What are they (we) Missing?
When Electronic Media Displaces Sleep, Academics, and Exercise

USF Psychiatry Department Grand Rounds
Disclosures of Potential Conflicts

NONE
OUTLINE

• Case
• Definition
• Epidemiology
• Diagnosis
• Treatment
• Conclusions
Case Study: Jermaine

- 15 year old inner city African American Male
- 8th grade – functionally 6th, held back in 4th, 7th
- Single mother with 5 children, Father rarely involved
- Heavy marijuana use
- Adderall XR 30mg, Seroquel 300mg HS, partially compliant with poor follow up
Case Study

- TV, Video Games in room since age of 3 years, smart phone for last year
- About 12 total hours media exposure daily, multitasked into 9 hours
- Video Games of choice: Grand Theft Auto, Madden,
- Movies/TV: Menace to Society, Martin, Everybody Loves Chris,
- Music: Rappers: Lil Boisie, Lil Wayne
Case Study: Jermaine

- “Bipolar”, ADHD
- “I don’t sleep”
- “He can’t concentrate”
- “I need my medicine”
What is Displacement?

Electronic Media taking time, focus and energy away from other activities

Especially concerning is less time for academics, exercise and sleep.
2009-2010 NHANES survey

- 38% of 6 to 11-year-olds met both physical activity and screen time recommendations (Fakhouri, et al., 2013).
- Obese youth and older are significantly less likely to meet screen time and physical activity recommendations.
- Screen time is only loosely connected to exercise levels. Many more active boys also consume large amounts of media.
Early Childhood Television – Pagani 2010

- Screen time at 23 months - correlated with later Video Game use
- Screen time at 23 months correlated with obesity in 4th grade

Each hour per week of television correlated with:

- 7% unit decrease in classroom engagement, 6% in math achievement, 0% changing in reading (content!)
- 9% unit decrease in fitness and 13% decrease in weekend physical activity
The Elephant in the room

• TV, Adiposity and Cardiometabolic risk in Children and Adolescents – Staiano 2013 - More TV = worse metabolic profile (see next slide)
• Obese adults with TV in bedroom watch 5.4 hours per day (vs. without TV in bedroom watch 3.6 hours per day) – Jones 2010
• Children of overweight / obese parents average 22 / 30 minutes more TV per day then of normal weight parents– Steffen 2009
• Viewing correlates to parental TV – Bleakly 2013
Table 1. Descriptive characteristics of study sample by TV in the bedroom and by TV viewing time

<table>
<thead>
<tr>
<th></th>
<th>TV in the bedroom</th>
<th>TV viewing time (hours/day)</th>
<th>p-value&lt;sup&gt;a&lt;/sup&gt;</th>
<th>p for trend&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No (n=127)</td>
<td>Yes (n=242)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>11.8 (3.5)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>12.6 (3.5)</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Male (%)</td>
<td>38.6</td>
<td>52.1</td>
<td>0.01</td>
<td>ns</td>
</tr>
<tr>
<td>Ethnicity (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>34.6</td>
<td>57.9</td>
<td>&lt;0.0001</td>
<td></td>
</tr>
<tr>
<td>Nonblack</td>
<td>65.4</td>
<td>42.1</td>
<td>&lt;0.0001</td>
<td></td>
</tr>
<tr>
<td>BMI percentile (%)</td>
<td>69.9 (27.1)</td>
<td>74.8 (28.0)</td>
<td>ns</td>
<td>0.035</td>
</tr>
<tr>
<td>Fat mass (kg)</td>
<td>14.4 (9.1)</td>
<td>18.4 (13.0)</td>
<td>0.003</td>
<td>0.005</td>
</tr>
<tr>
<td>Subcutaneous adipose tissue mass (kg)</td>
<td>3.2 (2.7)</td>
<td>4.4 (3.9)</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>Visceral adipose tissue mass (kg)</td>
<td>0.11 (0.11)</td>
<td>0.14 (0.15)</td>
<td>0.020</td>
<td>ns</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td>71.9 (15.0)</td>
<td>78.4 (18.3)</td>
<td>ns</td>
<td>0.007</td>
</tr>
<tr>
<td>Triglyceride (mg/dL)</td>
<td>63.8 (31.4)</td>
<td>68.7 (36.2)</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>HDL-C (mg/dL)</td>
<td>53.3 (11.7)</td>
<td>53.3 (12.4)</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Glucose (mg/dL)</td>
<td>88.1 (6.3)</td>
<td>88.9 (6.5)</td>
<td>ns</td>
<td>0.004</td>
</tr>
<tr>
<td>Insulin (μU/mL)</td>
<td>6.2 (5.1)</td>
<td>9.8 (10.1)</td>
<td>0.0002</td>
<td>0.002</td>
</tr>
<tr>
<td>Systolic blood pressure (mmHg)</td>
<td>101.9 (11.0)</td>
<td>104.8 (10.7)</td>
<td>0.016</td>
<td>0.049</td>
</tr>
</tbody>
</table>
The Henry J. Kaiser Family Foundation

