

NOTE: There is more information in this handout than can be covered in the live version of this presentation. My aim is to spend as much time in person with you explaining the concepts in a compelling and interesting way while this handout is meant to be a useful resource as you are inspired to further study after the presentation.

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### 1) This is Your Brain on Self-Control

- Our system of self-control (our pre-frontal cortex) is slapped on top of our old system of urges and instincts.
- Blood flow to Pre-Frontal Cortex increased through meditation (practical: 5-minute meditation exercise)
- Fight-or-Flight stress response is an energy management instinct
- A tale of two threats: Tiger vs. Cheesecake
- Heart Rate Variability – more variability linked to better self control (practical: 4-6 breaths per minute for 2 minutes) Trains the ability of the body to shift to “pause-and-plan” rather than “fight-or-flight”
- Sleep Deprivation => cells can’t absorb glucose effectively => crave sweets/caffeine => Pre-Frontal Cortex gets less fuel PFC bears the brunt of the energy crisis. PFC impaired >> loses control over other brain regions. *(see DEEPER DIVE below for additional details)*
- Diet-Soda (or any non-caloric sweetener) – promises the brain a sugar rush that never comes
- The Self-Control Muscle – like any muscle, overuse it and it gets tired.
  - The energy required for self-control is high
  - Brain will “spend” when times are good and “save” when times are not
    - Drop in blood-sugar => health consequences/death => become increasingly driven by impulses and seek immediate gratification

### 2) The Willpower Muscle – training the self-control muscle without exhausting it

- When your willpower is running low, find renewed strength by tapping into your wantpower:
  1. How will you benefit from succeeding at this challenge?
  2. Who else will benefit if you succeed at this challenge?
  3. Imagine that this challenge will get easier for you over time if you are willing to do what is difficult now.
- When you find your biggest want power – the thing that gives you strength when you feel weak – bring it to mind whenever you find yourself most tempted to give in or give up.
- Choice architecture designed to manipulate people’s decisions is a controversial proposition. Some see it as restricting individual freedom or ignoring personal responsibility. And yet, **people who are free to choose anything most often choose against their long-term interests.** We may simply be too tired to act against our worst impulses. If we want to strengthen self-control, we may need to think about how we can best support the most exhausted version of ourselves – and not count on an ideal version of ourselves to show up and save the day.
- Train the Willpower Muscle – small challenges to build willpower resiliency
  - Examples:
    - Put jacket on with opposite arm first
    - Step into pants with opposite leg first

- brush teeth with opposite hand
- open bottle cap with opposite hand
- fold arms with opposite arm on top
- clap hands with opposite hand on top
- fold hands with opposite hand on top
- Your ideas:
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**3) When Progress is Dangerous: Moral Licensing** – when we assign moral significance to amoral areas of life, we set ourselves up to fail

- Moral Licensing = when you do something good, you feel good about yourself. This means you're more likely to trust your impulses which often means giving yourself permission to do something bad.
- Anything you moralize becomes fair game for the effect of moral licensing. If you tell yourself that you're "good" when you exercise and "bad" when you don't, then you're more likely to skip the gym tomorrow if you work out today.
- ...how we make most judgments of right or wrong. We have a gut response, and we only look to logic if we are forced to explain our feelings.
- When you feel like a saint, the idea of self-indulgence doesn't feel wrong. It feels right. Like you earned it.

**4) The Problem with Progress**

- We are all too quick to use progress as an excuse for taking it easy.
- Self-control success has an unintended consequence: It temporarily satisfies – and therefore silences – the higher self. Psychologists call this "goal liberation." The goal you've been suppressing with your self-control is going to become stronger, and any temptation will become more tempting.
- Progress can be motivating, and even inspire future self-control, but only if you view your actions as evidence that you are committed to your goal. (Ask: "How committed do you feel to your goal?" instead of "How much progress do you feel you made toward your goal?")

**5) The Brain's Big Lie: Why We Mistake Wanting for Happiness**

→ Dopamine is for action, not happiness.

- The promise of happiness – not the direct experience of it – is the brain's strategy to keep you hunting, gathering, working, and wooing.
- Checking our electronic devices compulsively...direct line into our brains, giving us constant jolts of dopamine.
- Because the pursuit of reward is dopamine's main goal, it is never going to give you a "stop" signal.
- When our reward system is quiet, the result isn't so much total contentment as it is apathy. It's why many Parkinson's patients – whose brains aren't producing enough dopamine – are depressed, not peaceful.
- We need the promise of reward to keep us interested and engaged in life.

