





What Has Changed?

- It's obvious that there has been a large increase in mass shootings over my lifetime
- What is the cause of this?



Serotonin

- Plays a role in regulation of mood, appetite, sleep and depression
- 90% of serotonin receptors are in the gut, 8% in the blood and only 2% in the brain



Serotonin Producing Neurons

- Located in the raphe nuclei, the midline of the brain stem
- Project upwards into all parts of the brain and downward into the spinal column
- Have a regular, slow spontaneous level of activity during the day that varies little
- Slow down when you sleep, shut down when you dream



Serotonin Neuron Functions

- Regulate carbohydrate cravings, digestion
- Regulate sleep ands wake cycle
- Affects pain tolerance
- Promotes assertive behavior and the drive for self-esteem
- May also be involved with vomiting, sexuality, memory and learning, body temperature, cardiovascular function and endocrine balance
- Low levels of activity are associated with depression, bipolar disorders, anxiety, cravings for carbohydrates, insomnia and fatigue



Serotonin and LSD

- LSD binds to a variety of serotonin receptors slowing their rate of firing
- This induces hallucinations that last well beyond the time LSD stops interfering with serotonin
- Remember that serotonin is also inhibited when we are dreaming
- Ergot fungus and psilocybin from certain mushrooms has a similar effect



Serotonin and Aggression

- Serotonin is involved in assertiveness and aggression
- It may is involved in our drive to obtain respect from others (and possible self-respect)
- Serotonin neurons push us to get our needs met
- They are also involved in our drive for status or social dominance



Posture and Serotonin

- Dr. Jordon Peterson refers to research on lobsters which shows lobsters posturing for dominance is linked to serotonin levels
- Serotonin helps us have good posture, i.e., stand up for ourselves, while depression causes our mood (and posture) to slump
- However, straightening up for posture (and reaffirming your value internally) also lifts depression and adjusts serotonin levels



Serotonin Neurons

High Activity

- Help us have willpower
- Help us connect with our body and reality
- Help us to delay gratification and to create and act on wellformed plans
- Excessively high serotonin can lead to aggressive, violent and hostile behavior

Low Activity

- Difficulty finishing things
- Feeling depressed and discouraged
- Getting annoyed easily
- Being unable to control your impulses
- Ungrounded thought processes

Serotonin Drugs

- SSRIs—Selective Serotonin Reuptake Inhibitors (inhibit serotonin reuptake, may also increase GABA responses)
 - Fluoxetine (Prozac), Paroxetine (Paxil, Seroxat), Sertraline (Zoloft, Lustral), Citalopram (Celexa), Excitalopram (Lexapro, Cipralex), Fluvoxamine (Luvox)
- SMS—Serotonin Modulators and Stimulators
 - Vilazodone (Viibryd), Vortioxetine (Brintellix)
- SARIs—Serotonin Antagonists and Reuptake Inhibitors (block serotonin receptors)
 - Etoperidone (Axiomin, Etonin) and Trazodone (Desyrel)

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Elevated Serotonin Has Been Linked To

- Schizophrenia, psychosis and mania
- Mood disorders (depression, anxiety)
- Organic brain disease especially mental retardation at a greater incident rate in children
- Autism (a self-centered or self-focused mental state with no basis in reality)
- Alzheimer's disease
- Old age
- Anorexia
- Constriction of the blood vessels
- Blood clotting
- Constriction of bronchials and other physical effects
 - Source: http://www.drugawareness.org/ssri-facts/ssri-meds/

Reduced Serotonin Metabolism is Linked To

- Suicide (especially violent suicide) and multiple suicide attempts
- · Violent crime, arson, hostility and more contact with police
- Hostility, increased arguments with spouses, friends and relatives and loss of employment due to hostile behavior
- Insomnia and depression
- Alcohol abuse and dependence on various substances
- Impulsive acts with no concern for punishment, reckless driving, exhibitionism
- Bulimia
- Obsessive compulsive behavior

http://www.drugawareness.org/ssri-facts/ssri-meds/

Violent Mice

- Mice with a mutation that causes their brains to be flooded with an excess of serotonin (Tg8 mutation) have fierce tempers
 - Mutant Mice May Hold Key To Human Violence–An Excess Of Serotonin, A Chemical That Helps Regulate Mood And Mental Health, Causes Mayhem by Jean Chen Shih from http://www.drugawareness.org/ssrifacts/ssri-meds/





Abrupt Changes in SSRI Dosages are Dangerous

- "With antidepressants the FDA has now warned that any abrupt change in dose, whether increasing or decreasing the dose, can produce suicide, hostility, or psychosis – generally a manic psychosis when you then get your diagnosis for Bipolar Disorder."
- "WARNING: The practice of taking a pill every other day throws you into withdrawal every other day and can be very dangerous when you consider the FDA warnings on abrupt changes in dose."

Resources

- https://www.ssristories.net/school-shootings/
- <u>https://www.youtube.com/channel/UCo-6uMPDOtwaPe1ec3Rhr3A</u> (International Coalition for Drug Awareness YouTube channel)
- <u>https://www.drugawareness.org/</u> (International Coalition for Drug Awareness webpage)



