ANALOG KIDS IN A DIGITAL AGE – PT II: New Technologies, Old Challenges

John S. Hutton, MD, FAAP - NRSA Clinical Research Fellow, Division of General Pediatrics, Cincinnati Children’s Hospital Reading and Literacy Discovery Center. Owner, blue manatee children’s bookstore & decafé.
Objectives

We will focus on children under age 5 (last time was <3):

- AAP Media Guidelines & screen time statistics
- Key drivers of screen time use/overuse
- The role of parents: background, co-viewing, modeling
- Screen-based gadgets for children 5-under
  - e-books: types, promise, pitfalls
- Why screen-based is problematic for development
  - Joint attention
  - Social gating
  - Dialogic reading
- Why t-books & Reach Out and Read work so well
Wisdom of the Ages

“Anyone who has a library and a garden wants for nothing.”  - Cicero, ~50 BC

“You have brains in your head, You have feet in your shoes, You can steer yourself any direction you choose.”  - Dr. Seuss, “Oh, The Places You’ll Go!”  1990

“The keys to a happy childhood are a pile of books and a back door.”  - Richard Louv, 2008
Wisdom of the Now
(from Babble.com)

How we managed to finally get more SLEEP in the mornings.
Pretest: who’s missing?

Parents!
Small Adults?
Big News!
(in 1999)

“The negative effects of excessive and inappropriate electronic media are well-described in children, including language delay, obesity, behavioral problems, and poor academic performance.”

- American Academy of Pediatrics Committee on Public Education

Children are NOT Small Adults!
(nor e-dults, iDults, Wii-dults, Gdults...)

Ask Your Doctor…

AAP Electronic Media Guidelines

• **NO Analog Baby:** Pediatricians should “urge parents to avoid television viewing for children under the age of 2 years…and encourage interactive activities that will promote proper brain development, such as playing and reading together.” Also discourage background viewing.

• **NO Sanctuary:** No child should have a television in his/her bedroom. Instead, TVs, video games, and computers with Internet access should be in public areas of the home.

• **SLOW Moderation:** Children over 2 should limit viewing time to no more than 1-2 hours per day of quality, educational, pro-social programming, ideally with an adult caregiver.

• **CO Tune In:**
  – View television with children and discuss content, avoiding media as an electronic baby-sitter.
  – Monitor shows that children and adolescents are watching and ensure appropriate content.
  – Use controversial programming as a means to discuss important topics, such as family values, sexuality, drugs, and violence.

• **GO! Advocate:**
  – Provide alternate healthy options, such as unstructured play, reading, learning an instrument or sport, art projects, or spending time with friends or family.
  – Support efforts to establish comprehensive media education in schools.
  – Pediatricians should serve as role models for appropriate media use by limiting television and video use in waiting rooms and patient rooms…and actively promote reading (**such as Reach Out and Read**).
Ask Who?

• 1999 AAP “Media Matters” initiative, stressing pediatricians’ “unique position to relay information about media to parents/children”\(^1\)

• 2003 study found 85\% of parents of children <2 had never talked to their pediatrician about media use\(^{11}\)
  – Over half of US households have no viewing rules\(^{12}\)
  – Parents are interested in reducing children’s viewing time, but are uncertain how to do so\(^{35}\)
Ask Elmo?

Screen Time Statistics

- 90% of US children are regular viewers by age 2\textsuperscript{15}
- 2006 Kaiser US Kids 0-6\textsuperscript{13}: avg 2-3 hours/day for 0-2, increases w/age
  - Key driver = portable devices

- 2009 Kaiser, US Kids 8-18\textsuperscript{12}:
  - Average = 7.5-11 hrs/day vs 6.5 in 2005; 70% in bedroom
  - Higher for lower SES, single parent, lower education
  - Risk factor for heavy use = history of viewing at younger age
  - Kids in homes with RULES (AAP Guidelines!) used significantly less media\textsuperscript{12,40}

- 2011 Common Sense Media\textsuperscript{14}:
  - 2-4 year olds: 2.3 hours/day; 5-8 year-olds: 3+ hours/day
  - Vs. 28 minutes being read to (decreasing)
  - ~45% 2-5 y/o have TV in their bedroom, increases with age
  - “App Gap” between higher and lower SES households; tablets vs TV

