



# The Great Disconnect: MegaHERTZ to MegaHURTS

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# Media & Addiction Leading to MegaHurts

## What is addiction?

A condition that results when a person ingests a substance (e.g., alcohol, cocaine, nicotine) or engages in an activity (e.g., gambling, sex, shopping, Social MEDIA/Technology) that can be pleasurable but the continued use/act of which becomes compulsive and interferes with ordinary life responsibilities, such as work, relationships, or health. Users may not be aware that their behavior is out of control and causing problems for themselves and others.

# ARE YOU ADDICTED TO THE WEB?



**TAKE THE TEST**

- 1** Do you feel absorbed in the internet (remember previous online activity or long for the next session)?

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- 2** Do you feel satisfied with internet use if you increase your amount of online time?

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- 3** Have you failed to control, reduce

- or give up internet use repeatedly?

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- 4** Do you feel nervous, temperamental, depressed or sensitive when trying to reduce or give up internet use?

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- 5** Do you stay online longer than originally intended?

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- 6** Have you taken the risk of losing a

- significant relationship, job, educational or career opportunity because of the internet?

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- 7** Have you lied to your family members, therapist or others to hide the truth of your involvement with the internet?

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- 8** Do you use the internet as a way

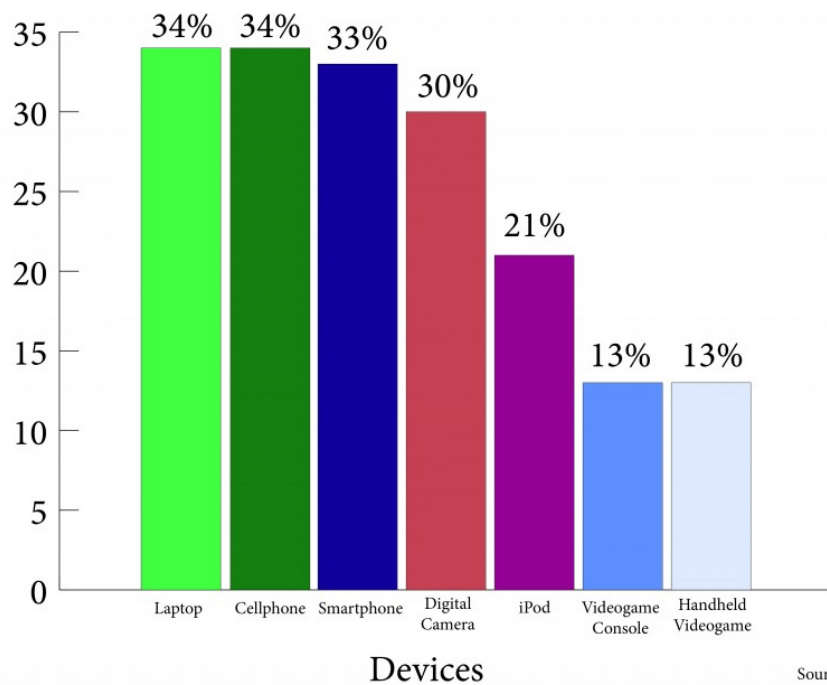
of escaping from problems or of relieving an anxious mood, eg feelings of helplessness, guilt, anxiety or depression?

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**You are an internet addict if you answered 'yes' to questions one to five and to at least one of the remaining questions.**

# Technology Use by Two Year Old's

Technology Children Use by Age 2



JAMA reported that each additional hour of television a toddler watches can potentially result in a seven percent unit decrease in classroom engagement and a 13 percent unit decrease in weekly physical activity. Of those studied, television-watching toddlers also showed a 10 percent increase in classmate victimization, and are five percent more likely to have a high BMI.

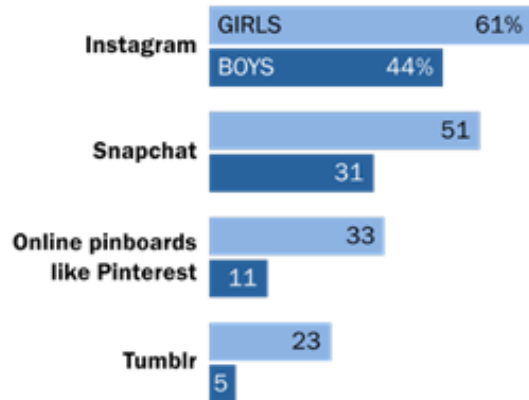
Source: American Academy of Pediatrics



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## Girls Dominate Visually-Oriented Social Media Platforms

Percent of girls and boys who use ...

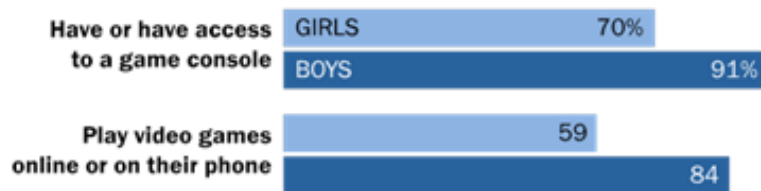


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## Boys Are More Likely to Play Video Games



Percent of girls and boys who ...



Source: Pew Research Center's Teens Relationships Survey, Sept. 25-Oct. 9, 2014 and Feb. 10-Mar. 16, 2015. (n=1,060 teens ages 13 to 17).

PEW RESEARCH CENTER

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- ▶ 8-10 year old children spend on average 8 hrs of media/tech time a day
- ▶ Tweens or teenagers average 11 hrs or more

# Business Week Digital Immersion

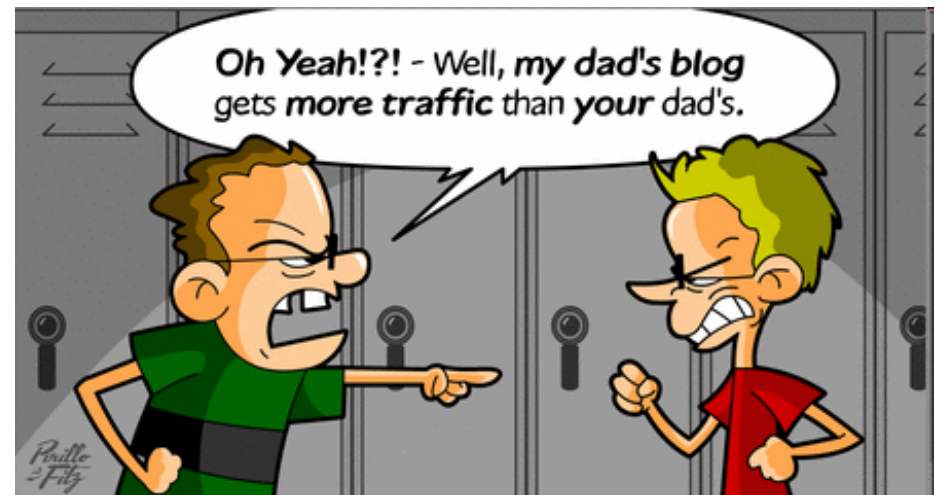
- ▶ Estimated that the typical person by their early 20's will have spent more than 30,000 hours on the internet or playing videogames.

