

THE UNIVERSITY OF ALABAMA AT BIRMINGHAM
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TRIP
 Translational Research
 for
 Injury Prevention
 LABORATORY

5 Reasons the Amish Were Right About Technology

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The Amish and Technology

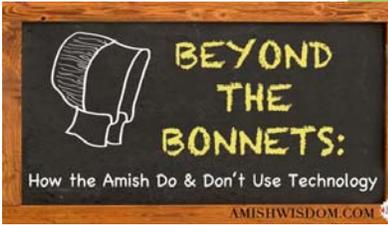
- Contrary to common belief, the Amish do not shun modern technology
- They are more selective in their use of technology and do not automatically assume that NEW = BETTER
- Amish evaluate new technology and decide for themselves whether it's a good fit for their life

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The Amish and Technology



Amish School



AMISHWISDOM.COM
<http://amishwisdom.com/category/beyond-bonnet/>

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Internet and Social Media

- 1 billion users on Facebook
- 400 million users on Instagram
- 316 million users on Twitter

(Statista, 2016)



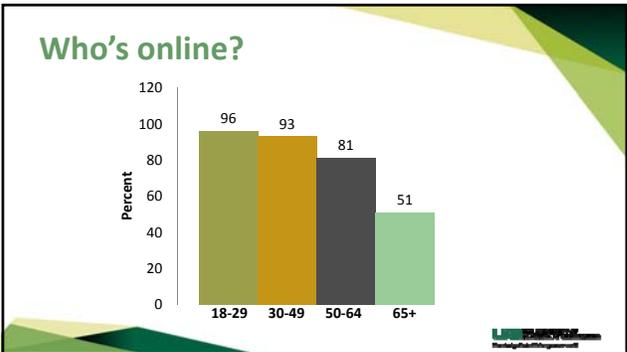
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Internet and Social Media



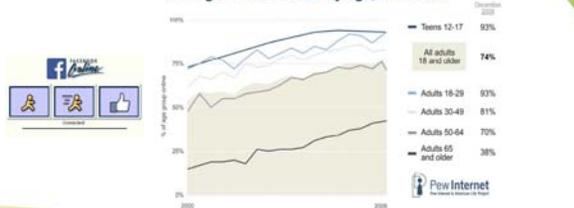
What social network sites do you use?

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The World is “Dialing-up”

Change in internet use by age, 2000-2009



#1 PHYSICAL HEALTH

Sleep

- Essential
- Growth
- Learning
- Mood
- Creativity
- Weight control

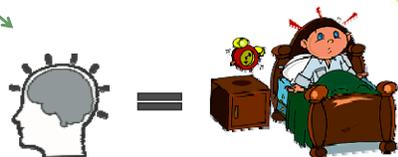


Electronics and Sleep

When it's 3 am
but you're trying
to squeeze in one
more episode



Light promotes wakefulness



Disrupted Sleep Signals

- Light emitted from small electronic devices is sufficient enough to miscue the brain and promote wakefulness



Sleep and Electronics

- Increased use of electronic devices in bed
- Children using electronics as a sleep aid
 - Later weekday bedtimes
 - Fewer hours of sleep
 - More daytime sleepiness
- Texting, emailing, etc. after lights-out increases daytime sleepiness in teens



Sleep and Electronics

- Even academic use of electronics may disturb sleep
 - Homework increasingly completed on computer



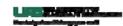
Sexual Health

- Sperm count reduced by as much as half in men who carry cell phones in pants pocket 4 hours per day.
- Sperm motility impaired
- Mitochondrial DNA in sperm damaged 3x more if exposed to cell phone radiation



Fitness

- Cell phone use similar to other sedentary behaviors (e.g., watching television)
- Associated with disrupted physical activity and reduced cardiorespiratory fitness
- Greater risk for health problems



Orthopedic Health

- Looking down at a tablet or phone screen adds pounds of pressure on the spine
 - Continuous spine stress
 - Early wear and tear



