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Human Development & Family Studies

The Digital Child: Lessons from Studying the Family Media Ecology

22 January 2025

Disclosures

Advisory Boards

Sesame Workshop
Children & Screens Institute

Consultation

Common Sense Media
Center for Scholars and Storytellers

Funders

US National Institutes of Health
US National Science Foundation
WI Alumni Research Foundation



Digital Media and Child Development (0-5 years)

Learning from Screens

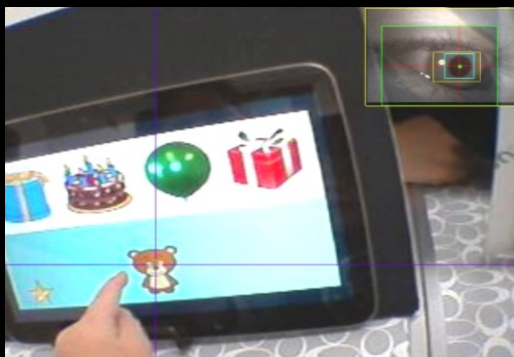


Family Media Ecology



Emphasis on real-time measures, dynamic processes

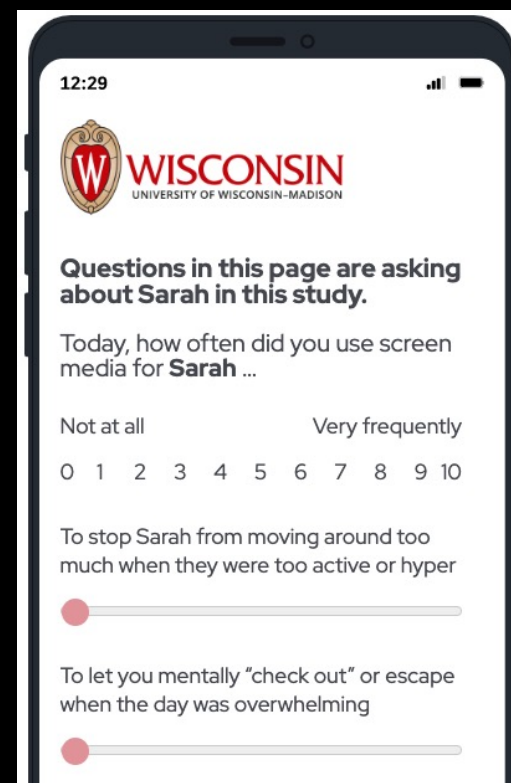
Psychophysiological & Behavioral Tests



Semi-Naturalistic Observation of Play



Daily Diaries & Experience Sampling



Plan for Today



1. Learning from screens
(a few highlights)



2. Family media ecology
(DREAMER framework)



3. Research to practice
(the 5 Cs)



1. Learning from Screens

still body ≠ still mind

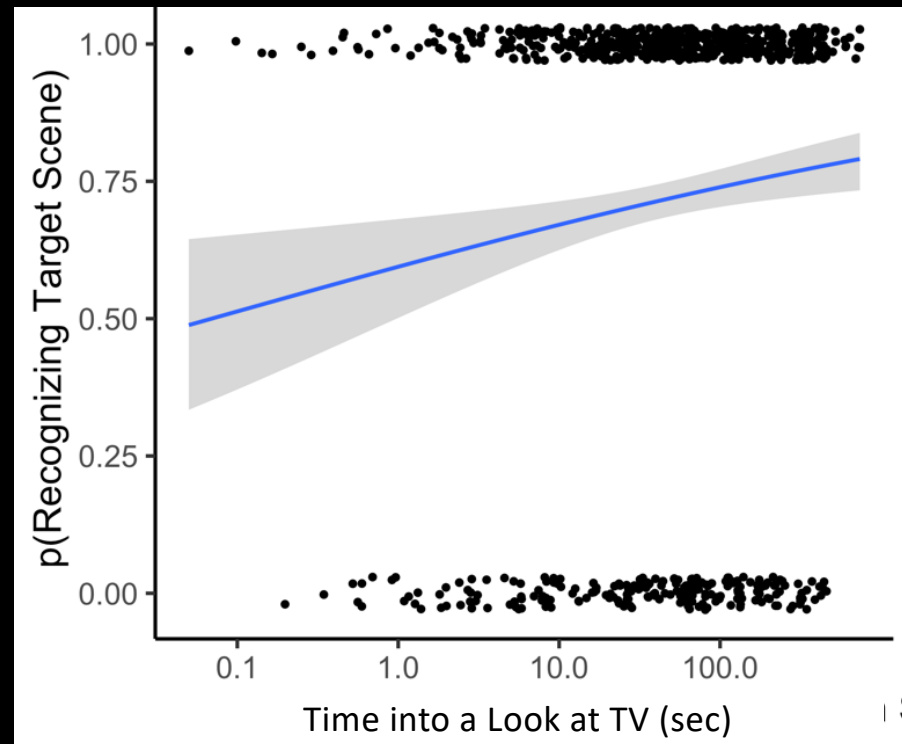
Photo credit:

Donna Stevens, 2015, *Idiot Box*



Sustained Attention:

- Less extraneous movement
- Lower distractibility
- Slower heart rate
- **Better event memory**
- **Better story comprehension**

