

The Psychology and  
Neuroscience of  
Sustainable  
Weight Loss

Susan Peirce Thompson, Ph.D.

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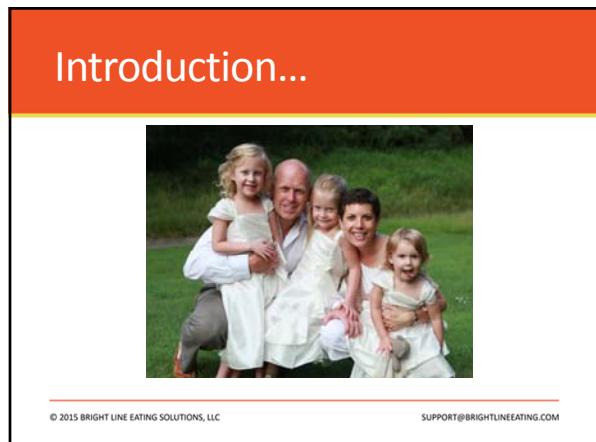
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## Introduction...

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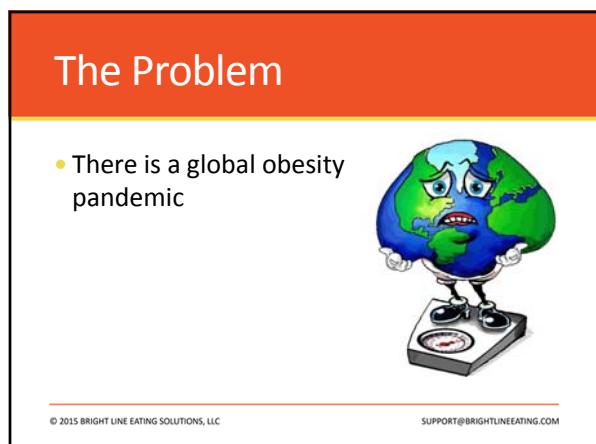
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## The Problem

- There is a global obesity pandemic



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# It's as Bad as You Think

- 2.1 billion people are overweight or obese
- In the USA, 108 million people are on a diet
- Obesity is now a bigger problem in developing nations than malnutrition
- China and India lead the world in numbers of overweight people
- The Middle East has the highest per-capita rates of Type 2 Diabetes – 40%
- 75% of people are dying prematurely from diet-related diseases

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## ...And Worse

- Over the next three years, a new McDonald's will be opening in China ***every single day***
- Over the next 20 years, we will spend an estimated \$47 trillion dollars on diseases caused by the Global Industrial Diet
- Over 99% who try to lose weight do not get slender and stay slender long-term

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## The Psychology and Neuroscience of Sustainable Weight Loss

1. How and why are so many millions being stymied in their weight-loss attempts?
2. Why can some people maintain a healthy weight, while others struggle?
3. What does it really take?

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# It's Not Just About Weight

- Plenty of slender people struggle with their eating too
- 17% of slender people qualify as full-blown food addicts
- We need a solution that addresses not just ***weight*** but ***food obsession***
- ***Happy, Thin, and Free!***

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## Question #1

- Question: How and why are millions of people being stymied in their weight-loss attempts?
- Answer: Their **brains** are blocking their attempts to lose weight
  - This happens in three main ways
  - To lose weight and keep it off, you must understand and work with your brain

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## #1 The Wiring of Willpower

- The first huge mistake that people make when they try to lose weight is they rely on their willpower

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## A Crash Course in Willpower

- 1998: The Radish Experiment



- Willpower is like a muscle that can be fatigued through use

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## How Does Willpower Work?