Photo by Alamy



Cell-phone Related Injuries

Text Neck



Gaming-Related Injuries

- A Wii Problem (Fish & Thompson, 2009)
- Nintendonitis
- Wii knee
- Wiitis



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Cell-phone Injury Findings

- Text neck
- Excessive strain on the spine from looking down and forward (Hansraj, 2014)
- iPod finger
- Case study of ruptured tendon due to excessive smartphone gaming (Gilman et al., 2015)
- Cell phone elbow
- Cubital tunnel syndrome (Darrowish, Lawton, & Evans, 2009)



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Orthopedic Health

- Regular use can lead to carpal tunnel syndrome or cubital tunnel syndrome (a.k.a. "cellphone elbow")



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Orthopedic Health

- High amounts of texting can lead to "Blackberry Thumb"
- Sores, blisters
- Repetitive stress injuries
 - Pain
 - Numbness
 - Discomfort



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Hygiene

RIGHT NOW THERE ARE 1,438,080 GERMS LIVING ON MY CELL PHONE

HOW MANY ARE ON YOUR PHONE?

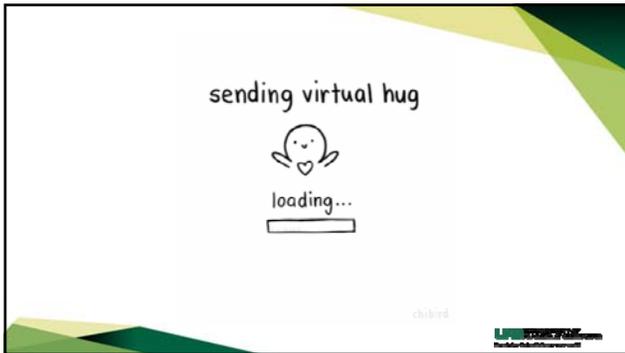
istock.com

- 94.5% doctors' phones tested contaminated with some kind of bacteria
- Including some known as "superbugs"

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#2 MENTAL HEALTH



Internet Addiction

- Diagnostic Criteria (Modified from DSM-IV)
 - Preoccupation
 - Tolerance
 - Withdrawal
 - Failure to control
 - Use longer than intended
 - Functioning impairment
 - Lying
 - Escape (Young, 1998)
- Impulse control disorder



Internet Addiction



- Prevalence using Young's criteria
 - 9.8% of those aged 12-19 years old in China
- Related to other psychiatric disorders
 - Substance use disorder
 - ADHD
- Major depressive disorder and dysthymic disorder
- Hostility and aggressive behavior (Ko et al., 2012)

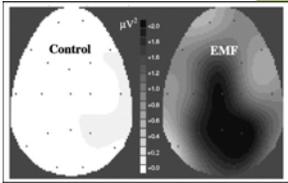
Cell phones

- Can be used to ostracize
 - lower levels of belonging,
 - control, self-esteem, and
 - meaningful existence (Smith et al., 2004)



The Internet and Technology are Changing our Brains

- https://youtu.be/HffWFd_6BJ0
- Mobile phone exposure can alter resting EEG activity in the brain (Croft et al., 2002)
- 2G and 3G Mobile Phones shown to increased resting alpha rhythms (Croft et al., 2010)



Darker tones indicate activity



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#3 SOCIAL

How has technology affected our Social Functioning?

THE GOOD



- More connections new and old
 - Family near and far
 - Friends from long ago
 - Employment opportunities
- More info for the boys in blue
 - Authorities can track criminal activities
- Information access
 - Infinite knowledge of the web in our pockets



How has technology affected our Social Functioning?

THE BAD AND THE UGLY



- The news on social media
 - Not always accurate or unbiased
 - Can lead to conflict & arguments
- Not enough time spent with books
 - Students spending more time connecting than learning
- Less face to face communication
 - Poor interpersonal skills
- Cyberbullying
 - Easy and anonymous



How has technology affected our Social Functioning?