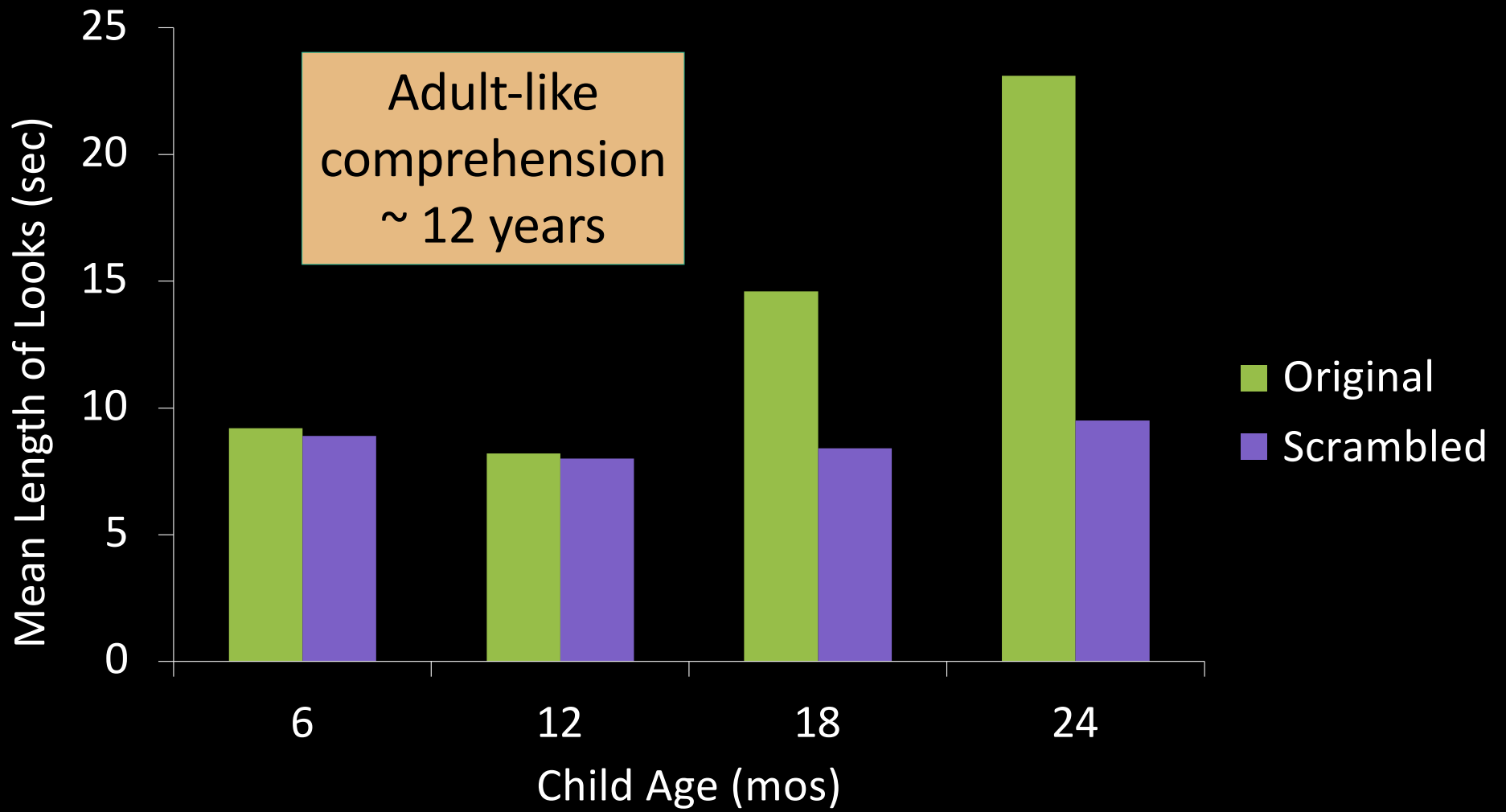


Li & Kirkorian (2024);
also Anderson & Burns (1993); Pempek et al. (2010);
Richards & Anderson (2004)

Watching TV is
hard work

(especially for young children)









"The Treachery of Images", René Magritte, 1929





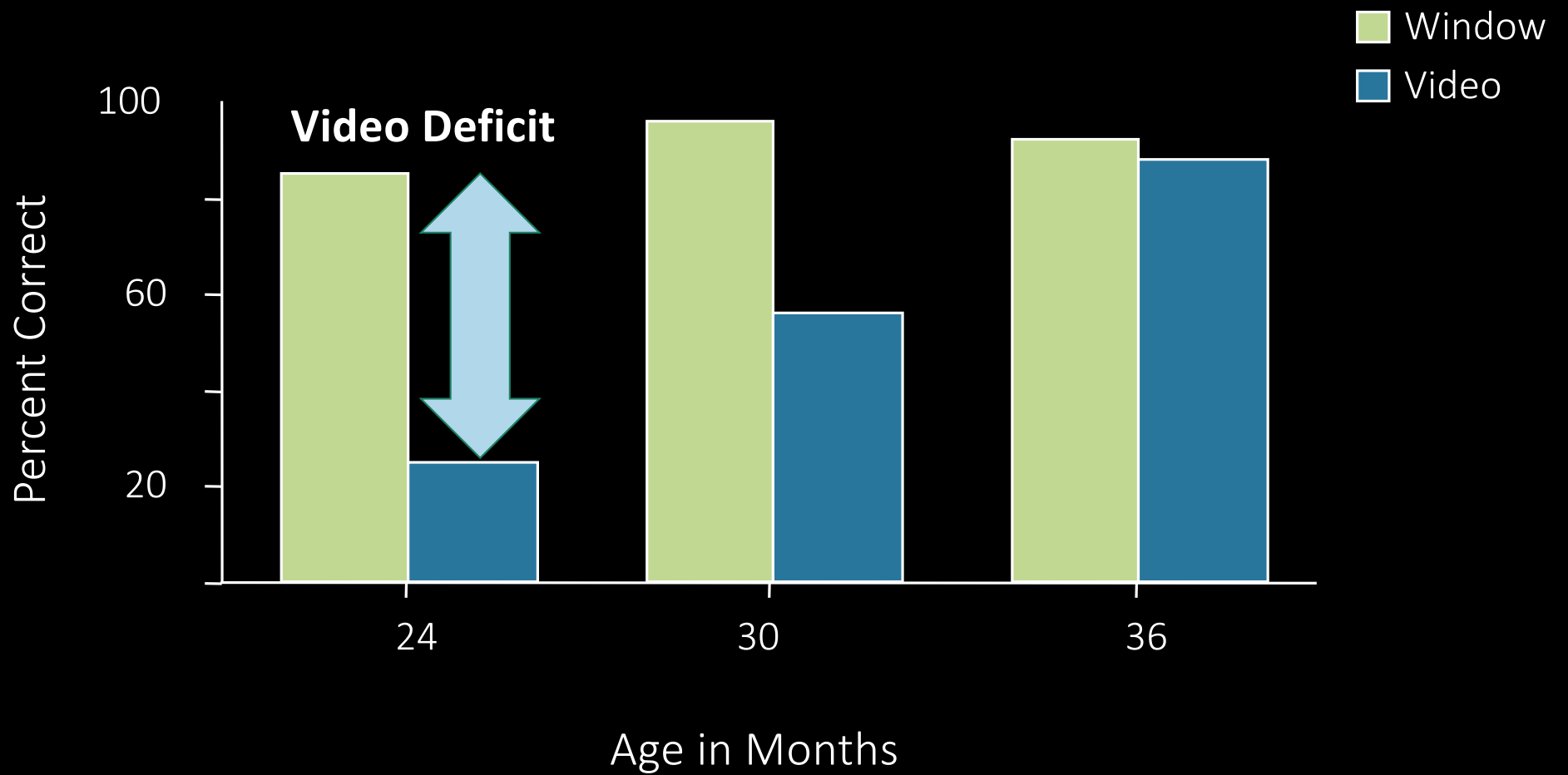
Window



Video



Troseth & DeLoache (1998)