I calculated some of these numbers. This equates to:

- ▶ Roughly 3.5 years on the internet, playing games or using technology
- ▶ And if you average 8-10 hours of sleep an evening, that is roughly 6-years of sleep
- ▶ So ½ of their lives are sleeping or using technology

# MegaHurts

- ▶ Obesity
- ▶ Social communication deficits
- ▶ Academic decline
- ▶ Cyberbullying
- ▶ Increases in aggression
- ▶ Diminished sleep
- ▶ Lack of physical activity
- ▶ Social isolation

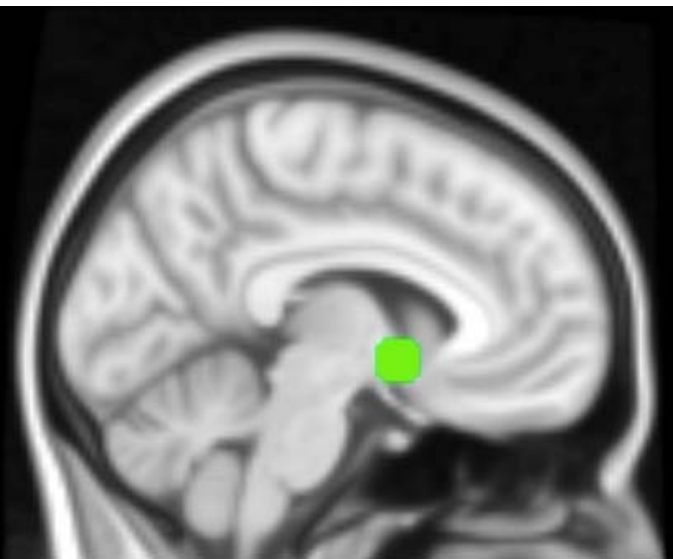


Children now spend more time with the media than they do with their family, in school, or sleeping.



# Major Neuroanatomical areas involved with technology

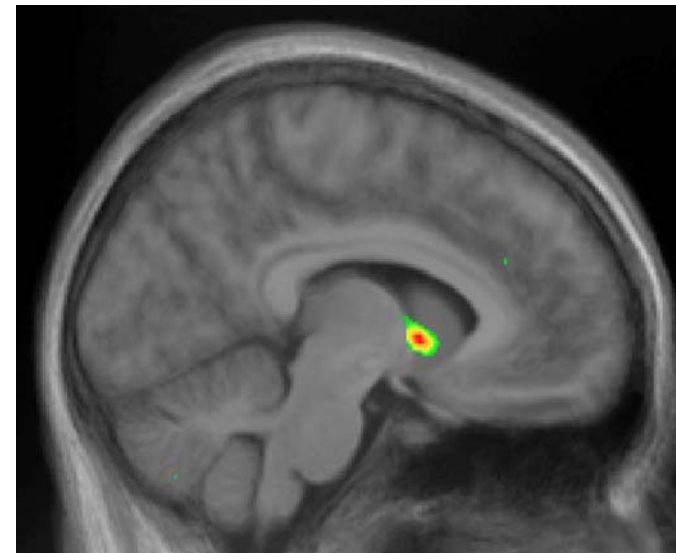
- ▶ Striatum: the caudate nucleus; putamen and nigrostriatal pathway. All of these structures are also part of the basal ganglia system, which plays a major role in learning, motor control, and several other cognitive processes.
- ▶ Nucleus Accumbens – pleasure seeking center of the brain, which also drives dopamine release



NA on videogames

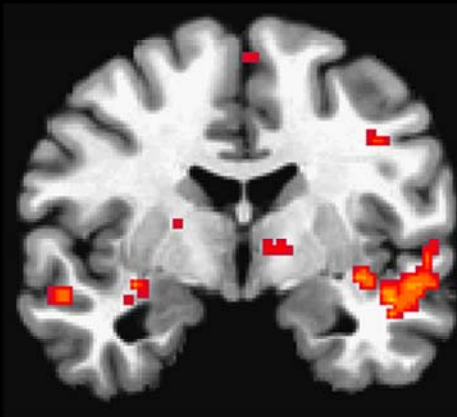
NA on cocaine

The Power of the Like in Adolescence: Effects of Peer Influence on Neural and Behavioral Responses to Social Media” by Lauren E. Sherman, Ashley A. Payton, Leanna M. Hernandez, Patricia M. Greenfield, and Mirella Dapretto in *Psychological Science*. Published online May 31 2016  
doi:10.1177/0956797616645673