THE BAD AND THE UGLY



- Cyberbullying
 - **42% of online teens reported being cyberbullied in the past year!**
 - Victims of cyberbullying more likely to
 - Attempt suicide (*TWICE* as likely)
 - Use alcohol and drugs
 - Receive poor grades
 - Have lower self-esteem



Social Media

Spending a day on Facebook has once again fooled me into believing I have an actual social life.



- The life and death of "Likes"
 - Virtual empathy
 - Sense of belonging
- The disguise of social media
 - The real you and the Facebook you
 - 10,000 of my closest "friends"
 - Too few or too many "friends" = less socially attractive
- The focus on self
 - Share, share, share!
 - Focus on self
 - 80% of posts are announcement about ourselves

somecards



The Family

- Families are spending less time together
 - May be "together" but mentally absent
 - Children 8-18 spend 50+ hours a week on media
- Lack of conversation at dinner tables or living rooms
 - Parents know less about children
 - Families vent/share on social media rather than to each other



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#4
ACADEMICS

Living, Breathing, Schooling with Technology

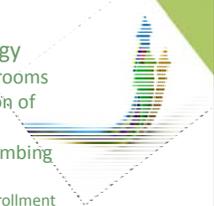
- Advanced relationship with technology
 - “Surrounded by and using computers, videogames, digital music players, video cams, cell phones, and all the other toys and tools of the digital age” (Prensky, 2001)
 - “Technology may be crucial to early schooling success and overall development” (Prensky, 2003)



Living, Breathing, Schooling with Technology

Living, Breathing, Schooling with Technology

- Advanced relationship with technology
 - Resulted in ~93% of public schools classrooms having internet & increased incorporation of technology into curriculum
 - Increasing demand for online courses climbing 10 years in a role
 - Account for 33% of total higher education enrollment



Living, Breathing, Schooling with Technology

Technology Usage & Academic Performance

Study	Sample	Results	Results (cont.)	Discussion
Assessed frequency of technology usage and students' overall GPA	483 university students 71% women 56% freshmen	Higher number of hours spent daily on a computer was negatively associated with student's GPA	Negative relationship between the amount of time spent on their computers per week and the amount of time spent studying	Students who spend a significant amount of time online experience academic and learning difficulties

Living, Breathing, Schooling with Technology

Technology & Schooling

- “Student access to technology is no longer a privilege; it is a prerequisite for full participation” in education



Living, Breathing, Schooling with Technology

Technology & Schooling

- Several AL school boards have issued iPads to students
- If used correctly, they can
 - Help prepare students for future
 - Teach diversity in learning styles
 - Provide opportunities to collaborate with classmates
 - Help students stay engaged



Living, Breathing, Schooling with Technology

Keys to Successful Implementation of Technology

- Right blend of teachers and technology
- Embed the use of technology within the daily school schedule
- Provide effective professional development for teachers on technology integration
- Use of technology to explore and create rather than “drill and kill”



Living, Breathing, Schooling with Technology


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 Knowledge that off change year unfold

#5
INJURIES

Distracted Driving: An Epidemic

- Distracted driving kills 1000's each year
- Nearly ½ million injured in police-reported crashes where driver distraction was reported



National Highway Traffic Safety Administration, 2012 

Distracted Driving Findings

- When texting, individuals made more simulated lane deviations and crashes (Stavinos et al., 2013)
- Teens with ADHD completed the driving scenario faster while texting than non-ADHD counterparts, suggesting a failure of compensatory behavior (Stavinos et al., 2015)





Distracted Driving Findings

- A nationwide study showed a 7% reduction in crash-related hospitalizations. For individuals ages 22 to 64 texting bans were significantly associated with these reductions. (Ferdinand, Menachem, Blackburn, Sen, Nelson, & Morrissey, 2015)





