The Influence of Digital Media on Developing Children

Nurturing Developing Minds 2017
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Greenville Health System
Disclosure

• I have no actual or potential conflict of interest in relation to this program/presentation.
Warning

• This presentation contains several sample videos containing scenes of intense and graphic violence.
• The inclusion or exclusion of any content does not reflect any personal endorsement.
• All videos were pulled from YouTube.
Background

- Video game industry growth has been consistently outpacing the general U.S. economy
- Currently a $23.5 billion industry
Digital Media Use

63% of U.S. households are home to at least one person who plays video games regularly (3 hours or more per week)
The average game player age is **35** years old.

**AGE of Game Players**
- 27% under 18 years
- 29% 18-35 years
- 18% 36-49 years
- 26% 50+ years

**GENDER of Game Players**
- 59% male
- 41% female
Digital Media Use

• However…
  – Most 2-year-olds use mobile devices on a daily basis
  – >90% of 1-year-olds have already used a mobile device (most by 4 months old)
Digital Media Use

• SES does not seem to be a significant factor on use.
  – 96% of 0- to 4-year-olds in a low-income clinic had used mobile devices
  – 75% owned their own

• However, SES does seem to affect content.
  – 54% of children from higher-income families use educational content compared to 28% from lower-income families
Digital Media Use

• Teenagers
  – 3/4 of teenagers own a smartphone
  – 24% of adolescents describe themselves as “constantly connected”
  – 50% report feeling “addicted” to their phones
Digital Media Use

• Ever-growing emphasis on social media
• Most teenagers maintain a “social media portfolio.” (based on 2015 data)
  – Facebook (71%)
  – Instagram (52%)
  – Snapchat (41%)
  – Twitter (33%)
  – Google+ (33%)
  – Vine (24%) now shut down
  – Tumbler (14%)
  – Other (11%)
Digital Media Use
What do they play?

Top 20 Selling VIDEO GAMES of 2015
BY UNITS SOLD

<table>
<thead>
<tr>
<th>RATING</th>
<th>GAME NAME</th>
<th>GENRE</th>
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<tbody>
<tr>
<td>1</td>
<td>CALL OF DUTY: BLACK OPS III (M)</td>
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<td>2</td>
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<td>STAR WARS BATTLEFRONT 2015 (T)</td>
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<td>NBA 2K16 (E)</td>
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<td>GRAND THEFT AUTO V (M)</td>
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<td>13</td>
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<tr>
<td>14</td>
<td>HALO 5: GUARDIANS (T)</td>
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<td>15</td>
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<td>20</td>
<td>METAL GEAR SOLID V: THE PHANTOM PAIN (M)</td>
<td></td>
</tr>
</tbody>
</table>

Source: The NPD Group/Retail Tracking Service
Where do they play them?

Top devices most frequent gamers use:
PC (56%), dedicated game console (53%), smartphone (36%), wireless device (31%), dedicated handheld system (17%)

Top three types of video games that the most frequent gamers play most often on their wireless or mobile devices:

38% Puzzle/board game/card game/game shows
6% Action
6% Strategy
Why do they play them?

53% of the most frequent game players feel video games help them connect with friends and 42% feel video games help them spend time with family.

Of the most frequent gamers 75% believe playing video games provides mental stimulation or education.

36% of the most frequent gamers play on their smartphones.
Top 5 reasons parents play games with their kids:

1. It’s fun for the entire family: 88%
2. Because they’re asked to: 76%
3. It’s a good opportunity to socialize with their child: 76%
4. It’s a good opportunity to monitor game content: 59%
5. They enjoy playing video games as much as their child does: 57%
Parents and Digital Media

PARENTS CONTROL WHAT THEIR KIDS PLAY

93%

of parents believe that the parental controls available in all new video game consoles are useful. Further, parents impose time usage limits on video games more than any other form of entertainment:

79% of parents place limits on video game playing
74% of parents place time limits on Internet usage
73% of parents place time limits on TV viewing
65% of parents place time limits on movie viewing
Parents and Digital Media

9 out of 10 require their children to ask permission or are present when their child buys or rents a video game.

95% always or sometimes pays attention to video games played by their child.

68% of parents say video games are a positive part of their child’s life.

