Stress, Anxiety & Mental Health

Huberman Lab Keypoints

Episodes in this pack: 23

How to Overcome Social Anxiety | Dr. Nick Epley

Guest: Dr. Nick Epley
Date: 2026-05-18 · Duration: 2:30:24
URL: https://www.youtube.com/watch?v=Q2hOryHdgAk

KEYPOINTS

1. We constantly 'mind read', and it's useful but error-prone
Epley, a behavioral scientist at the University of Chicago, explains that we infer thoughts, intentions and attitudes behind other people's behavior, and even behind animals, gods or the planet. The inference helps us explain what someone is doing and predict what they'll do next. It's better than not doing it, but it systematically misfires in predictable ways.

2. With strangers, we use our own minds as the template
When we know nothing about someone, the main tool we have is ourselves: if I feel cold, I assume you do too. Egocentrism also means we overestimate how clearly we come across. We know what we meant, so we assume an email will be read the way we'd say it, and sarcasm or jokes land badly in text.

3. Voice conveys a mind; text is mostly 'dead'
Speech happens as thought happens, so rate, pitch and intonation reveal enthusiasm, sadness, intent and sarcasm. In a study with Juliana Schroeder on the eve of the 2016 election, people who heard Trump or Clinton voters explain their choice rated them as more thoughtful, intelligent and rational than people who read the same words. The effect was strongest when they disagreed with the speaker. Yet most people say they'd rather write to seem smart because they can edit.

4. People underestimate how much others want to connect
Across more than 30,000 participants in over 120 experiments, Epley's lab finds people consistently underestimate how positively others will respond when they reach out. If two strangers sit silently next to each other, each reads the other's silence as disinterest, which creates a shared but mistaken belief that nobody wants to talk.

5. Extraversion strongly predicts happiness, and acting extraverted helps everyone
The correlation between daily positive affect and extraversion is about 0.5, comparable to the correlation between fathers' and sons' heights, and about 0.3 for life satisfaction. Ed Diener called it a foundational finding. Will Fleeson's lab studies and Sonja Lyubomirsky's two-week interventions found that acting more extraverted raised positive feelings regardless of baseline personality. Introverts, too, report feeling better with people than alone.

6. Sociability is like exercise: a habit, not a fixed type
Epley thinks the difference between people who seek out connection and those who don't is largely the habits they've built. Avoiding people keeps you from developing the skills to read cues, gracefully exit 'sticky' conversations or spot when someone is busy. Those skills come from approaching.

7. Brief exchanges matter more than we assume
Huberman admits he'd thought of small talk and manners as 'crackers', not nourishment. Both conclude that fist bumps, compliments and quick shared moments create a real sense of kinship. Epley's students hypothesize, though it is untested, that one good exchange with a stranger shifts how you feel about the whole group they belong to.

8. Social anxiety persists because beliefs never get tested
Exposure works because you discover your predictions were wrong. If you never reach out, you never get that disconfirming evidence. Much social anxiety is a fear of seeming creepy or 'too sticky'. Epley's answer is calibration rather than avoidance: friendly is not the same as friends, and if someone doesn't call back, don't ping them a third time.

9. Context and norms shape what counts as polite
Earbuds and phones signal 'don't bother me'. In the UK, and even more in Japan, staying out of strangers' business is itself politeness. Epley cautions that what looks like eroding manners may be people trying not to intrude. He treats a greeting as an invitation the other person can accept or decline.

EXAMPLES

1. Jia Jiang's 100 days of rejection
Trying to desensitize himself to rejection, Jiang made about 106 odd requests: Olympic-ring doughnuts at Krispy Kreme (an employee spent 15 minutes making them), planting a rose in a stranger's yard, co-piloting a plane. Epley's lab coded the videos and found he was accepted about 51 times and rejected about 48, with only around seven showing any negativity. Jiang's takeaway was that other people are far kinder than he expected.

2. The underestimation-of-compliance effect
Frank Flynn (Stanford) and Vanessa Bohns (Cornell) found people overestimate how many others they'll need to ask before enough say yes. Epley adds that helpers also feel better than requesters expect. Asking someone to take your photo feels like a burden but usually makes them happier.

3. Gustavo on the train
Epley sat beside a young man with earbuds and greeted him. The man took one earbud out, offered a fist bump, then proudly showed his binder from a culinary trade program. Epley left the 30-minute conversation feeling more hopeful about young people in general.

4. The red glasses compliment
On his way to the train, Epley told a stranger her red glasses looked fabulous. She stopped, took them off and said she really needed that today, a small example of how much a passing compliment can mean.

5. Data-driven courage to adopt

After a painful loss, Epley's wife asked whether he'd consider adopting a child with Down syndrome. He was full of doubt, then recognized he was making the same overly pessimistic forecast as his participants. He notes their resources and strong marriage made it feasible, and the family traveled to China to adopt.

OTHER RELEVANT

1. Talk, don't type, when it matters

For apologies, delicate news or anything involving humor or sarcasm, call or speak in person. Text strips out the cues that show you're a thoughtful person with good intentions.

2. Treat your predictions as hypotheses

Before skipping a conversation because 'they won't want to talk', remember that the data consistently show this guess is too pessimistic. Make small, low-cost overtures, like a greeting or a question about someone's day, and see what happens.

3. Ask for help more often

Requests are granted more often than you expect, and helping feels good to the helper. Accept alternatives gracefully: when Jiang couldn't announce his love of Costco over the intercom, the manager took him to lunch instead.

4. Calibrate eye contact and persistence

Keep your gaze moving rather than fixed. In Huberman's story, a well-liked college roommate unsettled people by staring until he was told to keep his eyes moving. Respect clear signals such as someone being on a call or not replying.

Tools to Bolster Your Mental Health & Confidence | Dr. Paul Conti

Guest: Dr. Paul Conti
Date: 2026-05-04 · Duration: 2:10:02
URL: https://www.youtube.com/watch?v=cWCs7dxrt-A

KEYPOINTS

1. Start from what's going right
Psychiatrist Paul Conti, discussing his book 'What's Going Right', argues that the mental health system teaches people to see themselves through what's wrong and to wear labels that can deepen helplessness. Yet there is 'far more going right in any of us than there is going wrong if we're here.' Starting from strength makes it easier to look honestly at what you want to change. He insists this isn't Pollyanna thinking: it is consistent with what's true.

2. Compassionate curiosity is the core tool
Most people avoid looking at themselves because they fear what they'll find or don't believe they can change. Conti's remedy is to approach yourself with curiosity that isn't harsh: what runs through everything I do, how am I different in different situations, and when am I presenting a false self that even I know is false? Curiosity can be serious or light-hearted, but it has to be there.

3. Your self-talk is the first place to look
Notice what you say to yourself in quiet moments, when no one is listening or there's a pause in the action. Some people repeat intrusive messages hundreds of times a day without noticing them. Becoming aware of those messages is the entry point to the 'structure and function of self' that Conti says all humans share.

4. Intrusive thoughts always have a meaning
Conti's approach is to identify the repeated thought, then ask what purpose it serves. Constantly telling yourself 'nothing is going to be okay' may be an attempt to protect yourself from future shock, or a sign of an unprocessed loss. If thoughts or worries reflect real danger, change the situation. He also notes that medication can sometimes help.

5. Balance external check-ins with time alone
Constant streams of other people's lives make it hard to know what you yourself prefer. Conti suggests a 'sweet spot': check in with trusted people, similar people and different people, but spend enough time alone that you think through life's questions on your own first. Social media can strengthen your sense of self, for example by helping you find kindred spirits, or it can distract you from it. Honesty about which it is doing is what matters.

6. Doing versus reflecting: the test is happiness
Huberman asks whether people who simply 'do' without introspection are missing something. Conti says the real question is whether that person is happy. Some active people are meditative while moving, and forcing stillness on them can be an external imposition. Using tools like NSDR to be at your best is different from trying to control your states because you think something is wrong with you.

7. Asking 'why' restores agency
When someone knows they should exercise or stop seeing a draining friend but doesn't, Conti calls those behaviors 'X marks the spot': places to dig. The reason might be a need to be liked, putting others first, or fear of failure after earlier attempts. Realizing you are copying or rebelling against a childhood pattern gives agency back, because nobody wants to be 'programmed' like the Manchurian Candidate. The goal is for 'the whole me' to decide, even if the decision is not to go.

8. The limbic system doesn't know the clock or the calendar
You can say 'that was then, this is now', but emotional systems don't track time. When strong feelings drop you into the past, that is a marker of something from that time you haven't worked through. People often fear it means they're going crazy. Conti says these moments point to where to dig, because emotionally the past is still in your present.

9. Happiness is peace, contentment and delight, not escape
Conti rejects 'happy-go-lucky' as the goal, because it implies being unaware of how hard life can be. Contentment means holding awareness of both what went well and what didn't, even tragedies. Delight is something we all had as children and can recover. Escapes, including substances, feel good for a couple of hours 'but at what cost?'

EXAMPLES

1. 'I don't get stressed, I give stress'
Huberman's former colleague said this. Asked whether people treat themselves the way they treat others, Conti says the saying has no general validity. Someone calm inside while stressing everyone else 'is not a healthy way to be'. More commonly, people treat others far better than they treat themselves.

2. The gym, sized down
A patient keeps aiming for five gym visits, fails, and then goes zero times. Conti helps them settle on Monday and Friday, or even once a week, because one success builds on itself. He warns that expecting change faster than it can happen leads to giving up within about two weeks.

3. Larry Squire's wall of photos
Huberman describes memory scientist Larry Squire filling his walls with photos of people, places and experiences he liked: 'a vessel of awesome memories.' Conti frames this as taking control of the climate within us, priming the mind with what's gone right.

4. Parenting by reaction
Conti describes a parent who pushed so hard against how they were raised that they realize they're letting their kids run wild

in ways that aren't even safe. It was an automatic reaction to a trigger, not a choice. Seeing the pattern lets the whole self decide how to parent.

OTHER RELEVANT

1. Do a self-talk audit

Several times this week, pause and note the exact phrases running in your head. For each repeated one, ask what it's protecting you from and whether it points to something unprocessed.

2. Look at childhood without a dog in the fight

To heal earlier trauma, Conti recommends looking at the past without needing it to be less bad, or the worst, than it was. Overwhelming trauma can make intentional living harder but doesn't prevent it. A cycle of self-criticism after repeated failed attempts can be just as limiting.

3. Surround yourself with good memories

Put up photos of experiences and people you loved. It is a cheap way to bias your mind toward what's going right without ignoring difficulty.

Unlearn Negative Thoughts & Behaviors Patterns | Dr. Alok Kanojia (Healthy Gamer)

Guest: Dr. Alok Kanojia
Date: 2026-03-02 · Duration: 3:08:43
URL: https://www.youtube.com/watch?v=9G2MRFs4vac

KEYPOINTS

1. Texting erodes the ability to read ambiguity
Kanojia says much of social life now happens over text, so the brain gets little practice reading facial expressions, and some young people feel almost autistic in person as a result. Many complain about 'mixed signals', but he argues mixed signals are normal: everyone holds ambivalence, and the back-and-forth of reading and adjusting to someone is how relationships actually work.

2. Tolerating uncertainty predicts mental health across conditions
Kanojia calls intolerance of uncertainty a factor that cuts across diagnoses: people who can sit with not knowing tend to be more resilient and have better mental health and quality of life. Demanding clear answers from every interaction, flirtation included, works against that.

3. Distress tolerance means accepting emotions, not suppressing them
Huberman worries that holding back reactions is draining. Kanojia agrees that suppression isn't the goal. Healthy distress tolerance moves the other way: you recognize and accept the feeling so you can be calm alongside it, rather than acting it out or pushing it down.

4. Naming an emotion is only the first step
When the amygdala is flooded, finding words forces it to quiet down enough for language areas to describe the feeling, which Freud recognized over a century ago. But journaling or talking about feelings is often not enough, especially for men, in Kanojia's clinical experience.

5. Resilient people deliberately add other emotions
After a breakup, for example, a resilient person remembers three good years alongside one bad one, and recognizes the experience will help them spot the next toxic relationship. This works in both directions: when you're infatuated with a person or a business idea, Kanojia suggests adding some anxiety, using the addiction-psychiatry technique of 'playing the tape through to the end'. He says he has seen more relationships ruined by falling in love than by anything else.

6. An emotion is information and motivation, not a license to act
Kanojia criticizes the online trend of 'speaking my truth' as an excuse for behaving badly. From an evolutionary view, emotions exist to inform and motivate, so feeling something doesn't oblige you to act on it.

7. Criticism hurts most where it hits an existing self-doubt
An angry attack is black-and-white and easy to dismiss, though it triggers your own amygdala and denial. A calm, precise critique works like a 'poison dart': it finds your weak point and the doubt grows. Kanojia's view is that what hurts is what you already believe about yourself. Labels like 'loser' or 'ugly' are part of the ego, which the Eastern model treats as part of a mind you can observe, like your hand.

8. Therapy and meditation reveal different things
Kanojia thinks psychotherapy gives the best insight into your own mind, while meditation is best for stepping outside the ego and quiets the brain's self-related default mode network. He notes research linking the therapeutic benefit of psychedelic sessions, mostly studied with psilocybin, to 'ego death', and suggests MDMA may also change self-perception. He adds that meditation science is in its infancy: eight-week studies teach beginners to swim and don't show what an Olympian looks like.

9. Young men who are stuck are often misdiagnosed
Many 'failure to launch' cases are gifted kids who hit a wall. Kanojia says men are taught to do, not to understand how they work, so they chase single fixes for problems that have many causes. He stresses that tiredness is a signal from the brain and doesn't always mean low energy.

EXAMPLES

1. Six months of 'that must be hard for you'
As a third-year resident, Kanojia saw a man in his 40s who had been in the clinic for eight years with depression and recounted his troubles every week. After six months Kanojia asked whether it was helping, and the man said he thought that was simply what therapy was. Kanojia calls it a light-bulb moment showing that talking about feelings alone often isn't enough.

2. His own slow launch
Kanojia took 5.5 years to finish college with a 2.4 GPA, started medical school at 28 and couldn't support himself until residency at 32. His wife, who has worked since 16, waited it out with confidence in him. What turned things around was figuring out how he works.

3. Shunya ('void') meditation
Imagine you've existed for only 10 seconds: no story, no identity, just raw experience. Everyday glimpses of this include losing yourself in a sunset or the relief of finally getting to pee. An introductory practice is to close your eyes, scan your body and look for an absence of sensation around the solar plexus while breathing. Kanojia advises approaching deeper practices with caution.

4. Erectile dysfunction in young men

Kanojia says ED in men under 30 has risen from about 5% two or three decades ago to about 20%, often meaning difficulty reaching climax during intercourse rather than getting an erection. He worries more about interactive, parasocial porn platforms such as OnlyFans than passive viewing.

5. Bedtime procrastination

Kanojia cites research separating procrastinating about going to bed from procrastinating about sleep once in bed. Falling asleep takes frontal-lobe impulse control. Once you're past your sleep window, he says, 10:30 on the phone turns into 12:30.

OTHER RELEVANT

1. Use social media carefully

Don't scroll when you feel bad: you're primed for salient content and will be 'programmed' more, and using it to regulate your mood is a big problem. Stay off it near bedtime. Remember that what you see becomes your standard; Kanojia sees body dysmorphia in men catching up with women alongside 'alpha' influencers.

2. Find your own direction rather than one set by comparison

First ask how social media has shaped what you want, then be wary of goals driven by comparison. They can bring success but not happiness: from the YouTubers he works with, he sees that one million subscribers leads to wanting two, then to fear of the creator growing faster. A real internal drive stays the same while its objects change.

3. Walk for an hour before a date

Kanojia tells patients to walk for an hour without technology before a date. His reasoning is that social media has disrupted dopamine signaling and made it neurochemically harder to feel the rush of being with someone.

How to Control Your Cortisol & Overcome Burnout

Date: 2025-08-04 · Duration: 2:16:16
URL: https://www.youtube.com/watch?v=Ibj1k3IZTNU

KEYPOINTS

1. Cortisol's main job is to mobilize energy, not just to respond to stress
Cortisol is a steroid hormone made from cholesterol, like testosterone and estrogen. Its central role is deploying blood glucose so the brain and body have energy for whatever the day demands, including stressors, exercise and focused work. Huberman argues that understanding its 24-hour rhythm, rather than treating it as 'the stress hormone,' is what tells you which tool to use at which time.

2. Cortisol follows four predictable daily phases
A classic study of cortisol secretion found a six-hour low period running from about 4 hours before lights-out to 2 hours after. Cortisol then rises slightly in hours 3 to 5 of sleep and climbs fast in hours 6 to 8, which overlaps with the REM-rich part of the night. A fourth phase follows waking. If you sleep only six hours, you miss most of that late-night rise, and seven hours captures only part of it.

