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# Behavioral and Developmental Impact of Media Exposure and Content

Current guideline and significant revision written by Jaimie Flor, MD and Paulette Ann Wy, MD, in collaboration with the ANGELS Team, January 13, 2017.

Guideline originally developed by Katherine Burns, MD, February 16, 2012.

## **Key Points**

- Media consumption has never been more prevalent and it has numerous forms e.g. tablet, mobile, computer & television. Children are exposed to media at even younger ages.
- Media exposure can be harmful or beneficial, hence, it should be closely monitored. Heavy media exposure has been associated with possible detrimental effects such as obesity, sleep deprivation, aggressive behavior, delayed development, decreased school performance and others.
- Parental involvement and modeling are key to successful supervision of media use among children.
- Physicians should be more proactive in eliciting media consumption in children and to counsel families accordingly.

## **Definition**

Electronic media include television, movies, video games, computers, computer tablets, smart phones or cell phones, Internet time, texting, music, social media and others

- Exposure in our society is pervasive, and available 24 hours a day, 7 days a week, 365 days a year.
- Content of programming, images, and commercials/advertisements must be included in any consideration of media health impact.
- Social Media

- Social media use is common even as young as age 8
- Social media include social networks (e.g. Facebook, Twitter), blogs, video-sharing sites (e.g. YouTube), photo-sharing sites (e.g. Instagram) and others.
- Advertising is frequently targeted to the individual
  - This can be positive - introducing support groups, public health education causes, etc.
  - This can be negative - inappropriate or indiscriminant targeted advertising of things such as tobacco and alcohol or of groups supporting less-than-desirable behavior
- Use of social media alone is not associated with increased risk taking behavior; however, exposure to friend's pictures of smoking and alcohol use IS associated with use of these substances
- Twenty-five percent (25%) of teens report 'often' encountering some type of hate speech

## **Media Consumption in United States' Families**

- Recent national survey data indicate that on average, "tweens" spend nearly 6 hours a day and teens spend nearly 9 hours a day using media.
- In one recent study, at age 4 years, half of children had their own television and 75% had their own mobile device
- In the same study, 96.6% used mobile devices with most starting before age 1 year
- At age 2 years, most children use a mobile device daily with comparable screen time on television and mobile devices
- Patterns of use suggest early adoption, frequent and independent use and media multitasking
- Parents often use mobile devices as "digital pacifiers" to placate or distract children as a means to manage children's behavior
- Sixty-six percent (66%) have TV on during meals at least sometimes.
- Fifty-eight percent (58%) report positive media effects on children personally witnessed.
- Sixty-one percent (61%) report negative media effects on their children.
- Fifty-one percent (51%) report children affected by violence in video games (nightmares, behavior outbursts, etc.) while 57% report effects from TV violence.
- Sixty-two percent (62%) report child has been frightened by something on TV.
- Greater TV watching and TV in bedroom more common in these situations (although data are uncertain if such activities directly influence these outcomes or if these are indicative of social situations related to such outcomes):
  - Lower-income families
  - Non-Caucasian families
  - Poorer school performance

## **Media Consumption Research**

### **Early Childhood Development**

- Audible television has been associated with decreased human adult speech and decreased child vocalizations.
- Some evidence suggests excessive television viewing in childhood is associated with attention problems in children
- Infants over 6 months of age do attend to the TV and can imitate what they hear and see.
  - They do not learn as well, but they do learn the content.
  - Specific claims to improve infant learning, made by certain brands of educational videos, have not been substantiated and buyers of these products have been offered refunds

from the manufacturer.

- Infants need a combination of eye contact, observation of mouth movements, and reciprocal interaction with a live, real caregiver to master social skills.
- Current existing studies, though few, propose that media does not enhance language development in children younger than 2 years
- A recent study suggests that infant play with electronic toys may be associated with lesser vocalizations and could therefore be detrimental to language development, as compared to play using traditional toys or books
- Television viewing was found to have an association with poor sleep quality and delayed language in children younger than 2 years.
- More research is needed to elucidate the long term effects of media exposure in this age group.

