EFFECTS OF SCREEN TIME ON CHILDREN

Why is this topic important?

- What, if anything, is the effect on speech and language?
- What about for other disciplines (OT, PT)?
- Research is limited but is continuing to grow!
- Articles posted from:
    - NPR: Kids and screen time: What does the research say?
    - ASHA: Handheld screen time linked to delayed speech development
    - CNN: Limiting children's screen time linked to better cognition
    - CBS News: Groundbreaking study examines effects of screen time on kids

How much are we watching?

- Much of the research focuses on TV
- Research for tablets, smartphones is still limited
- Based on survey results:
    - Over 40% of children regularly watched TV, DVDs, videos by 3 months
        - By 24 months, this rose to 90%
    - Children 0-24 months watch approximately 2 hours of TV/day
- In the US, only 32% of children under 24 months follow the recommended guidelines for no screen time, though the recommendations have since changed

Screen time & speech/language

- In 2017, the Hospital for Sick Children in Toronto presented research regarding the relationship between screen time and language development
  - *Around 900-1,000 children, ages 6-24 months*
  - *2011-2015*
- By their 18-month check-ups, 20 percent of the children had daily average handheld device use of 28 minutes, according to their parents
  - *Used the ITC- Infant Toddler Checklist*
- RESULT: Infants with more handheld screen time have an increased risk of an expressive speech delay
- Every 30-minute increase in handheld screen time was linked to a 49% increased risk of “expressive speech delay” (i.e. score below the 10th percentile in the symbolic, social or the total score of the ITC)
- The study did not find any link between use of a handheld device and other areas of communication, such as gestures, body language and social interaction.

More research

- Television viewing associates with delayed language development (2008)
  - 166 children, ages 15-48 months (110 typically-developing, 56 with language delay)
  - Reviewed language milestones, Denver-II
- RESULTS: “Children who started watching television at <12 months of age and watched television>2 h/day were approximately six times more likely to have language delays”
  - Meaning, watching more TV earlier can increase risk for expressive language delay

- Associations between media viewing and language development in children under 2 years (2007)
  - 1,000 parents with children ages 2-24 months
  - Used parent interview and short form of the MacArthur-Bates Communicative Development Inventory (CDI)
- RESULTS: They found a large negative association between viewing of baby DVDs/videos (Baby Einstein, Brainy Baby) and vocabulary acquisition in children age 8-16 months.
  - "The 17-point difference associated in the analysis with each hour of baby DVD/video watching corresponds to a difference of about 6 to 8 words for a typical child out of the 90 included on the CDI"
- *Reading every day as opposed to less often is associated with about a 7-point increase in the normed CDI score
- The effect is specific to baby DVDs/videos and specific to children age 8 to 16 months. No other form of media exposure that was measured, and none for children age 17 to 24 months, was associated with either better or worse language outcome

Table II. Regressions of CDI language scores (normed) on parental interaction and media variables

Variable	Age 8 to 16 months		Age 17 to 24 months	
	Coefficient	[95% CI]	Coefficient	[95% CI]
Parental interactions				
Reading at least once daily	7.07*	[0.53,13.60]	11.72*	[1.86,21.59]
Storytelling at least once daily	6.47*	[0.23,12.71]	7.13†	[−0.11,14.37]
Music listening at least several times weekly	5.36	[−1.92,12.64]	7.2	[−2.10,16.50]
Children's media watching time (hours/day)				
Baby DVDs/videos	−16.99**	[−26.20,−7.77]	3.66	[−4.45,11.77]
Children's educational shows	1.72	[−4.42,7.87]	2.21	[−1.74,6.15]
Movies and children's noneducational TV	6.6	[−1.81,15.02]	2.03	[−2.78,6.83]
Grownup TV	−1.42	[−11.57,8.73]	2.38	[−5.68,10.45]
Parental viewing with child				
Rarely or about half the time (referent)				
Usually or always	5.57	[−2.10,13.23]	0.39	[−6.74,7.52]
N/A: no media viewing	−7.70†	[−15.49,0.08]	2.65	[−7.29,12.60]
r^2	0.17		0.18	
n	384		345	

Results also adjusted for sex, age, number of siblings, premature birth, premature birth by age interaction, hours per week in daycare, whether both parents are present, maternal and paternal education, parental income, child race/ethnicity, and the state of birth (Minnesota or Washington).