3. The first hour or so after waking is a unique window to boost cortisol
Alongside the HPA axis, the suprachiasmatic nucleus (SCN) can drive extra cortisol through a parallel pathway via the splanchnic nerve. That window is open for roughly 1 to 3 hours after waking. The SCN receives input from melanopsin retinal ganglion cells, which respond to big shifts from dim to bright light, so morning light is the main way to open this pathway.

4. A bigger morning peak leads to lower evening cortisol
Because cortisol regulates itself through negative feedback, a high early peak triggers a steady decline starting around late morning. That leaves you energetic into the afternoon and low in cortisol by night, which helps you fall and stay asleep. Huberman calls this the point to 'bold underline.' Chronically high cortisol at the wrong times is linked to immune suppression, abdominal fat and the rounded 'moon face.'

5. Caffeine barely raises cortisol in habitual users but prolongs it
In people who have had caffeine daily for about five days, 100–300 mg doesn't raise cortisol much. Non-habitual users see a substantial rise. Caffeine does extend how long cortisol stays effective, which is why Huberman suggests delaying it by 60 to 90 minutes if you crash in the afternoon. That way the morning cortisol curve comes down gradually rather than falling off a cliff. If you want caffeine right away, that's fine, as long as you still get light, water and movement.

6. Exercising at a consistent time anchors the cortisol rhythm
Exercise is a strong entrainment cue. If you train within the same 2–3 hour window, ideally four to six days a week with at least one full rest day, your body learns to release cortisol in anticipation, and you start to feel more energetic in the hour before your usual session. Huberman describes this as a Pavlovian effect on a longer timescale.

7. Cold exposure raises cortisol only when it's occasional
Deliberate cold exposure raises cortisol only if you do it about once or twice a week. Done more often, the cortisol effect fades, but the rise in dopamine, norepinephrine and epinephrine continues and, as far as is known, does not saturate. Huberman says there's no evidence that regular cold exposure chronically raises cortisol in women more than in men.

8. Evening light is a potent cortisol trigger because baseline cortisol is low at night
Because evening cortisol is so low, the hypothalamus is primed to respond, and even moderate short-wavelength light can push cortisol up and suppress melatonin. Huberman recommends dimming lights, using red bulbs or a red phone filter (triple-click accessibility shortcut), or glasses that block short-wavelength light. Late-day sunlight in spring and summer is fine.

9. Starchy carbohydrates at dinner help keep evening cortisol low
Higher blood glucose reduces the drive to release cortisol, which helps explain why carb-heavy comfort foods feel calming. Huberman eats moderately or low carb through the day and includes rice, potatoes or yams at dinner around 7–7:30 pm. Ideally you'd stop eating about two hours before bed, but he allows a small snack if hunger keeps you awake.

10. Low-carb diets raise cortisol only temporarily
In the studies Huberman reviews, cortisol rises during the first three weeks of a low-carb diet and then settles back down. His test is simple: if you're low carb and sleeping well, don't worry. If you're sleeping poorly, try adding starch to your last meal. Insulin resistance (metabolic syndrome) is the exception, because cortisol stays high when cells can't use the glucose.

EXAMPLES

1. Grapefruit and black licorice
Grapefruit slows the enzymes that break down cortisol and caffeine. Huberman has started eating one pink grapefruit in the late morning and notices more energy, while acknowledging the effect could be placebo. Glycyrrhizin in black licorice (not red) inhibits 11;"Ô…4@, which converts cortisol to cortisone, and its effect is strong enough that he advises the lowest dose and caution later in the day.

2. Ashwagandha's measured effect
In the best studies he describes, ashwagandha lowered cortisol by about 11–29% at 300–900 mg. Huberman suggests starting at 300 mg, taking it only in the late afternoon or evening, and never taking large doses early in the day. The small amounts in blends (under about 50–100 mg) are not meaningful. He takes 300 mg in the evening himself.

3. The sleep stack and cortisol
Huberman has taken 50 mg of apigenin (from chamomile) nightly for over eight years, along with magnesium threonate and theanine, 30–60 minutes before bed. Apigenin lowers cortisol less than ashwagandha does. He stresses that supplements

come only after the behavioural basics are in place.

4. Cortisol flattening with age and illness

Men's and women's cortisol patterns look similar until about 40, with women's baseline slightly lower. Between about 40 and 70, the morning peak becomes rounder and the afternoon decline flatter. Flattening also appears around menopause. In studies of people with cancer, a steeper fall in cortisol through the afternoon predicted longer survival, though Huberman notes it's not the only factor.

OTHER RELEVANT

1. Morning stack

Within 30–60 minutes of waking, get outside and look toward the sun without sunglasses. This matters even more on cloudy days. Before dawn, a 10,000-lux lamp (around $100) is a backup. Drink 16–32 oz of water, with electrolytes if you like, and exercise early if you can.

2. Burnout type 1: wired in the morning, crashing in the afternoon

If you wake too early feeling anxious, cortisol is likely rising too steeply. Huberman suggests 10–30 minutes of NSDR or yoga nidra on waking, citing a study in which 11 minutes lowered cortisol. Set an alarm in case you fall back asleep.

3. Burnout type 2: tired in the morning, wired at night

Focus on the six hours before bed and the two hours after. Avoid bright light and late caffeine, use physiological sighs (two nasal inhales, then a long mouth exhale), and eat starches at dinner. Then push the morning cortisol peak higher with light, hydration and exercise. Huberman notes that true night owls have a normal rhythm, just shifted later.

4. Late workouts are okay with a cooldown

Moderate-to-intense training late in the day can triple or quadruple cortisol, but training as late as sundown is usually fine. Afterward, eat starchy carbs and use exhale-emphasized breathing so the natural evening decline can resume.

Healing From Grief & Loss | Dr. Mary-Frances O'Connor

Guest: Dr. Mary-Frances O'Connor
Date: 2025-06-02 · Duration: 2:32:36
URL: https://www.youtube.com/watch?v=inUkNZe5H3k

KEYPOINTS

1. Grief and grieving are different things
O'Connor, who directs the Grief, Loss and Social Stress Lab at the University of Arizona, treats grief as an emotion: a wave that arrives whenever you remember your loved one is gone, even 25 years later. Grieving is the process of learning to live with the loss. She compares it to the stock market: some days are terrible, but over a year there is usually an upward trajectory.

2. The 'gone but also everlasting' conflict triggers waves of grief
Attachment comes with an implicit belief: I will always be there for you, and if you are absent I should search harder. After a death, your memory knows the person has died, but your attachment system still assumes they are out there somewhere. Each time you notice those two streams conflict, a wave of grief follows. That is why absence initially makes the longing stronger, not weaker.

3. Yearning engages the brain's reward-learning region
In her imaging work, bereaved people viewed photos of their deceased loved one versus a stranger. Greater self-reported yearning correlated directly with activity in the nucleus accumbens (ventral striatum), the same dopamine-linked region involved in wanting and addiction. Memory, emotion-regulation and autonomic areas were active in everyone, but yearning varied by person.

4. Yearning is closer to thirst than to addiction
O'Connor's analogy is a desert hike without water: you think of nothing else, but nobody calls that addiction. Attachment figures are basic needs, like food and water. Part of grieving is finding new ways to meet those needs, including someone else you can say 'I will always be there for you' to, because the person who died can no longer fill that role.

5. Healthy grieving moves through protest and despair, then transmutes them
Drawing on John Bowlby's attachment work, protest is the active searching state, driven by cortisol and adrenaline. Despair is withdrawal, which conserves resources but brings inflammation and shifts in prolactin and oxytocin. Both must be acknowledged, then turned into actions that keep the person's memory while you rebuild a life. Our innate ability to shift attachment from parents to peers in adolescence suggests we are built to make this adjustment.

6. Bereavement carries real medical risk
Large epidemiological studies show all-cause mortality rises in newly bereaved people, so 'dying of a broken heart' is not just a metaphor. In O'Connor's lab, blood pressure rose for everyone during a wave of grief, and it rose most in those reporting the most intense grief. A replication in Germany found their blood pressure did not recover.

7. The stage model was a description that became a prescription
Elisabeth Kübler-Ross's 1969 work was groundbreaking in showing that grief is more than sadness. However, her descriptive interviews were later treated as a fixed sequence. Disbelief, anger and acceptance can occur together, in any order, alongside many other feelings.

8. Oscillation is the sign of healthy grieving
The dual process model of bereavement describes moving back and forth between loss-oriented time (crying, barely able to make cereal) and restoration tasks such as doing the taxes for the first time. The ability to switch between the two, not steady progress in one direction, is the marker of health. There is no way to 'optimize' grieving.

9. Most people adapt, but about 1 in 10 develop disordered grief
Bodies and minds are remarkably resilient. For the roughly one in ten whose grief shows no change over time, O'Connor says specific evidence-based psychotherapy can restore a typical grieving trajectory, so professional help is worth seeking.

10. 'If only' rumination is a form of protest
Guilt-laden stories about how the death could have been prevented are endless, and every one ends with 'and then they would have lived', which is not reality. Rumination can feel easier than accepting random tragedy, because it offers an illusion of control. But it pulls you out of the present. The better question is whether a thought is helpful, not whether it is true.

EXAMPLES

1. Progressive muscle relaxation beat mindfulness for widowed adults
In O'Connor's intervention study with widows and widowers, progressive muscle relaxation was meant to be the control condition, compared with mindfulness training and a waitlist. Mindfulness helped, but progressive relaxation helped grief even more. Participants could use it anywhere, and grieving brains may lack the bandwidth for a demanding new practice.

2. Primate mothers and the grooming rule
Observational studies show primate mothers carrying a dead infant for days to months and neglecting self-grooming. During that time, the troop's strict grooming hierarchy is suspended and anyone may groom her. O'Connor's lesson is that others should 'groom' the bereaved by prompting checkups and self-care that were neglected during caregiving.

3. Baby aspirin in the first two weeks
In a proof-of-concept study from her lab, replicated in Australia, bereaved people took low-dose aspirin for two weeks after the death and it was cardioprotective. O'Connor stresses it was not a randomized clinical trial and should not be taken as medical advice. Her point is that bereaved people should be treated as patients.

4. A beer for breakfast
The morning after her mother died, a restaurant owner in her Montana hometown offered her anything and she asked for a beer. She calls it the right tool at that moment because it let her cry with her best friend. Both she and Huberman stress that drinking to avoid feelings on an ongoing basis is harmful.

5. A widower who cried, then talked about dating
An older man in a UCLA study wept describing his wife's death two years earlier, then spoke happily about dinners with a new woman who brought out different parts of him. O'Connor uses this to show oscillation between loss and restoration.

OTHER RELEVANT

1. Try progressive muscle relaxation
Briefly tense and release muscle groups from head to toe, using free guided audio, and notice the contrast between clenched and relaxed. Practiced regularly, it becomes a portable tool for the grocery store, meetings or falling asleep.

2. Change your environment to break rumination
When you notice the 'if only' loop, physically get up and walk outside. O'Connor uses this herself. Focus on coping with the thoughts rather than answering them.

3. Support the body of a grieving person
Presence, touch, someone else in the room at night, bereavement groups, and nudges toward overdue medical, dental and mammogram appointments all matter. Support does not remove the pain, but it gives the body resources while it learns to regulate without the lost person.

4. Let difficult memories come rather than suppressing them
Avoiding images of the death can keep calling them up and suppressing them, which makes them more charged. Over time most people come to remember the life more than the death.

5. Seek help if nothing is shifting
If grief shows no change as months pass, targeted evidence-based therapy can help. Grief itself never fully disappears, and that is normal.

Transform Your Mental Health With Diet & Lifestyle | Dr. Chris Palmer

Guest: Dr. Chris Palmer
Date: 2025-03-31 · Duration: 3:12:02
URL: https://www.youtube.com/watch?v=hCyvqRq5YmM

KEYPOINTS

1. Metabolic psychiatry revives a century-old idea
Palmer notes that researchers from the 1800s into the 1960s measured lactate, glucose and other metabolic markers in people with schizophrenia and bipolar disorder. Psychiatry then focused on neurotransmitters, while other researchers split into psychological and social camps. His framework brings these back together. Biological, psychological and social factors all act on metabolism, in different combinations for different people.

2. Mitochondria do far more than make energy
Mitochondria turn food and oxygen into ATP; if that process stops, a person dies within about six minutes. Research over the past 25 years shows they also help make neurotransmitter building blocks, store GABA, and guide the release of neurotransmitter vesicles at synapses, which does not happen when mitochondria are removed even if ATP is supplied. They also switch inflammation on and off, carry out the first and last steps of cortisol synthesis and the first step of all steroid hormones (estrogen, testosterone, progesterone), and are major regulators of gene expression.

3. Depression is not just a 'missing molecule' problem
Huberman lays out two common models: a deficiency of serotonin or dopamine, or treatments that open a window for neuroplasticity. Palmer calls metabolism and mitochondrial function an umbrella over both, because mitochondria govern how neurotransmitters are made and released and how target cells respond to them. The first antidepressant, the MAO inhibitor iproniazid, was discovered when tuberculosis patients became less depressed.

4. Childhood adversity shows that mental and physical health are linked
Adverse childhood experiences raise the risk of essentially every psychiatric diagnosis, including PTSD, ADHD, psychosis, mood disorders and substance use. They also raise the risk of obesity, type 2 diabetes, heart disease, autoimmune disease and dementia. People with six or more ACEs live on average about 20 years less than people with none. Palmer argues that metabolism and mitochondria are the only thread that connects all of these outcomes.

5. Stimulants help or harm depending on dose
People with ADHD show reduced glucose metabolism in the brain, and appropriate, usually low doses of stimulants raise dopamine and brain metabolism enough to ease symptoms. Overstimulated mitochondria leak electrons from the electron transport chain, producing reactive oxygen species that damage mitochondria and cells and can cause chronic dysfunction. Palmer says this may help explain later heart deaths among heavy cocaine and amphetamine users.

6. The ketogenic diet is a proven anticonvulsant with growing psychiatric evidence
The diet is a 100-year-old evidence-based treatment for epilepsy, supported by more than a dozen controlled trials and two positive Cochrane reviews. In treatment-resistant epilepsy it is six times more likely to bring seizure freedom than trying another drug. More than 50 pilot trials, case series and case reports covering over 1,900 people with schizophrenia, bipolar disorder, depression, anxiety or anorexia suggest benefit, sometimes remission. Palmer stresses it mimics fasting and is an intervention, not the healthiest diet for everyone.

7. Lifestyle comes before any supplement
Palmer's six pillars of lifestyle medicine are diet, movement, sleep, managing substance use, stress reduction, and relationships including purpose. Endurance athletes' muscles differ from untrained muscles mainly in the number and health of their mitochondria. He says no supplement 'stands a chance in hell' of undoing a harmful lifestyle, noting that one-third of US adults sleep too little and about 60% of what Americans eat is ultra-processed. Severe illness may need more than lifestyle changes.

8. Common nutrient deficiencies affect mitochondria and mood
Vitamin B12, folate and iron are essential to mitochondrial function. A JAMA study found about 40% of US females aged 12–21 were iron deficient, which Palmer links to the sharp rise in mental illness in girls after puberty, alongside psychosocial causes. B12 deficiency, which affects about 50% of mostly vegetarian India, can cause depression, psychosis or delusions and permanent nerve damage. Metformin and oral contraceptives both impair B12 absorption.

9. Parents' metabolic health affects their children's neurodevelopment
In a meta-analysis of over 3 million people, maternal obesity roughly doubled autism risk and maternal diabetes doubled it, while both together quadrupled it. Paternal obesity also doubled risk, which Palmer says is far larger than the effect of older fathers. Only about 7% of Americans are healthy on all five metabolic-syndrome markers: waist size, blood pressure, glucose, triglycerides and HDL. People who look thin can still be metabolically unhealthy.

EXAMPLES

1. Ian Campbell's bipolar ketogenic pilot
In a UK trial, 20 patients with bipolar disorder on a ketogenic diet showed wide-ranging metabolic improvements in weight and blood pressure and reduced brain glutamate, which is linked to hyperexcitability. Palmer reads this as metabolism and neurotransmitters working together rather than as competing explanations.

2. Creatine as a phosphate shuttle
Creatine joins ATP inside mitochondria to form phosphocreatine and carries energy to synapses and ribosomes. It comes only from animal foods. Vegans and people with schizophrenia, depression or Alzheimer's tend to have lower brain levels. Small studies are promising, but Palmer does not yet routinely recommend it because large trials have not been funded.

3. Methylene blue's caution

It is an off-patent electron acceptor and donor that may limit electron leakage and oxidative stress, and may support mitochondrial biogenesis. Palmer has not used it with patients. It can cause serotonin syndrome, sometimes fatal and often mistaken for anxiety or panic, especially with serotonergic drugs. It can also stain teeth, and quality of supply matters.