## **Toddler Development**

- High-quality programming can be beneficial after basic receptive language skills develop.
- Short-term alterations in attention with fast paced programming have been documented and advertised in lay media, but long-term implications are unclear.
- Although touchscreen technology has a growing presence in early education, recent studies show that learning transfer is impaired/transfer deficit persists, i.e., children are consistently learning less from televisions, touchscreens and books relative to face-to-face interactions
- Information acquired via a robust 3D demonstration might not necessarily transfer to the 2D setting as assumed by educators and parents (or the reverse)

## **Violent Behavior/Aggression**

- Violent content is common in all forms of electronic media.
  - 200,000 incidences seen by age 18
  - Frequently humorous content without realistic repercussions or legal repercussions
- Concerns persist about methodology of studies examining this issue, especially regarding gender- normed behaviors, but preponderance of evidence supports increase in aggression with exposure to violent media.
  - Exposure to media violence results in physiologic changes including increased heart rate.
  - Even self-reported media violence exposure results in increased teacher-reported aggression, for both males and females.
  - This topic has been studied since the 1950s in a multitude of research formats.
  - Current theories speculate the cumulative effect of exposure to violent content, supporting single or very limited exposure is not as harmful as continued exposure.
- Intense TV exposure during childhood and adolescence was found to be correlated with increased antisocial behavior in early adulthood according to one study.
- A previous study suggests that modifying children's media to show content of an educational and prosocial nature was associated with an improvement in children's behavior.

## **Video Games**

- Playing violent video games results in increased aggressive behavior and thinking about the violence prolongs the increased aggressive behavior.
- Pathological gaming, even if the game is non-violent, is associated with increased aggression.
- More than 90% of American youths play video games
- More than 90% of E10+ rated/teen rated/mature rated games contain violence portrayed as justified, fun or without negative consequences

- Habitual violent video game playing increases long-term aggressive behavior by producing general changes in aggressive cognition, regardless of sex, age, initial aggressiveness or parental involvement
- Effects of violent video game playing on aggressive cognition are more pronounced in younger children

## **Sex**

- Heavy exposure to sexual content has been linked to
  - Earlier engagement in sexual activity
  - More rapid progression of sexual behaviors
  - Greater risk for unplanned pregnancies
  - Increased risk of sexually transmitted infections
- Theory is that such media become a peer, of sorts, setting such behaviors as 'normal'
- TV shows targeting adolescents contain more sexual content than many adult-oriented shows but are less likely to discuss contraception, sexually transmitted infections, or sexual health responsibility.
- Overall, media are much more likely to portray casual sex than provide education or portrayal of sexually responsible behaviors.
- Internet
  - Exposure to sexually explicit websites is common with approximately 50% of adolescents reporting visiting such a site.
  - Sexual predation is more likely from other minors than adult sexual predators.
- "Sexting"
  - 7% of 13-18 year olds reported sending or showing someone sexually explicit images of themselves in the past year.
  - These adolescents were more likely to engage in risky sexual behavior.

## **Substance Use**

- Advertisement influences adolescent attitudes, behavior, and opinions.
- Alcohol, tobacco, and prescription drugs are heavily advertised.
- Alcohol
  - Teen-oriented magazines frequently advertise alcohol.
  - Television commercials advertising alcohol are common and target teen programming.
  - Conversely, public service announcements regarding alcohol safety are rare.
  - Alcohol consumption is common on teen- and preteen-oriented movies and television.
- Tobacco
  - Approximately 70% of movies contain smoking, even G- and PG- rated movies.
  - Negative health effects are rarely portrayed.
  - Exposure is directly related to earlier initiation of tobacco use.
  - Effects are amplified if viewer identifies with the character utilizing tobacco.

## **Illegal Substances**

- Use and mention relatively rare on television
- Common in movies
- Common in music lyrics and videos especially rap music

## **School Performance**

- Greatest negative effect on school performance seems to be if television is in child's room.