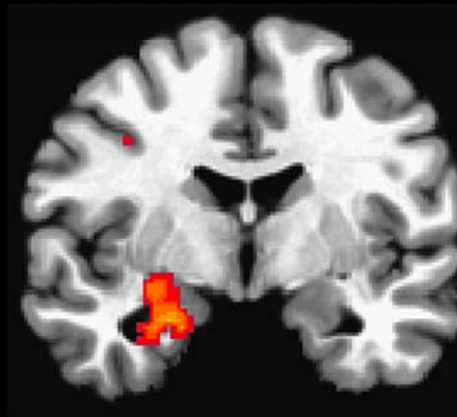


# Neurological Activation

## Functional MRI Study of Emotional Stroop Task



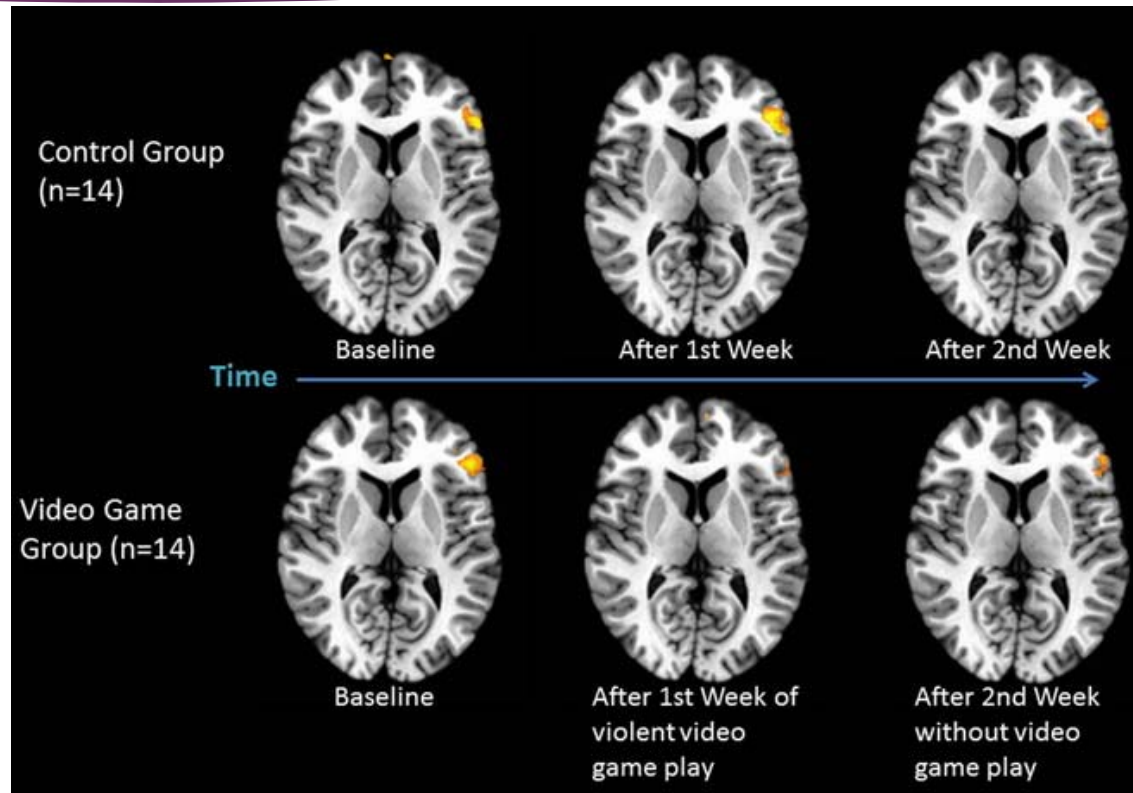
Non-violent game players



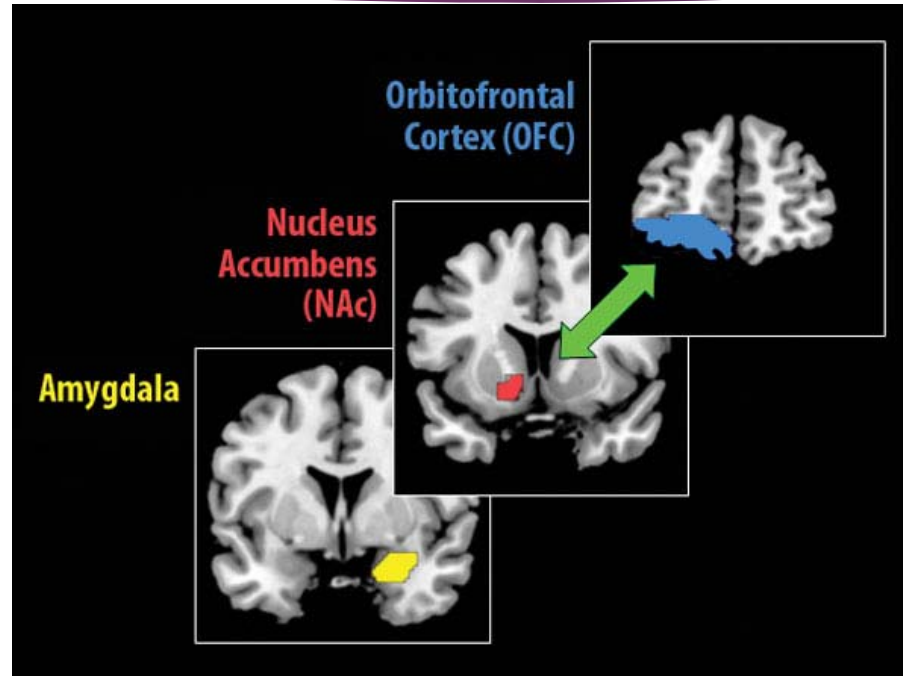
Violent game players

Compared with the group that played the nonviolent game, the group that played the violent video game demonstrated less activation in the prefrontal portions of the brain, which are involved in inhibition, concentration and self-control, and more activation in the amygdala, which is involved in emotional arousal. Dr. Matthews: Violent Video Games Leave Teenagers Emotionally Aroused Radiological Society of North America November 28, 2006

MRI scans show that after a week of playing a violent video game, young men showed less activation in a brain area called the dorsolateral prefrontal cortex. A control group did not show such changes.