4. Urolithin A trials

Palmer credits the company Timeline for well-designed randomized trials. In people over about 55–65, roughly eight weeks of urolithin A improved muscle mass, performance and aging-related biomarkers. He considers it reasonable to try, but only on top of diet and exercise.

5. Fasting and the Women's Health Initiative

Valter Longo's plant-based fasting-mimicking diet of about 600 calories a day, done in 5-day cycles a few times a year, improved many health biomarkers. By contrast, the large Women's Health Initiative low-fat trial found no benefit over the standard American diet, which leads Palmer to say low-fat dogma should go.

OTHER RELEVANT

1. Get B12, folate, iron and metabolic markers tested

Vegans and vegetarians, people on metformin or the pill, and menstruating teens are higher-risk. Palmer suggests at least annual checks, along with blood pressure, glucose, triglycerides and HDL, even if you are not overweight.

2. Treat ketogenic therapy as medical treatment

For schizophrenia, bipolar disorder or treatment-resistant depression, ketogenic therapy can change lives, but some patients come off medications at the same time. Do it with clinicians, not alone.

3. Before conceiving, work on metabolic health

Given the obesity and diabetes data for both parents, improving diet, exercise and sleep before pregnancy is a modifiable way to lower the risk of neurodevelopmental disorders in children.

4. Vaccines and infection both carry inflammatory risk

Palmer says vaccines raise inflammation, which in rare hyper-responders could affect neurodevelopment, as in a court case involving a child with a known mitochondrial disorder. He also notes that existing studies find unvaccinated children more likely to develop autism, plausibly because severe infections like measles harm mitochondria too, while criticizing what those studies controlled for. Good sleep and nutrition may support a child going into vaccination.

How to Achieve Inner Peace & Healing | Dr. Richard Schwartz

Guest: Dr. Richard Schwartz
Date: 2025-03-03 · Duration: 2:13:08
URL: https://www.youtube.com/watch?v=KuuoLT-fq4s

KEYPOINTS

1. The mind is naturally made of parts
Schwartz, who developed Internal Family Systems (IFS) about 41 years ago, assumes everyone has multiple sub-personalities, not in a diagnostic sense. We are born with these parts and they are valuable, but trauma and attachment injuries force them into extreme roles. Frozen in time, they behave as if the original trauma is still happening.

2. IFS began with bulimic clients who described an inner family
Trained as a family therapist, Schwartz tried in about 1983 to cure bulimia by reorganizing patients' families and failed, because the clients kept bingeing and purging. When he asked why, they described a critic that attacked them, which hit a part that felt empty and worthless, which triggered a binge part to rescue them, followed by more criticism. That circular sequence looked like the dynamics he studied in real families.

3. A bad event is not traumatizing unless we exile the hurt part
In Schwartz's view, if you go toward the part that got hurt, embrace it and help it unload the feelings, you are not traumatized. Trauma comes from locking away our most sensitive parts because others say 'just move on.' The more exiles you carry, the more delicate you feel and the more dangerous the world seems, because anything can trigger them.

4. Managers try to prevent triggers; firefighters put out emotional fires
Managers keep life under control: perfectionists, inner critics trying to make you look good, and caretakers who tend to everyone but you. When an exile breaks through, firefighters react impulsively regardless of collateral damage, through addiction, dissociation, bingeing or rage. Schwartz stresses these are roles, not essences; the critic is not just an internalized parent's voice but a part desperately trying to protect you.

5. There are no bad parts, only parts in bad roles
Firefighters often form a hierarchy, and for many people suicide sits at the top as a comforting exit plan. Rather than fearing a suicidal part, IFS asks what it fears would happen if it did not act. The answer is usually that the pain would be too much. If that pain can be unloaded, the part often transforms into one that wants to help you live. Addictive parts get the same curious treatment.

6. The Self, with a capital S, is beneath every part
When parts step back, clients spontaneously report curiosity or compassion toward a critic and say 'that's not a part, that's me.' Schwartz finds this Self in everyone and defines it by eight C's: curiosity, calm, confidence, compassion, courage, clarity, creativity and connectedness. In IFS the Self is not a passive witness but an active inner and outer leader.

7. Localizing feelings in the body bypasses the thinking part
Directing questions to a sensation's location and waiting for an answer to come from there keeps clients out of the narrating mind, which often thinks it is supposed to run the therapy. Highly cognitive people can do IFS, but the thinking part must first be persuaded to step out long enough to feel the body.

8. Protectors often create what they fear
An overly protective stance provokes protectors in others, escalating conflict. Compassion for your own judgmental part lets you see the exiles driving other people's protectors without becoming more vulnerable; the Self can still be forceful. Schwartz says many people choose bad partners because a part carrying worthlessness from parental rejection seeks redemption through someone similar, a theme from his book You're the One You've Been Waiting For.

9. Ketamine can quiet managers and speed IFS work
Schwartz had just completed an IFS and ketamine retreat with 32 leaders and says IFS is now a primary model in psychedelic therapy. Ketamine, the legal option, often puts manager parts to sleep, so in 15 minutes afterward he can do what might take five sessions. A so-called bad trip can be reframed as a terrified exile seeking attention. Huberman cautions that young people should avoid psychedelics, that psilocybin and MDMA remain illegal, and that unsupervised use can cause serious problems.

EXAMPLES

1. Huberman's titanium teddy bear
Recalling a high-friction conversation with a close family member, Huberman located his frustration between his midsection and forehead as a pressure the size of a teddy bear. When asked to get curious rather than dislike it, it softened and moved. Schwartz mapped two polarized firefighters: one protecting the relationship and one judgmental part it kept at bay, plus probably a younger part holding a fantasy of what the relationship should be.

2. Legacy burdens in conflict zones
Schwartz describes inherited extreme beliefs and emotions passed down through ancestors, and runs training programs in the Middle East. He envisions large-group unburdening of Holocaust-related burdens on one side and Palestinian burdens on the other. In couples work he calls timeout and asks each person to speak for their parts, not from them.

3. Work as a firefighter against fear of death
Huberman describes 80 to 85 hour work weeks and finding, through IFS-style questioning, that the workaholic part feared annihilation, ultimately a fear of death that surfaces at the edge of NSDR. He has since cut hours and chosen meaningful projects, learning from his bulldog to savor slowing down.

4. Schwartz's own worthlessness

The oldest of six boys with undiagnosed ADD, Schwartz was called lazy and worthless by his physician-researcher father. A part driven to prove him wrong built IFS through humiliation at psychiatry grand rounds, along with a part that closed his heart, which later did not serve him as a community leader until students confronted it.

5. A retracted MDMA neurotoxicity paper

Huberman notes that a high-profile Science paper reporting MDMA neurotoxicity in non-human primates was retracted after it emerged the animals had been injected with methamphetamine, a retraction that received little press.

OTHER RELEVANT

1. A self-guided protector exercise

Pick a protector, such as a critic, overworker or caretaker. Find it in or around your body and notice how you feel toward it; ask any parts that dislike or fear it to relax. Then ask: what do you want me to know? What are you afraid would happen if you stopped? Thank it for trying to protect you. Ask what it would do if freed, how old it thinks you are, updating it if wrong, and what it needs from you. Schwartz says not to do this if it frightens you, and that a therapist is needed to heal exiles.

2. Make it a daily check-in

One session reverses if you drop it. Each morning Schwartz checks how the parts he is working with are doing and what they need; through the day he notices whether his heart is open and mind curious, treating any departure as a protector showing up.

3. Use quiet states, carefully

On waking, before managers come online, Huberman keeps his eyes closed and explores what surfaces. Schwartz agrees that sleep, breathwork and psychedelics put managers to sleep; cyclic hyperventilation should never be done in or near water.

4. Notice what devices are helping you avoid

Schwartz argues constant phones and busyness feed distractor parts and leave exiles further behind, which is why many people fear having nothing to do.

How to Heal From Post-Traumatic Stress Disorder (PTSD) | Dr. Victor Carrión

Guest: Dr. Victor Carrión
Date: 2024-09-23 · Duration: 2:26:59
URL: https://www.youtube.com/watch?v=4RFEkGKKhdE

KEYPOINTS

1. Stress follows an inverted U; trauma sits past the peak
Carrión, a Stanford child psychiatrist, describes stress as helpful up to an optimal point — caring about tomorrow's exam, or a vaccine challenging the immune system — beyond which it carries a physiological cost (allostasis). Traumatic stress threatens your physical integrity. Resilience and post-traumatic symptoms are both possible outcomes, and recovery means returning to that optimal point, not eliminating stress. He worries that overprotecting kids from all stress robs them of chances to build coping skills.

2. 'PTSD feeds on avoidance'
That is his team's slogan. Pretending nothing happened, or that treatment isn't needed, lets symptoms deepen and become complicated by substance use and self-injury, which makes treatment harder. Ruminating alone doesn't help either: in children, trauma turns play into joyless, repetitive play, and people usually fixate on the wrong event.

3. PTSD is usually a backpack, not a single event
Most people carry an accumulation of stressors (allostatic load). Most existing trauma treatments targeted one event and required parent participation, which fails when a parent is the source of trauma, is avoidant, or would lose their job for missing work. That gap is why Carrión developed his own treatment.

4. Many kids have impairing symptoms without a formal diagnosis
Children struggling in school and relationships often fall short of the behavioral criteria for PTSD. Carrión therefore studied stress symptoms across a spectrum. He firmly believes ADHD exists, but he saw children sent to him with ready-made ADHD diagnoses and stimulant plans whose problems were trauma. The two can also coexist, and ADHD inattention can raise the risk of PTSD.

5. Children with PTSD symptoms keep bedtime cortisol high
Measured before breakfast, lunch, dinner and bed, these children showed a normal daily cortisol rhythm except at bedtime, when levels stayed above those of healthy controls. That fits their night-time symptoms: bedwetting, nightmares, and short or shallow sleep.

6. Higher cortisol tracked with hippocampal changes over time
A cross-sectional MRI study found no hippocampal volume difference, which Carrión saw as a window to intervene. In a small longitudinal sample, though, higher pre-bedtime cortisol correlated with smaller hippocampal volume. On memory tasks, children with symptoms activated fewer hippocampal voxels and showed weaker ventromedial prefrontal activity, consistent with a quick-firing amygdala lacking its prefrontal 'brake'.

7. Transgenerational trauma: genes and learned behavior, epigenetics unproven
Carrión says the jury is still out on whether stress-induced genomic changes pass to offspring, though vulnerability genes clearly do. He has treated children with full PTSD symptoms and no identifiable trauma, where the trauma surfaced in a parent's history. Avoidance, hypervigilance and mistrust had been learned across generations.

8. Cue-Centered Therapy is multimodal and child-led
It combines CBT with psychoeducation (what cues and classical conditioning are, that recovery is possible), self-efficacy, empowerment and insight work, and it can be done without parents. In trials it reduced anxiety, depression and PTSD symptoms as rated by both children and observers, and untreated parents' anxiety also fell. It is published as an Oxford therapist manual, and an adult adaptation is underway.

9. Self-chosen tools work best
Children start with an empty toolbox. They are taught breathing, muscle relaxation, positive thinking, mindfulness and simple yoga poses such as mountain pose, but they decide which cues matter and which tools to keep. Tools they invent themselves work best; teammates and sports come up often. The underlying message is that the most portable tool is yourself.

EXAMPLES

1. The orange-juice tool
A girl returned after a week much improved. She had forgotten the taught techniques and instead drank a glass of orange juice whenever she felt bad. Carrión validated it, since what mattered was the message that 'I can take care of myself.'

2. East Palo Alto yoga and mindfulness classrooms
After about three months of yoga and mindfulness in two classrooms, the principal asked what was going on because none of those students had been sent to her office. A larger study with the nonprofit Pure Power trained the teachers themselves, two to three times a week for 15–50 minutes. The headline finding: about 73 minutes more sleep on average, with deeper sleep confirmed by at-home polysomnography.

3. Puerto Rico island-wide rollout
After Hurricane Maria, more hurricanes and earthquakes, Puerto Rico — a single school district — is training all its teachers in the yoga and mindfulness curriculum and pairing it with Cue-Centered Therapy at scale for the first time, as a model for districts like New York and LA.

4. Mini-brains exposed to cortisol
With Stanford geneticist Alex Urban and a postdoc in his lab, skin cells are reprogrammed into neurons that grow into

organoids and are exposed to cortisol. Epigenetic analysis flagged known PTSD-linked genes such as glucocorticoid receptor genes, plus novel collagen-related genes Carrión links to stress-accelerated aging. Cheek swabs from the Puerto Rico students will test which genes predict resilience and treatment response.

OTHER RELEVANT

1. Break a reaction into four corners

Map a reaction (screaming, bolting from class) onto a square: thoughts, emotions, body sensations and actions. Start with whichever corner the person relates to, whether that's a headache for a child without emotional vocabulary or 'what if I don't run?' for an action-oriented one. Changing one corner usually shifts the others, building a 'cube' of alternative responses. Huberman calls this a concrete version of 'creating space'.

2. Practice positive thoughts when calm

Rehearse coping thoughts outside the stress response, too ('I'm not bad; this is the cue'). Later, rework the narrative to correct distortions like 'it was my fault' and move from victim to survivor.

3. Use controllable stressors to build agency

Carrión stresses that a sense of control matters, such as choosing to keep anti-anxiety pills in a pocket. Huberman's view is that deliberate cold exposure, done safely, offers a controllable way to practice working with your own stress response.

4. Protect sleep as a first-line lever

Both treat sleep as a recalibrator of the autonomic 'seesaw' (hyperarousal versus dissociation). Avoid treating a child's attention problems as ADHD without asking about stressors at home.

How Smartphones & Social Media Impact Mental Health & the Realistic Solutions | Dr. Jonathan Haidt

Guest: Dr. Jonathan Haidt
Date: 2024-06-10 · Duration: 2:26:55
URL: https://www.youtube.com/watch?v=csubiPlvFWk

KEYPOINTS

1. The 'great rewiring' happened between 2010 and 2015
In January 2010 most teens had flip phones, used to call and text. There was no Instagram and no front-facing camera. By 2015 most had smartphones with front cameras, high-speed internet and unlimited texting. Girls were mostly on Instagram, the first platform built for the phone. Haidt, a social psychologist at NYU, notes it's now possible to spend 10–15 hours a day on a phone. A flip phone never allowed that.

2. The mental-health curves bend sharply around 2012
Large US surveys show rates of anxiety, depression and self-harm fairly flat from the 1990s through 2010–2011, with about 12–15% of girls having had a major depression. Then the girls' lines rise 'like a hockey stick'. Most measures are up 50–150%, close to doubling for younger girls. Boys' curves rise more gradually, starting around 2009–2010. Haidt credits Jean Twenge with first raising the alarm.

3. It's not just self-report
Against the claim that Gen Z simply talks more openly about mental health, Haidt points to the same sharp rise in hospital admissions for self-harm and psychiatric emergency visits. The pattern appears in the US, Canada, Australia, New Zealand, the UK and Scandinavia. He says nothing else fits the timing, and that experimental data exist alongside the correlational data. He also stresses that why any one person is depressed has many causes.

4. From play-based to phone-based childhood
Pew and Gallup data put US teens at about five hours a day on social media alone, mostly TikTok and YouTube videos, plus screen time at school. Haidt argues that play, the basic thing young mammals do, has been displaced, and that a phone-based childhood is incompatible with healthy development. He compares a phone on a student's desk to having a TV, record player, walkie-talkie, guitar and paint set there during geometry class.

5. We fear the wrong dangers
Parents pulled kids indoors over fear of strangers. FBI figures Haidt cites show only about 100–150 true stranger kidnappings a year in the US; most abductions are by a non-custodial parent. Meanwhile overprotection plus phones has driven up suicides, which he argues cost far more lives than abolishing kidnapping would save. He blames the availability heuristic.

6. The trap has different bait for girls and boys
Borrowing Yascha Mounk's idea that a trap needs attractive bait and a way to stop you leaving, Haidt says girls, more oriented to relationships, were lured by social comparison and gossip on Instagram. Boys, more oriented to systems and 'effectance' (psychologist White's 1950s term for the thrill of causing an effect), went to video games and online worlds. Girls' online life is more performative and perfectionistic about image.

7. Pornography and dopamine
Huberman explains that big dopamine spikes that arrive without effort, as with amphetamine, cocaine or high-resolution pornography, wire reinforcement to short timescales, then deepen the trough below baseline. The result is less and less reward for more and more use, and it bypasses the effortful learning of courtship. Haidt doesn't demonize or celebrate porn. He asks who would want to date a young man who has watched it several times a day since 13.

8. Puberty is a sensitive period for becoming a person
Huberman says experience up to about age 25 strongly shapes the brain's social and sensory maps, and that puberty is the brain's fastest period of change, with hormones activating massive plasticity, including in the frontal lobe. Haidt argues puberty is a sensitive period for cultural learning, for how you become a person in your culture. That's why he urges delaying smartphones until late puberty.