- Electronics exposures continue to grow and change
- Negative correlation between screen time and grades.
- Boys are heavier media users and experience more academic problems.
- Many heavy electronics users do also participate in recommended levels of exercise.
### Media in the lives of 8-18 year olds

<table>
<thead>
<tr>
<th></th>
<th>Television</th>
<th>Video Games</th>
<th>Computer</th>
<th>MUSIC</th>
<th>Overall Exposure /Total time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys:</td>
<td>4.5 hrs</td>
<td>1.22 hrs</td>
<td>1.5 hrs</td>
<td>2.5 hrs</td>
<td>10.75 hrs/7.6 hrs</td>
</tr>
<tr>
<td></td>
<td>Average 90 min daily on console video games, if at all. Less print social networks / More gaming.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### The Vidiots - KFF 2010

<table>
<thead>
<tr>
<th>Amount of use</th>
<th>Heavy</th>
<th>Moderate</th>
<th>Light</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fail/ Poor Grades</td>
<td>47%</td>
<td>31%</td>
<td>23%</td>
</tr>
<tr>
<td>Get into trouble</td>
<td>33%</td>
<td>21%</td>
<td>16%</td>
</tr>
<tr>
<td>Often sad /unhappy</td>
<td>32%</td>
<td>23%</td>
<td>22%</td>
</tr>
<tr>
<td>Often Bored</td>
<td>60%</td>
<td>53%</td>
<td>48%</td>
</tr>
</tbody>
</table>
THE COMMON SENSE CENSUS
MEDIA USE BY TWEENS + TEENS

This 2015 national survey details the media habits and preferences of American 8- to 18-year-olds and shows just how central a role media plays in the lives of Generation Z.
AVERAGE DAILY MEDIA USE
Excluding time spent using media for school or for homework

**TWEENS**
8-12 Years Old

6 hours
5:55 Total Hours
4:36 Hours of Screen Time

**TEENS**
13-18 Years Old

9 hours
8:56 Total Hours
6:40 Hours of Screen Time

Multitasking: The New Normal
Many teens use media while studying, and most think it has no effect on the quality of their work.

While Doing Homework, Teens ...
- 50% use social media
- 51% watch TV
- 60% text
- 76% listen to music
MEDIA CONSUMPTION IS HIGHLY MOBILE

Mobile devices account for nearly half (41%) of all screen time used among tweens and 46% among teens.

TWEENS

53% of Tweens Have Their Own Tablet

24% of Tweens Have Their Own Smartphone

TEENS

37% of Teens Have Their Own Tablet

67% of Teens Have Their Own Smartphone
SURPRISE! TV AND MUSIC STILL DOMINATE DAILY MEDIA DIET

Social Media = #meh

Teens spend on average 1:11 using social media, but only 10% of teens choose using social media as their “favorite” media-related activity.

TWEENS WHO DO ACTIVITY EVERY DAY.

- Watch TV: 62%
- Listen to Music: 37%
- Play Mobile Games: 27%
- Read: 27%
- Watch Online Videos: 24%
- Use Social Media: 10%

TEENS WHO DO ACTIVITY EVERY DAY.