- Both weekday exposure time and R-rated content are associated with poorer school performance.
- Fast paced images of cartoons and other television programs may overstimulate the child, disrupt normal brain development and effect ability to perform executive functions
- Watching television may reduce the child's motivation to perform other activities that enhance neurodevelopment such as drawing, physical activity or school homework
- Impact of weekend exposure to media seems less significant
- School performance is associated with time spent completing homework, successful completion of which would seem to be inversely proportional to media exposure time.
- Teachers report significant perceived negative impact of entertainment media on school performance of their students but also report benefits such as exposure to different viewpoints and experiences.

## **Attention-Deficit/Hyperactivity Disorder (ADHD)**

- There is some evidence that individuals with ADHD cannot regulate their media consumption well.
- Likely represents a primarily genetic condition, which can be influenced by environment, including media exposure.
- In short term, exposure does influence cognitive functioning, but long-term effects are less obvious.
- One theory of ADHD postulates that symptoms are not inattention but rather a lack of appropriate inhibition.
  - Up to 30% of children multitask with media.
  - Multitasking is not fully completing multiple tasks simultaneously but rather rapidly alternating between the tasks; thus, exposure to multitasking has been shown to negatively affect attention span.
  - In youths and adults, media multitasking has been associated with task inefficiency lapses in attentiveness and safety hazards
  - Epidemiological studies demonstrate association between ADHD symptoms and lower executive function with shorter sleep duration and sleepiness in children and adolescents

## **Long-term utility and detrimental effects of media consumption are unknown.**

### Other health effects

- Recent study examined effects of electronic media use on well being, examining effects on emotional well being, self-esteem, family functioning and social functioning
- Higher levels of electronic media use are associated with children being at risk for poorer outcomes with some indicators of well being with possible dose-response association
- Obesity
  - Time spent in media use is associated with obesity.
  - Unclear if sedentary lifestyle, food marketing, or combination is the etiology.
  - Exposure to fast food advertising influences children's food beliefs and preferences. Children are then more likely to request parents for such types of food.
  - Increased food consumption when watching television; concerns that satiety cues are altered.
  - Nutritional value of food eaten decreases with increase in media consumption.
- Eating disorders
  - Eating disorders increased among Fiji youth when American television was introduced.
  - Unhealthy body shapes are presented as typical.

- Pro-anorexia websites exist which provide detailed information on embracing unhealthy habits and life styles.
- Sleep deprivation
  - Television in the bedroom is associated with less sleep.
  - Media use close to bedtime is associated with more sleep problems (difficulty falling asleep, waking, etc.).
  - Constant text message alerts from cellular phones may disrupt solid REM sleep.
  - Exposure to bright screen before bedtime may have a role in salivary melatonin concentration changes and subsequent reduction in sleep duration
  - Longer screen time predicted shorter sleep duration in children
  - Longer screen time could displace sleep duration directly or indirectly by displacing time spent in other behaviors that benefit sleep such as physical activity
  - Sleep duration is inversely associated with subsequent screen time (less sleep could promote tiredness and fatigue, could reduce motivation to engage in more active behaviors and, over time, lead to more sedentary activities such as television viewing or computer use)