9. The four norms
No smartphone before high school (a flip phone is fine). No social media until 16. Phone-free schools, with phones locked away in a Yondr pouch or locker all day, because 'keep it in your pocket' just means constant conflict. And far more independence, free play and real-world responsibility.

10. It's a collective-action trap
Social media is a social addiction. In 1997, the peak year, 37% of high schoolers smoked, but social media is all-or-nothing within a peer group. So families should act together. If four families change phone rules at once, no child is left out.

EXAMPLES

1. Summer camp as a detox
Haidt hears the same story repeatedly: an 11-year-old girl turns surly after getting an iPhone, comes back from a phone-free camp as her sweet self, then turns surly again once back on the phone. His rule: never choose a camp that doesn't ban phones.

2. Free Play Friday
Pair restrictions with something positive. Clear Friday afternoons of lessons and give kids money to go out together and have adventures, so it feels like fun rather than deprivation.

3. Regain control of attention
In Haidt's NYU flourishing course, students first turn off nearly all notifications (Uber, which tells you the car is three minutes away, is worth keeping), and remove social media from their phones, using it on a computer if needed.

4. The awe walk
Adapted from Dacher Keltner, who used awe walks to process his brother's death: walk somewhere beautiful, a little slower than usual, with no phone or earbuds, and just notice. Students walking Washington Square Park report lower anxiety and 'heart opening'. Haidt now uses his AirPods far less.

5. Dynamic subordination
Huberman describes elite SEAL squadrons where leadership shifts to whoever has the needed skill. Haidt and Huberman argue that boys learn this through low-stakes physical play and conflict that online life replaces.

OTHER RELEVANT

1. Focus on the medium, not just the content
Citing Marshall McLuhan and Neil Postman, Haidt says social media is more addictive than TV because of constant behavioral rewards and because it's performative.

2. Act as a group
Talk with the parents of your child's friends and with school principals, many of whom want phone-free schools but fear parents' objections.

3. Policy and resources
Haidt urges support for the Kids Online Safety Act (KOSA). He points to anxiousgeneration.com and LetGrow.org, and rates his optimism 10 out of 10.

Overcoming Physical & Emotional Challenges | Coleman Ruiz

Guest: Coleman Ruiz
Date: 2024-04-08 · Duration: 3:18:02
URL: https://www.youtube.com/watch?v=acgz0C-z-gc

KEYPOINTS

1. Wrestling was the first turning point
Ruiz grew up in New Orleans, the son of a father who had wrestled, and says he knew within a week, maybe at his first practice, that wrestling was his thing. He also boxed between seasons. What he valued most in combat sports was the respect: fighters understand what it takes to face someone on a mat with no equipment, nowhere to run and no timeouts. The love of hard physical effort has stayed with him.

2. Earning your place daily works, until it doesn't
At the Naval Academy prep school in Newport, Rhode Island, and later, Ruiz never felt he had arrived. Each day was a restart where he had to prove himself again, driven largely by fear. He calls this adaptive in that it made him go all in for his team, but also maladaptive: after loss, his response was simply to work even harder.

3. Three backgrounds predicted who survived BUD/S
As a first-phase officer in charge, the phase that runs Hell Week (five nights with barely an hour of sleep, where most quitters ring the bell before Wednesday), Ruiz says instructors found that pull-ups, run times and home region didn't predict success. Their informal survey found that roughly 90–95% of those who made it had been varsity athletes, had divorced parents or had been suspended from school. He stresses this was anecdotal and would not pass independent review.

4. Having no other team can make someone refuse to quit
Asked why divorce would predict grit, Ruiz says that for him the thought was 'if I don't have this team, then what team do I have?' However cold and miserable it got, he wasn't leaving. Huberman relates to looking outside the household for family and belonging.

5. Repeated loss was absorbed rather than processed
Serving at a Tier One unit from 2006 to 2011, Ruiz lost well over 40 people he knew. Averaged out, he attended a funeral or memorial about every 90 days. The routine was a funeral, a few beers, then back to work. His closest mentor, a Marine named Doug whose toughness he had never seen equalled, was killed in 2007. Ruiz describes taking the call in his kitchen in Virginia Beach and feeling 'the whole scaffolding of the world' disappear.

6. Leaving the military was the hardest part of the journey
After separating in fall 2011, Ruiz had night sweats and no idea what to do with himself. He had thought PTSD 'the biggest joke on the planet' until he read the symptoms. Joseph Campbell's The Hero with a Thousand Faces gave him a framework: he felt trapped in the return stages, especially the 'refusal of the return', without a mentor to help him cross the threshold back into ordinary life.

7. An intense psychedelic experience was followed by collapse
Ruiz describes physician-supervised, legal sessions of ibogaine and 5-MeO-DMT two days apart, one of the most profound experiences of his life, which left him feeling connected to all warrior cultures. A few months later he fell into severe depression. He now calls that combination 'the nuclear option' and says it isn't right for everyone. When friends ask, he initially tells them no, and he favours slow, skilled talk therapy first.

8. Emotional pain can be physically overwhelming
The depression shocked him most because he had not believed something like it was real. He couldn't believe emotional pain could be so physically painful, and says he came close to the line of suicide. Looking back, he likens those months to being cut open, scorched from the inside and put back together to start over. Huberman, drawing on psychiatrist Paul Conti, notes that the limbic system's dread doesn't know the clock or the calendar, so it feels like it will last forever.

9. Recovery came in small steps
His wife Bridget insisted on full-time help immediately, and he admits he would otherwise have avoided it. Gains were minuscule but steady. He stopped drinking easily during that period. Huberman shares that he took low-dose bupropion for about four months during a postdoc depression and adds, after Conti, that many such medications are designed to help people get over a bump, though some people need them long term.

EXAMPLES

1. 'Your goggles are foggy'
When Ruiz called in crisis, Huberman told him his judgement was clouded, so he should outsource his decisions, and even his identity, to trusted people for a while, letting them hold 'the spokes of the wheel'. Ruiz found that something he could actually do.

2. A tough-love line from a teammate
One friend told him that harming himself would prove everything he had stood for was a lie. Ruiz says it hit 'dead center' and became a pivot. He cautions that tough love is risky and should only be used with someone who can handle it, and Huberman adds that anyone with a plan needs protection.

3. A warning from a Medal of Honor recipient
At a lunch in 2011, Vietnam veteran Paul 'Buddy' Bucha stopped him on the stairs and said, 'Son, you have it… and you're going to have to deal with it.' Ruiz dismissed it at the time and only later understood.

4. Bodywork as an entry point

Before therapy, Ruiz tried light-touch craniosacral work, massage, books by Sam Harris and a course with Robert Wright. They helped somewhat but weren't consistent help on their own.

OTHER RELEVANT

1. His routine now

Training five of seven days (cycling, running, swimming, lots of kettlebells), at least an hour of sauna on the other two, strict attention to sleep, no alcohol and small meals grazed through the day.

2. Range instead of rigid toughness

Borrowing David Epstein's term, he says men can keep a protective fighter mode while adding kindness and calm, and that loosening his grip, including on his three sons, has made things go better.

3. Asking for help

Both stress that zero-cost support exists through friends, clergy and groups like AA, and Ruiz describes the hours friends spent on the phone with him as essential.

Mental Health Toolkit: Tools to Bolster Your Mood & Mental Health

Date: 2023-10-30 · Duration: 2:04:11
URL: https://www.youtube.com/watch?v=CJIXbibQ0jI

KEYPOINTS

1. Mental health starts with the 'big six' biological pillars
Drawing on Dr. Paul Conti's 'first principles of self-care' and Dr. Lisa Feldman Barrett's work, Huberman names six pillars: sleep, light (now 'light and dark'), movement, nutrition, social connection and stress control. These keep the autonomic nervous system and neuromodulators working well, and they make the psychological tools later in the episode work better.

2. Treat sleep as a lifelong practice
Aim for as much good-quality sleep as possible on most nights, but don't be neurotic about it. Sleep is something you'll work on for the rest of your life, like fitness. After a poor night, get back on track the next night instead of worrying about it.

3. Get morning light and real darkness at night
Get sunlight in your eyes for about 10 minutes on clear mornings and 20–30 minutes on overcast ones, plus some light in the late afternoon. Even heavy cloud lets through far more light than indoor lighting. A study in Nature Mental Health measured light exposure in more than 85,000 people. It found that daytime light and nighttime darkness each independently predicted better outcomes for depression, bipolar disorder, PTSD and other conditions. Huberman suggests 6–8 continuous hours of very dim light to darkness in every 24 hours.

4. Movement and nutrition basics
Huberman suggests about 180–220 minutes of Zone 2 cardio a week (a pace where you can still hold a conversation), getting your heart rate very high at least once a week, and resistance training. For nutrition he avoids diet wars: whatever your eating style, get enough, but not excess, quality calories.

5. Limit social interactions that drain you
Barrett points out that nervous systems regulate each other, including between people and pets. People who leave you feeling taxed or upset disrupt your physiology as well as your mood, so limiting those interactions protects mental health.

6. Lower stress in real time and raise your threshold for it
The physiological sigh is a full inhale through the nose, a short second inhale to fully inflate the lungs, then a long exhale through the mouth. One, sometimes two or three, quickly lowers stress. To raise your threshold, get into a cold shower for about a minute: the adrenaline surge is unavoidable, and practicing staying calm under it trains you for real-world stress.

7. The brain runs on prediction, so routines support mood
Barrett describes the brain as managing a 'body budget' by predicting what's coming. Your 'affect' (arousal, hormones and other bodily signals) colors how you feel. Keeping the six pillars consistent makes your bodily states more predictable, which helps stabilize mood.

8. Medications open a window for neuroplasticity
SSRIs, Wellbutrin and psilocybin, which is chemically similar to serotonin, all act on neuromodulator systems. Depression is not simply a serotonin or dopamine deficit, though. Huberman frames these drugs as tools for opening up the brain's ability to rewire, which is why he stresses combining them with talk therapy that works on the real-life and historical causes.

EXAMPLES

1. Name emotions more precisely (emotional granularity)
Two experience-sampling studies, one in depressed people and one including Barrett with healthy adults, prompted people several times a day to report what they felt. Labeling emotions more precisely improved emotional processing and well-being. Precision cuts both ways, since dwelling in detail on negative emotions can intensify them. Huberman recommends rich labeling of positive emotions and treating negative ones as information, while taking clinical depression or anxiety seriously.

2. Five minutes of cyclic sighing a day
In a study published in Cell Reports Medicine, five minutes a day of repeated physiological sighs, done at any time of day, improved mood around the clock and reduced anxiety, producing the best results of the practices compared. Heart rate variability, which rises with exercise, sleep and long exhales, ties breathing to emotional state.

3. Build a self-concept with age-by-age folders
From the Conti series: create a folder for each period of your life (for example ages 6–11 or 25–30) with bullet points about where you lived, schools, influential people, key experiences, relationships and struggles. Huberman's own notes include teachers' names and a summer camp that changed him. The aim is a structured story of yourself that informs the present and the future, not an autobiography.

4. Explore the unconscious through dreams and the moments after waking
Late-night REM dreams carry more emotion. On waking, lie still with your eyes closed to recall a dream better, then jot down its themes and watch for ones that recur over weeks. You can also spend 1–5 minutes after waking with your eyes closed, simply noticing where your thoughts go.

OTHER RELEVANT

1. Free-association journaling
Write whatever comes to mind for 5–10 minutes, daily or a few times a week. These notes are only for you, so forget handwriting and how it reads. Huberman describes a second, more structured style of journaling as well.

2. Agency and gratitude come from doing the work

Conti's model aims for agency and gratitude in daily life, which lead to peace, contentment and delight. They don't arrive by decision. They come from understanding yourself, your drives and your defenses, such as denial or overwork.

3. Process trauma in full language

Serious trauma should be worked through with a trained clinician. Conti, speaking with Dr. Peter Attia, warns that shrinking the language you use about a trauma to something more palatable feeds guilt and shame and pushes it into the unconscious, where it can resurface as night waking or compulsive thinking. His book is The Invisible Epidemic.

Using Meditation to Focus, View Consciousness & Expand Your Mind | Dr. Sam Harris

Guest: Dr. Sam Harris
Date: 2023-01-02 · Duration: 4:21:55
URL: https://www.youtube.com/watch?v=-wIt_WsJGfw

KEYPOINTS

1. The self that meditation deconstructs is the feeling of a subject behind your face
Harris is careful about which 'self' he calls an illusion. Your psychological continuity, memories and identity as a distinct person are real. What doesn't hold up under inspection is the felt sense of a separate observer inside the head, a passenger in the body appropriating experience 'from the side'.

2. Distinguish consciousness from its contents
Harris frames everything as consciousness (the fact that experience is lit up at all) versus its contents (thoughts, emotions, sensations, perceptions). Most people approach meditation as a way to change contents, getting rid of anxiety and cultivating calm or love. That is possible, but he says the core insight of the 2,000-year-old practice is recognizing what consciousness is already like, whatever its contents.

3. We lose the sense of self constantly without noticing
Harris compares it to saccades. We move our eyes about three times a second, and the brain suppresses vision during each movement using a copy of the motor command, so we are briefly blind without realizing it (jiggle your eyeball with a finger and the world shakes because no such copy is made). In a similar way, the self drops out whenever attention is fully absorbed. He suggests this is why flow and peak experiences feel so rewarding.

4. Almost no one can attend to anything for 30 seconds without getting lost in thought
Harris claims that without substantial concentration training, no one could keep attention on the breath for 30 seconds without being pulled into inner conversation, even if their life depended on it. On a silent retreat, feeling more distracted as the days go on is actually a sign of progress, because you're finally seeing how distractible you are.

5. Mindfulness means noticing thoughts as thoughts, not stopping them
Harris defines mindfulness as careful attention to the contents of consciousness, as distinct from being lost in thought. Thoughts can keep arising; the point is to see language and images as spontaneous appearances in consciousness. Practice usually starts with the breath as an anchor and then, often within the first week, opens up to sounds, bodily sensations, moods and finally thoughts themselves.

6. Concentration practice is a useful but 'brittle' tool
Single-pointed focus on the breath, a mantra or a candle flame can make the body and hearing seem to disappear and produce 'druglike' states, along with calm and smoother emotions. Harris values this but sees it as a tool, not the goal. Mindfulness has the advantage of being compatible with any experience because it doesn't artificially narrow attention.

7. Vipassana breaks experience into tiny sensations, which can ease pain
Classic vipassana pays close attention to seeing, hearing, touching and so on until 'hands' dissolve into a cloud of brief sensations of pressure and temperature. Applied to pain, Harris says much of the suffering comes from resisting and worrying about it (why did I do this, did I herniate a disc). Simply feeling it, the pain breaks apart into shifting sensations, and equanimity becomes possible. He notes that people tested after a three-month retreat could make finer perceptual discriminations.

8. Thoughts simply appear, which undercuts the sense of control
Harris's demonstration: think of a city and notice that one name just arrives, such as Huberman's 'Minneapolis'. You can't summon names you don't know, and among those you do know you don't choose which one surfaces. The reasons we give afterward are often confabulated. He contrasts this with Karl Deisseroth's nightly practice of thinking in complete, punctuated sentences for an hour, arguing that even then you don't know what you'll think next.

9. Progress comes in two step-changes
The first is clearly experiencing the difference between being lost in thought and being aware, including of thought. The second is noticing that no one is doing the noticing: awareness has no center and no place from which attention is aimed. Harris stresses this is a claim about experience, not metaphysics: 'I'm not saying the mind isn't what the brain is doing.'

10. Psychedelics change the contents of consciousness; meditation reveals its nature
Harris sees the two as complementary but different in kind. Psychedelics were indispensable for him at 17–18 in proving that looking inward was worth doing; he doubts he would have stuck with meditation otherwise. He separates MDMA (an empathogen that doesn't alter perception the way classic psychedelics do) from LSD and psilocybin, and warns that bad trips happen and that people prone to schizophrenia or bipolar disorder should almost certainly avoid them.

EXAMPLES

1. Anger with and without mindfulness
Brooding over reasons to be angry keeps the anger going. Once you notice thought as thought, the anger becomes a 'meaningless inner incandescence' with a short half-life, and you can choose whether to stay angry for one minute or ten instead of being 'the hostage of that'.

2. Can't get to Central Park from here: the clenched fist
Harris uses the parable of a stranger telling a lost tourist 'you can't get to Central Park from here' to show that the seeking self can't travel to the goal. Like a fist trying to become an open hand, the fist doesn't make the journey; it comes apart.