- 2011 Preschoolers\textsuperscript{52}: 4.4 hours – home + child care settings
WHY
Should I
Care?
(or listen to meddling MDs?)
Health Risks of Excessive Screen Time

- **Obesity** – US rate >2x since 1980
  - Media + food as calming tools for fussy infants
- **Impaired sleep**
- **Increased risk/severity ADHD** (1-3 y/o, content)
  - 9.5% ages 4-17 (2007); increased ~3%/yr 1997-2006, 5.5%/yr 2003-2007\(^49\)
  - Overstimulation, impaired critical stages for self-regulation
- **Increased risk/severity depression** (24% >2.7 hrs)
- **Antisocial behavior** – violent/adult content
- **Decreased parent-child interaction** ("talk time")
  - Language delays (esp < 2 y/o)\(^39\)
  - Decreased **social skills** – empathy, non-verbal
  - Decreased **creative** playtime/practice (fine motor)
  - **Academic** problems – vocabulary, distraction
Parent-child... huh?
What About Parents?
Dora and Diego Smarter than Frog and Toad?

Parental reasons for media choices:

1. **Education**
2. **Entertainment**
3. **Babysitting**

   - When parents perceive media helps learning, children were >2 times more likely to exceed AAP guidelines

• **Marketing works!**
  
  - 70% of parents say their infants are “less fussy” when viewing
  - 55% say infants are “more focused”
  - 29% believe having infants watch videos is “good for their brains”
Do Parents Care?

• **2013 Study of Parents of Children 0-8**:  
  – 8 in 10 say screen time is not a source of conflict  
  – 55% are "not too" or "not at all" concerned about media use  
  – 30% concerned  
  – More positive than negative views on screen media affect on learning and creativity (except video games)  
  – Most see technologies as bad for physical activity  
  – Main tools for rewarding or diverting children = books, toys, activities, and TV vs 37% smart phones/tablets

**Generational Shift: "Parents set the family style"**

• **Media-Centric Families (39%)**: parents 11 hrs/day, kids 4.5  
  – **Moderate** (45%), 5, 3 hours; **Light** (16%), 2, 1.5 hours
Beware Background

2012 Study US Children 8mos – 8yrs\textsuperscript{31}:

- Average 232 minutes background TV daily (4 hours!)
  - Range 140-356 minutes.
  - ~3x more than direct viewing and ~7x than reading together

- Factors associated with highest reported levels (time diaries)
  - Homes with very young children (mean 5.5 hours for 8mos – 2 years old)
  - Lower caregiver education
  - Lower household income
  - Single parent home
  - African American race
  - Presence of TV in the child’s bedroom
  - TV on when no one is actively watching

- Trend: increase in direct and decrease indirect viewing with age

- Effects: reduced duration/quality of toy play, parent-child interaction, vocalization, conversation, vocabulary
Do As I Do

- 2012 Annenberg Media Environment Survey\textsuperscript{51}:
  - Online: 1550 parents of children 0-5, 6-11, and 12-17
    - 64% white, 12% African American, 17% Hispanic
    - Median income $60k
    - 68.1% some college or less
- Parent viewing = strongest association with child viewing
  - 23 extra child minutes per hour of grownup time
- 70% parental bedroom TV (children 46%, increase with age)
  - Independent predictor for younger children, not adolescents
- More rules for younger children - assoc with less viewing
  - 13-20% = “never” set rules
- Likely understates actual viewing via social acceptability bias
  - Adolescent-reported viewing ~1 hour higher than parental report

Encourage parents to be good media role models!
A Not-So-Subtle Association

Co-Viewing

• Recommended by AAP, but...
• Associated with more viewing
• Highest among 6-11 y/o (60% “often”)
• Tends to involve children watching what grownups want to watch

51 • Readiness: sexual/violent content, reality TV...
• Cited reason for TV in a child’s bedroom:
  → → So grownups can watch their own shows
Content Matters

• **Social Learning Theory**: children imitate observed behaviors (bad AND good)

• Violent viewing strongly associated with aggression, bullying, antisocial behavior
  – Especially before age 5: reality vs. fantasy

• **2013 “Media Diet” RCT 3-5 y/o**: encourage pro-social, age-appropriate (co)-viewing
  – Improved internalizing (anxiety/depressive) and externalizing (aggressive, oppositional) behaviors
  – Especially low-SES boys
  – Did not attempt to change total viewing time
If You’re Going to Watch…

Pro-Social Outcomes at 6 Months

Don’t Count Out The Count!