62% of parents whose children are gamers play computer and video games with their children at least weekly.
Parents and Digital Media

• Other studies have indicated varying parental reports of checking game ratings
  – As low as 2/3

• In a 2000 survey of teen gamers:
  – 90% claimed parents “never” check game ratings
  – 8% claimed they “rarely” check
  – 1% claimed they were ever prevented from buying a game based on rating
How is digital media rated?

- Electronic Software Rating Board (ESRB)
- Apple’s proprietary rating system
  - 4+
  - 9+
  - 12+
  - 17+
How is digital media rated?

- **Electronic Software Rating Board (ESRB)**

  - Suitable for children 3+. Typically considered educational.

  - Generally for all ages. Can contain cartoon violence and mild language.

  - For individuals 10+. Can contain violence, mild language, crude humor, or suggestive content.

  - For individuals 13+. Can contain moderate amounts of violence (including small amounts of blood), mild to moderate use of strong language or suggestive themes, and crude humor.

  - For individuals 17+. Can contain intense and/or realistic portrayals of violence (such as blood, gore, mutilation, and depictions of death), stronger sexual themes and content, partial nudity, and more frequent use of strong language.
How are games rated?

- There is a high concordance between game ratings and parent ratings in determining “M” ratings, but less for “T” and under.

- Literal imagery can affect rating categories.
  - Red blood gives a higher rating than green blood or no blood.
How are games rated?

Of the games rated by ESRB in 2015:

- 37% received an E (Everyone) rating
- 23% received an E10+ (Everyone 10+) rating
- 29% received a T (Teen) rating
- 11% received an M (Mature) rating
# How are games rated?

## Top 20 Selling VIDEO GAMES of 2015
**BY UNITS SOLD**

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50%

Source: The NPD Group/Retail Tracking Service
Flaws with Digital Media Research

- Much of it is based on surveys.
- There is a lack of long-term follow-up.
- There is a lack of consideration of displaced activities.
  - One study showed improvement in a task after observing a character in a video with whom a child developed a close attachment. However, children in the control group had better language development.
- The industry is constantly evolving, making much research obsolete at publication.
NES (1983)
SNES (1990)
Playstation (1995)
Playstation 2 (2000)
Xbox 360 (2005)
Playstation 4 (2014)
iPhone (annually since 2007)
Virtual Reality (2016)
Flaws with Digital Media Research

- Lines are becoming blurred between media for entertainment vs. communication
  - Apple Messages now supports in-message games
- Many studies compare violent video games to not gaming as opposed to playing non-violent games in equal duration.
- There is too much emphasis on extreme outcomes.
  - Affects parents’ perceptions
Can you be addicted to video games?

• It’s not that simple.
• Video game overuse has been shown to cause social dysfunction.
• However, there is no clear evidence supporting withdrawal.
• Dependence-like behaviors are more likely in children who start playing at younger ages.
• There is no AMA or DSM classification of video game addiction.
  – However, the DSM-V appendix includes Internet Gaming Disorder in the “Conditions for Further Study.”
Do video games cause violence?

- Yes and no. (But mostly yes.)
- Violent video games do temporarily increase aggressive cognition, affect, and behavior, and decreases prosocial behavior
  - Strongest evidence in children <10
- However, violent crimes among youth have decreased in the past 20 years
- The media has created a relative “crying wolf” situation.
- At the very least, violent games do seem to decrease pro-social behaviors.
Do video games cause violence?

**Note:** Rates are arrests of persons ages 10-17 per 100,000 persons ages 10-17 in the resident population. The Violent Crime Index includes the offenses of murder and nonnegligent manslaughter, rape, robbery, and aggravated assault.

Office of Juvenile Justice and Delinquency Prevention (OJJDP)
Doom (1993)
Doom (2016)
Call of Duty Black Ops III (2015)
Grand Theft Auto V (2013)
Grand Theft Auto V (2013)
Grand Theft Auto V (2013)

- Graphic sex scenes (partial nudity)
  - Including first person oral sex

- Strip clubs
  - First-person lap dances

- Prostitution
  - Interactive solicitation
Grand Theft Auto V (2013)

• Parents’ average age rating 13+

• GTA V REVIEW
  – “I just bought this game for my 12 year old son after a lot of convincing, and I don't find it as bad as CS said it was. There is not a lot of blood and you can stay away from sexual content. My only problem with the game is the swearing...A masterpiece though.”