3. Ambushing Richard Dawkins with a guided meditation

Harris says Dawkins closed his eyes, found 'nothing of interest to see' and lacked the interest to persist. By contrast, he notes, with a dose like 100 micrograms of LSD 'there's just no possibility that nothing's going to happen'. He recalls the MAPS MDMA trial dose as 125 mg with an optional 75 mg booster.

4. Quitting Twitter on Thanksgiving

Harris checked it at least a dozen and sometimes 100 times a day, and says many of his worst professional episodes started there. As a political centrist criticizing both sides, he had no tribe defending him, and he was forming darker views of real friends than face-to-face life ever justified. He describes the result as almost wholly positive, with a recognizably addictive pull he no longer feels.

OTHER RELEVANT

1. Try the 30-second test, then start broad

Pick an object such as the breath, time 30 seconds and notice how often thought steals your attention. Then practice returning, and gradually widen attention to sounds, sensations, emotions and thoughts instead of fighting them.

2. Feel strong emotions as raw physiology

Before a talk, anxiety looks like a verdict on who you are. Felt directly as cortisol and sensation, Harris says, it 'no more maps onto the kind of person you are than a feeling of indigestion'.

3. Don't wall meditation off from the rest of life

Harris still sits formally but misses days. He has designed his life so that a two-hour hike is the same practice as sitting. He warns against 'banking' meditation in one compartment while the rest of life stays unexamined.

4. Reorient toward process over achievement

Achieving a goal has a tiny duration and a short half-life. Harris points to a 'double dissociation': people can have everything and be miserable, or have almost nothing and beam with joy. He argues the scarce resource is free attention that can rest in the present.

Psychedelics & Neurostimulation for Brain Rewiring | Dr. Nolan Williams

Guest: Dr. Nolan Williams
Date: 2022-10-10 · Duration: 2:48:55
URL: https://www.youtube.com/watch?v=X4QE6t-MkYE

KEYPOINTS

1. Depression is an umbrella, and among the most disabling conditions worldwide
Williams, a Stanford psychiatrist also trained in neurology, says depression ranges from anxious and overactive to flat and unmotivated. His lab works with Conor Liston's group at Cornell to define biotypes from brain imaging. He compares moderate depression to the disability of an acute heart attack and severe depression to that of untreated, terminal cancer. The American Heart Association now lists depression as a fourth major risk factor for coronary artery disease.

2. Psychiatry has fewer tools as a case gets more acute
In cardiology, an emergency room or ICU offers more tests and treatments than a clinic. In psychiatry, someone who moves from depressed to suicidal often gets the same oral antidepressants they were already taking. Williams' work targets this emergency gap.

3. The prefrontal cortex is wired to the heart
TMS uses a magnetic pulse to induce current in brain tissue only. Stimulating the left dorsolateral prefrontal cortex (DLPFC) spreads through the cingulate, insula and amygdala to the nucleus tractus solitarius and the vagus nerve, briefly slowing the heart. Williams stresses that the slowing marks that you have hit the right network; it is not itself the treatment. Simply lowering heart rate, for instance with a beta blocker, is unlikely to treat depression.

4. There is a 'volitional threshold' in depression
In mild depression, small but well-designed studies support meditation, mindfulness and exercise, and low heart-rate variability is associated with moderate to severe depression. As depression deepens, thoughts become only partly under voluntary control, so behavioral tools work less well. The extreme end is catatonia.

5. Ketamine's antidepressant effect appears to need the opioid system
In Williams' crossover trial, the same patients received standard ketamine with either 50 mg naltrexone or a placebo. Naltrexone largely blocked the antidepressant effect, yet the dissociative 'trip' felt identical. He takes this to mean that pharmacology, not just the subjective experience, matters. He notes that opioids may relieve emotional pain short term but are pro-depressant chronically.

6. MDMA's neurotoxicity reputation rests partly on a mistake
Huberman recounts that an influential Science paper reporting serotonin-neuron damage had in fact injected methamphetamine, as the same group later acknowledged. Williams cites a NIDA-funded study of MDMA-only users in Utah's LDS community that found no neurocognitive differences, plus pre/post testing from early MDMA trials. He concludes there is no apparent risk at one to three clinical doses, with purity assured. Huberman adds that the post-MDMA slump may reflect a prolactin rebound after the dopamine surge.

7. Psilocybin and targeted TMS converge on one circuit
Imaging by David Nutt and Robin Carhart-Harris found overall brain activity decreases on psychedelics while global connectivity increases. Williams says the antidepressant effect of psilocybin, like his TMS protocol, reduces connectivity between the subgenual anterior cingulate (negative mood) and the default mode network (self-representation).

8. Ibogaine produces a 'life review', with cardiac risk
Ibogaine comes from the root bark of an iboga shrub used sacramentally by the Bwiti in Gabon. It produces few open-eye visuals; with eyes closed, people replay past memories with detached empathy, sometimes for 24–36 hours. Williams calls it seemingly the most powerful psychedelic, but also the riskiest, because of cardiac effects his team screened for with ECGs. It is not recreational.

9. Stanford Neuromodulation Therapy (SNT) applies spaced learning to TMS
Standard TMS runs once daily for six weeks. SNT gives 10 sessions a day, an hour apart, for five days: about 90 minutes of total stimulation, roughly five times the usual dose. It uses theta-burst pulses that mimic hippocampal rhythms and are aimed via each person's own connectivity scan. Williams reports remission in 60–90% of cases depending on the study, often within days, though durability varies (some patients a year, some four).

EXAMPLES

1. Veterans' ibogaine study
With donor funding, Williams' group evaluated former SEALs and Army Rangers before and after ibogaine in Mexico, then 5-MeO-DMT a month later as a separate session. They used clinical scales, cognitive testing, imaging and EEG. Early impressions were of dramatic improvement and no cardiac events. Many described forgiving themselves for moral injury.

2. Opioids, depression and pain
In matched knee-replacement patients, those with depression needed about triple the oral opioid dose by day four. Williams suggests the drugs may be treating emotional as well as physical pain.

3. Triple chronotherapy
One night of sleep deprivation lifts mood in depressed people until they sleep again. Work with Stanford colleague Greg Sullivan pairs sleep deprivation with a calculated phase shift and bright light to re-entrain the circadian clock, producing durable effects. Williams warns it increases anxiety and must only be done under medical supervision. He says it is underused partly because it has no billing code.

4. Origins of TMS for depression

His mentor Mark George combined findings of an underactive prefrontal cortex in depression with evidence that TMS could raise motor cortex excitability. Early patients at NIMH were discharged after treatment. FDA clearance came in 2008.

OTHER RELEVANT

1. For mild depression, regulate sleep first

Williams recommends a consistent sleep and wake schedule, CBT for insomnia, and keeping the bedroom for sleep and intimacy only, with no TV, food or phone. He says getting sleep right is 'half the battle'.

2. Exercise and slow breathing are reasonable starting points

They fit the brain–heart regulatory pathway and have supporting evidence in mild depression. Severe depression usually needs clinical treatment.

3. Everything discussed requires medical supervision

Ibogaine, 5-MeO-DMT, MDMA and psilocybin therapies are not approved treatments in the U.S. and require screening and supervision. SNT's device is FDA-cleared and is being rolled out through a company Williams' former students joined, with trials still recruiting.

Biology & Treatments for Compulsive Eating & Behaviors | Dr. Casey Halpern

Guest: Dr. Casey Halpern
Date: 2022-09-26 · Duration: 2:14:35
URL: https://www.youtube.com/watch?v=Nr5xb-QCBGA

KEYPOINTS

1. Deep brain stimulation delivers medication as electricity
Halpern, a neurosurgeon, describes DBS as implanting a thin insulated wire whose tip contacts deliver current from a pacemaker-like pulse generator to a tiny brain region. The most consistent effect is immediate relief of tremor, even after 20 years of shaking. Side effects within a few millimeters, such as brief laughter or panic, revealed therapeutic uses: Parkinson's patients sometimes report that gambling, compulsions or low mood improve along with tremor.

2. OCD involves dysregulated, not simply overactive, cortical circuits
The orbitofrontal and prefrontal cortex, which support inhibitory control, function abnormally in OCD, along with their projections to the dorsal striatum (caudate and putamen) and the ventral striatum, including the nucleus accumbens. Halpern cautions against thinking of 'up or down' activity; the aim is to normalize function.

3. DBS for OCD helps only some patients so far
Surgical risk for OCD is similar to that for tremor, but the payoff is less reliable. About 50% of patients respond, and responders still have symptoms, so many psychiatrists hesitate to refer. Halpern performs DBS for OCD in only three to five patients a year and is leading research to target obsessions more specifically. He sees obsessive traits on a spectrum, some of which help in surgery or business.

4. The nucleus accumbens gates reward-seeking, and strong rewards can hijack it
When the ventral striatum is perturbed, rats pursue rewards despite foot shocks. In mice, two weeks of 60% fat food leaves the nucleus accumbens functioning abnormally, partly hyperactive and partly hypoactive, likely predisposing continued overeating and eventually habit. Halpern views loss of control as a common thread across binge eating, addiction and OCD, though it is not a formal diagnosis.

5. Not all obesity is a binge-eating problem
Obesity is a phenotype with many causes. Halpern credits mentor Tom Wadden with warning that only about 20% of people with obesity show addiction-like eating, still an enormous number. Binge eating disorder affects an estimated 3 to 5% of people and is likely underdiagnosed in obesity.

6. A binge has a strict definition; loss-of-control eating is far more frequent
A binge requires loss of control plus eating an unusually large amount in a short time, perhaps half a day's calories compared with normal meals. Severe cases binge about once a day; moderate cases three to four times a week. Loss-of-control eating can occur dozens of times a week, with some trial patients reporting 20 to 30 episodes.

7. A two-hit model for how binge eating develops
Halpern's hypothesis, which he says is unpublished: the first hit is a predisposition everyone shares to some degree, magnified by cheap, refined, hyperpalatable food we did not evolve with, such as high-fructose corn syrup even in bread. The second hit is a stressor, probably recurring. Shame adds a third layer. Both anxiety and disinhibition, as with alcohol, can trigger binges, suggesting imbalance in either direction.

8. Episodic stimulation beats continuous stimulation for episodic disorders
Depression or Parkinson's may behave like 'state' disorders needing continuous therapy. Binge eating, addiction and OCD involve intermittent episodes in otherwise normal days. In mice, Halpern's group, publishing in PNAS, found a nucleus accumbens signal that predicts loss of control; triggering 5 to 10 seconds of stimulation only then blocked binges durably, while continuous stimulation lost its effect, likely through tolerance. Over time the predictive signal itself became less frequent.

9. Anorexia and compulsive overeating may be more alike than different
Both can reflect compulsions to over- or under-eat despite risk, shaped by social pressures and similar brain vulnerabilities. Anorexia has the highest mortality of any psychiatric condition, from suicide and metabolic complications. Because implanting devices in very underweight patients risks wound erosion, non-invasive approaches are needed, but targets must first be found inside the brain.

EXAMPLES

1. Hunting for 'craving cells' in the operating room
In a first-in-human trial at Penn for patients who failed gastric bypass, fasted patients stay awake while a fine electrode is lowered into the nucleus accumbens and they view photos of foods they crave, like donuts. The goals: find craving-related cells, as surgeons find tremor cells by their sound in Parkinson's; capture a brief mood lift from stimulation; and confirm placement within about 0.5 mm with intraoperative CT and tractography. These results were unpublished at the time.

2. Provoking a binge in the lab
With the device implanted, a psychiatrist and eating disorder specialist induce each patient's own pre-binge negative mood while video and an eye tracker are synchronized to brain recordings. Even fully aware, under observation through a one-way mirror, treatment-resistant patients still lose control, which is why awareness alone is not enough for them.

3. Huberman's ephedrine superstition
Huberman recounts that a sports stimulant containing ephedrine in his youth triggered compulsive knocking on wood mid-exam, which vanished when he stopped. Halpern suggests a predisposition, noting Huberman's childhood throat-clearing tic. Tics in young males are common and often fade, though they can return with fatigue.

4. Focused ultrasound for essential tremor

MRI-guided focused ultrasound, FDA-approved for tremor, ablates a target with no incision. Essential tremor is about 10 times more common than Parkinson's and the most common neurological condition over 70; Halpern wrote to Bill Clinton hoping he would champion it. Using it for OCD or eating disorders awaits knowing where to ablate.

OTHER RELEVANT

1. Cultivate awareness of pre-behavioral states

Binges are often preceded by a dip in mood, stress or anxiety. Noticing that the thought of a donut is gaining allure is, for most people, a powerful tool until targeted non-invasive treatments exist.

2. Be cautious with stimulants and drugs if you are prone to compulsions

Halpern says he likely sits on the mild end of the obsessive spectrum himself and avoids drugs beyond a little wine for that reason.

3. TMS shows promise but remains imprecise

Transcranial magnetic stimulation over the frontal lobe is FDA-approved for depression, OCD and nicotine addiction. Halpern wants it to probe with purpose, reaching deep targets indirectly through connected surface regions, and is pairing TMS and invasive OCD trials.

4. Strength training with expert supervision

A trainer corrected Halpern's poor surgical posture with core work and powerlifting, including deadlifts. He was mildly hurt only when training alone; for people whose hands are their livelihood, he says close supervision is essential.

The Science & Treatment of Bipolar Disorder

Date: 2022-07-25 · Duration: 2:19:41
URL: https://www.youtube.com/watch?v=m_OazsImOiI

KEYPOINTS

1. Bipolar disorder is rare, often starts in the early 20s, and is dangerous
About 1% of people have it, compared with 10–17% who have major depression. It typically begins between ages 20 and 25, and an earlier first episode makes it more likely to be a lasting feature. Huberman cites a 20–30% higher incidence of suicide than in the general population. It also ranks among the top contributors to 'global burden', meaning years of normal life lost to disability.

2. Bipolar 1 is defined by mania lasting seven days or more
A psychiatrist looks for at least three of seven symptom categories, present all day, every day, for a week or longer. These include extreme distractibility, impulsivity (one person's ex-spouse bought 10+ air fryers; others book 12 international trips in an afternoon), grandiosity held as genuine belief, flight of ideas, a reduced need for sleep that doesn't bother the person, and rapid 'machine-gun' pressured speech. The person often can't see the shift, but others can.

3. Other causes of mania must be ruled out first
Traumatic brain injury, seizures, amphetamine or cocaine use, and prescribed corticosteroids can all produce identical-looking mania. Diagnosis is hard because the clinician gets a single snapshot, through conversation, of someone who may be on day one or day six of an episode, or using drugs as part of their impulsivity. There is no blood test.

4. Bipolar 2 involves shorter, milder hypomania and more depression
Hypomanic episodes last about four days or less and are less intense. The pattern is not a neat sine wave: some people swing high to low, others rapid-cycle (for example three days manic, three normal, three depressed), and some go manic and then back to baseline without depression.

5. Bipolar disorder is highly heritable, but not a single-gene condition
Heritability is about 85%, which means a susceptibility, usually across sets of genes, that interacts with environmental factors such as early life stress and trauma. Anyone with a twin, sibling, parent, or even a cousin or uncle with bipolar 1 should watch for signs in themselves and their family.

6. Borderline personality disorder differs in its triggers
Borderline personality disorder can produce manic-looking spending, promiscuity or flights of ideas, but these episodes almost always have an external trigger. Bipolar episodes of mania or major depression arise without any trigger, although life stress can worsen symptoms.

7. Lithium reaches patients slowly because it can't be patented
Lithium is element three of the periodic table and cheap, so drug companies had little incentive to produce it. The US FDA approved it for mania only in 1970, 21 years after Cade's paper. It works for many but not all patients, has real toxicity, and needs careful blood-level monitoring, especially in the first three months.

8. Lithium and ketamine act on homeostatic plasticity in opposite directions
Homeostatic plasticity keeps circuits from being too active or too quiet for too long. Citing a Neuron review, 'Targeting Homeostatic Plasticity for the Treatment of Mood Disorders', Huberman explains that lithium lowers the excitability of postsynaptic neurons, while ketamine increases receptor numbers and excitability. Ketamine is effective for major depressive episodes, including in bipolar disorder, but its effects are transient and must be repeated. Lithium also raises BDNF, which permits rather than directs plasticity.

9. Weaker parietal–limbic connectivity may underlie poor interoception
Imaging of people at high risk for, or diagnosed with, bipolar disorder shows reduced connectivity between parietal regions and the limbic system. The parietal lobe then exerts less top-down control over the limbic system. Over time people become poor at interoception, the sensing of their own emotional and bodily states.

10. Talk therapies reduce harm alongside medication
Cognitive behavioural therapy has the most evidence, partly because it has been studied longest, and can sometimes let drugs work at lower doses. Family-focused therapy uses relatives as early-warning observers of sleep and eating changes. Interpersonal and social rhythm therapy addresses relationships, work and school. The goal throughout is harm reduction, because manic spending, promiscuity and broken relationships deepen the depressions that follow.