• Quality educational (curriculum-based) TV shows, e.g. *Sesame Street*, have educational value when viewed in appropriate amounts by children ages 2 1/2 - 5 years

  – Greatest effects in short-term memory and reading identification, but NOT mathematics or reading comprehension (not dialogic)
  – Positive effect of “pro-social” programming

• “Ecological paradigm” - effects of screen media vary by socioeconomic and educational niche
  • Compliment (high achievers) vs. substitute for school learning
  • Pro-social messages especially useful in low-SES households

• Best with active parental involvement
Common Sense Advice

5 Tips for Picking Your Preschooler's First Shows
When you're 2 or 3, every show is a new show, from classic hidden gems to the latest thing on PBS Kids.

find tv for toddlers
When I Grow Up...
KinderGadgets
Your Baby Can Read Use a Tablet!

The Vinci®

“Together, we'll INSPIRE THE GENIUS.”

• Handheld tablet marketed for babies 0-4
• Founder Dr. Dan Yang, “mother/world-renowned telecom entrepreneur.”
• ESRP $389.00
• Games matched with developmental goals
  – Water, Sky, Exploration, World Travel, Stories
• Emotional Reward System:
  – “Voice, sound, color, and animation tell your child their choice is right”

“Having found traditional toys for infants generally uninspiring, Dr. Yang noticed her child's profound fascination with a smartphone...”

• Winner of 2011 TOADY for worst toy
Tablets-R-Us

• **Tabeo** tablet – launched 2012
  • Pre-loaded with 50 “kid-friendly” apps including Angry Birds
  • “Interactive” E-reader App - iStoryBooks
  • Recommended ages 8-up
  • Parental control options
• **Meep!** – ages 5-up
  • Apps, e-books, online chat
Vtech InnoTab

• Learning App Tablet ages 3-9

“...Your child will have so much fun, they won’t realize they’re learning!”
Kid-e-readers

“I read before I go to bed. I figure reading a book is like watching TV but using your head for the picture.”

- 14 year-old Wisconsin boy
ebook Trends

• **2013 Scholastic Survey (kids 6-17 + parents):**
  - 49% parents feel their children don’t spend enough time reading for fun
    - 72% of parents interested in ebooks for children
  - Increased % children who have read an ebook since 2010 (46% vs 25%)
    - 80% prefer print books
  - Narrowing gender gap in reading frequency **via decrease in girls**
    - 36% from 42% = frequent readers; boys 32%
    - Driver: increase in social media + cell phone internet use by girls
  - 50% age 9-17 would read more for fun with greater access to ebooks
    - Especially boys (reluctant readers); Allure of apps & games?
  - **90% say they are more likely to finish a book they choose themselves**
  - **Major influences:**
    - Reading role-model parent or large book collection (more than income)
    - Building reading into daily schedules

• Ages 3-7
• “Animated storyteller.”
• Isn’t that a movie? “Stories come to life by watching animation, hearing well-known character voices narrate stories, listening to music, and viewing graphics.”
Disney Digital

Read Disney Stories on all of your Devices!

Disney Book Apps bring endless fun and excitement to your mobile device. Several Disney Book Apps are now available for the Apple iPad, iPhone and iPod touch, and many more will be added! With a wide selection of characters, stories and features, you are sure to find the perfect App for readers of all ages.
iPad
(iParent optional)
Free Play vs FreeTime®
($4.99-$6.99/month)

Never hear your kids say, “I’m bored.”
We’ve added over 1,000 popular new kids’ titles.

Kindle FreeTime Unlimited is the first-ever all-in-one subscription that brings together all the types of content that kids and parents love - books, games, educational apps, movies and TV shows. With unlimited access to thousands of hand-picked titles for kids ages 3-8, parents don’t have to spend time (and money) guessing what their kids will enjoy, and kids can explore a world of age-appropriate content on their own - no ads, no in-app purchases.
iParenting

Parental Controls

- Disable: 
  - Podcasts
  - Radio
  - iTunes Store
  - Allow access to iTunes U
  - Ping
  - Shared Libraries

- Ratings for: United States
  - Show content ratings in library

- Content Restrictions:
  - Movies to: NR
  - TV shows to: TV-14
  - Apps to: 12+
  - Restrict explicit content

Restrictions apply to sharing and the iTunes Store.