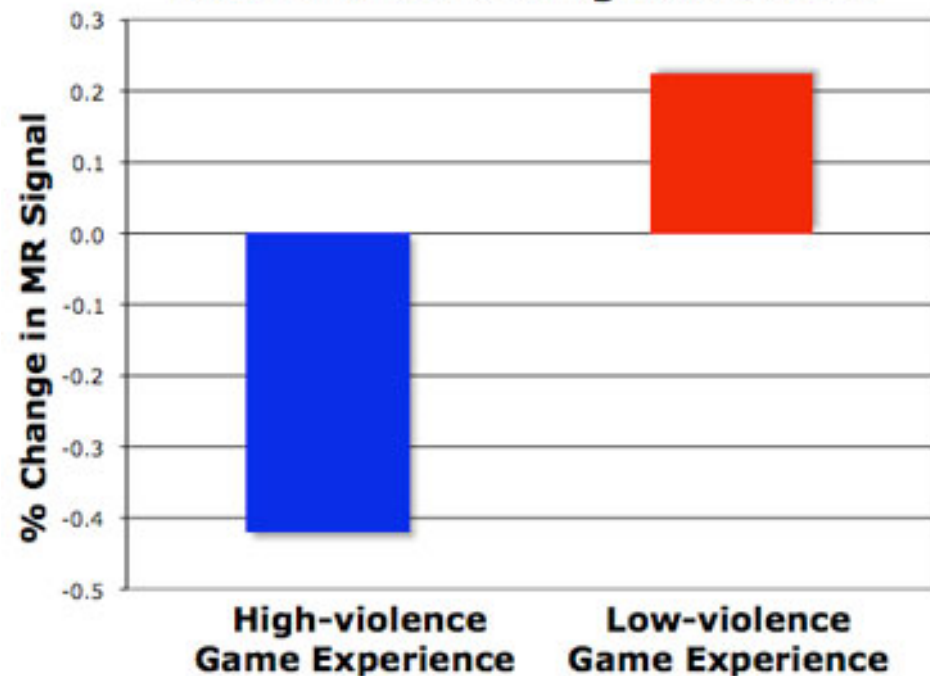
# Men versus Women



Men showed more activity in reward regions of the brain (in color) than women. Men also had stronger links between two regions (green arrow). Stanford Report, February 6, 2008 Video games spark brain reward in men more than women

When playing a high-violence video game, players accustomed to such games showed lower activity (measured via signals from magnetic resonance imaging) in the rostral anterior cingulate cortex (rACC), whereas players used to low-violence games displayed higher activity. This difference suggests that gamers who often play violent games may be desensitized to aggression and violence. D. A. Gentile and J. R. Gentile, "Violent Video Games as Exemplary Teachers: A Conceptual Analysis," *Journal of Youth and Adolescence* 9 (2008): 127-141

### The Brain's Rostral Anterior Cingulate Cortex



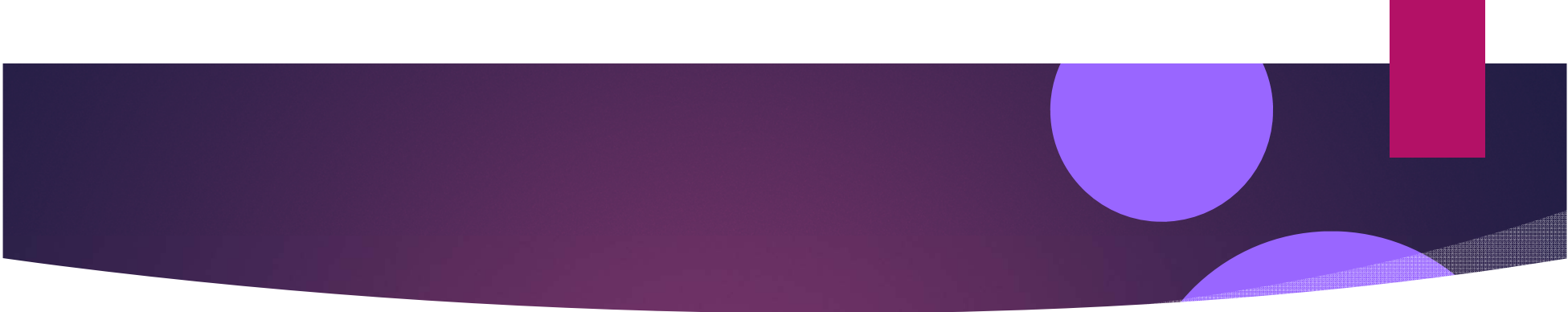


## Technology/Media forces Multitasking

### Multitasking Optimizes Performance

**Ya – NO! This is a Myth a Big Illusion**

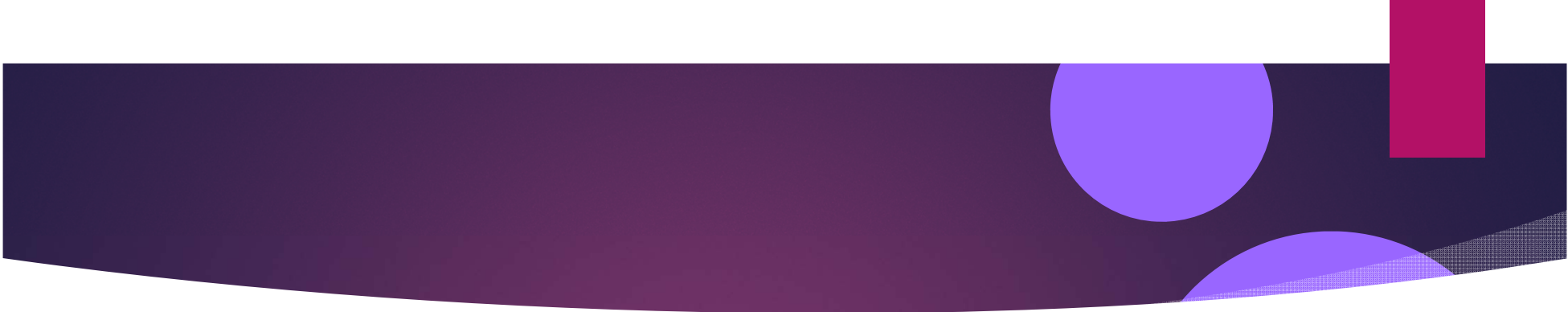
- ▶ Stanford Research: Frequent multitaskers performed worse because they had more trouble organizing their thoughts and filtering out irrelevant information, and they were *slower* at switching from one task to another

- 
- ▶ University of London found people who multitasked during cognitive tasks experienced IQ score declines similar to if they had smoked marijuana or stayed up all night. IQ drops of 15 points for multitasking men lowered their scores to the average range of an 8 year old child.
  - ▶ University of Sussex compared the amount of time people spend on multiple devices (such as texting while watching TV) to MRI scans of their brains. They found that high multitaskers had less brain density in the anterior cingulate cortex, a region responsible for empathy as well as cognitive and emotional control.