- Willpower is like a battery
- The things we do all day everyday deplete our willpower stores
  - Resisting temptations
  - Persevering on a task
  - Regulating emotional responses
  - Redirecting attention
  - Making decisions – (like checking email)
- We make an average of 119 food-related decisions each day

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## The Anterior Cingulate Cortex

- When willpower stores are depleted, activity in the anterior cingulate cortex slows down to a crawl



- Fueled by brain glucose

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## “The Willpower Gap”



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## An Illustration: The Legal System

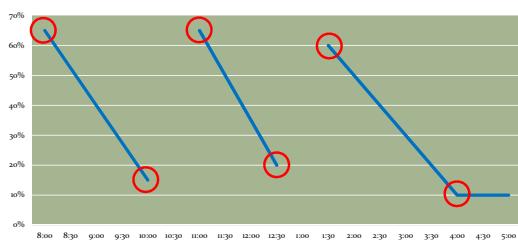
- Two schools of thought:
  1. Lady Justice is blind and impartial
  2. Justice hinges on "What the judge ate for breakfast"



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## The Minute-by-Minute Data



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# How Can You Know You're Depleted?

- Is there a way these judges could know they had run out of willpower?
  - Depressed? No.
  - Angry? No.
  - Unhappy? No.
- The effect of willpower depletion on behavior is large, but the effect on subjective experience is far more subtle

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# The Telltale Sign

- The telltale sign is that the volume on life feels like it's turned up
- Stronger reactions
  - A sad movie makes you sadder
  - A traffic jam makes you more frustrated
  - Ice-cold water feels more painful
  - Challenging life circumstances feel more catastrophic
  - Temptations pull more strongly

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## What Should You Do About It?

- Key #1:
- You must take the load off of willpower
- How?

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## A Curious Finding

- Roy Baumeister & colleagues developed an instrument to measure people's willpower
- Interestingly, the people who score the very highest on the instrument are also those who use their willpower the least

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## How Can This Be?

- They use their willpower *in advance* to avoid having to use it in the future
- They have **BRIGHT LINES**
  - Clear, unambiguous boundaries that you don't cross no matter what
  - Very effective at bolstering willpower
- They build **RITEAULS**

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## The Power of the Automatic Brain

- Did anyone here brush their teeth this morning?



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第二章 中国古典文学名著与现代文化

## The Emergency Action Plan

- Several activities have been scientifically shown to replenish willpower
  - Getting social support
  - Cultivating gratitude
  - Meditation
  - Prayer
  - Sleep

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## Armed With This Science...

- ....we can evaluate conventional wisdom when it comes to weight loss
- Q: Does this advice TAX willpower or take the load OFF of willpower?

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## Example #1

- Meal timing and frequency
- “Eat several small meals throughout the day”
  - “Keep your metabolism revving”
    - Fallacy
  - Don’t let your blood sugar drop
    - Fallacy

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## The Straight Scoop

- The big problem with eating many small meals throughout the day, or grazing nonstop, is that it taxes your willpower **ALL DAY LONG**
- Interferes with automaticity 



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## Example #2

- Exercise
- Exercise is pretty useless for weight loss
- Eating right is critical for weight loss
- Exercise burns up willpower



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## My Exercise Recommendations

- Exercise is incredibly healthy in just about every way
- Just don't start exercising at first
- Wait until rock-solid habits of healthy eating have become automatic

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## Recap:

1. How and why are so many millions being stymied in their weight-loss attempts?
  - Their brains are blocking their attempts to lose weight
    - #1 Willpower
    - #2 Cravings

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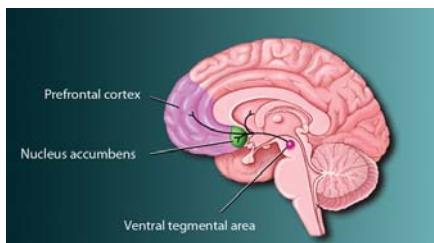
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# Cravings

- Dopamine / Reward Pathway
- MOTIVATION

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## Key #2:

- Stop flooding the brain with dopamine

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## Recap:

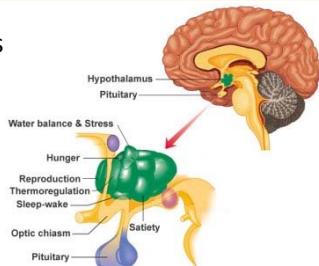
1. How and why are so many millions being stymied in their weight-loss attempts?
  - Their brains are blocking their attempts to lose weight
    - #1 Willpower
    - #2 Cravings
    - #3 Hunger

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# The Source of Hunger

- The hypothalamus
  - Hormones



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## The Role of Leptin

- Leptin is a hormone that is secreted by our fat cells
  1. I'm not hungry
  2. I feel like exercising



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### Key #3:

- Lower insulin levels

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## Question:

- What floods the brain with dopamine?
- What raises insulin levels?

- SUGAR
- FLOUR



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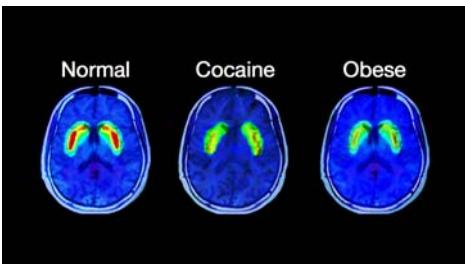
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## PET Scans of Dopamine



Normal      Cocaine      Obese

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## The Smoking Gun



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# The Psychology and Neuroscience of Sustainable Weight Loss

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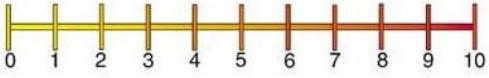
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## The Susceptibility Scale



1/3            1/3            1/3

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• Animal data  
• Human data

- 56% obese women / 43% obese men
- 30% overweight
- 17% lean

1/3

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## Implications

- One size does NOT fit all
- People survey the landscape from their own vantage point
- A sensible eating plan might work really well...if you could stick with it
- But 1/3 of the population is high on the Susceptibility Scale and disproportionately sabotaged by the willpower gap, hunger, and cravings

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## Question:

- WHY are some people high on the Susceptibility Scale while others are low?
- What causes this difference?

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## Answer:

- Some people are naturally more sensitive to the cues that predict rewards
- This is true in rats as well
- To illustrate...

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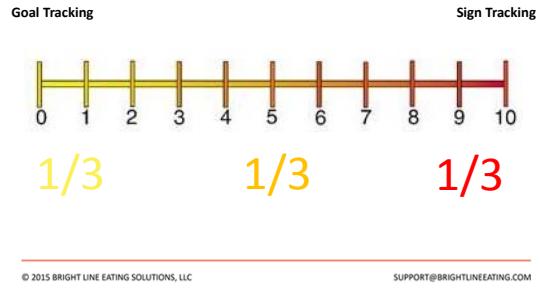
## Goal Trackers vs. Sign Trackers



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## The Results

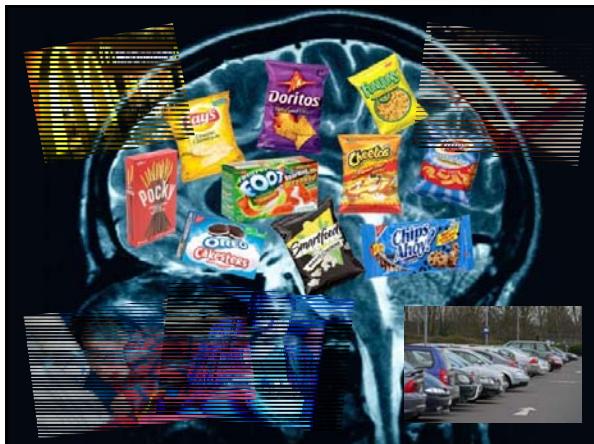


## Why?

- What causes some rats to be especially sensitive to the cues that predict rewards?
  - Genetic
  - Environmental

## Think About This...

- What are the implications of having a brain that is especially sensitive to the cues that predict food rewards in our society?