- Watch TV: 66%
- Listen to Music: 58%
- Play Mobile Games: 45%
- Read: 34%
- Watch Online Videos: 27%
- Use Social Media: 19%
Displacement of Sleep

• Large reviews confirm electronics are significantly interfering with sleep (Cain 2010)
• Interactive electronics (especially Video Games) disturb sleep quality (King 2013, Weaver 2010)
• Low lux light & blue light disrupt sleep (Czeisler 2013)
Related to displacement of Sleep

- Access to many media devices (each one makes it worse)
- Active mobile phones in the bedroom overnight
- Television in the bedroom
Sleep is related to Cognition and Academics

• Dewald Meta-analysis 2010: Sleepiness, Sleep quality and duration all correlated with academic performance
• Curcio 2006: Sleep loss related to learning capacity and academic performance, poor declarative memory and procedural learning
• Short 2011: Parental-set bedtimes associated with improved sleep and daytime functioning
Displacement of Academics

• More screen time associated with lower academic performance - Cummings 2007
• Video Game Playing Associated with lower GPAs - Jackson 2010
• No association between computer and video games and GPA in college students - Wack 2009
• Multitasking and electronics associated with worse grades in college - Jacobson 2011
• Video game play detrimental to GPA and possibly SAT scores – Anand 2007
Most heavy media users receive poor grades

• Less time studying?
• Reduced sleep?
• Worse focus?
• De-motivator?
• Reduced reading?
• Identity formation?
• A combination or other?
Displacement of direct Social Interactions

- Disconnectedness? – Predicted by Meyrowtiz 1985
- Loss of social skills – Ulhs 2014
- Loss of social capital – Putnam 1995
- Loss of benefits of direct social interaction
Displacement of Nature- Re-naturing our lives
Ulrich 1984, Berman 2008, Louv
Concerned?
Positive Effects

• The “rights revolution” was aided by media portrayals
• Children’s programming promotes prosocial attitudes and learning
• Prosocial game play correlates with increased helping, empathy, emotional awareness & sharing
ECOLOGICAL MODEL

- Family
- Media
- Neighborhood
- Peers
- Schools
Diagnosis of Displacement Effects

- Various Displacements vs. Specific
- Multiple types of problematic media vs. Single
- Duration
- Continuous vs. intermittent
- Associations
Case Study

• Weaned off Seroquel, Adderall DCed
• Threatens to “click out”, but doesn’t
• Not found to be hyperactive, anxious or have a mood disorder
Case Study:

Complete media fast via Incarceration:

• Begins reading while incarcerated: “Bluford High series”
• Makes progress in school, advancing 2 grades in a year
• Is removed from mental health list after 5 months
Historical Perspectives

Plato- (427-347 BC): children should only hear stories providing guiding principles and values

KNOW THY SELFIE
Treatment: Satisficing

• Good enough!

• Simple heuristics often lead to better decisions than complex theoretically optimal procedures. Marewski 2010
Treatment: Rules of Thumb

Honor Silence

Everything off on weeknights

Bedroom sanctuary: no electronics
Gentile et al, JAMA Pediatrics 2010

Parental Monitoring of media correlated positively with:
- Total Sleep Time
- Academic performance
- Viewing R rated movies increased odds of poor academic performance
- Screen time inversely correlated with total sleep time
- Prosocial behavior and aggression also affected
- Did not correlate with BMI
Media Restriction

• Perceived as punishment by the youth, leading to further resistance and conflict.

• Parent training focuses on extinguishing negative family cycles, reducing negative communications and shaping new behaviors through rewards and positive communications.
Engrained unhealthy regimens

• Empathetic, accepting, and positive
• Regardless of whether caregivers are interested in, or ready for, change
• Strong reinforcers keep patterns going
## MOTIVATIONAL APPROACH

<table>
<thead>
<tr>
<th></th>
<th>Impossible</th>
<th>Could do Sometime</th>
<th>Could do most of the time</th>
<th>Could do almost always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase positive communication</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>All electronics off 1 hour before bedtime</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>1 set of media rules for whole family</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Family media fast on weekend</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Family reading / quiet time daily</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
Focus on the positives

- Positive examples: Low levels of electronic media use are associated with multiple better outcomes
- Cross cultural comparisons are illuminating
- Suggest an “experimental” media fast
- Parents: “Know thy selfie?”
- Motivational approach
Treatment of Displacement of Exercise

• Sedentarism is a family problem: Parents must have “skin in the game”
• Gyms are for people who are already in shape
• Re-nature: exercise in nature is exercise\textsuperscript{2}
• Questions?

• Comments?
What are they (we) Missing?
When Electronic Media Displaces Sleep, Academics, and Exercise

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