# Psychological Refractory Period

- ▶ Occurs when two tasks are performed at the same time and the reaction time to one of the tasks is delayed because of the presence of the other task.
  - ▶ So we are slower to engage a conversation
  - ▶ To pay attention to nonverbal cues
  - ▶ To shift our focus to the other "to dos"



- 
- ▶ When the brain is presented with two tasks at once, it quickly toggles back and forth between tasks.
    - ▶ But when your brain receives more information than it can process, an area of your brain called the posterior lateral prefrontal cortex (pLPFC) takes over
    - ▶ pLPFC will line these stimuli up in a queue, rather than trying to handle them simultaneously
      - ▶ But this will translate to homework, chores or other tasks not getting done

Cortex. 2013 Nov-Dec;49(10):2845-52

How does this Look in Real Life?



# Be Objective



Be Objective



# What Makes Media so Powerful?

- ▶ Three main intrinsic needs involved in self-determination
  - ▶ Competence/mastery
  - ▶ Autonomy
  - ▶ Relatedness
- ▶ These needs are innate and universal across culture and time



# What Makes Media so Powerful?

- ▶ People show commitment and effort to meet these needs that, if met, allow psychological growth
  - ▶ When these needs are not met there are negative consequences
- ▶ Electronics can give the sense of meeting these emotional needs conveniently
- ▶ Easier and faster than alternative real world solutions

# Intrinsic Motivation

- ▶ Feedback from others and rewards for efforts to meet these three needs affect intrinsic motivation
- ▶ Positive feedback increases intrinsic motivation
- ▶ Negative feedback diminishes intrinsic motivation

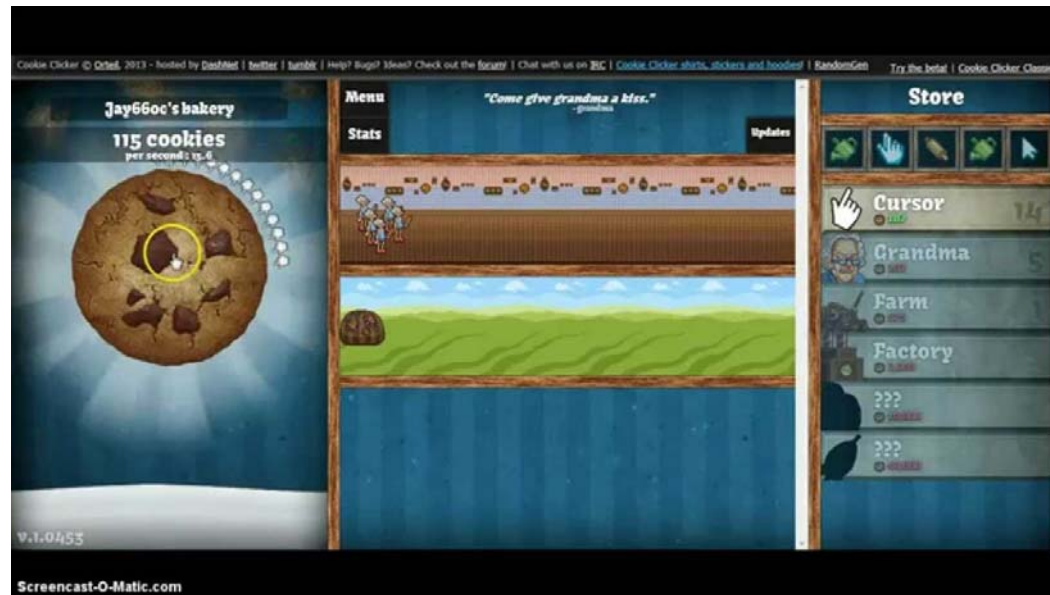


# Competence

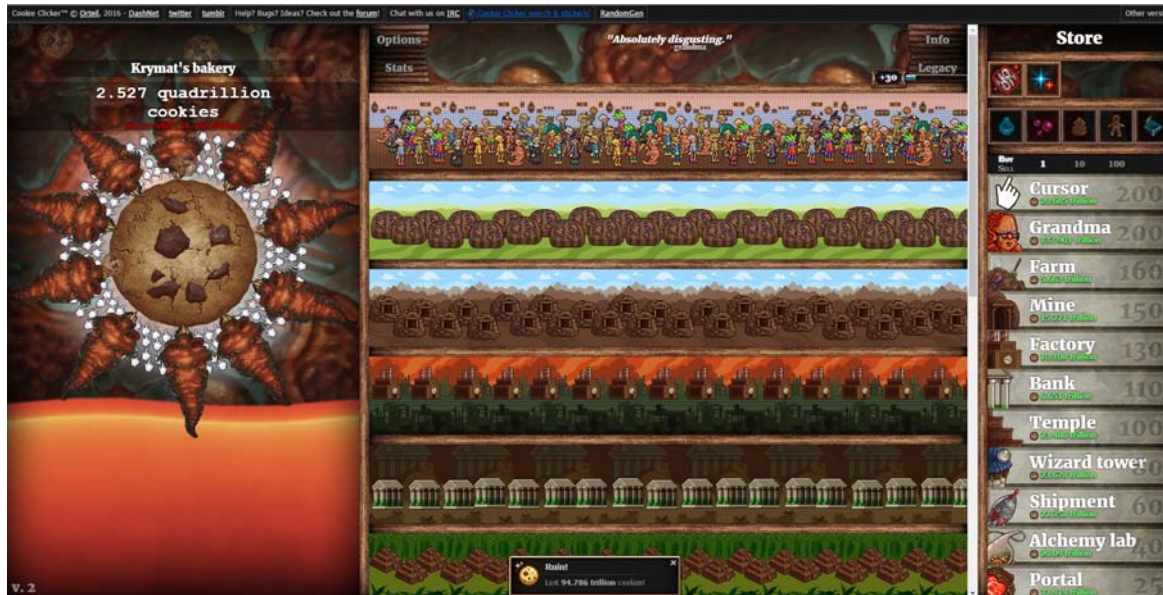




# Competence



# Competence



# Autonomy



Relatedness

**facebook**

**You** **Tube**

# Why is this a Problem?



- ▶ Creates false sense of accomplishment
- ▶ Short-term resolution
- ▶ Needs are only met while engaged in the activity

## Decreases Resilience

- ▶ Creating the perception of meeting these emotional needs very quickly lowers the threshold/expectation for how hard one should work to meet needs
- ▶ Real life is significantly more difficult in comparison
- ▶ Start to crave constant stimulation
- ▶ More difficult to cope with boredom, anxiety, etc.
- ▶ Perpetuates external sense of control, harder to focus self or calm self when necessary

# Is Media Bad?

- ▶ Can be healthy in moderation
  - ▶ Interact with others
  - ▶ Exercise brain and vision
  - ▶ Make quick decisions
  - ▶ Distraction from life stresses
  - ▶ Can help to cope with everyday life
  - ▶ Educational
- ▶ Similar to many other conveniences in life
- ▶ Many healthy things in life can become unhealthy in excessive doses



The big question – what to do about it?