**$P < .01$; *$P < .05$; †$P < .1$.

CAN CHILDREN LEARN FROM WATCHING VIDEOS?

- Can toddlers learn vocabulary from television? An experimental approach (2007)
  - 48 toddlers, ages 15-24 months
- Wanted to know if they could learn novel words in 4 presentations:
  - Adult speaker via live presentation when the toddler was attending/joint reference
  - Adult via live presentation when the toddler was not attending
  - Adult speaker on TV
  - Edited clip from children's TV show (Teletubbies)
- RESULT: Most successful in learning novel words in the joint reference condition!
  - Significantly less successful with Teletubbies
  - Both younger (15–21 months) and older (22–24 months) participants identified the target objects when they were taught the novel word by an adult speaker
  - However, it appeared that children under the age of 22 months did not identify the target item when they were taught the novel word via the television program
  - Meaning, even though all children learn language best in the context of social interaction, older toddlers may learn words from video alone

- Word Learning from baby videos (2010)
  - *96 children, 12-25 month old*
  - *Used Bayley Scales of Infant and Toddler Development-III (BSID-III), parent interview, and MacArthur Communicative Development Inventory (CDI)*
- Results:
  - *“Apart from the gains in word knowledge we would expect from developing children, there was no evidence that children learned words specifically highlighted in a DVD focused on teaching children those words. Additionally, exposure to the DVD was unrelated to our measures of general language learning, providing no evidence that exposure to this DVD over 6 weeks either helped or hindered children’s general language learning”*
  - *“Earlier exposure was related to lower scores on a measure of general vocabulary knowledge”*

- Live action: Can young children learn verbs from video? (2009)
  - 96 children, ages 30-42 months
  - “Pilot data for the current study indicated that children under the age of 30 months were unable to learn a verb from video, even with live social support”
  - *Study 1: Do children learn verbs from video in an optimal learning environment?*
  - *Study 2: Do children learn verbs from video alone?*
  - *Study 3: Does social interaction merely provide more information?*
- RESULT:
  - Younger children (30-36 months) only learn verbs from video with live social interaction
  - Older children (36 months+) can learn verbs from video alone
    - But “learning was extremely difficult”
- Why are children under 3 unable to learn from videos alone?
  - Cognition in continually increasing
  - Children become more aware of their environments

In total: What is the effect on speech/language development?

- On Average:
  - Under 12 months = negative effect
  - 12-18 months = negative/no change?
  - 18 months-30 months = no change?
  - 30-36 months = need social interaction to learn
  - 3+ = can learn from video alone

What about a foreign language?

- Brief exposure to Mandarin can help American infants learn Chinese (2003)
  - 9-month-old American infants who were exposed to Mandarin Chinese for less than five hours in a laboratory setting were able to distinguish phonetic elements of that language
  - In a companion study, another group of American infants was exposed to the same Mandarin material using a professionally produced DVD or audiotape
  - They showed no ability to distinguish phonetic units of that language

- RESULT: “The findings indicate that infants can extract phonetic information from first-time foreign-language exposure in a relatively short period of time at 9 months of age, but only if the language is produced by a human, suggesting that social interaction is an important component of language learning”

What does the American Academy of Pediatrics say?

- As of 10/21/2016:
  - “Recognizing the ubiquitous role of media in children’s lives, the American Academy of Pediatrics (AAP) is releasing new policy recommendations and resources to help families maintain a healthy media diet”
  - “Today’s children grow up immersed in digital media, which has both positive and negative effects on healthy development”

AAP Recommendations

1. Birth-18 months = no screen time; facetiming
2. 18-24 months = high-quality programming- CO-VIEW
    a. *Blue's Clues, Sesame Street, Barney*
3. 2-5 years = 1 hour daily of high-quality programming- CO-VIEW
4. 6+ = make sure it isn't replacing sleep, physical activity, etc.
    - *Be consistent with how long kids can watch media*

- Designate media-free times: dinner, driving, one hour before bed
- Watch WITH your children: "mindful use"