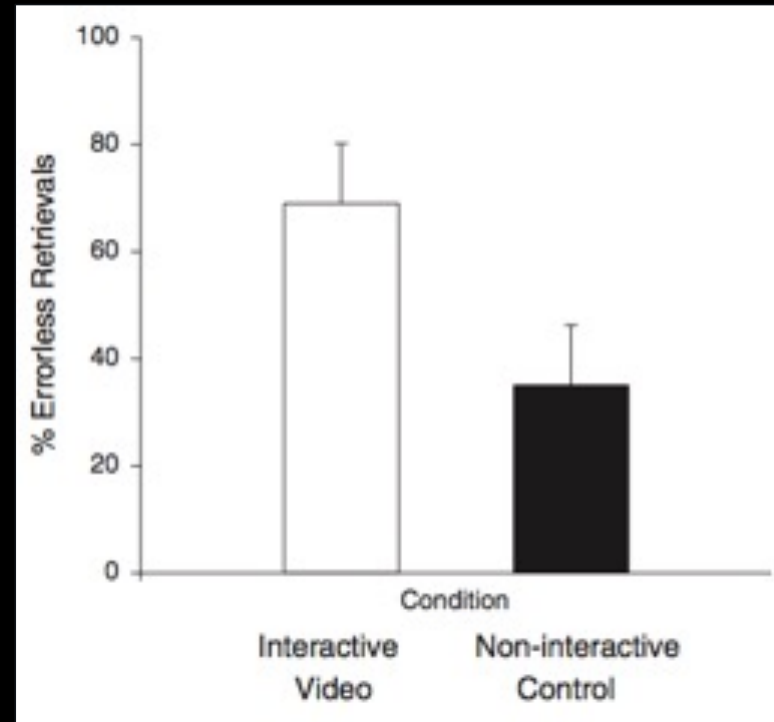
Schmitt & Anderson (2002). Television and reality: Toddlers' use of visual information from video to guide behavior. *Media Psychology*.

More difficult task → video deficit lasts longer (4-5 yrs)



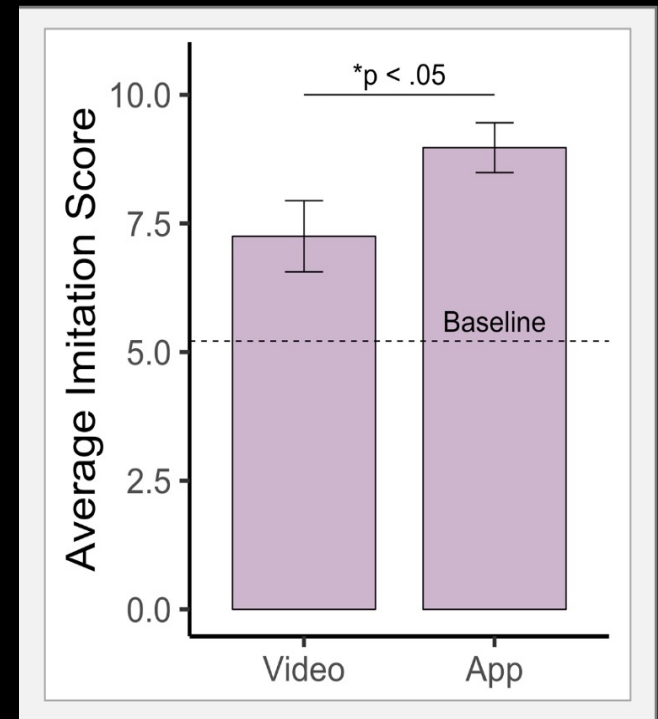
Kirkorian & Simmering (2023). *Developmental Science*.

Live social interactions help



Troseth et al. (2006); also Myers et al. (2019); Nielsen et al. (2008); Roseberry et al. (2014)

Touchscreen interactions help sometimes (not always)



Kirkorian et al. (in preparation). Also Choi & Kirkorian (2016), Kirkorian et al. (2016), Kirkorian et al. (2021)

Content is a stronger predictor of outcomes than screen time alone (Barr & Linebarger, 2017)



Educational Child TV

Stronger language skills

(Jing et al., 2023; Linebarger & Walker, 2005; Linebarger & Vaala, 2010)

Higher executive function

(Barr et al., 2010)

Greater school readiness and achievement

(Anderson et al., 2001; Linebarger et al., 2014; Wright et al., 2001)

Non-educ. Child TV

More externalizing and behavioral problems

(Tomopolous et al., 2007; Verlinden et al., 2012)

Lower psychosocial well- being in early childhood

(Pagani et al., 2010).

Adult & Background TV

More aggression, externalizing, emotional reactivity

(Chonchaiya et al., 2015)

Lower executive function

(Barr et al., 2010)

App Design

Engagement- prolonging design

Autoplay, behavioral reinforcement with frequent rewards, etc.
(Munzer et al., 2022)

More absorption

(Hiniker et al., 2018; Munzer et al., 2019)

More negativity

(Munzer et al., 2021)

“Media Diet”
rather than
“Screen Time”



Takeaways:

Learning from
Screens

Still body ≠ still mind

Watching TV is hard

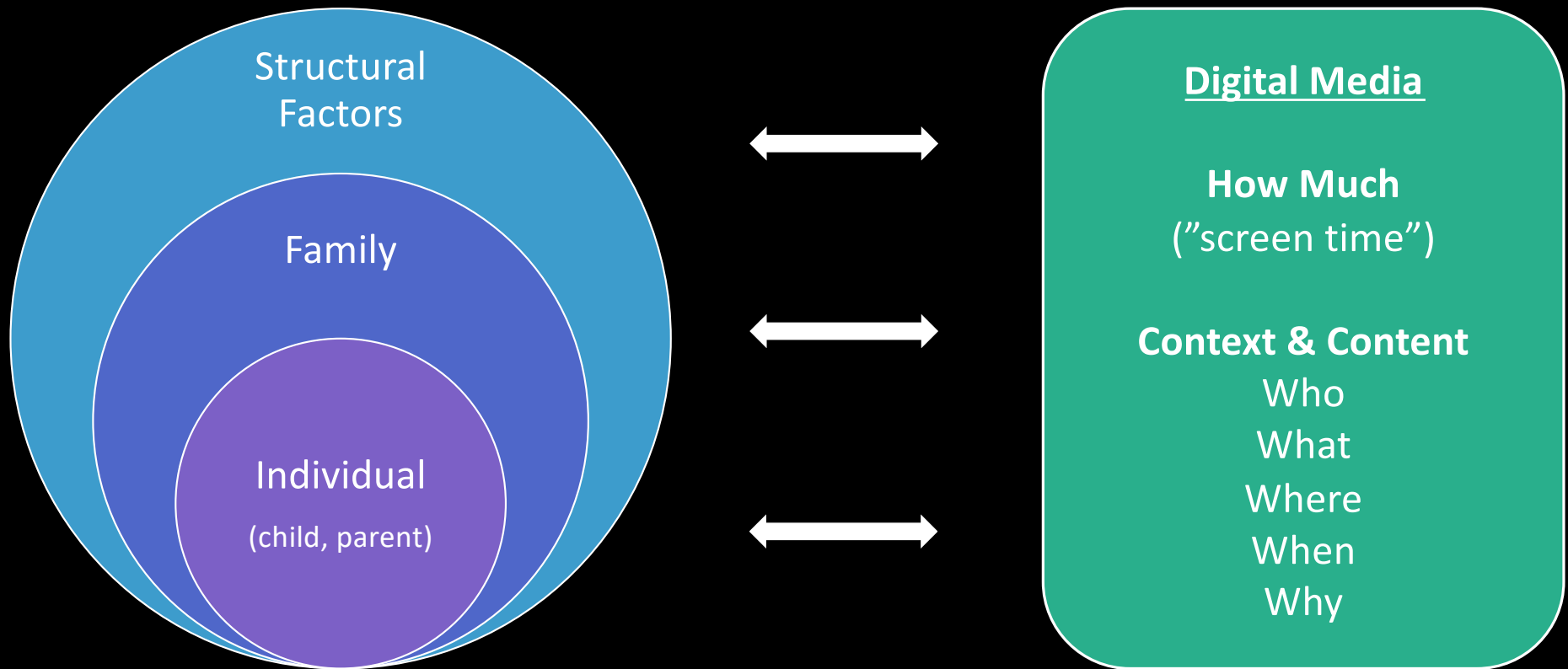
Interaction helps (sometimes)