# Parent Strategies

- ▶ Understand what needs are met by this behavior
- ▶ Develop alternatives strategies to meet those needs
- ▶ Understand difference between reinforcement and punishment
  - ▶ Reinforcement increases likelihood a behavior will happen in the future
  - ▶ Punishment decreases likelihood a behavior will happen in the future
- ▶ Model behaviors
  - ▶ Children learn through modeling
  - ▶ Teenagers are sensitive to hypocrisy

# Internalization

- ▶ Transforming extrinsic motivators into personal values
- ▶ More likely to occur when there is a sense of relatedness
  - ▶ Especially when there is a sense of understanding, caring, and safety
- ▶ Competence in activities promotes internalization
- ▶ Autonomy is important when trying to internalize behaviors
- ▶ Increasing a person's choices and options tends to increase intrinsic motivation
- ▶ Giving unexpected positive feedback tends to increase intrinsic motivation
- ▶ Giving unexpected negative feedback tends to decrease intrinsic motivation
- ▶ Behavior that is not intrinsically motivated is not persistent

# Develop Executive Skills

a goal without  
a plan is just  
a wish - Antoine de Saint Exupéry

- ▶ Task initiation
- ▶ Perspective taking
- ▶ Metacognition
- ▶ Problem solving
- ▶ Goal setting
  - ▶ Explicitly teach, model, and reinforce skills
  - ▶ Set goals
  - ▶ Create plan
  - ▶ Follow plan
  - ▶ Evaluate and modify plan as necessary

# Parent Strategies

- ▶ Promote intrinsic motivation
- ▶ Emphasizing restriction of media is not always useful
  - ▶ People can continue to fantasize about media even when it is not present
  - ▶ Create plan to meet other needs before entertainment
- ▶ Recognize that efforts to change are countered by culture and peer influence
- ▶ Figure out what you can do together
  - ▶ Seize opportunities to build relationships and make compromises
  - ▶ Work together on activities, deal with ending and starting activities together
  - ▶ Try trade-offs – do dishes together, play games together
- ▶ Practice thinking out loud

# Strategies for Teens

- ▶ Learn to do what works
  - ▶ Speak in complete sentences
  - ▶ Make to-do lists
  - ▶ Do it or write it down
  - ▶ Seek out opportunities to learn
- ▶ Be proactive
  - ▶ Schedule
  - ▶ Visualize

## to do list

1. Make vanilla pudding. Put in mayo jar. Eat in public.
2. Hire two private investigators. Get them to follow each other.
3. Wear shirt that says "Life." Hand out lemons on street corner.
4. Get into a crowded elevator and say "I bet you're all wondering why I gathered you here today."
5. Major in philosophy. Ask people WHY they would like fries with that.
6. Run into a store, ask what year it is. When someone answers, yell "It worked!" and run out cheering.
7. Become a doctor. Change last name to Acula.
8. Change name to Simon. Speak in third person.
9. Buy a parrot. Teach the parrot to say "Help! I've been turned into a parrot."
10. Follow joggers around in your car blasting "Eye of the Tiger" for encouragement.

# Use Technology to Your Advantage

- ▶ Apps
- ▶ Reminders
- ▶ Alarms
- ▶ Be more efficient
- ▶ Use technology to learn
- ▶ Focus on technology as a tool to support other aspects of life rather than replace them
  - ▶ Texting/social media
    - ▶ Texting and social media can serve to enhance relationships by conveniently connecting with people, or
    - ▶ It can damage relationships by replacing other interactions
  - ▶ Video games can be a reason to get together with friends

# Learn to Calm Yourself

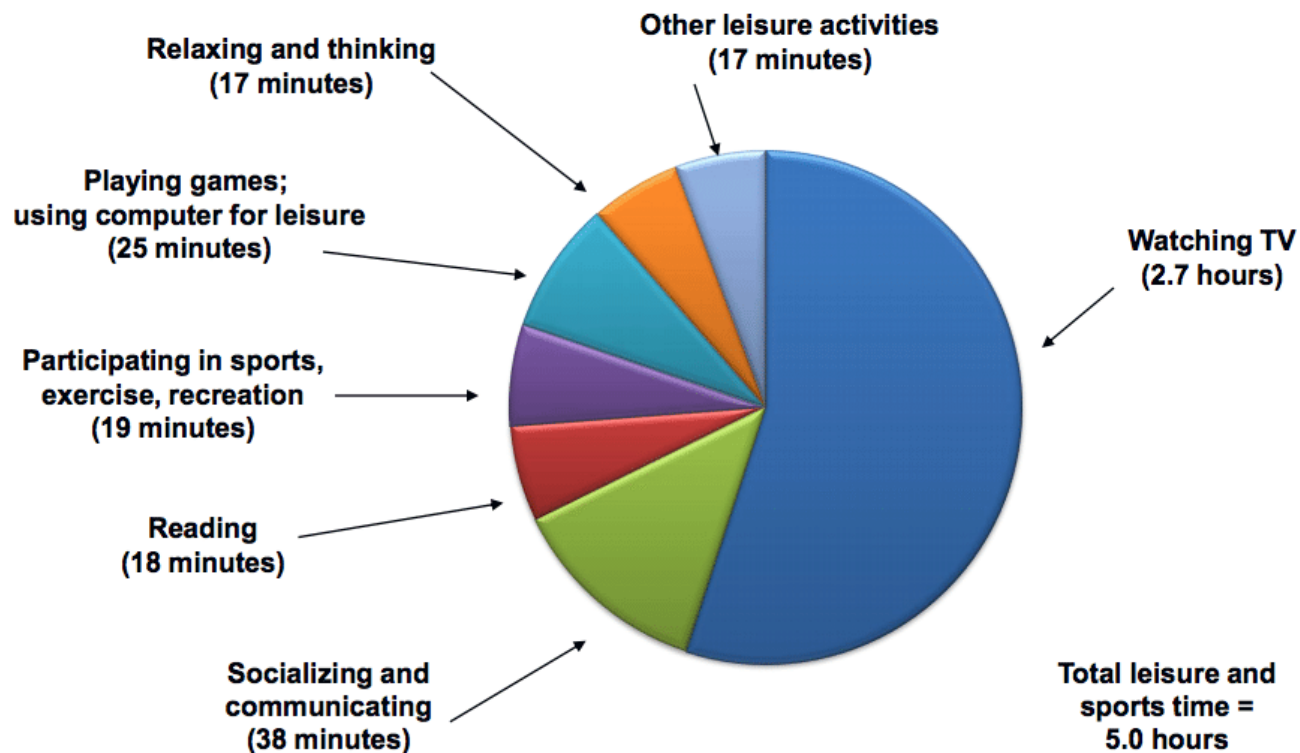
- ▶ Mindfulness
  - ▶ Open, undivided attention to what is happening within and around oneself
  - ▶ Learning to relax
  - ▶ Attend to senses
  - ▶ Being “in the moment”
- ▶ Use calming strategies before and after more stimulating activities



