

Educational Media Exposure and Parent-Child Interactivity

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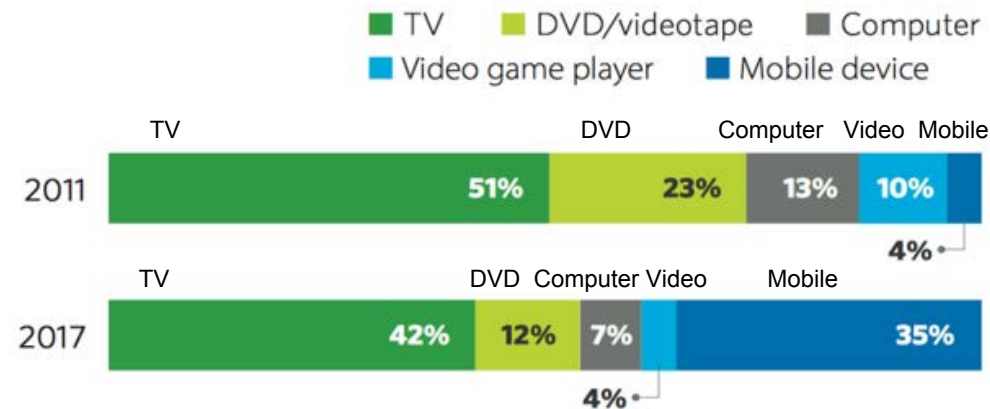
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Young children's electronic media exposure

- Young children exposed to a significant amount of media (Rideout, 2017)
 - < 2 years: 0:45 hrs /day; 2-4 year olds: 2:45 hrs /day
- Exposure is mostly to traditional screens-TVs (Rideout, 2017)
 - Mobile devices nearly universal in children 0-8 years
- AAP recommendations (AAP, 2016):
 - No media <18 months
 - >2yrs: 1 hour or less, high quality programming, shared use to promote enhanced learning and greater interactions

Among 0- to 8-year-olds, share of time spent using:



Is educational media exposure beneficial in young children?

- Established benefits of media exposure in preschool and older children related to learning
 - Vocabulary and language (Rice, 1990)
 - Prosocial behavior (Anderson, 2009)
- In younger children (<3 years), benefits of media are not as well established
 - Data not consistent with learning
 - Gaze studies: poor comprehension of images until 18 to 24 months (Pempek, 2010)
 - Deficit Models:
 - Video Deficit (Anderson, 2005)
 - Transfer Deficit (Barr, 2013)

Mechanisms for benefits of educational media

- Two possible routes for benefit of educational media
 - Direct impact on learning
 - Facilitate learning early literacy skills (letters/numbers) seen in older children (Rice, 1990)
 - Increased cognitive stimulation via parent-child interactions
 - Child-directed educational media
 - Parent-directed media apps and technology-based interventions

Objectives

- Does educational media that is **directed at children** enhance parent-child interactions?
- Can media apps and technology-based interventions that are **directed at parents** enhance parent-child interactions?

Characteristics of media exposure that may support or impede parent-child interactions

- Context (Anderson, 2001)
 - Background exposure
 - Child is present, age-inappropriate content, child usually not attentive
 - Foreground exposure
 - Child is present, age appropriate content, child usually attentive
- Content
 - Educational media directed at the child
 - Prompts for parents to interact
- Platform
 - Mobile devices
 - eBooks

Two Perspectives

- Integrate findings from:
 - **Experimental studies**
 - Observational studies: as media is actually used by families in their lives (“Real World”)

Foreground media: Implications for interactions

- Foreground child-directed educational media: potential for parent-child interactions in the context of covieving
 - Talking about content during programs
 - Scaffolding the child's understanding
 - Talking about content after covieving programs
- Comprehension of educational media is higher if co-viewed (Strouse, 2013)

Reduced interactions and language with educational media compared to play

Fewer interactions (Courage, 2010; Pempek, 2011) and reduced language (Lavigne, 2015)

- Educational media even when covieved compared to free play session
 - Parents interactions reduced
 - Talked less
 - Played less
 - Parent language reduced
 - Fewer number of words
 - Fewer different words

Potential for enhancement of quality

- Study: 3 groups of 12-18 mo (Pempek, 2011; Lavigne, 2015)
 - 1st/2nd: Co-viewed media either Sesame Beginnings or Baby Einstein@ home for 2wks
 - 3rd: no videos
- 2 weeks later in lab: 30 min TV on, 15min free play
- Higher quality parent-child interactions and richer language
 - Families who had co-viewed media at home compared to no videos had higher quality parent-child interaction in free play
 - Parents had richer language when they did talk
 - More new words per utterance