Content and design are critical



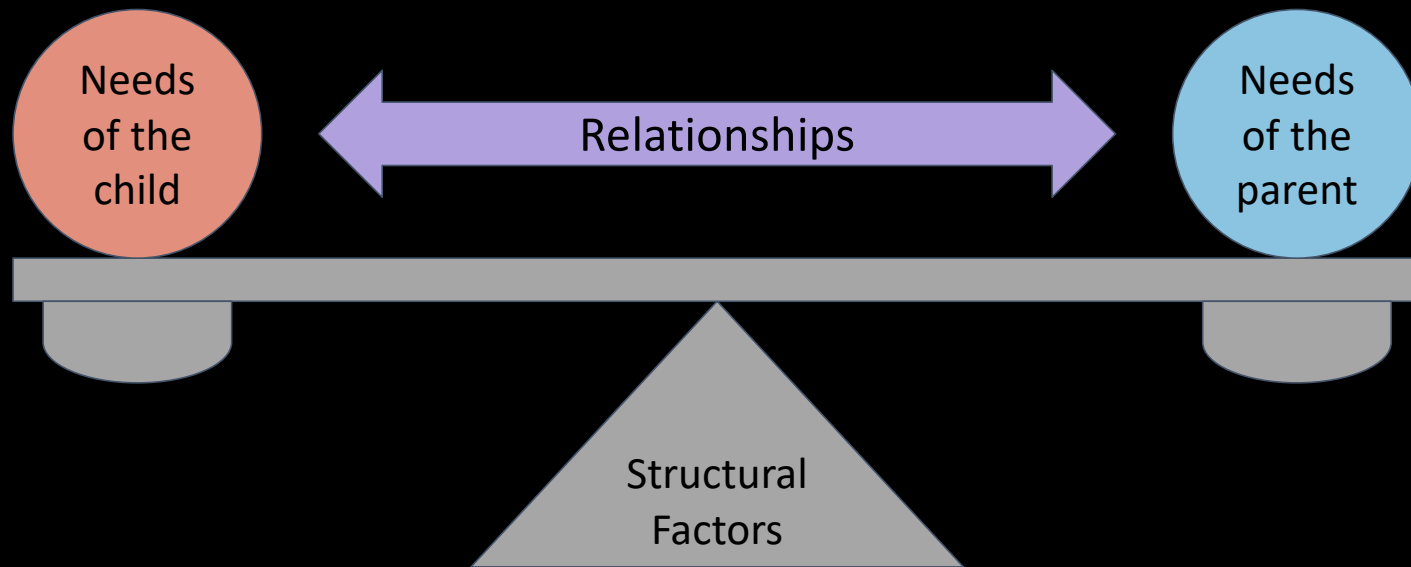
2. Family Media Ecology

Family Media Ecology



Adapted from Barr et al., 2024; Bronfenbrenner & Morris, 2006

1. Balance the needs of all
2. Prioritize relationships, connectedness
3. Recognize the scales are different for different families



Existing
theoretical
frameworks
lacking...