# Create a Family Media Plan

## Leisure time on an average day

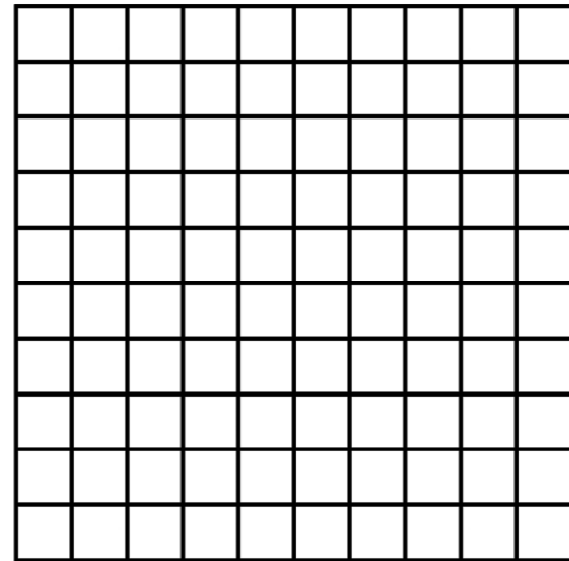
- ▶ Identify how much time to spend sleeping, exercising, reading, with media, etc.
- ▶ Create media free areas in the house
- ▶ Keep electronics out of the bedroom
- ▶ Turn off electronics 1 hour before bedtime





# Managing and Prioritizing Time

- ▶ Assuming approximately 8 hours of sleep per day, a person's waking hours can be divided into 100 10-minute blocks of time
- ▶ Decide how you would ideally allocate your time



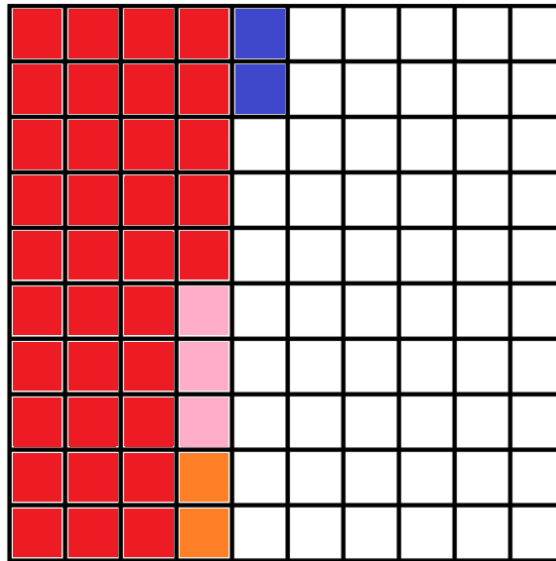






# Amount of time in school (actually learning)

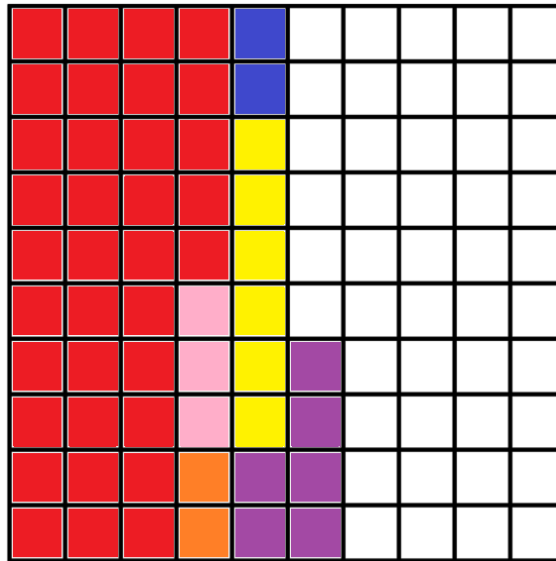
- ▶ ...and time staring at the cute guy or girl in your science class
- ▶ Leaves 35 blocks for potential learning





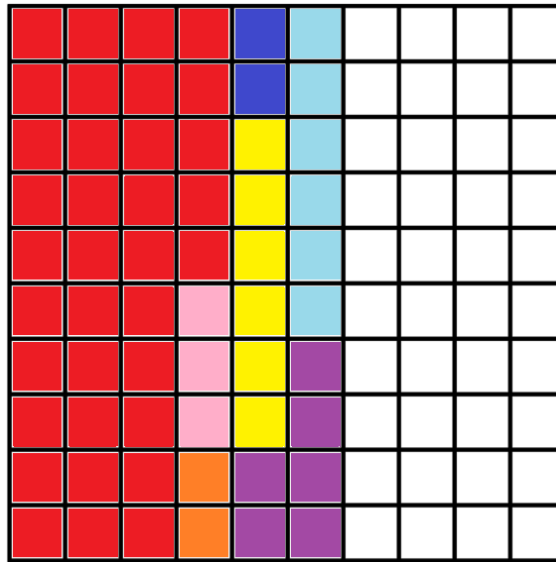
# Managing and Prioritizing Time

- ▶ And 6 blocks for hygiene, getting ready for school, etc.