EXAMPLES

1. John Cade's lithium discovery
An Australian psychiatrist and prisoner of war from 1942 to 1945, Cade suspected that manic patients excreted a toxic substance. He injected their urine into guinea pigs, isolated uric acid, and dissolved it using lithium. In a control experiment, lithium alone calmed the animals. His 1949 paper in the Medical Journal of Australia, 'Lithium Salts in the Treatment of Psychotic Excitement', included case 7: a 40-year-old man, violent for two months, was 'distinctly quieter' four days after starting lithium citrate three times a day and soon left hospital.

2. Judd et al., JAMA Psychiatry
People with bipolar 1 spent about 53% of their time symptom-free, about 32% in major depression and about 15% manic or mixed. People with bipolar 2 spent about half their time depressed, which helps bipolar 2 go unnoticed as plain depression, especially with alcohol self-medication.

3. Omega-3 studies point both ways

Murphy et al. 2012 found that 4 g/day of a 70% EPA formulation worsened manic symptoms over about 16 weeks. A 1999 double-blind trial in 30 adults aged 18–64 found that 9.6 g/day of fish oil for four months greatly reduced bipolar symptoms compared with olive oil. Huberman's takeaway is that high-dose omega-3s seem to help a good number of people, but should never be the only treatment.

4. Creativity in eminent people

A study of 1,000+ eminent 20th-century Westerners, based on biographies, found depression or mania in as many as 90% of eminent poets (about 75% depression, about 20% mania). The figures were as low as about 10% in the military and about 20% in professional athletes, with no mania among the athletes. This is correlation, and the data are indirect.

5. GLP-1 and yerba mate (opening segment)

A Cell paper showed that GLP-1 suppresses appetite through parallel pathways: enteric neurons that cause gut distension, and a gut-to-hypothalamus route that triggers satiety. Huberman drinks yerba mate, which releases far less GLP-1 than the drugs, and avoids the smoked varieties over carcinogen concerns.

OTHER RELEVANT

1. Stay alert to bipolar 2 in people who seem merely depressed

Someone isolating or drinking more may be cycling; their 'normal' stretch may in fact be hypomania. Relatives of people with bipolar 1 deserve extra vigilance.

2. Know the trade-offs of ECT and rTMS

ECT induces a seizure that releases neuromodulators and BDNF and is well established for treatment-resistant depression. It doesn't target mania, and it requires a hospital, anaesthesia and cost, and can cause some memory loss. rTMS is non-invasive and has reduced depressive and, in a few cases, manic symptoms, but it is early-stage; be cautious of commercial clinics without research ties.

3. Don't count on psychedelics or cannabis for mania

Psilocybin (studied at Johns Hopkins, including by Matthew Johnson) shows promise for depression, but Huberman knows of no controlled trials for mania, and it is illegal in the US. Stanford clinicians told him cannabis doesn't treat either phase; at most it may help some people sleep.

4. Discuss inositol and omega-3s only as additions to treatment

Myo-inositol affects second-messenger signalling and membrane fluidity, as do lithium and omega-3s. Huberman personally takes 900 mg every third night or so for sleep, and notes that the 10–18 g doses used for OCD can upset the stomach. Any supplement for bipolar disorder belongs alongside, not instead of, psychiatric care.

The Science & Treatment of Obsessive Compulsive Disorder (OCD)

Date: 2022-06-27 · Duration: 2:33:35
URL: https://www.youtube.com/watch?v=OadokY8fcAA

KEYPOINTS

1. OCD is an itch that gets worse when you scratch it
Obsessions are unwanted, intrusive, recurring thoughts; compulsions are behaviors performed to relieve the anxiety they cause. The relief is brief and reinforces the loop, so the next obsession comes back stronger. Anxiety binds the two together. People with OCD usually know their fears are irrational, such as believing a left turn will cause a death, yet the urge feels overwhelming.

2. Common, debilitating and often hidden
Huberman cites estimates that 2.5% to perhaps 4% of people have true OCD, and says it ranks seventh among the most debilitating illnesses of any kind. The range is wide because many people disguise symptoms out of shame, using small hidden rituals such as tapping a thigh or counting silently. Most people with OCD never seek evidence-based treatment.

3. Three broad categories: checking, repetition and order
Checking includes returning to the stove or locks 20 or 30 times. Repetition includes counting sequences or, as bandmates described of Joey Ramone, walking a stairway a set number of times. Order covers symmetry, cleanliness and 'incompleteness,' a sense that something is not right and cannot be left. Many intrusive thoughts involve taboo, violent or sexual content, which deepens the shame.

4. A cortico-striato-thalamic loop is the core circuit
Imaging studies consistently show heightened activity in a loop linking the cortex, the striatum (which selects actions and holds them back, 'go' and 'no-go') and the thalamus, which gates what reaches awareness. Stimulating these circuits in animals produces compulsive grooming to the point of hair loss, and effective treatments reduce activity in the loop. Twin studies suggest roughly 40 to 50% of cases have a genetic component.

5. Exposure therapy works by raising anxiety, not lowering it
Unlike most anxiety treatment, cognitive behavioral therapy with exposure and ritual prevention guides patients, step by step, to articulate their deepest fear and face the trigger, whether real or imagined, then refrain from the compulsion while anxiety peaks. Patients learn anxiety can exist without the ritual. Huberman describes protocols summarized by Columbia's Helen Blair Simpson: two planning sessions, then about 15 exposure sessions at twice a week or more, with homework.

6. In head-to-head data, exposure therapy beat SSRIs
In a 12-week study (Foa and colleagues, 2005), placebo did nothing, while exposure therapy cut Y-BOCS severity from about 25 to about 11 by four weeks. SSRIs helped significantly but less, with gains from weeks four to eight. Starting both together added nothing over therapy alone, but adding exposure therapy for someone already on an SSRI improved symptoms further. Medication changes should go through a physician.

7. SSRIs help even though serotonin may not be the root problem
Options include fluoxetine, fluvoxamine, sertraline, citalopram and the less selective clomipramine. Yale's Christopher Pittenger notes in a 2021 review that serotonin is not clearly disrupted in OCD, but serotonin supports cognitive flexibility, and OCD involves rigidity. Real benefit often takes 10 to 12 weeks. For non-responders, psychiatrists may add a low-dose neuroleptic, which acts body-wide and can cause motor and other side effects.

8. Newer treatments remain unproven
Psilocybin has not yet matched its depression results in OCD. In a 2020 placebo-controlled study of 14 adults, smoked cannabis high in THC or CBD had little acute effect on OCD symptoms. Small ketamine studies show some relief in some patients. Transcranial magnetic stimulation over motor areas may help break the rapid obsession-compulsion pairing, with most excitement around combining it with therapy or medication.

9. Hormone patterns differ in OCD
A study of 30 patients and 30 controls found elevated cortisol and DHEA in women with OCD, and higher cortisol with lower testosterone in men. Huberman suggests both patterns could reduce GABA-mediated inhibition, though cause and effect are unknown and hormone-based treatments are untested.

EXAMPLES

1. Home visits expose hidden rituals
Because place-based conditioning makes symptoms return at home, clinicians may visit to see the faucet or towel that triggers rituals, and assign homework so gains made in the office carry over.

2. Myo-inositol and other supplements
A 2011 review found 5-HTP and tryptophan reduced symptoms somewhat like SSRIs, with similar potential side effects. Studies of inositol used very high doses, around 18 g a day, with some partial relief in as little as two weeks, though some participants quit due to stomach upset. Glycine trials used 60 g a day, which Huberman does not recommend outside a study. He personally takes 900 mg of myo-inositol for sleep.

3. Huberman's childhood grunting tic
Around age six or seven he felt compelled to grunt and hid in the car to do it. It faded within a year but resurfaces when he is exhausted, a reminder that transient tics in children are common.

4. Superstition on the path to compulsion
Rats and baseball pitchers both add irrelevant motions that happened to precede success. Repeated enough, such rituals

become automatic. People with OCD tend toward more superstitions; Huberman occasionally challenges himself not to knock on wood.

OTHER RELEVANT

1. Thoughts are not actions

Everyone has disturbing thoughts, like imagining jumping from a bridge. Recognizing that a thought does not equal a deed, and that the anxiety can be tolerated, is a cornerstone of recovery.

2. Do not call ordinary tidiness OCD

Obsessive-compulsive personality disorder lacks the intrusive quality; people often welcome their orderliness. If you can leave a pen cap crooked and move on, it is not OCD.

3. Mindfulness helps indirectly

Meditation sharpens focus, which could feed obsessions, but in Blair Simpson's research it seems to help mainly by improving engagement with therapy homework.

4. Ask for the Y-BOCS

The Yale-Brown Obsessive Compulsive Scale is the standard clinical measure; a score of 16 or higher indicates meaningful impairment.

Therapy, Treating Trauma & Other Life Challenges | Dr. Paul Conti

Guest: Dr. Paul Conti
Date: 2022-06-06 · Duration: 2:24:29
URL: https://www.youtube.com/watch?v=IOl28gj_RXw

KEYPOINTS

1. Trauma means an experience that overwhelmed your coping and left you different afterward

Conti draws a line between trauma and disappointments or bad memories. In the clinically useful sense, trauma changes how the brain functions, and you can see it in mood, anxiety, sleep, behavior, physical health and heightened vigilance. Simply remembering a cruel playground remark doesn't meet that bar. Trauma can be acute or chronic, and he says it underlies a large share of the depression, panic, addiction and poor choices he treats.

2. Guilt and shame usually follow trauma and push people to bury it

He describes shame as an 'aroused affect' that fires without our choice. In small ancestral groups it worked as a powerful deterrent, much as strongly encoded negative memories once helped people survive. In modern life, that same reflex makes people hide what changed in them, which is exactly backwards. Unlike in a viral pandemic, healing from trauma requires connection and putting words to what is happening inside.

3. The repetition compulsion is real

Conti says people who've been abused often end up in similar relationships or situations again. He explains this through the limbic system, which 'always trumps logic' when emotion is strong enough and 'does not care about the clock or the calendar.' The emotional brain tries to fix the past by replaying it in the present, so reproducing the original situation can feel like the path to relief.

4. Negative self-talk serves punishment, avoidance and a false sense of control

Huberman described imagining worst-case scenarios while driving. Conti named three drivers, 'and they're all bad.' The first is punishing yourself because trauma convinced you it was your fault. The second is distraction, since anger can feel better than guilt or shame. The third is the illusion that rehearsing disaster might prevent it. He calls these fantasies maladaptive signs of real brain change.

5. Short-term coping is fine, but it isn't resolution

Steering your thoughts away from something so you can fall asleep or get through a workday is a legitimate short-term strategy. If the past keeps dominating the present, though, real change means facing the material directly. Conti notes that people often try to change the past in order to control the future, and in the process stop living in the present.

6. Healing needs a 'de novo' perspective from outside your own loop

Conti says he's struck by how many intelligent, empathic people have had the same thought running in their heads for years. Our brains don't spontaneously notice that they've been spinning their wheels. Fresh perspective can come from a trusted person, from writing, or simply from knowledge about how trauma works.

7. Rapport is the single biggest factor in choosing a therapist

Conti puts it this way: if you list the top 10 factors in finding a therapist, 'just repeat rapport 10 times.' That means real attention, trust, and someone invested in your getting better. Modality still matters, but the best therapists aren't 'pigeonholed' into psychodynamic, CBT or DBT. They adapt to what the person needs. Therapy that always feels pleasant probably isn't touching the hard material.

8. Medication is overused when it replaces understanding

Conti says 15-minute visits weeks apart lead to 'polishing the hood when there's a problem in the engine.' He estimates the US uses roughly five times as much psychiatric medication as the Dutch. Some diagnoses, including bipolar disorder, OCD and true ADHD, nearly always warrant medication alongside therapy. More often, he sees medication as a way to help someone engage in therapy. Antidepressants raise distress tolerance, and some low-dose antipsychotics can quiet clinical rumination.

9. Not all attention problems are ADHD

Stimulants like Adderall, Ritalin and Vyvanse work very well for genuine ADHD. Conti notes that people who truly have it generally tolerate stimulants well. But anxiety, depression, poor sleep, poor diet, stress and trauma can all impair attention. In people without ADHD, long-term stimulant use can affect judgment, physical function and vigilance.

10. Psychedelics and MDMA work differently and both require clinical guidance

Conti calls the academic data on psilocybin and LSD 'powerfully positive.' His conjecture, which he labels as such, is that they quiet chatter in the outer cortex, where much of our survival-driven rumination happens. MDMA, by contrast, floods the brain with dopamine and serotonin. That makes it more permissive to approach trauma without guilt and fear, but the state has to be guided toward working through something, not just feeling good.

EXAMPLES

1. Conti's own turning point

In his early twenties, Conti's younger brother died by suicide. He describes hiding guilt and shame, losing his belief that hard work could make a difference, and feeling the world was against him. Only when his self-care visibly broke down and people around him stepped in did he recognize that he had changed and get help.

2. The rock in the shoe

While teaching physicians, Conti told a clinical anecdote that schoolchildren would recognize as someone with a rock in their shoe who can't concentrate. Several physicians answered 'ADD.' He uses the story to show how reflexively medicine reaches

for a prescription instead of finding the cause.

3. Intensive therapy

Conti says that if therapy happens less than once a week, too much of each session goes to catching up, so an hour weekly is the minimum for real progress. His practice offers about 30 clinical hours in a week across five or six clinicians, which he estimates is worth about 60 conventional hours.

4. Huberman's MDMA trial sessions

As a clinical trial participant, Huberman found his first session full of relational insights and his second mellow and centred on acceptance. Without guidance, he said, he could have fixated on something like how wonderful water is. Conti agreed that this suggestibility is why clinical structure matters.

5. Alcohol and cannabis

Conti says the number of times he has seen alcohol used well for coping 'approaches zero.' Some people, more often of Northern European ancestry, have a strongly euphoric response that raises the risk. Cannabis narrows attention, which can help some people relax or fall asleep, but under high distress it can narrow focus onto the very thing that is upsetting them.

OTHER RELEVANT

1. Journal when the thought shows up

Keep a journal with you and write when the painful thought arrives. Reading your own words back creates distance, almost as if the story belonged to someone else. That makes room for compassion and logic, including realizations like 'I started thinking this way after that happened.'

2. Interview therapists like job candidates

A therapist your insurance assigns is not the one you're stuck with. Word of mouth from someone you trust raises the odds of a good fit. Try a few sessions, judge on rapport, and expect the work to be hard, sometimes excruciating.

3. Find your own before-and-after routine for sessions

Conti says there's no universal routine for therapy. Some people arrive early and meditate, some take notes or walk afterward to consolidate insights, and others need to set it aside and reflect later. The goal is to be fully present during the session and keep what you gained.

4. Get the basics right first

For Conti, self-care is simple but not light: enough sleep, decent food, natural light, and people who are good to you. No amount of vacations or treats makes up for missing these foundations.

The Science & Process of Healing From Grief

Date: 2022-05-30 · Duration: 2:06:47
URL: https://www.youtube.com/watch?v=dzOvi0Aa2EA

KEYPOINTS

1. Grief is a motivational state, not just sadness
Huberman frames grief the way modern researchers do: as yearning for something just out of reach. He likens it to reaching for a glass of water when you are desperately thirsty, only to have it shift just beyond your grasp every time. That anticipation of action that leads nowhere is part of why grief hurts physically, not only emotionally.

2. Grief and depression overlap but are distinct processes
Both can bring loss of appetite, poor sleep and sudden crying. But grief rarely responds well to antidepressants, while depression often does. The adrenaline–complicated-grief link described below is not seen in depression either. Huberman repeats that the two can coexist but involve separable brain circuits.

3. Complicated grief affects roughly 1 in 10 people
Complicated (or prolonged) grief starts out like ordinary grief but fails to resolve even after a long time, to the point of impairing daily function. Huberman stresses that grief is a process with a beginning, middle and end. Validated questionnaires exist to distinguish complicated from non-complicated grief.

4. The five stages are useful, not gospel
Elisabeth Kübler-Ross described denial, anger, bargaining, depression and acceptance. Huberman notes that anger is already a motivated state and that bargaining overlaps with denial. Neuroimaging, deeper psychological evaluation and more clinicians in the field now show that stages blend, braid together and vary between people rather than proceeding in a fixed order.

5. Dopamine drives the craving in grief
Dopamine is about desire and pursuit, not feeling good. That applies to hunger, sex, addiction and, it turns out, loss. In grief the brain's reward and motivation circuitry, particularly the nucleus accumbens, is engaged alongside pain areas, keeping you in an anticipatory state of reaching for the person.