Facilitate interactions during educational programming

- Intervention aimed at enhancing relationships by promoting interactions (Barr, 2011)
 - Incarcerated teen males and their 6- to 36-month old children
 - Teens watched clips from Sesame Beginnings to model parent-child interactions with a facilitator illustrating developmental concepts using media
 - Increased quality of parent-child interactions including
 - Joint attention
 - Turn taking
 - Fathers' perceptions on influence they had on their children's development

Parent scaffolding: Key element of interactions

- Parents who used more scaffolding (questions, labels, descriptions) had toddlers who used more words (Fender, 2010)
 - Parents co-viewed DVDs (Baby Einstein) with 12-25 month olds
 - Parents with “high teaching focus”
 - More likely to present variety of words, label and describe content on the screen
 - Toddlers were more engaged with video, had more quantity and quality target word use
 - compared to those exposed to parents with lower teaching focus

Two Perspectives

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Media exposure associated with reduced interactions and language

- Home observation study using LENA (Christakis, 2009)
 - When TV on:
 - Fewer words spoken by parent
 - Child uttered less
 - For every 1 hour of TV:
 - Parents spoke 770 fewer words: 30,000 fewer words /week
 - Child vocalizations 0.26 SD reduced
- TV exposure and worse later child language (Zimmerman, 2007)
 - Infants/Toddlers (8 to 16 months), each hour per day of viewing baby DVDs/videos was associated with a ~17-point decrease in language score

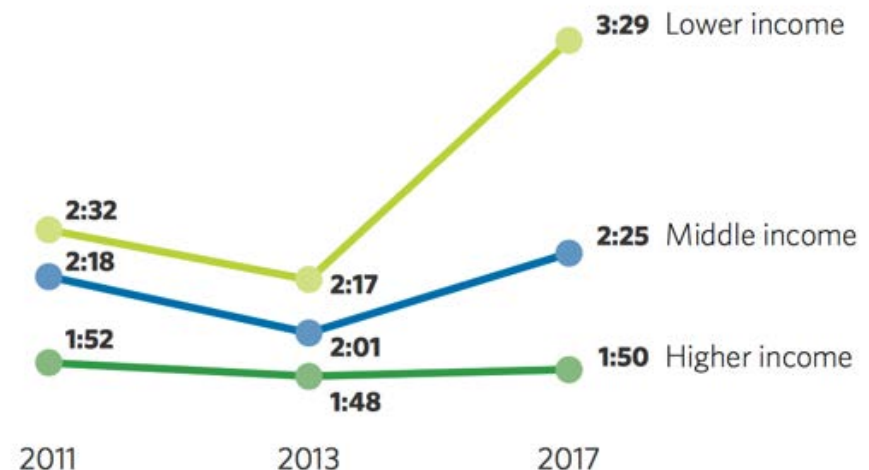
Co-viewing rates vary

- Parents co-viewing rates vary with age of the child and income:
 - More likely with very young children
 - 85% of 6- to 18-month olds if no older child in home (Barr, 2010)
 - Low in homes with young children 0-8 years (Connell, 2015)
 - ~30 % with TV and computers
 - Less with interactive screens
 - 29% smartphones, 21% tablets