• Great game and not as bad as people say!
  – “Well this game has a bad reputation but it really doesn't deserve it! You can learn a lot of things from this game such as about stocks and bonds, managing money and also sports as there is a big golf and tennis minigame! Bad places can easily be avoided and the violence is no worse that what is seen on the news and the language isn't as bad as what can be heard in school! It is a really fun game and a mature child should be just fine playing it as long as they are not a psycho and will know that it is a game and should never be repeated!”
Destiny (2014)
Final Fantasy VII (1997)
Realities of Digital Media

• Research has linked digital media to problems with:
  – Sleep
  – Attention
  – Learning
  – Obesity (begins in preschool but affects later life)
  – Depression
  – Exposure to inappropriate material
  – Compromised privacy and confidentiality
Realities of Digital Media

• Variables determining negative effects
  – Duration
  – Supervision
  – Access
    • Electronic devices in the bedroom
  – Content
Realities of Digital Media: Infants and Toddlers

• Limited (if any) support for early education
  – While some research has shown learning of novel concepts through digital media, children under 30 mo lack symbolic thinking and have immature memory flexibility to transfer knowledge from 2D sources
  – “video deficit”
• Adult interaction is crucial
  • Example: Children can learn novel words from videos, but only if their parents watch with them and reteach the words.
  • Begs the question of how much the video mattered
• Touchscreens help, but still problems transferring skills
• Video chatting should not be discouraged.
  – However, the same adult interaction component remains.
Realities of Digital Media: Infants and Toddlers

- There appear to be clear associations between duration of media use in early childhood and cognitive, language, and social/emotional delays in preschool/school-age.
  - Particularly with adult-oriented content
  - Poor development of executive functioning
  - “Theory of mind” deficits (understanding others’ thoughts and feelings)
Realities of Digital Media: Infants and Toddlers

• Content most designed to attract children’s attention (rapid changes, animations, sounds, interactive tapping/swiping) can decrease comprehension skills.

• Parental involvement
  – Using digital media with your child can actually stimulate learning
  – Unsupervised use leads to delays
Realities of Digital Media: Infants and Toddlers
Realities of Digital Media: Infants and Toddlers
Realities of Digital Media: Preschool Children

• “High quality,” prosocial educational TV shows (e.g. Sesame Street) have shown language and social benefits.
  – Preschoolers randomly assigned to prosocial content showed improvements in externalizing and internalizing behaviors.
  – This is often a useful alternative when modifying the overall media use is difficult.
Realities of Digital Media: Preschool Children

- Despite proven benefits related to “high quality” TV programs, the data for educational interactive media (games, apps, etc.) is much less consistent, and most are considered to have low educational potential.
  - Target only basic, rote skills
  - Not based on established curricula
  - No input from developmental specialists or educators
  - “Bells and whistles” can actually distract from learning
Realities of Digital Media: Preschool Children

• Digital media, by design, often implements behavioral reinforcements meant to achieve maximum duration of engagement.
  – Often auto-advance indefinitely
  – Can lead to tantrums when told to stop, especially in children with restricted interests such as in ASD (despite this being the group most likely to utilize excessive media use).

• Ideal apps are those that require dual engagement rather than “babysitting” and have automatic stops built in.
  – Sadly, not common in use.
Realities of Digital Media: School-Aged Children and Teens

• Research is much more promising.
  – Exposure to novel learning
  – Immersive experiences
  – Collaboration tools
  – Promote diversity awareness and empathy
  – Connection to support communities
    • Anonymity
Realities of Digital Media: School-Aged Children and Teens

• However, there are notable concerns in this population.
  – Exposure to mature content
YouTube & Livestream
YouTube & Livestream

Community

- Xbox Live Party (4)
  - 5 players
  - 96 messages
  - 18 party requests

- Invite Players to Party
- Invite Party to Game

Party Options: Party Chat

- smallisthail17: Left 4 Dead
- [obfuscated name]: Minecraft
- Master of Luck: Minecraft
- WacK Llamas: Minecraft

Select B Back X Leave Party Y Chat Channel

FINE!
Realities of Digital Media: School-Aged Children and Teens

• Increasing emphasis on inappropriate behaviors
  – Adolescent displays on social media portray/promote risky health behaviors
    • Substance use/abuse
    • High-risk sexual behaviors
    • Self-injury
    • Disordered eating
  – Leads other children to think these behaviors are normal or even desirable
Realities of Digital Media: School-Aged Children and Teens