# Managing and Prioritizing Time

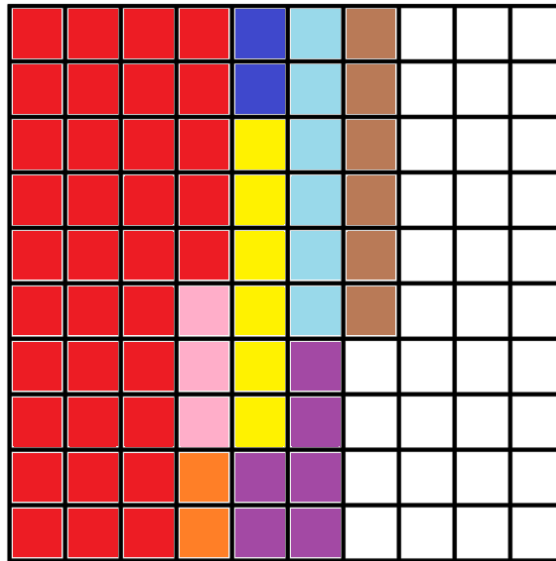
- ▶ And 6 blocks for dinner, breakfast, and snacks





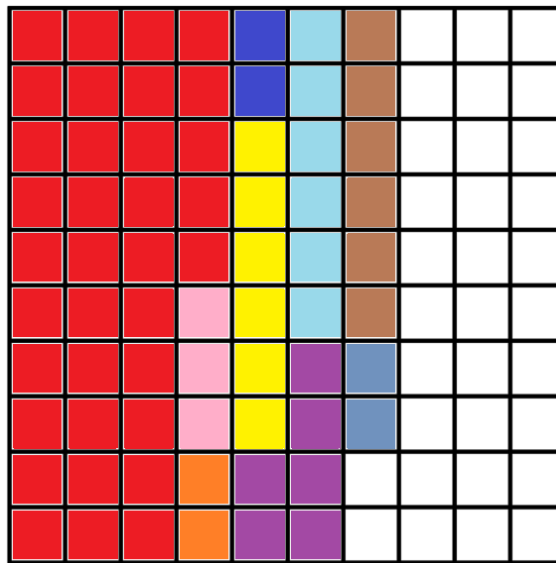
# Managing and Prioritizing Time

- ▶ 6 blocks for educational time like homework, studying, or reading



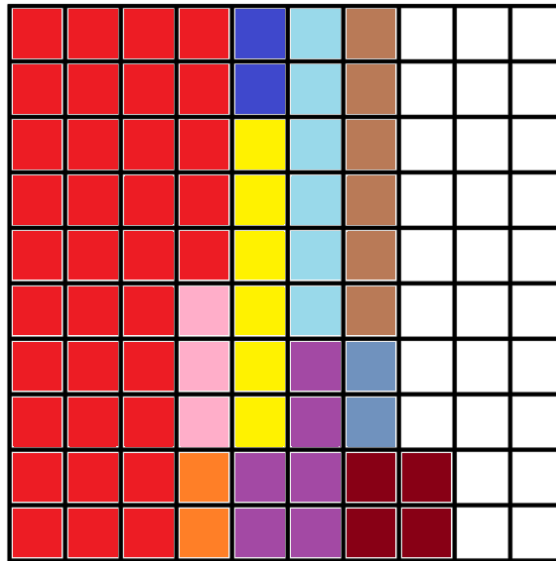
# Managing and Prioritizing Time

- ▶ 20 minutes (2 blocks) to do chores or help out around the house



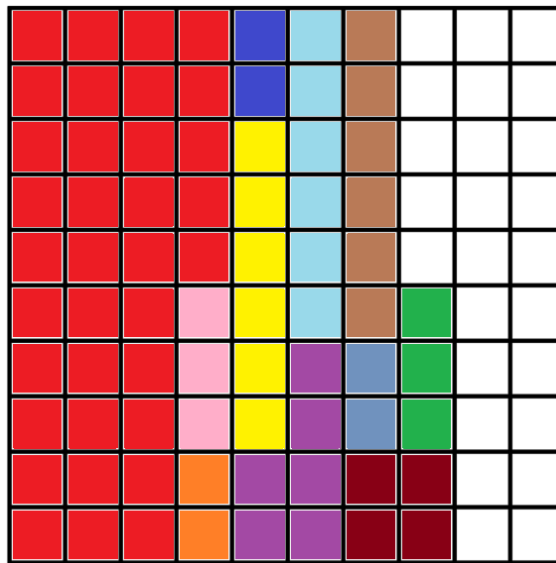
# Managing and Prioritizing Time

- ▶ 4 blocks for talking or texting friends



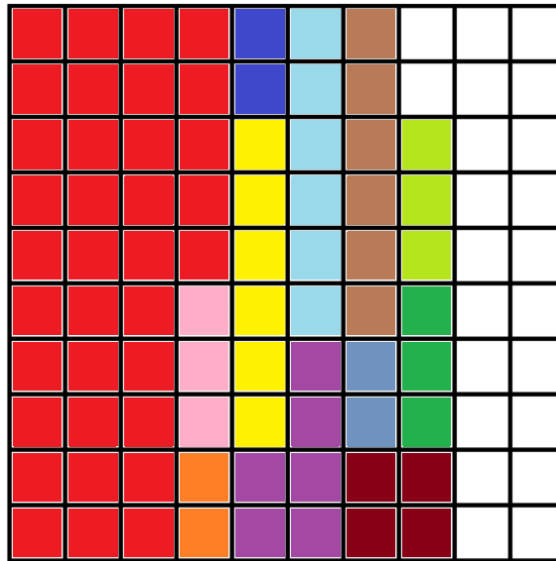
# Managing and Prioritizing Time

- ▶ 30 minutes (3 blocks) for talking or spending time with family



# Managing and Prioritizing Time

- ▶ And 30 minutes (3 blocks) for making a schedule, looking at your calendar, or any other stuff during the day that wasn't anticipated








# What Next?


- ▶ Continued excessive use can be sign of underlying mental illness such as ADHD, anxiety, or depression
- ▶ Professional assistance in these situations
- ▶ When in doubt, consult

BRAINS counseling, psyc X

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Speaking on the science, addiction, and brain



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