Poor children at greater risk

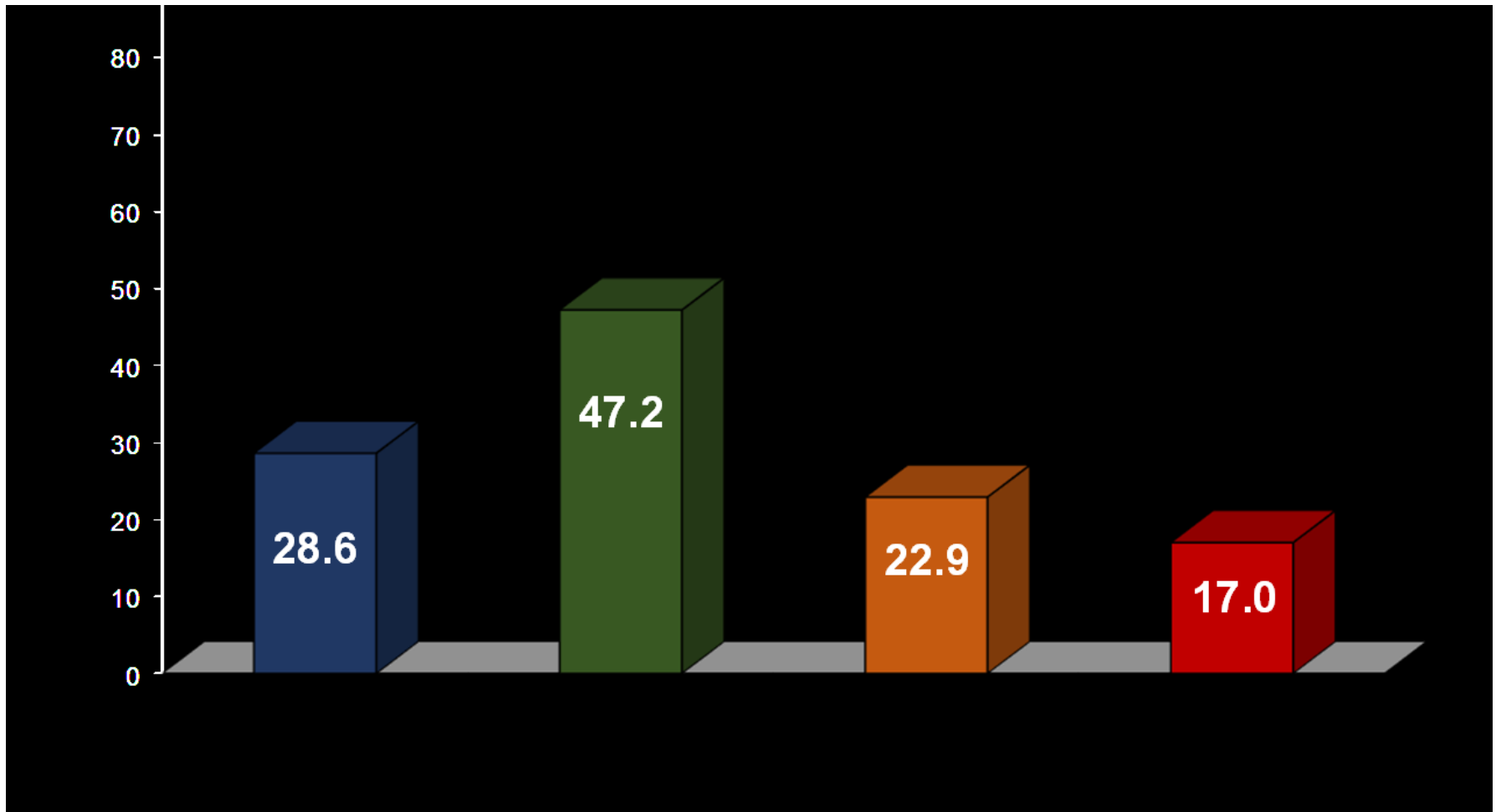
- More at-risk for language delay
 - Exposed to fewer words (Hart & Risley, 1995)
- More media exposure (Rideout, 2017)
 - Less likely to watch high-quality educational media
 - Media less likely to be co-viewed (Mendelsohn, 2008)
- Parents may view as a substitute to teaching/talking
- What do we know from real-world usage about educational media exposure in the homes of at-risk children?

Average time 0- to 8-year-olds spent daily (hours:minutes)



Note: Lower income is less than \$30,000 a year; middle income is \$30,000 to \$75,000 a year; and higher income is more than \$75,000 a year.