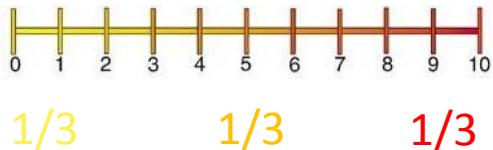
## Our Outline

1. How and why are so many millions being stymied in their weight-loss attempts?
2. Why can some people maintain a healthy weight, while others struggle?
3. What does it really take?

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## The Susceptibility Scale



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## It Depends

- For people who are low on the Susceptibility Scale, conventional wisdom might work (emphasis on “might”)
  - Reduced calories (as opposed to cutting out highly processed foods)
  - Exercise
  - “Cheat day”
  - Many small meals

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## For People Who are Higher

- Conventional wisdom is likely to backfire entirely
- Get the brain on board
- An integrated system:
- ***BRIGHT LINE EATING***
- Five brain-based suggestions for weight-loss success

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# The Basics

- Develop a regimen
  - Increase your willpower stamina
- Eat for sustained blood glucose
- Build in habits and automaticity
- Take the load off of willpower as much as possible

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## Suggestion #1:

## 1. Stick to Bright Lines

- No sugar
- No flour
  - Stabilize blood glucose (avoid willpower crashes)
  - Lower insulin to get leptin on board
  - Let dopamine receptors repopulate

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## Suggestion #2

## 2. Have a food plan

- Shrinks the 119 decisions to a more manageable number
- A good food plan includes both categories & quantities for every meal

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## Suggestion #3

### 3. Plan ahead

- Props up willpower by reducing on-the-fly choices when you may be depleted
- Makes the right thing to eat the easiest thing to eat

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# The #1 Thing You Can Do

- Write down your food the night before

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## Suggestion #4

#### 4. Engage in regular monitoring

- Nightly checklist sheet
- Little book by the fridge
- Graph paper by the scale

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## Suggestion #5

5. Have an Emergency Plan that you can activate in times of temptation

- Social Support: Call or text a friend
  - Join a community!
- Meditate
- Pray
- Get grateful
- Sleep

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## Five Actions to Rewire Your Brain for Success

- Stick to Bright Lines
- Have a food plan
- Write down your food the night before
- Continuously monitor your actions and your progress
- Have an emergency plan written down that you can activate when you get tempted

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# Pat Reynolds



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# Pat Reynolds



FOUND OUT  
1. HAD CANCER 4-14-06

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## Pat Reynolds



第二步：在“我的电脑”或“我的文档”中右键单击“我的公文包”，选择“发送到”→“桌面快捷方式”。

更多資訊請上網查詢：[www.104.com.tw](http://www.104.com.tw)

## Teresa Stawicki



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## Teresa Now



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# Linden Morris DelRio

The image consists of three separate photographs of a woman with short, light-colored hair, smiling and holding a small, dark object in her hands. She is wearing a patterned top in the first photo, a light-colored cardigan over a white top in the second, and a green tank top over a white top in the third. The background in all three photos shows a kitchen environment with various items like a yellow bowl, a red cloth, and a lamp visible.

# What Makes Weight Loss Truly Sustainable

- **IT GETS EASIER**
  - Insulin levels come down and leptin gets on board
  - Dopamine receptors replenish and cravings reduce
  - Willpower becomes more resistant to depletion
  - Habits become automatic

## Self-Perception Theory



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## Spread the Word...

- Refined foods are truly, physiologically addictive
- There is a Susceptibility Scale: Some people are more susceptible to their addictive pull than others

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## Spread the Word...

- Complete abstinence from sugar & flour is a viable and empowering choice for many
- Bright Lines work for eating like they work for smoking
  - Should be supported and respected
  - Just like the choice to not drink or smoke is supported and respected

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## Don'tcha Think?

- We can and should upgrade our social norms for expected foods at birthdays, holidays, restaurants, and public venues
  - We are paying the price
    - Obesity
    - Chronic diseases
    - Lethargy
    - Low self-esteem
    - Financial devastation

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# Q & A TIME

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