Distracted Walking Related Injuries

Distracted Walking



Source: Accident Analysis and Prevention, August 2012

Dangers of Distracted Walking



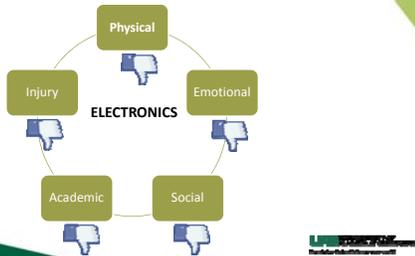
Distracted Walking Findings

- Conversation distracted college age students when using an interactive and immersive virtual environment (Stavinos, Byington, & Schwebel, 2011)
- Using virtual environment, distracted pedestrians were more likely to be hit by a vehicle (Schwebel, Stavinos, Byington, David, O'Neal, & Jong, 2012)
- In 2010, % increase of injuries related to distracted walking exceeded increase for distracted drivers (Nasar & Troyer, 2013)

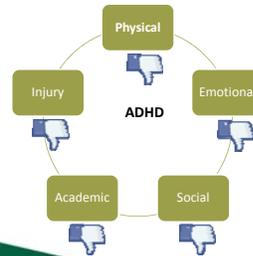




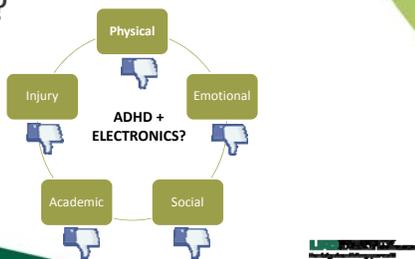
Summary



PARALLELS WITH ADHD?



What happens if we put both together?



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Today's Take-Home Message

Today's Take-Home Message

- Technology, like most things, has advantages and disadvantages
- Perhaps we should weigh the good along with the bad (and the ugly) when we are deciding to purchase/use new technology
- Maybe the Amish have it right!



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Time for a Little Group Work

You didn't know there would be work, did you?

PHYSICAL HEALTH VIGNETTE

Electronic device use near bedtime, or even in bed, is increasing not only due to the temptations of binge-watching a show on Netflix or checking Facebook, but also because an increasing amount of work is completed on these electronic devices. Professionals checking and responding to emails, as well as children, teens, and young adults completing most of their schoolwork on these devices at night leads to disrupted sleep patterns. In turn, the quality of work in these domains suffers due to poor sleep. What solutions can be implemented from a work/school perspective, societal perspective, and familial perspective to improve these issues?



MENTAL HEALTH VIGNETTE

Imagine Facebook has contacted you to build a tool to help people with psychological issues such as depression and anxiety? What would this look like?



SOCIAL FUNCTIONING VIGNETTE

Imagine you are a high school teacher and have been chosen to give a talk at the next parent-teacher conference about how to better connect with your children. What advice would you give to parents to help their children spend less time on devices and more time in conversation with the rest of the family? What are some practical tools/practices that you could suggest to help?



ACADEMIC VIGNETTE

Alex's alarm goes off and he reaches for his smartphone to turn it off. He wakes up and starts getting ready to attend class on this bright and cheerful Monday morning. He goes over to his computer and double checks that he sent his teacher his homework from last night as he currently has a C in History. On the way to the bus, he makes sure that he has his smartphone and his iPad for use at school. How might Alex's teachers use technology (or lack of technology) to engage Alex at school?



INJURY VIGNETTE

Distracted driving is a pervasive behavior that is a major source of injury and death across the US. While legislation has begun to take a crack at texting and driving, the behavior seems to be ever apparent. As a group discuss reasons why you think people of all ages are continuously texting and driving in light of the drastic repercussions. As a parent, educator, or researcher discuss current attitudes you see in your child/teens/students/clients about distracted driving. How will technology friendly and Wifi enabled vehicles shape this behavior?



Questions, Comments,
Concerns?





Feel Free to Contact Me!

TRIP LAB
trilaboratory.com

UAB COLLEGE OF ARTS AND SCIENCES
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