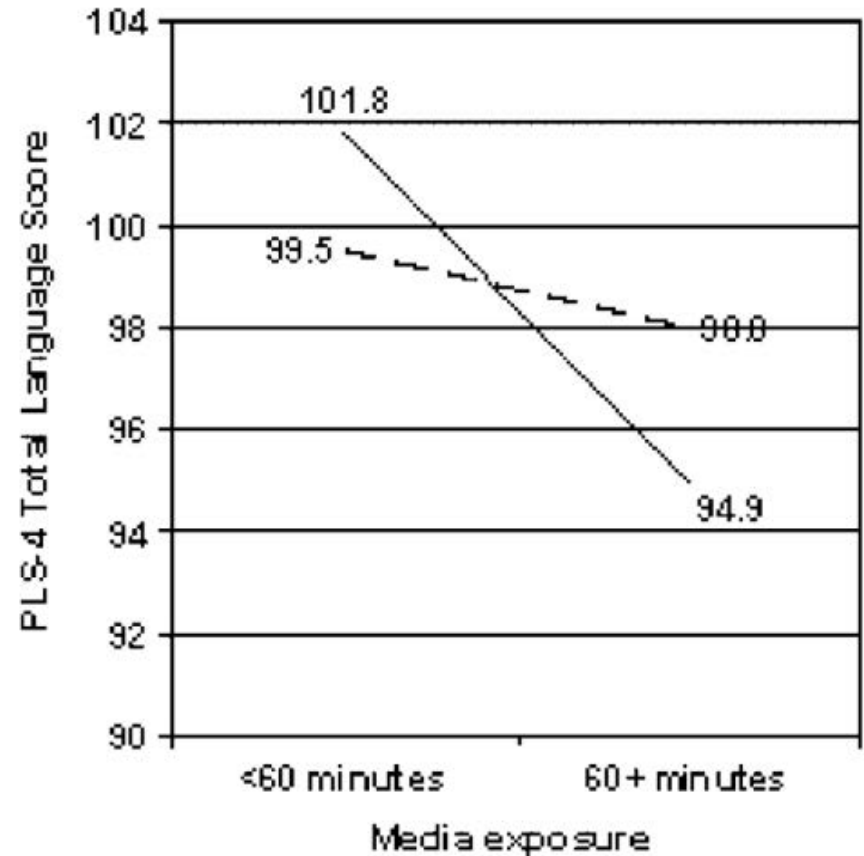
In absence of co-viewing, limited interactions even if educational media programs (6 months)



Mendelsohn, 2008

Parent-child interactions may buffer negative impacts

- Verbal interactions while co-viewing media at 6 months moderated adverse impacts of media exposure found on 14-month language (Mendelsohn, 2010)
- Adverse associations on language found only in absence (solid line) of these interactions versus the presence of these interactions (dotted line)