- Separate the real rewards that give our lives meaning from the false rewards that keep us distracted and addicted. Learning to make this distinction may be the best we can do.
- Desire is neither good nor bad, what matters is where we let it point us, and whether we have the wisdom to know when to follow.

#### 6) **ANYTHING BUT SELF-FORGIVENESS**

- We first learned to control ourselves as children through parental commands and punishment. The brain's self-control system does not fully develop until young adulthood, and kids need extra support until it does. However, many adults treat themselves like they are still children – and act more like abusive parents than supportive ones. They criticize themselves whenever they give in to temptation or fail in their own eyes.
- Self-criticism is consistently associated with less motivation and worse self-control. Single biggest predictor of depression.
- Self-compassion is associated with more motivation and better self-control.
- Without the guilt and self-criticism, there's nothing to escape. This means it's easier to reflect on how the failure happened, and less tempting to repeat it.

#### Forgiveness When You Fail

(1) What are you feeling?

(2) You're only human – consider other people you respect who have also had a setback

(3) What would you say to a friend

- Brain's reward system did not evolve to respond to future rewards. A reward that was far off was irrelevant to survival.
- Immediate rewards – triggers the older, more primitive reward system and dopamine-induced desire.  
Future rewards – value is encoded in PFC, the PFC has to cool off the promise of reward.
- Keep some distance between you and the reward – if you see it, for example, it seems available now. If is available later, the PFC has a better chance of maintaining control.
- Wait Ten Minutes: When immediate gratification comes with a mandatory 10-minute delay, the brain treats it like a future reward. Before the 10-minutes are up, bring to mind the long-term reward that will come with resisting temptation.
- Marshmallow Test (1960's – Stanford psychologist Walter Mischel) – 4 year-olds got one marshmallow now, two if you wait 15 minutes. Those who did best took their eyes off the marshmallows and/or put some distance between them and the marshmallow.

One of the most puzzling but predictable mental errors humans make: We think about our future selves like different people. We often idealize them, expecting our future selves to do what our present selves cannot manage.

#### **DEEPER DIVE: Too Tired to Resist: Why Self-Control is Like a Muscle**

People who use their willpower seem to run out of it. If you try to control or change too many things at once, you may exhaust yourself completely. Self-control is like a muscle – when used, it gets tired.

Could willpower exhaustion simply be the result of the brain running out of energy? Low blood sugar levels turn out to predict a wide range of willpower failures. But why does the brain's increased energy consumption during self-control seem to deplete willpower so quickly? Brain is mostly dependent on a steady stream of

glucose circulating in the body's bloodstream. The first expense to be cut? Self-control, one of the most energy expensive tasks the brain performs.

Energy Budget Model: Brain treats energy like money – it will spend energy when resources are high, but save energy when resources are dropping.

*(Diet Soda sidebar: little-known effect of diet soda that contributes to hunger, overeating, and weight gain. The sweet taste tricks the body into taking up glucose from the bloodstream in anticipation of a blood sugar spike. You're left with less energy and less self-control, while your body and brain wonder what happened to the sugar rush they were promised.)*

Modern human brain may still be using blood sugar levels as a sign of scarcity or abundance in the environment. Way back when the human brain was taking shape, dropping blood sugar levels had less to do with whether you'd been using your energy guzzling prefrontal cortex to resist a cookie, and more to do with whether food was available at all.

A brain that could bias your decisions toward immediate gratification when resources are scarce, but toward long-term investment when resources are plenty, would be a real asset in a world with an unpredictable food supply. In times of food scarcity, early humans who followed their appetites and impulses had a better chance of survival. What appears in our modern world as a loss of control may actually be a vestige of the brain's instinct for strategic risk-taking.

*(Sibebear: Type 2 diabetes is for all practical purposes the same as chronic low blood sugar, because the brain and body cannot efficiently use the energy that is available. This is likely one reason people with uncontrolled diabetes show impaired self-control and deficits in prefrontal cortex function. )*

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**Funtensity is the practical application of brain science to fitness. It unites *fun* and *intensity* and consists of 4 components, one of which is willpower.** A full one-day Funtensity workshop is available providing 6 hours of CECs from ACE and will prepare attendees to understand willpower, motivation, practical, useful brain science, and how to create workouts and exercises using partner-driven, interactive yet still challenging exercise.

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