American Academy of Pediatrics, 2016

“THE AAP RECOMMENDS PARENTS PRIORITIZE CREATIVE, UNPLUGGED PLAYTIME FOR INFANTS AND TODDLERS. SOME MEDIA CAN HAVE EDUCATIONAL VALUE FOR CHILDREN STARTING AT AROUND 18 MONTHS OF AGE, BUT IT'S CRITICALLY IMPORTANT THAT THIS BE HIGH-QUALITY PROGRAMMING, SUCH AS THE CONTENT OFFERED BY SESAME WORKSHOP AND PBS. PARENTS OF YOUNG CHILDREN SHOULD WATCH MEDIA WITH THEIR CHILD, TO HELP CHILDREN UNDERSTAND WHAT THEY ARE SEEING”

How does this affect other disciplines?

- Effects of television exposure on developmental skills among young children (2015)
  - 75 children, ages 15-35 months
  - "Among 75 children who were frequently exposed to television, young children watched a daily average of 67.4 min of television before age 2, which was excessive according to the American Academy of Pediatrics. Viewing television increased the risk of delayed cognitive, language, and motor development in children who were frequently exposed to television.
  - Cognitive, language, and motor delays in young children were significantly associated with how much time they spent viewing television"
- Associations between sedentary behavior and motor coordination in children (2012)
  - 213 children, ages 9-10 years
  - INVERSELY RELATED: As sedentary behavior goes UP, motor coordination of children 9-10 goes DOWN

How is motor proficiency affected?

- Screen time at ages 4, 5, and 7 → negatively correlated to motor scores; screen time at age 4 influenced motor proficiency at age 7
  - "These results indicate that even if children meet or were in the limits of the ST norms, if they had higher ST at 4 years old, they kept this ST higher over time and this ultimately had a negative impact on their motor proficiency EVEN when they watched less than the recommended amount per week"
- "It has been shown, for example, that for children adopted from orphanage settings who were deprived of motor activity and opportunities for exploration, moving to an enriched environment later in development does not fully remediate motor delays. These delays required targeted interventions"

- Fundamental motor skills are related to physical activity!
  - Children with greater motor coordination are involved in more advanced activities
  - Children with less motor coordination lack confidence and competence
- “To prevent this ‘spiral of disengagement’ in motor activities, interventions are required”

More information

- When looking at a video, you brain is processing too much at one time
  - “When your child’s visual system is super-busy processing, it locks up the vestibular system”
  - “The faster the changes in the sensory information you’re taking in, the faster your brain needs to process it in order to keep up”
- Blue Light & Attention
  - White LEDs containing blue light suppress melatonin and disrupt natural sleep cycle
  - Sleep less, have less restful sleeps
  - Sleep cycle disruptions can play a big role in ADHD and other mood/behavioral issues
    - no causation with screen time and ADHD, but might be a risk factor for attention problems
    - “The study surveyed teachers and parents about kids' screen habits and found that heavy screen timers were nearly twice as likely to have above average attention deficit problems”
- According to University College London: every four hours spent on a device, they lost sixteen minutes of sleep
- During dinners: less social interaction, focus isn’t on the food
  - Might be more willing to try new things/new foods if they see you eating them

Mental and physical health

- Even for older adults: If you watch more screen time than recommended at age 10, you're 3-5 times more likely to watch more ST when you're 20
- Mental health is predicted to be leading cause of disease burden by 2030
- TV watching and computer use can predict the depression level among adults"
  - >6 hours of computer/TV time per day was "associated" with greater risk for depression, especially for females, people below poverty level, and less educated individuals (20+ year olds)
- Approximately 8% of kids 12+ are diagnosed with moderate-severe depression
- As many as 2 to 3 percent of children ages 6 to 12, and 6 to 8 percent of teens may have serious depression, and an estimated 2.8 million adolescents (ages 12 to 17)
- Can lead to health issues
  - "The children who spent the most time in front of a screen scored higher on various measures of body fat and had higher levels of insulin after fasting. There was also a strong correlation between screen time and levels of a hormone known as leptin, which controls appetite. Even after the researchers controlled for physical activity levels, the trends remained"
- For adults; "They found that higher levels of screen time were associated with a higher risk of "all-cause mortality" as well as a higher risk of both heart disease and cancer
  - The findings were independent of physical activity, grip strength, BMI, smoking, diet and other major confounding factors, including socio-economic status"

Early-Viewing Homes: What's the Reality?