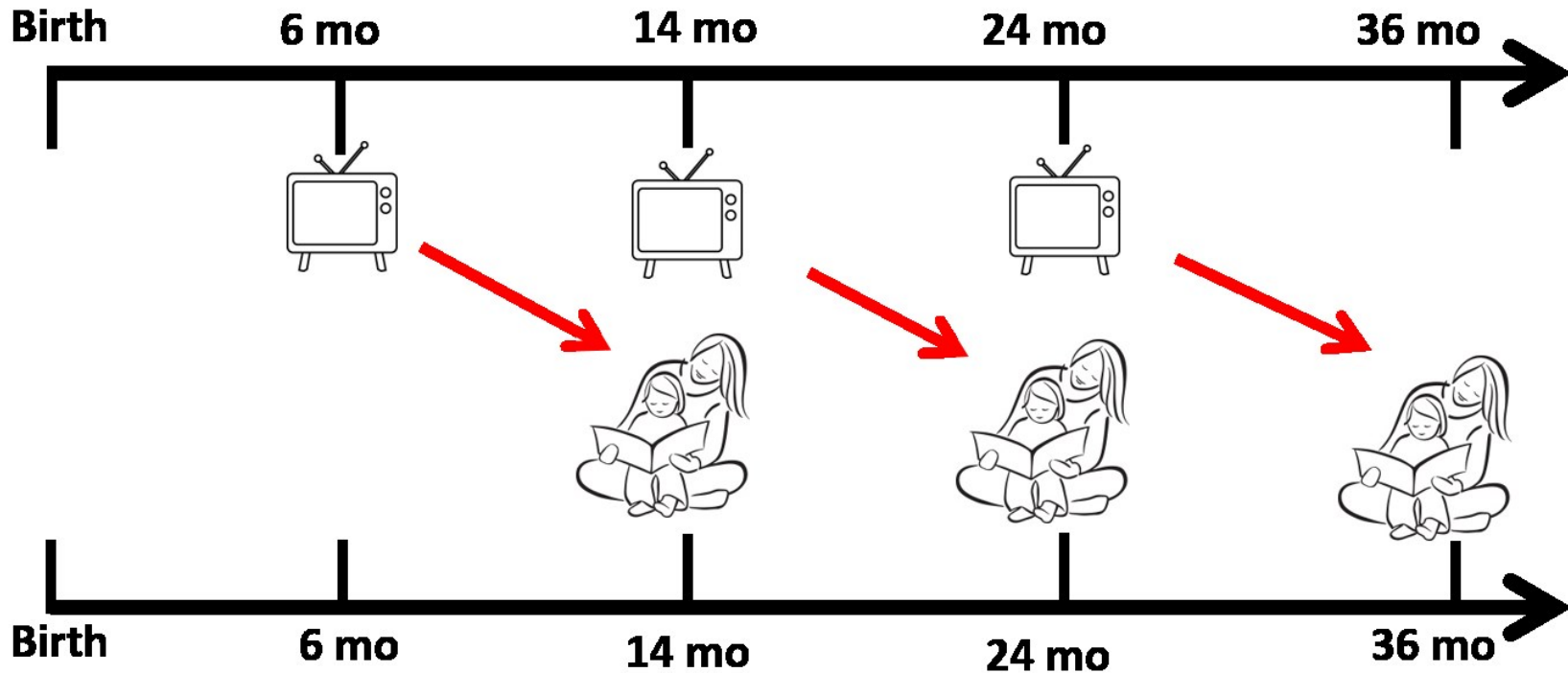


Key question: Does real-world usage of educational media exposure promote parent-child interactions?

- Secondary analysis of 147 low-income families in a larger study of child development (Choi, 2017)
 - Longitudinal assessment: 6 months to 36 months
- Educational media exposure, 24-hour recall diary
- Cognitive stimulation in the home, via **StimQ***
 - Interviewer-administered, office-based questionnaire
 - Scores provided for **TOTAL** Stimulation (StimQ) + 4 domains:
 - **Parent-child verbal interactions**
 - **Parent teaching activities** (stacking blocks, basic arithmetic)
 - Number and diversity of books
 - Number and diversity of toys /games that belong to child

Earlier Educational Media Predicting Later Home Cognitive Stimulation (StimQ)

Educational Media



Earlier Educational Media Predicting Later StimQ Findings

Outcome	β (SE)	Observations	P Value
StimQ	0.08 (0.05)	292	.09
Parent-Child Verbal Interactions	0.13 (0.05)	296	.02
Parent Teaching Activities	0.06 (0.06)	295	.24
Books	-0.00 (0.05)	296	.99
Toys	0.11 (0.05)	293	.03

Parent joint engagement and content are key

- Even when education media is covieved, there may be reduced language directed to the child compared to other experiences such as play
- Parents who actively scaffold around child-direct content, use more language and are likely to enhance the child's exposure to new words
- Impact of educational programs developed to foster parent-child interactions and enhance development, needs further study in real world especially in poor families

Future research needed

- Educational media use in young children
 - Quantitatively and Qualitatively
 - How is media used in the home
 - Longitudinal research
 - High-risk families
 - Further elaborate mechanisms of benefit
 - Which engagement strategies are most beneficial for children's development while co-viewing
 - Strategies in very young children (<18 months) given video/transfer deficit?
- How new emerging mobile devices are being used and what is their impact on child development
- Parents attitudes, mediation, own use and impact on their children

Can media apps and technology-based interventions that are directed at parents enhance parent-child interactions?

Parent-directed media apps to promote parent-child interactions

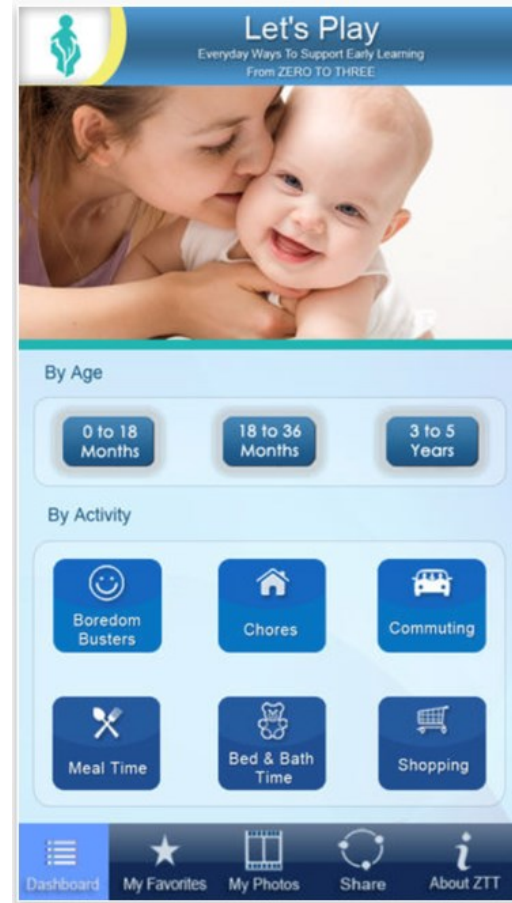
- Digital electronic media can be used to provide online information
 - Online resources that can be accessed anytime
 - Use information more effectively
- Grounded in research based on early child development
- Different platforms:
 - Text Messaging
 - App-based