Interrelated family members

Bidirectionality

Dynamic processes

Multiple timescales



Rachel Barr, PhD
Georgetown University



Heather Kirkorian, PhD
U. Of Wisconsin-Madison



Jenny Radesky, MD
University of Michigan

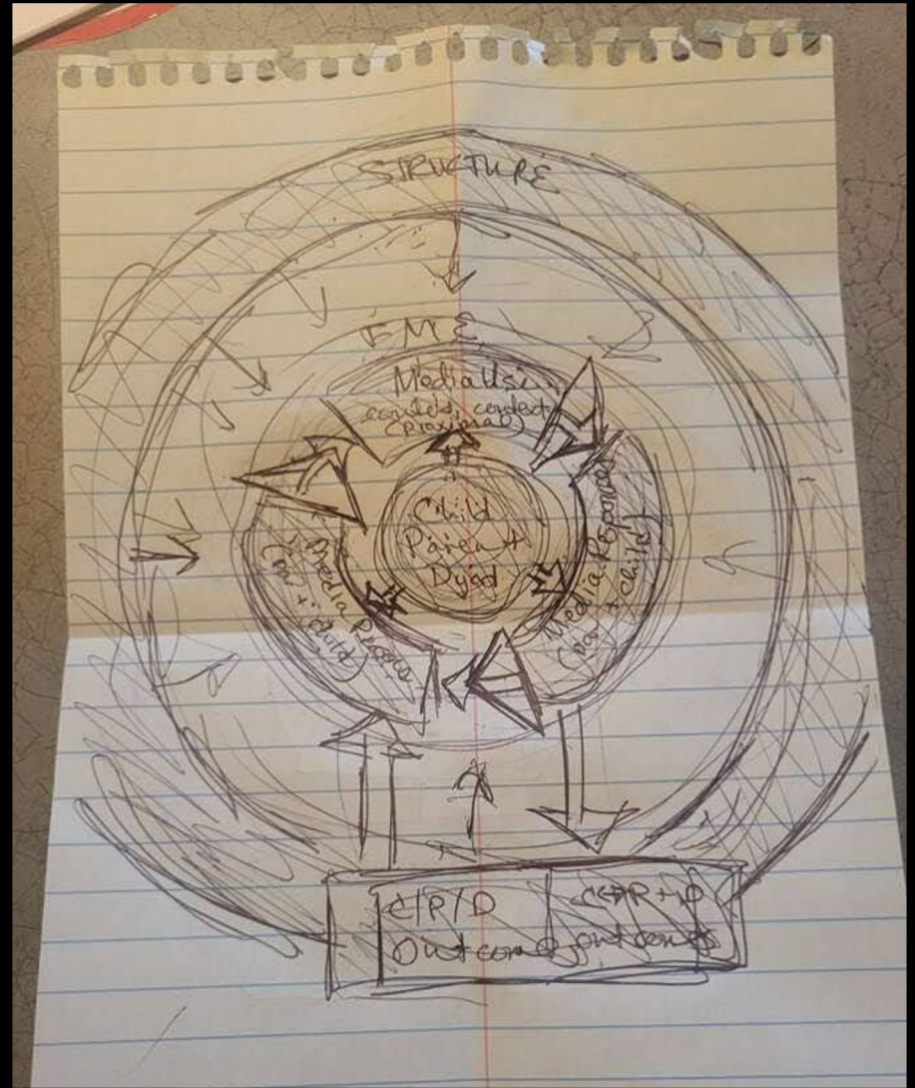


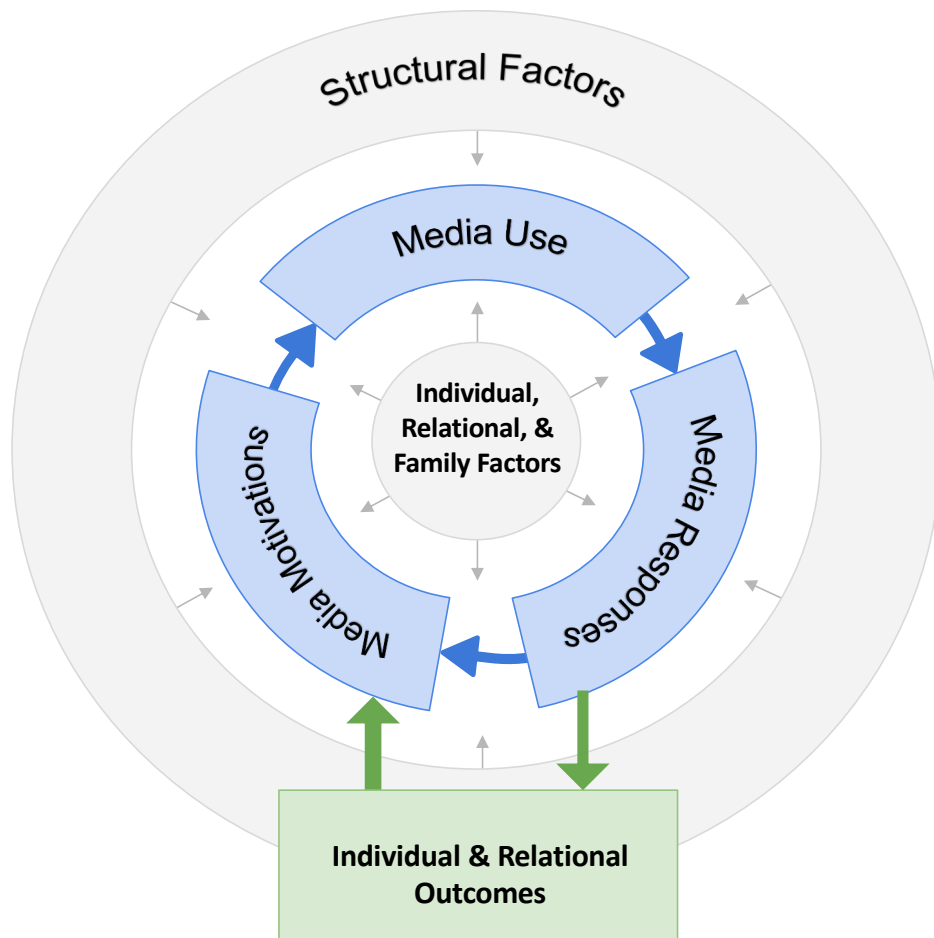
Sarah Coyne, PhD
Brigham Young University


**Cambridge
Elements**
Child Development

Early Childhood and Digital Media

Rachel Barr,
Heather Kirkorian,
Sarah Coyne and
Jenny Radesky





Dynamic,
Relational,
Ecological
Approach to
Media
Effects
Research

(Barr, Kirkorian, Coyne & Radesky., 2024)

Measuring the Family Media Ecology

The CAFE Consortium Toolkit

GLOBAL

Media Assessment Questionnaire (MAQ)

- Individual and family characteristics
- Media attitudes and practices for parent, child, household
- “Screen time” (quantity)
- Media content and context

DAILY

Time Use Diary for Child Activities (TUD)

- All child activities throughout the day (eating, sleeping, playing indoors, using digital media, etc.)
- Simultaneous / secondary activities
- Social context
- Second-hand media

MOMENTARY

Ecological Momentary Assessment (EMA)

- Child and parent activities (including digital media use)
- Motivations for media use (parent and child)
- Social context
- Parent and child emotions and behavior

CONTINUOUS

Passive Mobile Sensing App (Chronicle)

- Devices used by parents and/or children
- Time-stamped logs of all notifications and app use
- Specific app names or categories

Measuring Media Motivations

Regulatory & Relational

Media Motivations for Child (MEMO-C) Scale

(Suh et al., under review)

How often do you use SCREEN MEDIA (including mobile devices, streaming videos, video games, or TV shows)...

	Never	Rarely	Sometimes	Often	Very Often
To stop your child from moving around too much when they are being too active or hyper?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To help your child learn or experience something new?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To keep your child occupied when in public (e.g. doctor's	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Child Media (MEMO-C)	Joint Media Use (JMES)	Problematic Use (PMUM)	Internalizing (CBCL)	Externalizing (CBCL)
Regulate (12 items, $\alpha = .92$) “to calm your child down when they are upset (crying, yelling, showing big emotions)”	0.13* (0.06)	0.32*** (0.05)	2.06*** (0.57)	1.21 (0.58)
Occupy (5 items, $\alpha = .88$) “to keep your child occupied when you need some time to yourself”	0.03 (0.05)	0.12** (0.04)	0.63 (0.49)	1.90*** (0.53)
Connect (3 items, $\alpha = .71$) “to bond with your child or relax together”	0.28*** (0.04)	-0.01 (0.04)	-0.87* (0.42)	-0.84 (0.46)

Incremental validity based on hierarchical regression controlling for overall screen time and demographics

Media Motivations for Parent (MEMO-P) Scale

(Suh et al., under review)

Next, think about how **YOU, AS A PARENT**, use media.

How often do you use SCREEN MEDIA (including mobile devices, streaming videos, video games, or TV shows)...

	Never	Rarely	Sometimes	Often	Very Often
To take a break and relax when my kids are showing difficult behavior and getting on my nerves	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To feel less lonely or sad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To laugh or be entertained	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Parent Media (MEMO-P)	Joint Media Engagement (JMES)	Emotion Reg. in Parenting (REPS)	Mobile Distraction (DISRUPT)	Parenting Stress (PSS)
Regulate (6 items, $a = .82$) “to calm down in the moment, so that you don’t yell at your kids or overreact to them”	0.15** (0.05)	-0.20*** (0.03)	0.10 (0.07)	0.13*** (0.04)
Relax Alone (7 items, $a = .83$) “to help you unwind after a busy day”	0.05 (0.05)	0.04 (0.03)	0.62*** (0.08)	0.12** (0.04)
Connect (2 items, $a = .69$) “to connect with family and friends”	0.17*** (0.04)	0.06** (0.02)	-0.04 (0.06)	-0.13*** (0.03)

Incremental validity based on hierarchical regression controlling for overall screen time and demographics

MEMO scales in a nutshell...