6. Relationships are mapped on three dimensions: space, time and closeness
An imaging experiment had people view objects at different distances, hear tones at different time intervals, and see faces that varied in physical distance and emotional closeness (a sister versus a stranger or celebrity). The same brain region tracked distance in all three. Huberman's model: deep attachment rests on a rich catalog of episodic memories that predict where and when you can next reach someone. Loss destroys the space and time parts of that map while the attachment remains.

7. Healthy grieving keeps the attachment but uncouples it from space and time
There is no adaptive reason to numb yourself or argue that the person mattered less. The task is to hold the full depth of the bond while no longer expecting past patterns to repeat. Huberman calls it spinning two plates at once, which is why it feels effortful and cognitively hard as well as emotionally hard.

8. 'Trace cells' may explain feeling someone's absence
Work from the lab of Nobel laureates Edvard and May-Britt Moser on navigation cells in the hippocampus and entorhinal cortex includes trace cells. These fire when something expected at a location is missing, like a coffee cone not in its usual spot. Huberman says there is reason to believe this circuit is very active soon after a loss, producing the sense that the person might walk through the door any moment.

9. Guilt and 'what ifs' strengthen the wrong connections
Counterfactual thinking ('if I'd called a day earlier') explores an infinite space you can never verify or refute. Psychologists describe this kind of guilt as granting yourself more control over reality than existed. It reinforces the bond to the old memory map rather than letting it reorganize.

10. Oxytocin receptor density may set how intensely you yearn
Monogamous prairie voles have far more oxytocin receptors in the nucleus accumbens than non-monogamous ones. In experiments they will press levers and even cross a shock plate to reach their partner. Human work suggests people with intense grief may likewise have more oxytocin receptors in craving circuits. Huberman's point: grieving at different rates is normal, with probable biological roots, and can cause friction within families.

EXAMPLES

1. 'Craving Love? Enduring Grief Activates Brain's Reward Center'
In this fMRI study by Mary-Frances O'Connor (University of Arizona), grieving people showed more activity in physical-pain regions than non-grieving people. Those with complicated grief also showed reward-related activity in the nucleus accumbens, evidence that grief includes wanting, not only pain.

2. Catecholamine predictors of complicated grief
In another O'Connor study, participants with the highest pre-treatment epinephrine (adrenaline) had the most complicated-grief symptoms after psychotherapy, independent of baseline symptoms. People who run more alert and anxious at baseline are statistically more likely to develop complicated or prolonged grief.

3. Writing about loss helped only people with high vagal tone
35 bereaved participants wrote about three times a week. One group wrote about the death, their deepest feelings and a letter to the person; controls wrote about how they spent their time. Overall there was no difference between groups.

However, people with high vagal tone (strong respiratory sinus arrhythmia) benefited from the emotional writing. Huberman calls it preliminary but influential.

4. Evening cortisol in complicated grief

'Diurnal Cortisol in Complicated and Non-Complicated Grief' found the same overall daily curve in both groups: cortisol rising after waking and peaking about 45 minutes later. But 4 p.m. and 9 p.m. levels were significantly higher in complicated grief. Huberman suspects the relationship runs both ways.

5. A phantom touch after his advisor's death

For years after his graduate advisor died, Huberman felt a touch on the back of his neck when he thought of her, though they never had such contact. The grief literature likens this to phantom limbs, which V.S. Ramachandran studied extensively.

OTHER RELEVANT

1. Schedule dedicated attachment sessions

Set aside 5–10 minutes, up to 30–45 if you can, to feel the closeness deeply while staying oriented to your present surroundings. During that time, avoid counterfactuals, replaying memories and imagining the person returning. Expect your mind to slip into expecting them; that is normal.

2. Match breathwork to how you grieve

Inhales speed the heart and exhales slow it. To build vagal tone, consciously slow your heart on long exhales and let it rise on inhales for 1–5 minutes a day. Huberman suggests this mainly for people who struggle to access their feelings. Those already overwhelmed by attachment may not benefit from amplifying the mind–body connection.

3. Lower baseline adrenaline before loss comes

Since high resting epinephrine predicts worse outcomes, stress-reduction tools can serve as a kind of inoculation against complicated grief, which matters for everyone, since everyone will eventually face a loss.

4. Protect sleep and the cortisol rhythm

View morning sunlight, dim lights and avoid bright screens in the evening, especially between 10 p.m. and 4 a.m. The rewiring involved in remapping happens during deep sleep and NSDR (10–30 minute non-sleep deep rest protocols). No single supplement or diet will speed grieving.

Understanding & Controlling Anger & Aggression

Date: 2022-05-09 · Duration: 1:30:53
URL: https://www.youtube.com/watch?v=RBK5KLA5Jjg

KEYPOINTS

1. Aggression comes in distinct types
Huberman distinguishes reactive aggression, when you feel threatened or protect people you love, from proactive aggression, a deliberate effort to harm. Indirect aggression is non-physical, such as shaming or verbally diminishing someone, especially in groups. Some aggression is adaptive, and the episode is about understanding and modulating it rather than eliminating it.

2. Aggression runs on dedicated circuits that fire as a pattern
Konrad Lorenz, the Nobel laureate famous for geese imprinting on him, showed that single stimuli can trigger whole 'fixed action patterns'. Walter Hess later lowered electrodes into the brains of awake cats. Stimulating one hypothalamic site turned a purring cat into a hissing, arched-back, hair-raised attacker of people and objects. It calmed within seconds when stimulation stopped, and this happened in every cat. Later human work confirmed such stimulation also produces subjective anger.

3. About 3,000 estrogen-receptor neurons in the VMH are necessary and sufficient for attack
David Anderson's lab at Caltech, in experiments led by Dayu Lin (now at NYU), used optogenetic tools developed by Karl Deisseroth and others. They activated estrogen-receptor neurons in the ventromedial hypothalamus of freely moving mice with light. Huberman says the work showed this tiny population is both necessary and sufficient for aggression.

4. Testosterone drives aggression mostly via conversion to estrogen in the brain
The enzyme aromatase converts testosterone into estrogen, which then binds those VMH neurons. Mice and humans lacking aromatase show less aggression despite high testosterone. Blocking aromatase prevents aggression no matter how much testosterone is given. Huberman calls this one of the most counterintuitive points of the episode.

5. Day length gates whether estrogen triggers aggression
Long, sunny days lower melatonin, raise dopamine and reduce cortisol. Under those conditions, raising estrogen experimentally doesn't provoke aggression; in short days it does. Huberman's explanation is that winter brings more melatonin, higher stress hormones (partly from more pathogen exposure) and less dopamine.

6. High cortisol and low serotonin lower the threshold for aggression
This is the 'hydraulic pressure' model: hormones, light, stress and substances add pressure toward aggression or release it. Serotonin signals contentment with what you have, and its precursor is tryptophan. Tryptophan-rich diets or supplements, and SSRIs such as fluoxetine, generally (not always) reduce aggressive behavior.

7. Testosterone acts fast on the amygdala, biasing toward effort
In a study Huberman describes, applying testosterone gel raised testosterone and activity in the corticomedial amygdala within 30 minutes. That's quick for a steroid hormone, which usually acts slowly through gene expression. The amygdala has both corticosteroid and testosterone receptors. Testosterone tilts it toward action, which is why Huberman says it 'makes effort feel good' rather than simply causing violence.

8. Testosterone correlates with competitiveness, with heavy caveats
One salivary testosterone study ranked six male occupations from lowest to highest: ministers, salesmen, firemen, professors, physicians, NFL players. Huberman warns the causal direction is unknown, saliva is a weaker measure than blood, and firemen's high-stress jobs may raise cortisol, which tends to push testosterone down.

EXAMPLES

1. From mating to attack at the flick of a light
Partway through mating with a receptive female, a male mouse whose VMH estrogen-receptor neurons were stimulated immediately stopped and tried to attack and kill her. The switch happened within seconds. When the light went off, he went back to trying to mate. Alone in a cage with an air- or water-filled rubber glove, a stimulated male attacked the glove as if it were another animal.

2. Female prisoners and violent crime
In studies of incarcerated women, higher salivary testosterone was associated with convictions for violent rather than non-violent crimes. Women with even one aggressive prison rule violation had higher testosterone than those with none. Huberman says prisons differ widely in baseline violence, so the findings should be taken with a grain of salt.

3. Caffeinated alcohol and indirect aggression
A 2016 study in Addictive Behaviors surveyed people aged 18–47 on a college campus. Participants averaged about 9.2 non-caffeinated drinks a week, with some up to about 20 total and nearly 8 caffeinated alcoholic drinks. More alcohol predicted more indirect aggression. Caffeinated alcoholic beverage use was linked to indirect aggression even after accounting for typical alcohol use and dispositional aggression.

4. Acetyl-L-carnitine in children with ADHD
A randomized, double-blind, placebo-controlled crossover study gave 6–13-year-olds 100 mg/kg per day (maximum 4 g), split into two doses after meals, over 24 weeks. Blood carnitine rose. Total problem scores, attention problems, delinquency and aggressive behavior all dropped significantly. Huberman notes the sample was small and needs replication; there is no objective biomarker for ADHD.

5. Omega-3s and mood

Huberman cites double-blind placebo-controlled studies in which 1–3 g a day of omega-3s improved mood on par with some SSRIs. Getting above about 1 g of EPA specifically has let some people take lower SSRI doses. He stresses that you should never stop a prescribed SSRI on your own, but discuss it with your doctor.

OTHER RELEVANT

1. Get daylight, especially in winter

View as much sunlight as you safely can, starting early in the day, and avoid bright light at night. This keeps melatonin, dopamine and cortisol in the profile in which estrogen is less likely to drive aggression.

2. Lower cortisol with heat

Huberman suggests sessions of about 20–30 minutes in a sauna (he cites 80–100°C) or a hot bath at a temperature that won't burn you. He refers to his heat episode for details.

3. Ashwagandha, only in short cycles

Huberman calls it a potent cortisol reducer that may help during an irritable stretch. Because chronic use can disrupt other hormone and neurotransmitter pathways, he suggests about two weeks on, then two weeks off. Check with your doctor first.

4. Skip energy-drink cocktails

If you want to be less reactive, cut alcohol overall and especially caffeinated alcoholic drinks, which carried an aggression risk beyond alcohol itself.

5. Combine several small levers

No single supplement or habit flips someone from aggressive to calm. Huberman's approach is to stack levers that each relieve some 'hydraulic pressure': light, heat, diet (tryptophan, omega-3s), substance choices, awareness of competitive work settings, and an understanding of your own hormone context.

Erasing Fears & Traumas Based on the Modern Neuroscience of Fear

Date: 2021-12-06 · Duration: 2:13:50
URL: https://www.youtube.com/watch?v=31wjVhCcI5Y

KEYPOINTS

1. Huberman calls fear a generic 'threat reflex'
Like the spinal reflex that lifts one foot off a tack while bracing the other leg, the threat reflex speeds the heart, sharpens vigilance and mobilizes energy. At the same time it shuts down circuits for calm, sleep and wide-field perception. It isn't built for any particular danger, so almost anything can become frightening if it's paired with activation of this system.

2. The amygdala is a final common pathway, not a 'fear center'
The almond-shaped amygdaloid complex, with about 12 subregions, combines memories from the hippocampus with input from the senses to trigger the reflex. Its outputs go to areas for freezing, pain control and alertness, and also to the dopamine reward system. That second link turns out to be key for rewiring fear.

3. The stress hormone axis gives fear a long tail
The hypothalamic-pituitary-adrenal (HPA) axis has a fast phase and a slow one. The slower hormonal phase can change gene expression over days and build circuits that embed a fear. Huberman notes that this same slow machinery is what lets fears be undone.

4. Fear is learned by strengthening synapses
An intense event activates NMDA receptors, setting off long-term potentiation, which turns a weak connection into a 'high-speed' one, so that even a thought can trigger the reflex. Extinction runs this in reverse through long-term depression, a weakening of those connections. He says common drugs such as SSRIs, benzodiazepines and beta blockers ease symptoms only indirectly and don't target this circuitry.

5. Removing a fear takes three steps, in order
First, retell the trauma in detail again and again until 'a terrible, upsetting story becomes a terrible, boring story'. This is extinction, used in prolonged exposure, cognitive processing therapy and CBT. Then build a new narrative with genuine reward, and tie it explicitly back to the original event. This works because the prefrontal cortex's input to the threat circuit is inhibitory, acting as a brake.

6. EMDR's side-to-side eye movements suppress the threat circuit
Huberman, a vision scientist, was skeptical of claims that EMDR mimics REM sleep (false) or links the two brain hemispheres. Then five papers he reviewed showed that lateral eye movements suppress the amygdala, possibly because they're the eye movements of moving forward, which is incompatible with freezing. Colleagues told him it works best for single-event traumas, not a whole bad childhood, and that it mainly handles extinction, not building a new narrative.

7. Social isolation chemically amplifies fear
Work from David Anderson's lab at Caltech and Kerry Ressler's at Harvard shows that tachykinin rises in the central amygdala after trauma, drives anxiety and irritability, and climbs further with isolation. Trusted social contact lowers it, which is why Huberman stresses social connection alongside trauma work.

8. A predisposition to trauma can be inherited
Ressler's work on FKBP5 gene variants (and Brian Dias's studies of inherited smell-linked fear) suggests that abuse, especially in fathers, can pass down a more sensitive cortisol stress system. What's inherited is a lower threshold, not the specific trauma, and treatment is the same either way.

9. Ketamine and MDMA appear to compress the same process
A study from Karl Deisseroth, Robert Malenka and Liqun Luo at Stanford linked ketamine's dissociation to a 1–3 Hz rhythm in layer-5 neurons of the retrosplenial cortex. Ketamine-assisted therapy is legal with a physician's prescription. MDMA, which was then still illegal outside clinical trials, raised plasma oxytocin to about 84 pg/mL versus about 19 at baseline, alongside dopamine and serotonin. Huberman says both seem to make extinction and new learning happen faster, rather than working as magic potions.

10. Brief, self-chosen stress may reverse chronic stress
A study in mice found that five minutes a day of intense stress for two weeks reversed depression-like effects of chronic stress, while 15 minutes a day made them worse. A Science paper showed that the insular cortex matches how strong your bodily reaction is to how serious the threat really is. Psychiatrist David Spiegel adds that what matters is how you got into a stress state and whether you chose it.

EXAMPLES

1. One break-in, a whole city ruined
After a friend's car was broken into, they swore never to return to San Francisco. Huberman uses this to show how a single event can generalize into a broad fear.

2. The child who stopped biking
After a crash on the way to soccer, a child avoids biking, sports and friends. Extinction alone isn't enough: the child needs new, enjoyable rides linked back to the accident ('I'm enjoying this despite the crash').

3. Jumpy versus calm
Some people leap out of their seat at a quiet 'hello', while Huberman's bulldog Costello barely moved his eyes. The insula sets that threshold, and it can be recalibrated.

4. Normal fear versus trauma

A racing heart and a poor night's sleep after nearly being hit by a car show a healthy fear system. Symptoms persisting weeks, months or years later have moved into trauma and PTSD.

OTHER RELEVANT

1. Huberman's five-minute breathing protocols

For calm: cyclic sighing (a double inhale through the nose, a long exhale through the mouth) repeated for five minutes. For deliberate stress: about 25–30 deep breaths, then exhale fully and hold for 25–60 seconds, repeating for five minutes. His lab's data with Spiegel's were then unpublished. Avoid the stress version if you're prone to panic attacks, and ideally have a clinician involved.

2. Supplements with evidence for anxiety, timed carefully

Huberman cites saffron at 30 mg (about 12 studies using the Hamilton Anxiety Rating Scale), inositol at 12–18 g a day for about a month (effects he says rival antidepressants), and kava (eight double-blind studies, often about 100 mg extract or 50–300 mg kavalactones, with no liver-toxicity signal reported). Check with a doctor, and don't take them around exposure sessions, since dampening the response undercuts extinction.

3. Self-medicating can drive trauma deeper

Alcohol and other ways of numbing the response stop extinction and relearning from happening. Sleep, nutrition and social connection are the foundation.

Healthy Eating & Eating Disorders - Anorexia, Bulimia, Binging

Date: 2021-09-06 · Duration: 2:16:19
URL: https://www.youtube.com/watch?v=2XGREPnlI8U

KEYPOINTS

1. Nobody can define 'healthy eating' for every individual
Huberman stresses that no government, nutritionist or expert can prescribe one ideal eating plan. We can only measure outcomes such as liver enzymes, blood lipids, weight and performance, and food norms are heavily shaped by culture and family. What can be defined is clinically disordered eating, which is why he starts there.

2. Intermittent fasting mostly works because not eating can be easier than portion control
Satchin Panda's lab at the Salk Institute found that 4–12-hour feeding windows improved liver enzymes and insulin sensitivity in mice, with some supportive human data. Calories in versus calories burned still governs weight. There's no evidence that skipping breakfast is better or worse than skipping dinner, and if you fast, you still need fluids and electrolytes (sodium, potassium, magnesium) for your neurons to work.

