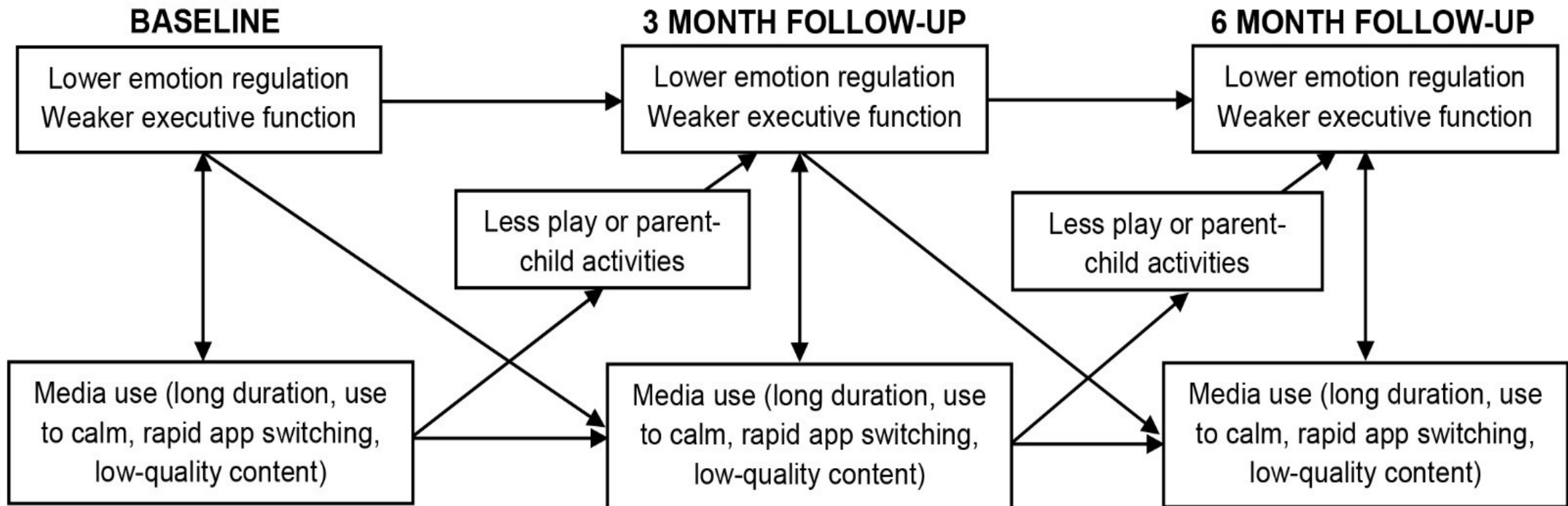
Transactional Processes

Transactional Model of Child Development (Sameroff, 1975)

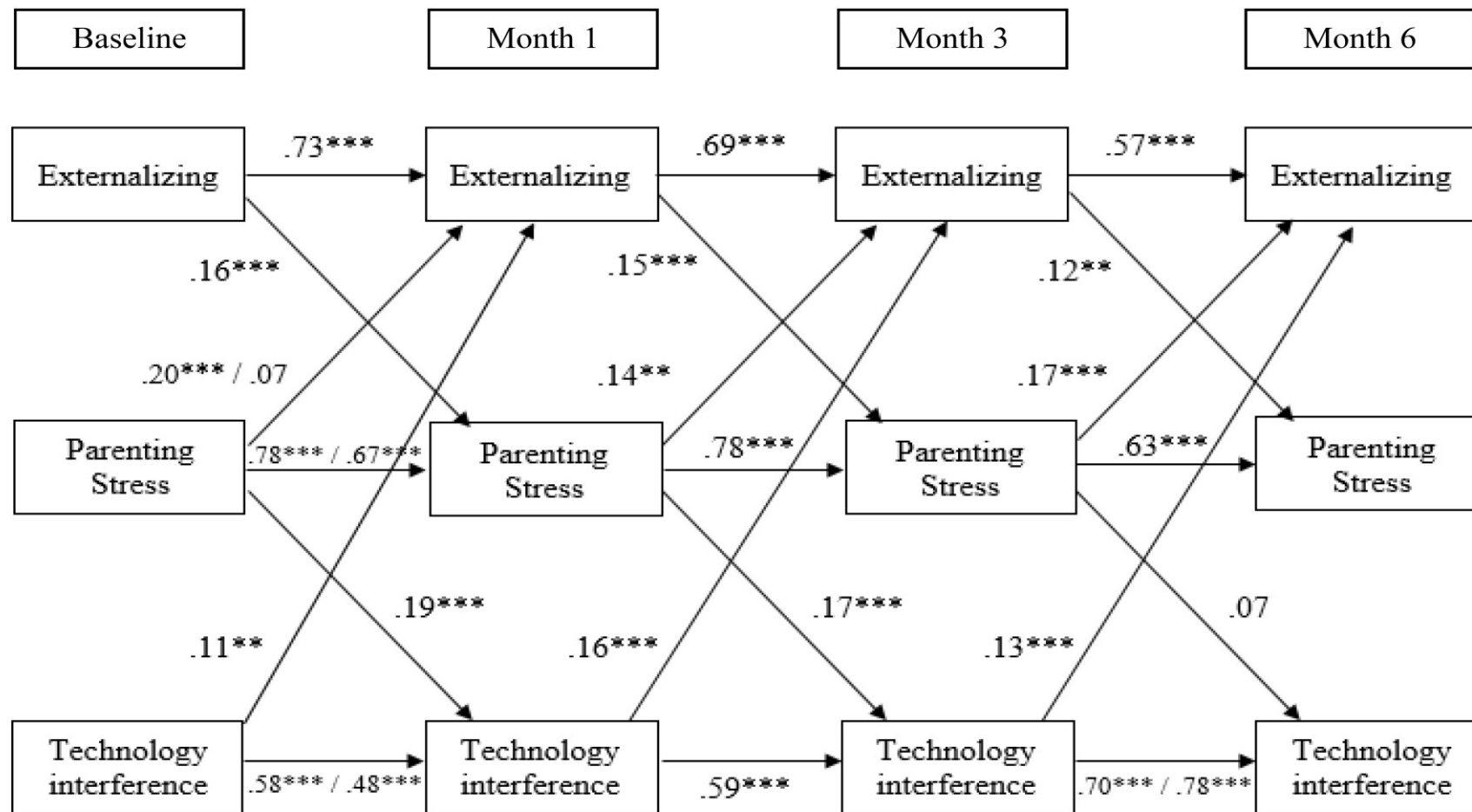


Transactional Processes

Figure 1: Conceptual Model of Transactional Associations Between Emotion Regulation, Executive Function, and Child Media Use



Longitudinal associations between parent technology interference, parenting stress, and child behavior





Developmental Behavioral Lens: 2016 AAP Guidelines

- Provide more actionable, family-centered guidance that acknowledges the great function media plays in households
- Emphasis on shared media use, intentional/planned media use as a tool, which can help build digital literacy
- Advocacy around marketing, help parents evaluate low-quality apps and content
- Address disparities in quality media access



Gaps in Knowledge

- Transactional, longitudinal associations between child characteristics and media use (particularly mobile/interactive).
- Parent-child interaction around media: How do parents effectively scaffold digital play and build digital literacy (conceptualize media as tool, use constructively, critically evaluate content and persuasive design)
- Interventions: Tech design changes, unplugged times, more shared use/high quality content – and how these can be implemented through existing community systems (e.g., schools, Early Intervention, child care settings, home visitors).



Thank you!

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