- Media to **connect** predicts **positive things**
- Media to **occupy child / relax alone** predicts **negative things**
- Media to **regulate self / child is mixed:**
 - Worse child / parent functioning
 - More joint media engagement

Media Dynamics

Examples from the Baby EMU Study

Project Overview

543 parents of infants 12-23 mos old

3-week intensive longitudinal burst

- 15,761 EMAs
- 8,683 end-of-day surveys
- 3,091 time use diaries
- Continuous passive mobile sensing

Survey packet (MAQ + others)

- Enrollment (wave 1)
- 6 months later (wave 2)
- 12 months later (wave 3)



Rachel Barr, PhD
Georgetown University



Maggie Kerr, PhD
U. Of Wisconsin-Madison

End-of-Day Surveys

All measured on 11-point scale (0-10)

Child emotions (e.g., fussy, calm, angry, happy)


Parenting behaviors (e.g., comfort / soothe, yell)

Parental burnout (e.g., exhausted, overwhelmed, distant)

Motivations for parent media (regulate, relax, connect)

Motivations for child media (regulate, occupy, connect)

12:29

 **WISCONSIN**
UNIVERSITY OF WISCONSIN-MADISON

Questions in this page are asking about Sarah in this study.

Today, how often did you use screen media for **Sarah** ...