3. Protein early in the day may build muscle better
A Cell Reports study in mice, with a crossover study in women (and earlier work in men), found that amino acids eaten early in the active phase, roughly 5–10 am in humans, were used better for muscle growth and strength than the same protein later. When the clock gene BMAL1 was knocked out, the effect vanished. It didn't matter when resistance training happened, and the study doesn't mean you should avoid protein later.

4. Anorexia is the deadliest psychiatric disorder and is largely biological
It affects about 1–2% of women (roughly ten times the rate in men), typically begins around puberty and is often diagnosed in the early 20s. Symptoms include muscle and bone loss, low heart rate and blood pressure, fine body hair (lanugo), loss of periods, and low testosterone or sperm. Huberman says its prevalence has stayed roughly stable since descriptions from the 1600s or earlier, and it appears even where food is scarce, so media imagery and perfectionism aren't the main cause, though genetics creates a predisposition.

5. Bulimia isn't caused by childhood sexual trauma
Meta-analyses don't support the stereotypes that people with anorexia are control-seeking perfectionists or that bulimia stems from early sexual trauma, though trauma can play a role. Both disorders have clear biological roots and can overlap. Diagnostic categories have expanded (EDNOS, OSFED, binge eating disorder, pica) partly because some people meet most criteria while still menstruating.

6. Appetite has accelerators and brakes
In the hypothalamus, AgRP neurons drive eating: destroying them abolishes appetite, and overstimulating them causes eating 'to the point of bursting'. POMC neurons act as a brake through melanocyte-stimulating hormone, which sunlight boosts; Huberman says this is one reason appetite is lower in summer. Body fat releases leptin to signal 'enough', and that signal is disrupted in obesity and some binge eating.

7. In anorexia, restriction becomes a rewarded habit
Joanna Steinglass's group at Columbia found that people with anorexia have a near-automatic sensitivity to the fat content of foods, and that food choice shifts into habit circuits (the dorsolateral striatum). Avoiding high-calorie food actually feels rewarding rather than like punishment, so reasoning about health damage, or removing thin imagery, doesn't work.

8. Anorexia raises cholesterol despite eating little
With little dietary fat, the liver overproduces cholesterol, which is needed to make sex hormones, often overshooting dramatically. Huberman notes this is a wrinkle in the idea that blood cholesterol simply reflects diet.

9. Bulimia and binge eating involve too little 'top-down' control
Binges can reach 10–30 times daily calorie needs within about two hours. Unlike anorexia, bulimia involves impulsivity, so the prefrontal cortex's top-down control is underactive. That's why SSRIs such as fluoxetine, ADHD stimulants and bupropion (Wellbutrin), which boosts dopamine and norepinephrine, can help. Purging damages the gut lining, microbiome and esophagus.

EXAMPLES

1. Spotting the face among coffee beans
People with anorexia find a face hidden among coffee beans faster than others. Researchers call this 'weak central coherence' (fixating on details and missing the whole). Combined with difficulty switching focus, it helps explain behaviors like pushing food around the plate and finding the one low-calorie item on the table.

2. Caltech's parking-lot study
Rooftop cameras showed staff parking in the same spot and walking almost identical routes every day, which Huberman uses to show how automatic habits are, including food-avoidance habits.

3. Deep brain stimulation for binge eating
Casey Halpern (formerly at Stanford, moving to the University of Pennsylvania) found delta-frequency oscillations in the nucleus accumbens linked to food reward in mice and humans. Targeted stimulation in an FDA-approved trial looks promising for severe binge eating disorder, and his team is recruiting.

4. When 'cheat days' resemble binge eating disorder
Huberman was told that bingeing at least once a month over two to three months would likely meet criteria, which by that definition includes some people with routine cheat days.

OTHER RELEVANT

1. Break the habit through interoception and family support

The most effective approach for anorexia appears to be CBT that teaches people to notice the internal cues leading into the habit (a quickening heart, hyperfocus), plus family-based models in which relatives learn the biology, stop condemning and gently point out habits. Relapse occurs in about 50%, often triggered by stress.

2. Shift exercise from breaking down to building up

Rather than banning exercise, some programs move people with anorexia from compulsive calorie-burning toward resistance training that builds muscle and bone, with food seen as fuel for that. Huberman notes fidgeting (NEAT) can burn 800–2,000 calories a day.

3. Wait for clinical trials on psychedelics and ibogaine

MDMA and psilocybin are being studied for eating disorders at Johns Hopkins and elsewhere, but Huberman has heard reports of visual snow, tics and insomnia after unsupervised use, and seizures after ibogaine. He urges waiting for trial data.

4. Get a professional diagnosis

Learning the symptoms is valuable, but take concerns about yourself or someone you know to a qualified clinician rather than self-diagnosing. Huberman says deaths from eating disorders are not far off those from car accidents.

Science of Stress, Testosterone & Free Will | Dr. Robert Sapolsky

Guest: Dr. Robert Sapolsky
Date: 2021-08-30 · Duration: 1:29:50
URL: https://www.youtube.com/watch?v=DtmwtjOoSYU

KEYPOINTS

1. Short-term stress helps, chronic stress harms, and the right amount is 'stimulation'
Sapolsky describes two curves. Over time, acute stress brings benefits (escaping the predator, sharper focus for a presentation) and chronicity is 'downhill from there'; most modern stressors, like 20 years of traffic or an abusive boss, are clearly chronic. The other curve is an inverted U: too little challenge is boredom, too much is stress, and the optimum, which we pay for with scary movies and roller coasters, is stimulation.

2. The amygdala decides whether arousal feels like excitement or terror
A racing heart and fast breathing produce roughly the same brain activation whether the event is wonderful or awful. The one difference is whether the amygdala is recruited; when it is, the experience is counted as adverse. Sapolsky calls it the checkpoint for valence.

3. Testosterone doesn't cause aggression; it turns up the volume on existing tendencies
Give the number-three monkey in a five-monkey hierarchy lots of testosterone and he fights more, but only with numbers four and five; he keeps deferring to one and two. In the amygdala, testosterone raises firing rates only in neurons that are already active and shortens their after-hyperpolarizations. It lowers the threshold for provocation rather than creating aggression.

4. Behavior drives testosterone more than testosterone drives behavior
Sexual activity and aggression raise testosterone, while levels beforehand barely predict behavior. Raising an adult's testosterone by 30% has essentially no effect on sexual behavior. After castration, sex and aggression drop but not to zero, and how much remains depends on prior experience, so social learning carries much of the behavior.

5. The challenge hypothesis: testosterone rises when status is threatened
John Wingfield proposed that testosterone promotes whatever behaviors maintain status. In baboons that means aggression. In an economic game where status comes from trustworthiness, testosterone made people more generous. Sapolsky's conclusion is that the problem in a violent society is how much status it hands out for aggression, not testosterone.

6. Testosterone breeds confidence, and sometimes overconfidence
In economic games it makes people more confident and therefore less cooperative, cocky and impulsive. Sapolsky speculates that this kind of altered risk assessment fed miscalculations like those that started World War I. Testosterone and dopamine are intertwined: testosterone boosts energy, alertness and motivation within minutes (glucose uptake into muscle rises), which is why replacement can help aging men. Rats will lever-press to infuse testosterone into the range that optimizes dopamine release.

7. Prenatal hormones organize the brain; adult levels mostly act as an on-off signal
The ratio of the second to fourth finger reflects fetal androgen exposure. It is visible on fetal sonograms and in other primates, but samples of around 1,000 people are needed to detect effects. Huberman was an author, as a Berkeley master's student, on Marc Breedlove's paper on it. Hormone levels during development make a big difference; adult fluctuations matter little.

8. Estrogen protects the brain and blood vessels, but timing is everything
Estrogen boosts hippocampal neurogenesis and glucose and oxygen delivery, protects against dementia and reduces oxidative damage to vessels, whereas testosterone worsens these. A large NIH trial of postmenopausal estrogen was stopped after it showed more cardiovascular disease, stroke and dementia. Sapolsky's explanation is that women started estrogen only after menopause was complete, by which time receptor patterns had shifted. Monkey studies that simply maintained ovulatory levels showed protection.

9. Control and predictability buffer stress, but only within narrow limits
A rat that thinks its lever reduces shocks gets fewer ulcers, even if the lever is disconnected. A warning light 10 seconds before a shock helps; one second before does nothing, and two minutes before makes things worse. A sense of control helps with mild to moderate stressors but adds guilt after catastrophes, so telling a refugee or someone with terminal cancer to 'take control' is, in his words, privileged heartlessness.

EXAMPLES

1. Voluntary versus yoked running wheels
One rat runs by choice; a second is forced to run whenever the first does. With identical muscle work, the first gets the benefits of exercise and the second the harms of severe stress. Sapolsky bets the yoked rat's amygdala is far more active.

2. Marathon winners whose testosterone falls
1980s studies found that a winner who finished three minutes slower than expected showed falling testosterone, while the 73rd-place finisher who expected to collapse by mile three had a large rise. Interpretation, a prefrontal cortex function, drove the hormone response.

3. Endocrine disruptors are real but unresolved
Sapolsky considers falling sperm counts and testosterone a real phenomenon, citing work such as Tyrone Hayes's frog studies and shrinking testicle size in crocodiles. Which toxins are responsible, at what doses, and whether the declines are large enough to matter remain open questions.

4. Baboon fieldwork and deep thinking
Sapolsky did about 90% of his insightful thinking during three months a year in an East African park, without electricity or

phone calls, sometimes going 12 hours without speaking.

OTHER RELEVANT

1. Pick a stress practice you actually like and do it almost daily

Meditation, mindfulness, exercise, prayer and gratitude all work on average, but only if the practice doesn't make you want to scream after 10 seconds. It needs about 20–30 minutes daily or every other day, not just weekends.

2. Deciding your well-being matters gets you 80% of the way

Sapolsky applies the 80/20 rule: carving out daily time is most of the benefit, just as depressed patients improve after merely booking an appointment. Be wary of anyone claiming their method is scientifically proven to beat the others.

3. Choose outlets and support carefully

Displacement aggression, taking stress out on someone weaker, does lower stress responses and causes much of the world's misery. Mistaking acquaintances for real support, or demanding support without giving it back, backfires.

4. Without free will, change is still possible

Sapolsky argues there is no room for free will, a view he develops in his book Determined: every behavior traces back to seconds-ago sensory input, hormones, fetal environment, culture and evolution. You can't change yourself by will, but circumstances, including learning that change is possible or reading about figures like Nelson Mandela, can change your brain toward optimism.

Understanding & Conquering Depression

Date: 2021-08-23 · Duration: 2:02:02
URL: https://www.youtube.com/watch?v=Xu1FMCxoEFc

KEYPOINTS

1. Major depression is common, disabling and different from feeling down
Huberman separates major (unipolar) depression from bipolar depression, which gets its own episode. Major depression affects about 5% of people and is the fourth leading cause of disability. Signs include grief, a newly low threshold for crying, guilt and anhedonia, where food, sex, exercise and socializing feel flat. He urges listeners to take any warning signs to a professional rather than diagnose themselves.

2. 'Anti-self confabulation' distorts how depressed people see their own progress
Like a person with dementia inventing stories about where they've been, a depressed person may tell themselves stories in which they are failing despite clear evidence otherwise. His example is an injured athlete who insists they are getting weaker while their physical therapist sees real improvement. The athlete explains it away by saying the parking lot was rearranged.

3. Depression also shows up in the body, in sleep and in cortisol
So-called vegetative symptoms run below conscious thought: constant exhaustion, waking at 3–5 a.m. and being unable to fall back asleep, disrupted sleep structure (slow-wave sleep normally comes before REM), and reduced appetite. One physiological signature is a cortisol peak that shifts from morning to around 9 p.m.

4. Three neuromodulators map onto different symptoms
He links low norepinephrine to lethargy and slowed movement, low dopamine to lack of motivation, and low serotonin to grief and shame. Drugs that mainly boost dopamine and norepinephrine avoid serotonin side effects but can cause anxiety or be habit-forming. Emotional and physical pain overlap through substance P, and substance P inhibitors have helped some depressed patients.

5. SSRIs make serotonin work better but do not create more of it
By blocking reuptake, drugs such as fluoxetine leave serotonin in the synapse longer. About two-thirds of people get some or full relief, while roughly one-third get none. The two-week delay before benefits appear suggests the drugs work through plasticity, either by forming new neurons in the hippocampus's dentate gyrus or by reopening critical periods, as Lamberto Maffei's group in Pisa showed in animals.

6. Hormones and repeated stress raise the risk
About 20% of people with major depression have low thyroid hormone, and psychiatrists sometimes prescribe thyroid medication. Childbirth, certain phases of the menstrual cycle and menopause also raise risk, so he suggests a blood panel that includes thyroid and cortisol. Risk climbs with each long bout of stress, especially after four to five, often surfacing months after a breakup or a hard stretch at school or work.

7. Genes such as 5-HTTLPR make depression more likely after stress, but don't guarantee it
Large studies, starting in New Zealand, found that people with certain versions of the serotonin-transporter gene 5-HTTLPR can become depressed after one or two major stressors instead of four or five. That makes learning to manage stress especially important for anyone with a family history.

8. Inflammation diverts tryptophan away from serotonin
Chronic stress raises inflammatory signals such as IL-6, TNF-alpha and CRP. These push the enzyme IDO to turn dietary tryptophan into kynurenine and then into quinolinic acid, which damages neurons and promotes depression. Lowering inflammation lets more tryptophan become serotonin. He suggests the late-night carb cravings common in depression may be an attempt to get more tryptophan.

9. Ketamine and psilocybin both seem to act through plasticity in cortical layer 5
Ketamine blocks the NMDA receptor, which puzzles him because NMDA activation normally drives plasticity. Yet a 2019 Science paper with Liston as senior author showed ketamine relieves symptoms by growing dendritic spines in the prefrontal cortex. Psilocybin acts at serotonin 5-HT2A receptors and may broaden lateral connections in layer 5. Ketamine works by distancing people from their experience, while psilocybin works by immersing them in it.

EXAMPLES

1. A 21-year-old caught in the pleasure–pain balance
Using Anna Lembke's model, Huberman describes a young man whose heavy use of video games and other high-dopamine activities left him needing hours of play just to feel okay. Everything else lost its appeal, a state experienced as depression and anhedonia. He is now in treatment to reset that system.

2. EPA matches SSRIs in many trials
Many studies find that at least 1,000 mg/day of EPA relieves symptoms about as well as SSRIs and can lower the dose of fluoxetine people need, for example from 40–50 mg. 2 g seemed to work even better. For heart health, studies suggest about a 9% improvement per gram of EPA. He notes his Scandinavian relatives take cod liver oil and eat fatty fish, especially in winter.

3. Creatine in a 2012 American Journal of Psychiatry trial
In a randomized, double-blind, placebo-controlled trial, creatine monohydrate boosted SSRI response in women with major depression. Other studies used 3–5 g, sometimes up to 10 g, per day and found greater phosphocreatine activity in the forebrain, possibly tied to NMDA receptors. Creatine has also worsened mania in people who were already manic.

4. JAMA Psychiatry psilocybin trial, May 2021

In a randomized trial by Johns Hopkins researchers including Matthew Johnson, Roland Griffiths and Patrick Finan, 50–71% of patients improved significantly after psilocybin-assisted therapy, depending on how long remission was tracked. Doses were about 20 or 30 mg per 70 kg of body weight, given in two sessions weeks apart. Whether the trip felt good or bad mattered surprisingly little, and microdosing doesn't appear comparable.

5. The ketogenic diet borrows from epilepsy treatment

Keto reduces seizures in many children with epilepsy by raising baseline GABA and shifting the balance between GABA and glutamate. Researchers are now studying it for keeping mood stable in both bipolar and major depression. He contrasts this with alcohol, which also boosts GABA but leaves the brain over-excitable as it wears off.

OTHER RELEVANT

1. Protect your dopamine baseline

Avoid repeatedly chasing huge dopamine spikes from activities or substances. If the system needs resetting, Lembke's approach is a 30-day complete break, followed ideally by not going back, especially with drugs.

2. Train the norepinephrine system

Deliberate cold showers, alerting breathwork and exercise keep the norepinephrine system tuned. He admits they won't cure major depression and that depressed people often lack the energy to do them.

3. Build a low-inflammation baseline

Get at least 1 g of EPA a day, checking the EPA amount on the label rather than total fish oil, and do 150–180 minutes a week of zone 2 cardio. Muscles that work rhythmically pull kynurenine away from the brain. He takes 1–2 g of EPA himself.

4. Never stop prescribed medication on your own

Supplements such as EPA and creatine may work alongside medication. Raise them with your doctor rather than swapping them in for prescribed drugs. Ketamine and psilocybin should only be used legally under clinical supervision.