Click the lock to prevent further changes.
Good or Bad?
eBook Amnesia

• 2006 Temple Infant Lab Study of children 3-5 + parents
• Choose an e- or traditional book and read together
  – Same degree of overall interaction
  – E-books – more device-related comments; behavioral orientation
    • Device intrusion: distracting animation, music, buttons
  – T-books – more content-related comments; story orientation
  – Comprehension effect: e-book users significantly worse
  – Confirmed by follow-up randomized study

• 2010 Pop-up Study: learning from picture books impeded by manipulative features
Enhanced Distraction

- **2011 Cooney Center Study:**
  - 3-6 year-old child-parent co-reading print and e-books
  - **Traditional books** best for comprehension, literacy building, and overall engagement
    - More *content-related* interaction, *dialogic* benefits
  - **Basic/enhanced e-books**: more *non-content-related* interactions, content-related dropped dramatically
    - Behavior-related *conflict* between parent and child
  - Enhanced e-book readers recalled less story details, *more engaged with device than parent*
  - Potential adjunct for learning disabilities, special needs
Why Is Old-School so Good?
Joint Attention

• Prerequisite for language development
  – Basis for dialogic reading
  – Theory of Mind: self & other
  – “Cognitive scaffolding”
  – Impaired in autism

• Requires social engagement

• Follow-in vs parent-directed JA
  – Greatest learning via “follow the child” (Montessori)

• Nelson’s functional hypothesis:
  – Directive mothers: language purpose = social directive
  – Follow-in: cognitive exploration/motivated to learn

• Electronic media incapable of JA, inherently directive
“Social Gating” for Learning & Language

- Motivation, non-verbal cues, emotion
- Evolutionary: occurs throughout animal kingdom

Dialogic All Day

- **Dialogic reading**: “serve & return” interaction
  - Extensive body of efficacy evidence
  - Inherently **human** function, not simulated well by SBM

- **2011 Vanderbilt Study**:
  - Parents of 3-year-olds over several weeks
  - “Co-view” video books:
    - Trained in **dialogic** viewing, interactive with child
    - Viewing as usual
  - Children with less-interactive parents showed fewer reading skills and comprehension
    - Parents had to be **trained** in dialogic process; didn’t come naturally with the electronic version
    - Co-viewed videos may have educational benefit *if dialogic*
Read-iness

Learn to Read

- Younger children (~0-7)
- Joint Attention
- Social (parent/caregiver)
- Dialogic Catalyst
- Best via real people/world
- SBM adjunct role: letter recognition, pro-social
- Reading role models
- Reach Out and Read!

Read to Learn

- Older children (~7-up)
- Independent
- Dialogic still important
- Fueled by positive view of reading & experiences
- Multiple platforms: beware “enhanced” & distracting content (social, games)
- Role for ebooks, esp reluctant readers
Books From the Beginning

• AAP Guidelines: start at 6 months
• Maternal and Child Health Bureau: 2 months
• Book sharing and dialogic reading promote language development, emotional attachment, and parent-child interaction, important predictors of school readiness
• Reach Out and Read: evidence-based intervention providing books and anticipatory guidance at WCC ages 6 mos-5 years
  – Reaches ~25% of low-income families in US, incl Spanish-speaking

“The single most important activity for building the knowledge required for eventual success in reading is reading aloud to children.”
  - US Dept of Education Report
Take Home Points:

• **Key Media History (at every WCC):**
  – “How much daily screen time (include background)?”
  – “Is there a TV or Internet access in the bedroom?”
  – “Do you read together every day? (bonus: “How?”)

• **High Impact Action Items:**
  – Remove TV/Internet from bedroom
  – Restrict viewing by context: meals, short car trips
  – Clarify Content: “educational,” entertainment, adult
  – Role modeling: limit background TV, intrusive use
  – Encourage healthy, fun, unplugged play
  – Reach Out and Read: advocate dialogic reading!
Thank You!

For more information:
www.BabyUnplugged.com
References

More References