- They don't want their children to fall behind other kids, educationally or digitally
- They want their children to learn
  - Might assume baby videos are teaching their children all they need to know
  - Might be less likely to engage in behaviors that promote language development
- Videos are heavily marketed to children under 2 years old, even when they have no educational value

“MANY COGNITIVE FACTORS PLAY A ROLE IN LEARNING FROM SCREENS AT THIS AGE, INCLUDING CHILDREN’S DEVELOPING PERCEPTUAL SYSTEMS, THEIR UNDERSTANDING OF SYMBOLS AND ANALOGY, AND THEIR DEVELOPING ABILITIES TO DISCRIMINATE HOW MUCH THEY SHOULD TRUST DIFFERENT SOURCES OF INFORMATION. GIVEN THAT CHILDREN YOUNGER THAN 2 YEARS ARE DEVELOPING ALL OF THESE CAPABILITIES, WE MAY NOT EXPECT THEM TO LEARN SOME KINDS OF CONTENT FROM A TELEVISION SCREEN”

What is the biggest takeaway?

- Research is still limited!
  - Very little research on tablets and smartphones
- Correlation does not equal causation
- Screen time isn't inherently bad
- Parent education is a huge part of our field!
  - How do children learn best?
  - If they're watching TV, the best thing parents can do is watch with their kids, to help children understanding what's happening in shows
- Follow the 5-2-1-0 rule
  - 5 servings of fruits and vegetables
  - 2 hours or less of screen time per day
  - 1 hour of physical activity
  - 0 sugary drinks

How Do Kids Learn Best?

- Babies are going through major cognitive development from birth to 2 (+)
- Babies learn words from a person looking at an object
  - DEVELOPING JOINT ATTENTION IS CRITICAL!
  - “Responsive and interactive exchanges” with other people, not passive
  - Videos typically were faced to the camera with a person speaking the word aloud
  - NOT how babies learn

Cont.

- Children learn through play!
  - *Physically, they receive sensory and proprioceptive input*
  - *They learn boundaries with play partners*
  - *They learn that back and forth communication (how to read body language, facial expressions)*
  - *They learn conflict resolution*
- Heavy parent use of mobile devices is associated with fewer verbal and nonverbal interactions between parents and children
  - *"A recent study of smartphone use in fast-food restaurants observed that as time spent by parents on their phones increased, so too did the likelihood of children acting out to gain attention, often leading to negative interactions"*
- For some parents, it's more about content than time
  - *teach them that what they are watching affects their mood, academic performance, behavior around others, etc.*

“CHILDREN YOUNGER THAN 2 YEARS NEED HANDS-ON EXPLORATION AND SOCIAL INTERACTION WITH TRUSTED CAREGIVERS TO DEVELOP THEIR COGNITIVE, LANGUAGE, MOTOR, AND SOCIAL-EMOTIONAL SKILLS. BECAUSE OF THEIR IMMATURE SYMBOLIC, MEMORY, AND ATTENTIONAL SKILLS, INFANTS AND TODDLERS CANNOT LEARN FROM TRADITIONAL DIGITAL MEDIA AS THEY DO FROM INTERACTIONS WITH CAREGIVERS, 3 AND THEY HAVE DIFFICULTY TRANSFERRING THAT KNOWLEDGE TO THEIR 3-DIMENSIONAL EXPERIENCE”

Effect on Our Field/Future Research

- Increases the caseloads of SLPs, OTs, PTs, etc.
- Can have lasting effects throughout life on academics, attention, mental and physical health
- Language development, motor proficiency, cognitive development go hand-in-hand
- Many studies used Baby DVDs/TV as their “Screen Time” measure
    - Long way to go to see true effects throughout life for iPad, smartphones
    - Many focused on typically-developing children: how does this affect children with Autism?
- Studies are limited and all over the board on populations, skills they’re teaching
- Reliance on self-reporting
    - not incredibly accurate