Text messaging helped engage parents in more learning activities

- Parents receiving text messaged tips engaged in more learning activities (Hurwitz, 2015)
 - Parenting tips texted to parents whose children in Head Start
 - Text-based interventions can supplement to other forms of family engagement
 - May transmit parenting information and support parental engagement

Let's Play

- Free parenting app
- Developed by Zero to Three
- Parents can:
 - Choose activities that promote early learning for your child
 - Take photos
 - Share activities through social media



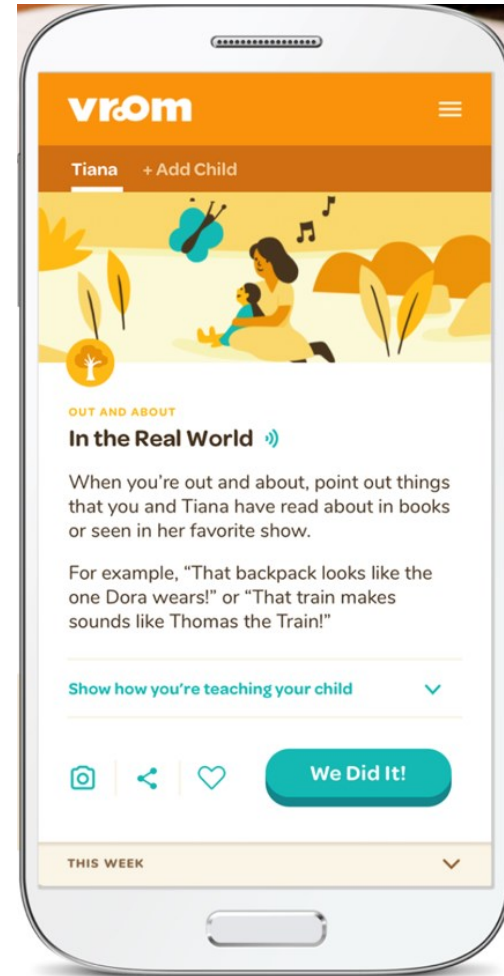
PBS Parent Play & Learn

- Designed for parents
- Games parents can play with kids around a familiar location such as grocery store, kitchen
- Daily “teachable moments”
- Parent notes providing suggestions for effective ways to interact with a child while playing a game
- Bilingual



Vroom

- Free app with learning tips for children 0-5 years old
- Core-Principles:
 - Positive Parent-Child Relationships
 - Back and Forth Interactions
 - Brain Building Basics- Look, Follow, Chat, Take Turns, and Stretch- to- Turn interactions that happen during shared time into brain building



Parent-direct technology-based interventions focusing on parent-child interactions

- **Filming Interactions to Nurture Development (FIND)** - Phil Fisher
 - Early Head Start home-visitation program in Oregon
 - “Serve and return”: aim to increase parent sense of competence, decrease parent stress leading to (+) outcomes in child
- **Play and Learning Strategies (PALS)** - Susan Landry
 - Trained parent educator, reviews real parent-child videotapes to demonstrate concepts
 - Guided practice sessions
- **Attachment and Biobehavioral Catch-Up (ABC)** - Mary Dozier
 - Parent coaches –provide parent training in home
 - Video feedback to highlight parents’ strengths, weaknesses, challenges
- **Video Interaction Project (VIP)** - Alan Mendelsohn

Video Interaction Project (VIP)

- Builds on Reach Out and Read model
 1. Interventionist / coach working 1-on-1 with families
 2. Promotion of play and reading aloud
 3. Core activity: Video-recording of parent-child interaction followed by review of video to promote self-reflection
- Low Cost: <\$200/child/year; with large health and education savings
- Findings Parent-child interactions:
 - Enhanced reading, play, talking, teaching (Mendelsohn, 2011a)
 - Reduced screen time (Mendelsohn, 2011b)
- NIH/NICHD Funded



VIP 1-Minute Glimpse

YouTube

Search



Parent-directed media impacts interactions, potential to enhance

- Interventions aimed at parents
 - Text messaging most established
 - Newer apps not as well-studied yet
 - Robust data on technology-based interventions
 - Use of videotape
 - Increased interactions
 - Impact development
- Future study of features:
 - Tailored messages
 - Supplement in person intervention – boost using media
 - Build in interactive elements
 - Ability to upload videos/interactions to share or track
 - Involve social media

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Thank you!