• Digital media and depression
  – Incredibly variable relationship
  – Actually a relatively “U” shaped trend with social media
    • More risk of depression associated with both too little and too much use
  – Is affected by active vs. passive use and the degree of social comparison per child
Realities of Digital Media: School-Aged Children and Teens

• Privacy
  – Children need to be educated that, in effect, nothing posted online is completely private

• Cyberbullying
  – Occurrence varies by age (10% - 40%)
  – Differs from regular bullying by ease of access
    • Any time of day, especially with smartphones
    • Anonymity of attackers
    • Rapid spread of information
Realities of Digital Media: School-Aged Children and Teens

• Sexting
  – Growing concern in adolescence
    • 12% of children aged 10-19 have sent a sexual photo
    • Small, urban study showed 48% of girls and 63% of boys had sent a sext, and 70% of girls and 82% of boys had received one.
  – Linked to increased risk of:
    • Other high-risk sexual behaviors
    • Depression
    • Substance abuse
  – Because it involves minors, even consensual sexting can lead to long-term legal consequences
Realities of Digital Media: School-Aged Children and Teens

• Online predators
  – Sexual predators
    • Involves “grooming” usually by misrepresentation as another child
    • Can lead to a relative snowball effect with initial acts used as blackmail leading to further exploitation
  – Other predators
    • Financial
    • “Trolls”
    • Online and in-game marketing
      – Gacha tactics
Realities of Digital Media: Adults

• Social media use: 70%
  – 90% in teens

• 27% report feeling “addicted” to their mobile device
  – 50% in teens
Realities of Digital Media: Adults

- Children <2 are more likely to watch inappropriate “background” media than older children
- Heavy use is related to verbal and nonverbal interactions
- Associated with more parent-child conflict
- Affects child’s use habits
- Associated with cognitive, social, emotional, and even general health outcomes
Realities of Digital Media: Other

• While regulations may gauge content of digital media, they are less clear cut with regard to in-game advertising.
• Alcohol brands maintain a strong presence on social media despite being more strictly regulated in traditional media.
• Much content and in-game marketing is relatively predatory in nature.
Digital Media Recommendations

- Only 16% of pediatricians ask about media use.
- Only 29% of families report relying on their pediatrician for advice about media use.
- However, research suggests that those who do ask tend to follow recommendations.
Digital Media Benefits

• Early learning
• Exposure to new ideas and knowledge
• Increased opportunities for social contact
• Opportunities for promoting topics such as health information
Digital Media Benefits

• Video games and virtual reality have been used as learning aids for children with chronic diseases and as adjuncts for pain control
  – More effective than anxiolytics
• Can motivate rehabilitation in stroke patients
• Have been used to train certain surgical procedures
Digital Media Benefits

• First-person shooters (FPS)
  – Concrete improvements in visual-spatial skills
    • These skills are linked to success in science, technology, engineering, and mathematics.
  – Improvements in attention allocation
  – Better open-ended problems solving skills

– All of these do not hold as true for other genres including puzzle games and RPG’s.
– Seems to hold true regardless of violent nature
– Correlation is not causation.
Digital Media
Recommendations

• Parental involvement
  – Encourage parents to use media devices with their children
  – Co-Play
Digital Media Recommendations

• Create a Family Media Plan
  – Screen-free zones
  – Screen-free times
  – Device curfews
  – Balance online and off-line time
    • Schedule specific activities into routines
Digital Media Recommendations

Hatcher Family Media Plan

Screen Free Zones

Having areas of your home remain screen-free is important. Select from the list below & add them to your Family Media Plan to make sure your children understand where screens are not allowed. Add any other screen-free areas that are specific to your family.

Mobile devices & TVs are not allowed in the following screen-free zones in our home:

- Kitchen or dining room table
- Bedroom

Screen Free Times

As part of the daily routine, make devices like TVs, phones, computers, games or other electronics off limits at specific times. Dinnertime & before bedtime are important ones, but more extended breaks from technology each day may also be needed, especially for families with very young children.

We will not use mobile devices or other screens during the following times:

- One hour before bed
- Meal times

Device Curfews

All families are different, but deciding when all devices are turned off for the night is a great addition to a Family Media Use Plan.

Devices will charge overnight in:

- Living room

 AAP Media Plan

More than 80,000 apps are labeled as educational, but little research has demonstrated their actual quality. Products pitched as “interactive” should require more than “pushing & swiping.” Look to organizations like Common Sense Media (https://www.commonsensemedia.org) for reviews about age-appropriate apps, games & programs to guide you in making the best choices for your children.

