Educational Media Exposure and Parent-Child Interactivity

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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
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 coviewing
  - Talking about content during programs
    - Scaffolding the child’s understanding
  - Talking about content after coviewing 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 coviewed 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?
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

*StimQ (Dreyer,1996) Internet search: StimQ*
Earlier Educational Media Predicting Later Home Cognitive Stimulation (StimQ)
# Earlier Educational Media Predicting Later StimQ Findings

<table>
<thead>
<tr>
<th>Outcome</th>
<th>β (SE)</th>
<th>Observations</th>
<th>P Value</th>
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<tr>
<td>StimQ</td>
<td>0.08 (0.05)</td>
<td>292</td>
<td>0.09</td>
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<tr>
<td>Parent-Child Verbal Interactions</td>
<td>0.13 (0.05)</td>
<td>296</td>
<td>0.02</td>
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<tr>
<td>Parent Teaching Activities</td>
<td>0.06 (0.06)</td>
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<tr>
<td>Toys</td>
<td>0.11 (0.05)</td>
<td>293</td>
<td>0.03</td>
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Parent joint engagement and content are key

• Even when education media is coviewed, 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 текст 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
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
References 1

References 2

- Courage ML, Murphy AN, Goulding S, Setliff AE. When the television is on: The impact of infant-directed video on 6-and 18-month-olds’ attention during toy play and on parent-child interaction. *Infant Behavior and Development*. 2010; 33: 176-188.
References 3


• Mendelsohn AL, Brockmeyer CA, Dreyer BP, Fierman AH, Berkule S, Tomopoulos S. Do verbal interactions with infants during electronic media exposure mitigate adverse impacts on their language development as toddlers? Infant and Child Development. 2010; 19;577-593.


References 5


Thank you!

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