Not at all Very frequently

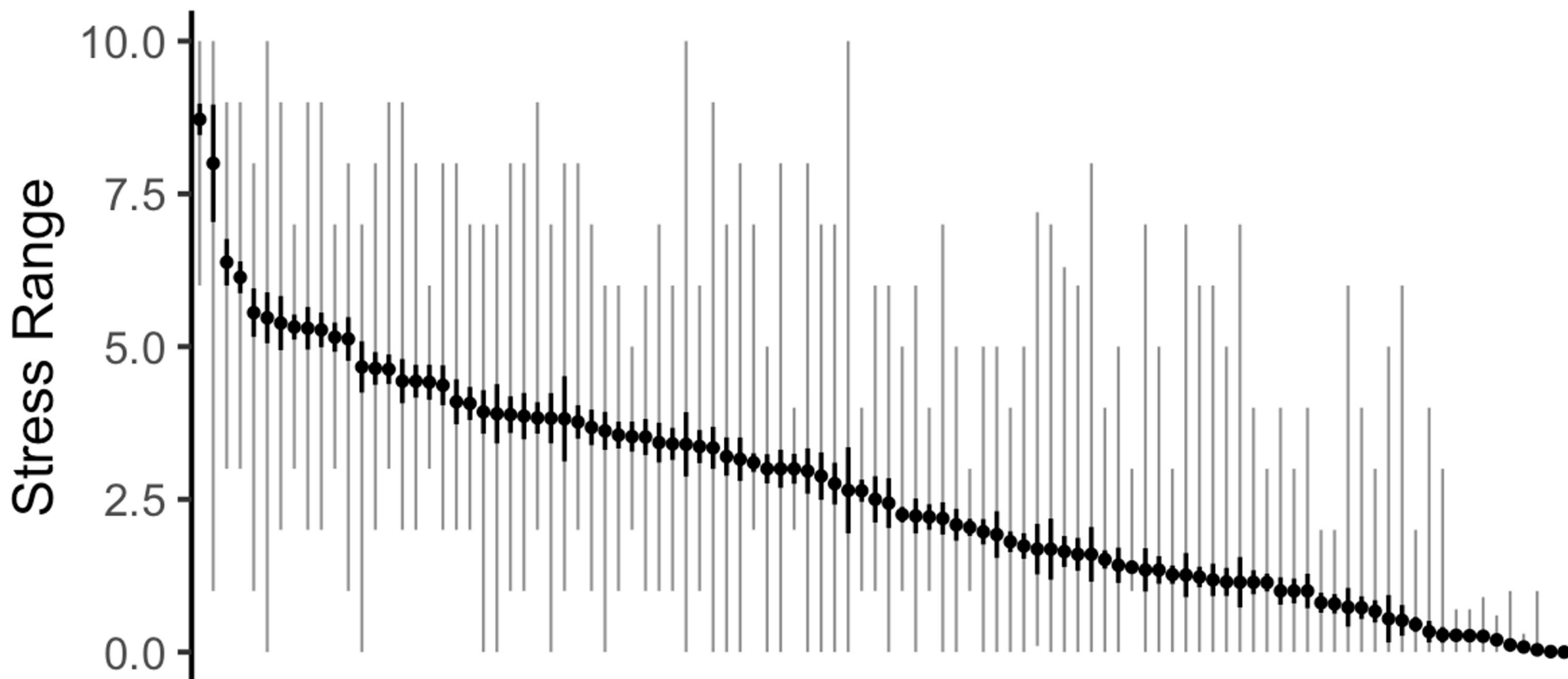
0 1 2 3 4 5 6 7 8 9 10

To stop Sarah from moving around too much when they were too active or hyper

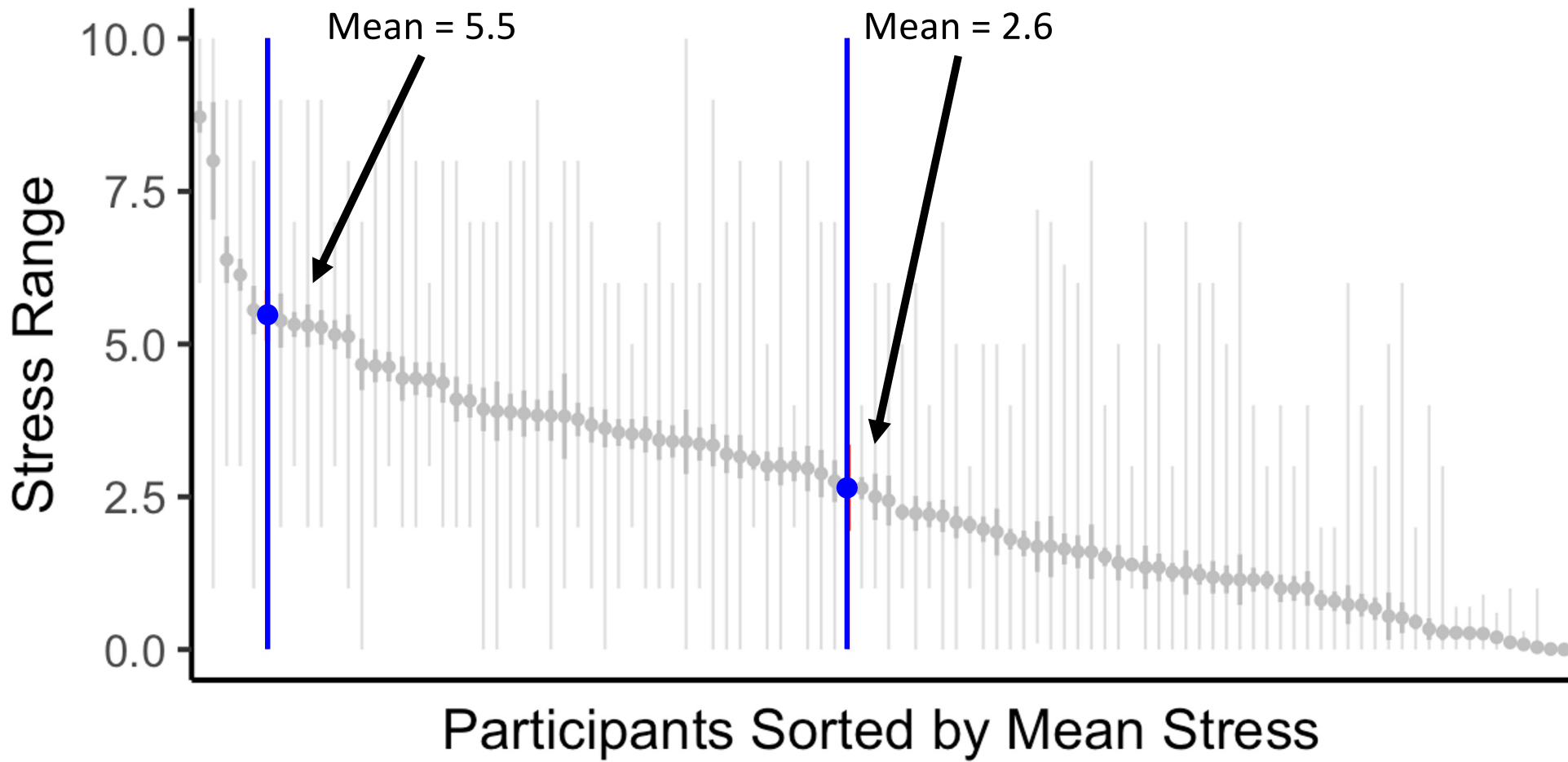
To let you mentally "check out" or escape when the day was overwhelming