## Recommendations for Physicians

- Ask two media-related questions at each health supervision visit.
  - Are you as a parent concerned or worried about the amount of time or lack of interaction related to electronic media consumption by your child?
  - Is there a TV set or Internet access in the child's room?
- Limit TV and video in waiting and patient rooms.
- Parents need to guide both access and content of media.
- Parents are recommended to devise a family plan for media use in the home. The rules should be written down and all family members should come to a consensus regarding these rules.
- According to most recent (November 2016) AAP guidelines, pediatricians should advise caregivers to:
  - Children younger than 18 months, use of screen media is discouraged except video-chatting (Skype or FaceTime)
  - For 18-24 months, introduce high quality programming/apps (examples would include Sesame Street, PBS Kids) and encourage parents to use it with their children (co-view and reteach)
  - Children older than 2 years, limit media use to 1 hour or less per day.
- No television or electronic devices that have Internet connectivity in the child's bedroom.
- No screentime an hour before child's bedtime.
- When not in use, turn off electronic media devices.
- Allow for 'unplugged' or 'screen-free' times during parent-child play or interaction.
- Consider charging phones and other electronic devices in parent's room at night.
- Keep computers in a highly visible or "public" section of the house.
- Develop a family policy of no electronics during meal times.
- Parents should address the "technology and technical skill gap" by educating themselves regarding technology their children are utilizing.
- Supervise websites or social media that the child visits and be mindful of possible dangers such as cyberbullying, online harassment, sexting, sexual content, invasion of privacy, and mental health issues that arise from viewing social media (e.g. low self esteem, depression and others).
- Identify media overexposure and discuss, as a family, how to decrease such exposure.
- Foster open communication among family regarding media use. Use parental controls (e.g. Internet or TV monitoring programs ) sparingly after establishing family guidelines for media

use.

- Restrictive and active media monitoring were indirectly associated with adolescents' prosocial behavior, aggression, and externalizing behavior
- Restrictive monitoring was found to be somewhat maladaptive and active monitoring found to be adaptive
- Parental monitoring of media has protective effects on a wide variety of academic, social and physical child outcomes
- Preview questionable programming.
- When possible, watch programming together, as a family, and utilize this as point of discussion regarding family values
- Consider recording and skipping questionable advertisements or portions of programming.
- Discuss media content with children and adolescents
  - Tailor limitations to the child's needs
    - Younger children (<6-8 years of age) have difficulty discriminating reality from fiction.
    - Children with behavior problems should be limited in violent media exposure and presented with shows that model appropriate behavior.
    - If child using inappropriate language, limit exposure to programming with such language.
    - Children with difficulty self-limiting should have more rigid, clear limitations.
    - Be adamant about a "no view" policy of age-inappropriate programming (e.g. containing violence, sex, illicit drugs, and others)
- Teach children to be media savvy and critically think about media.
  - Talk about what you have watched.
  - Discuss conflict and character's reactions.
  - Reinforce your own family values regarding sex, violence, and inappropriate behaviors noted on screens.
  - Advise children that the online sites they visit can be tracked via a "digital footprint" so they should think before they comment and post online.
  - Emphasize that children should be on their best behavior when online and should be aware of the harmful and grave effects of bullying or harassing others online.
  - If one's child is being the subject of cyberbullying, parents should consider restricting access to such social media sites and get school or other parents involved.
- Model responsible media use. Limit types of media consumed in front of children.
- Encourage "healthy media" choices—media with educational merit or those that foster ideal values such as empathy, good social skills, and tolerance for diversity.
- Consider what media exposure is replacing in the child's life.
- Homework and Home Learning Environment
  - Homework and home learning environment should be a priority for all children, but especially for children with learning or attention issues to optimize attention to work and minimize distractions, very much like school learning environment should be altered.
    - No TV or music
    - Quiet, calm environment
    - As few distractions as possible
- Pediatricians can take on an advisory or assistive role with schools in establishing media education programs and delineating policies regarding media in the schools (e.g. use of phones, internet, cyberbullying)

## Resources for Parents

- Summarizes and reviews upcoming movies focusing on sex/nudity, violence/gore, and profanity

- <http://www.kids-in-mind.com>
- Information regarding Internet safety from the official AAP site
  - <http://safetynet.aap.org>
- Reviews a variety of media
  - <http://www.commonensemedia.org>
- Reviews movies and television programming, nightly television schedule available, color-coded based on content
  - <http://parentpreviews.com>
  - <http://www.parentstv.org>

*This guideline was developed to improve health care access in Arkansas and to aid health care providers in making decisions about appropriate patient care. The needs of the individual patient, resources available, and limitations unique to the institution or type of practice may warrant variations.*

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