Diversity Your Media:

Use media in a way that promotes interaction, connection & creativity. Different types of media may each have potential benefits, so media use is best diversified so that not all of one’s time is spent doing one particular activity.

When we have recreational screen time, we will:

- Co-play (playing video games & using apps with a parent or adult)
- Play videos, shows & apps with adults
- NOT play video games that are against our family’s rules both at home & at someone else’s house
- NOT download apps, movies, games without permission & asking an adult if they are appropriate for my age

Balancing Online & Off-line Time

Media & digital devices are an integral part of our world today. The benefits of these devices, if used moderately & appropriately, can be great. But research has shown that face-to-face time with family, friends & teachers, plays a pivotal & even more important role in promoting children’s learning & healthy development. Keep the face-to-face up front & don’t let it get lost behind a stream of media & technology.

By decreasing screen time, we will have more time for:

- Reading
- Joining a team or playing a sport

Israel

6-12 years
Digital Media Recommendations

- Choose media for (or at least with) your child
- Diversify your media
  - Multiplayer games
- Reinforce good manners
- Promote good “digital citizenship”
  - Teach by example
## Internet Gaming Disorder Scale

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<tr>
<th>Criterion</th>
<th>During the last year . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preoccupation</strong></td>
<td>have there been periods when all you could think of was the moment that you could play a game?</td>
</tr>
<tr>
<td><strong>Tolerance</strong></td>
<td>have you felt unsatisfied because you wanted to play more?</td>
</tr>
<tr>
<td><strong>Withdrawal</strong></td>
<td>have you been feeling miserable when you were unable to play a game?</td>
</tr>
<tr>
<td><strong>Persistence</strong></td>
<td>were you unable to reduce your time playing games, after others had repeatedly told you to play less?</td>
</tr>
<tr>
<td><strong>Escape</strong></td>
<td>have you played games so that you would not have to think about annoying things?</td>
</tr>
<tr>
<td><strong>Problems</strong></td>
<td>have you had arguments with others about the consequences of your gaming behavior?</td>
</tr>
<tr>
<td><strong>Deception</strong></td>
<td>have you hidden the time you spend on games from others?</td>
</tr>
<tr>
<td><strong>Displacement</strong></td>
<td>have you lost interest in hobbies or other activities because gaming is all you wanted to do?</td>
</tr>
<tr>
<td><strong>Conflict</strong></td>
<td>have you experienced serious conflicts with family, friends or partner because of gaming?</td>
</tr>
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PRIUSS

- Problematic and Risky Internet Use Screening Scale

<table>
<thead>
<tr>
<th>Number</th>
<th>Question</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>do you choose to socialize online instead of in-person?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>do you have problems with face to face communication due to your internet use?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>do you experience increased social anxiety due to your internet use?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>do you fail to create real-life relationships because of the internet?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>do you skip out on social events to spend time online?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>do your offline relationships suffer due to your internet use?</td>
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<td>7</td>
<td>do you feel irritated when you're not able to use the internet?</td>
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<td>8</td>
<td>do you feel angry because you are away from the internet?</td>
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<td>do you feel anxious because you are away from the internet?</td>
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<td>do you feel vulnerable when the internet isn't available?</td>
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<td>do you experience feelings of withdrawal from not using the internet?</td>
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<td>do you put internet use in front of important, everyday activities?</td>
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<td>do you avoid other activities in order to stay online?</td>
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<td>do you neglect your responsibilities because of the internet?</td>
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<td>do you lose motivation to do other things that need to get done because of the internet?</td>
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<td>do you lose sleep due to nighttime internet use?</td>
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<tr>
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<td>does time on the internet negatively affect your school performance?</td>
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<tr>
<td>18</td>
<td>do you use the internet excessively?</td>
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</table>

Total score
Personal Pearls

• Parental controls
  – [Settings] > [Parental Controls/Restrictions]

• Create a sub-account for your child
  – e.g. Apple Family Sharing and Child ID

• Reinforce the digital equivalent of “stranger danger”
Personal Pearls

• Younger children should not game with headsets unless parents are playing with them and also have on a headset.
• Be weary of free “educational” apps
• Trust ESRB ratings
Informational Sites

- AAP.org
- Common Sense Media
- Entertainment Software Association
- Cyberpsychology, Behavior, and Social Networking
  - Peer-reviewed journal
References