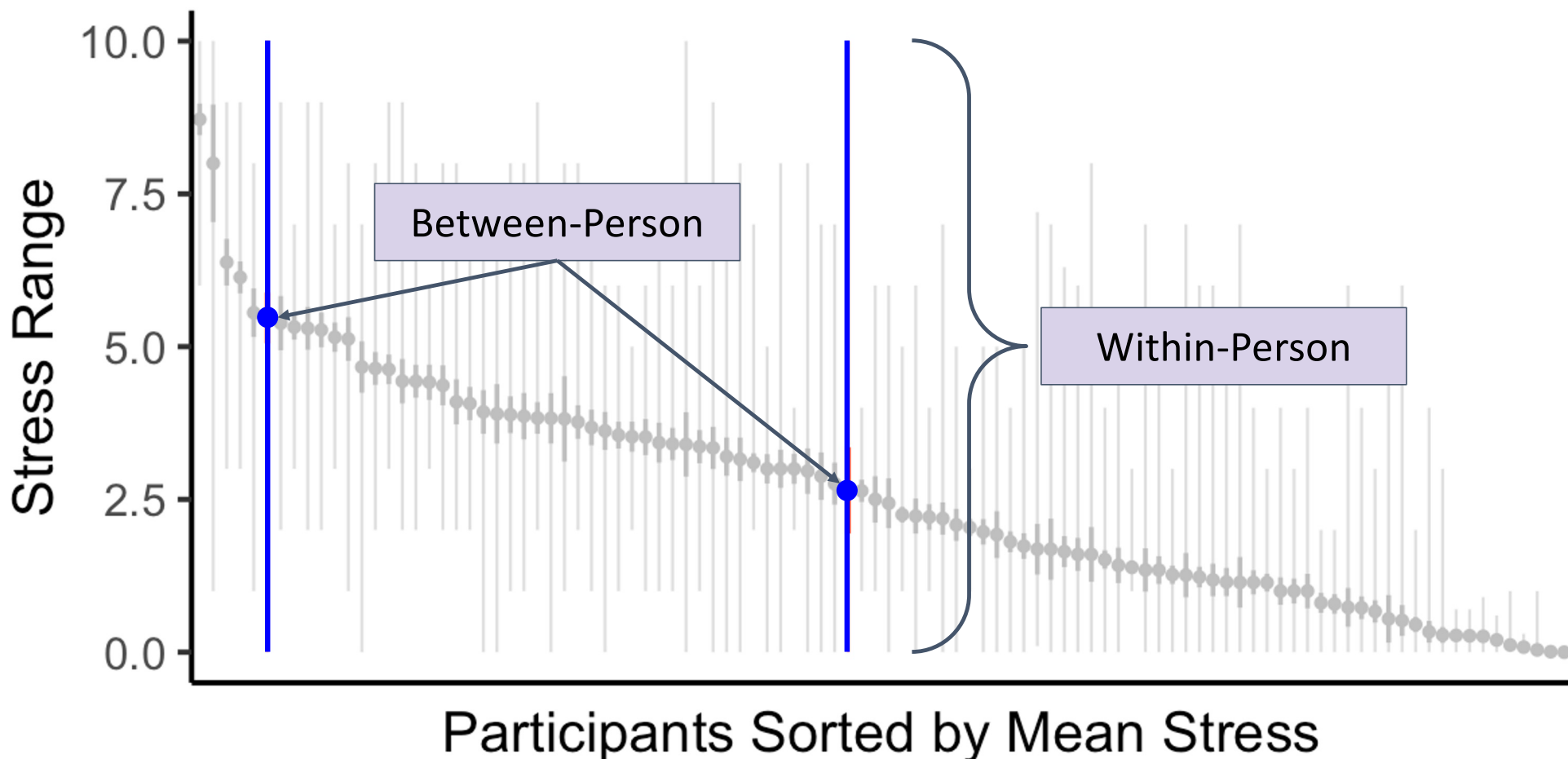
To reduce boredom

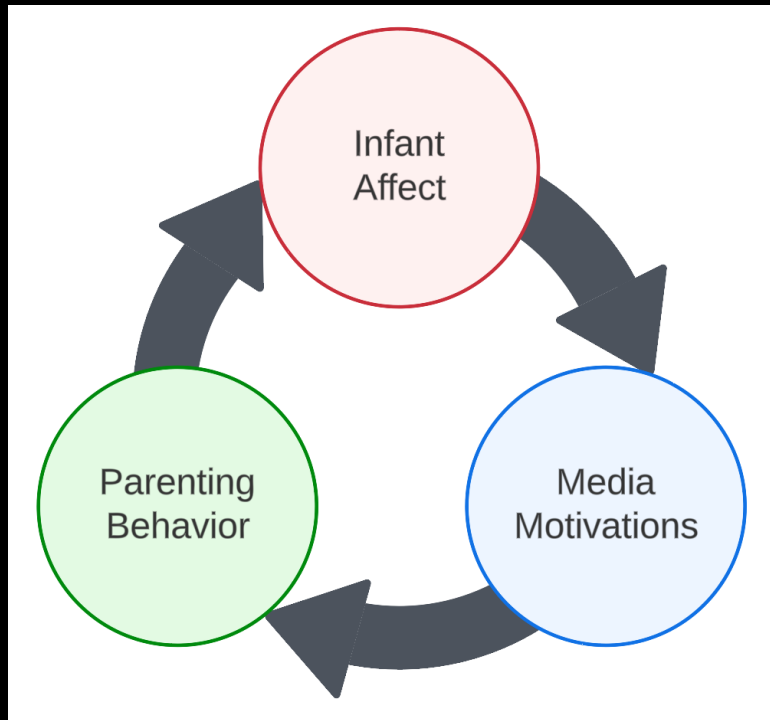
To prevent Sarah from getting overwhelmed or upset in a new situation



Participants Sorted by Mean Stress







Media Dynamics with Temporal Network Modeling

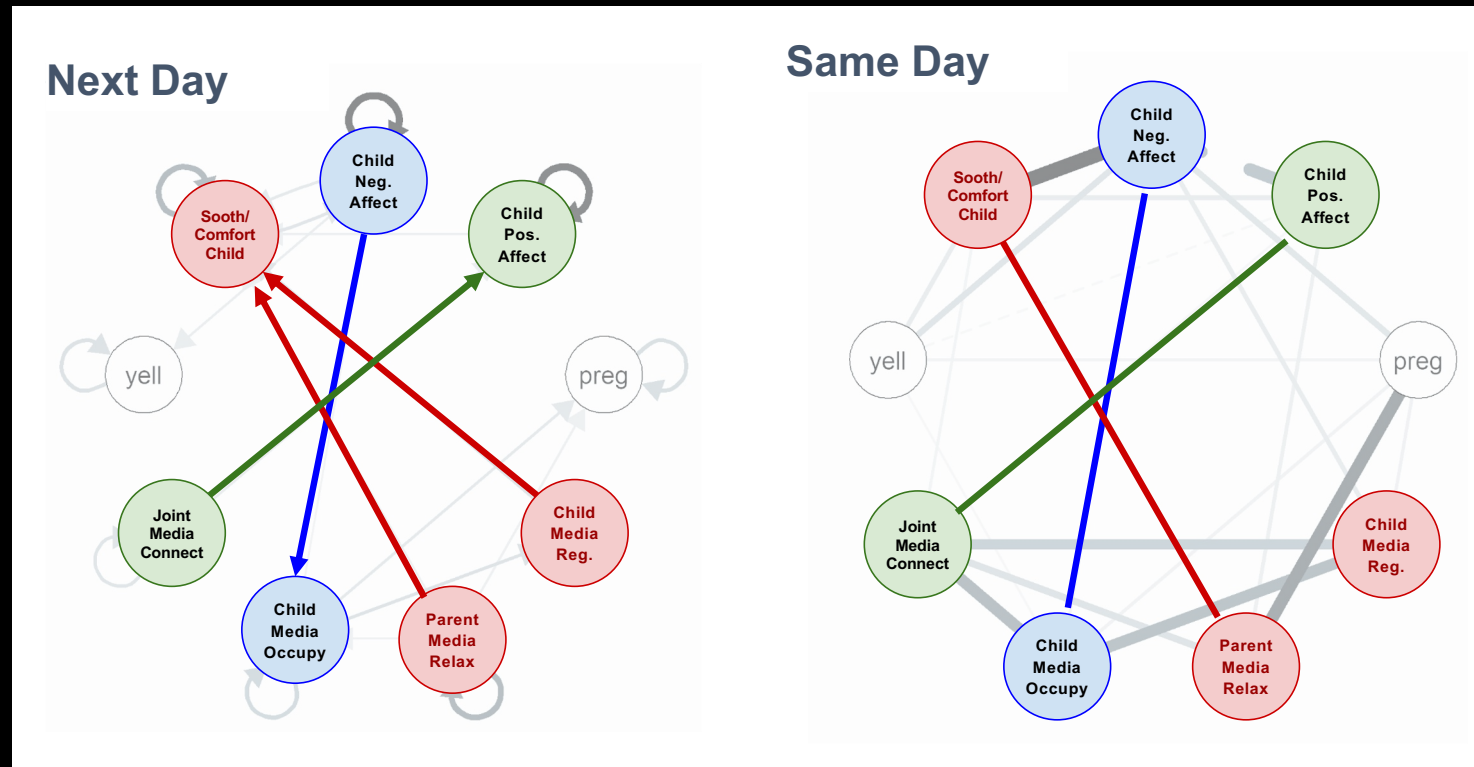
Generates 3 networks:

1. Next-day associations (temporal)
2. Same-day associations (contemporaneous)
3. Mean level associations (between-subject)

Kirkorian et al. (under review for *Developmental Psychology* special issue)

Temporal Network Models: End-of-Day

Kirkorian et al. (under review for *Developmental Psychology* special issue)



None of these highlighted links were significant in the between-subject model

Takeaways:

Family
Media
Ecology

Media can connect & disconnect

A coping mechanism for parents

Motivations: unique correlates

Media effects are dynamic



3. Research to Practice



The 5 C's of media use: How to manage screen time for your kids

today.com



Child

Content

Calm

Crowding out

Communication

Credit: American Academy of Pediatrics, Center of Excellence on Social Media and Youth Mental Health

Calm

Anticipate challenges

Build strategies to keep children calm and content *without using screens*

Build strategies to help *transition away from devices*



Establish consistent routines



Reward good self-regulation



Choose meaningful end points



Watch out for persuasive media



Provide attractive alternatives



Be a role model

Crowding Out

What must fit in your child's day?

Are they getting enough...

- Sleep
- Family interaction
- Physical activity
- "Green time"
- Reading / language
- Imaginative play
- Joy



Communication

- Use media to connect
 - During media use (joint media engagement, connect on-screen and off-screen)
 - After media use (e.g., What happened? What did you like? What did you learn?)
- Build a family media plan together
 - Plan rather than react
 - Scaffold rather than micromanage
 - Health/safety – what is non-negotiable (e.g., times/places)?
 - Clear routines (understood and agreed upon by all)
 - Clear consequences (understood and agreed upon by all)
 - Revisit/revise as children age, demonstrate responsibility

Key
Takeaways:

The 5 Cs

Child

Content

Calm

Crowding out

Communication

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Collaborators

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Jenny Radesky, University of Michigan

Bolim Suh, University of Wisconsin-Madison