Groundbreaking study examines effects of screen time on kids (2018)

- CBS News:
  - At 21 sites across the country scientists have begun interviewing nine and ten-year-olds and scanning their brains
  - They'll follow more than 11,000 kids for a decade
  - They'll spend $300 million doing it
- Already seeing premature thinning of the cortex which processes impulses from the 5 senses
- "The MRI's found significant differences in the brains of some kids who use smartphones, tablets, and video games more than seven hours a day"
- Apps are being designed to capture and keep kids' attention

“FINDING DEFINITIVE ANSWERS ABOUT SOCIAL MEDIA'S INFLUENCE ON MENTAL HEALTH CAN BE A FRUSTRATING EXERCISE. EIGHTY-ONE PERCENT OF TEENS IN A NEW NATIONAL SURVEY BY THE PEW RESEARCH CENTER SAID THEY FEEL MORE CONNECTED TO THEIR FRIENDS AND ASSOCIATED SOCIAL MEDIA USE WITH FEELING INCLUDED. BUT IN A MONTH-LONG EXPERIMENT AT THE UNIVERSITY OF PENNSYLVANIA, COLLEGE STUDENTS WHO LIMITED THEMSELVES TO JUST 30 MINUTES A DAY ON FACEBOOK, INSTAGRAM AND SNAPCHAT REPORTED SIGNIFICANT DECREASES IN LONELINESS AND DEPRESSION”


60
MINUTES

ESPAÑOL

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- Home
- Create Your Family Media Plan
- Media Time Calculator

Family Media Plan

Media should work for you & work within your family values & parenting style. When media is used thoughtfully & appropriately, media can enhance daily life. But when used inappropriately or without thought, media can displace many important activities such as face-to-face interaction, family-time, outdoor-play, exercise, unplugged downtime & sleep.

By creating a Personalized Family Media Use Plan, you can be aware of when you are using media to achieve your purpose. This requires parents & users to think about what they want those purposes to be. The tool below will help you to think about media & create goals & rules that are in line with your family's values.

To make YOUR family's Media Use Plan, start by entering your family's information. This information will remain private and confidential.

To find this information in Spanish, click here.

Get Started

Create Your Family Media Plan →

Media Time Calculator →

Family Media Plan

- Family Media Plan
- Available in English and in Spanish
- Can add in how much sleep they're getting, how much reading they should be doing, chores, homework, etc…
- Already comes with how much sleep your kids get and how much physical activity they need (10.5 hours, 1 hour)
- Designate "Screen Free" Zones and Times
- "When we have recreational screen time, we will…"

SCREEN TIME RECOMMENDATIONS

Younger than 18 months	Avoid media, except video-chatting
18-24 months	Watch high-quality programming, but watch with the child to help them understand what they're seeing
2-5 years	Limit to 1 hour: watch high-quality programming, but watch with the child to help them understand what they're seeing
6+ years	Place limits on media time and types of media (TV, smartphone, tablet); make sure the child gets enough sleep, physical activity, and other behaviors essential to health

What you can do!

- Designate media-free times together, such as dinner or driving, as well as media-free locations at home
- Have ongoing communication about treating others with respect online and offline
- Spend less time on your phone
- Create a personalized Family Media Plan
- Follow the "5-2-1-0" plan each day: 5 servings of fruits and vegetables, maximum 2 hours of screen time, 1 hour of physical activity, and 0 sugary beverages

Resources:

1. American Academy of Pediatrics: https://www.aap.org/en-us/about-the-aap/aap-press-room/pages/american-academy-of-pediatrics-announces-new-recommendations-for-childrens-media-use.aspx
2. Family Media Plan: https://www.healthychildren.org/English/media/Pages/default.aspx
3. Minnesota Department of Health, Television/Screen Time- What You Need to Know: http://www.health.state.mn.us/divs/hpcd/chp/cdrr/obesity/tvviewing/tvscreenneedtoknow.html
4. Common Sense Media: https://www.commonsensemedia.org/screen-time
5. What The Screen Time Experts Do With Their Own Kids: https://www.npr.org/sections/ed/2018/02/06/579555110/what-the-screen-time-experts-do-with-their-own-kids