

Addressing Obesity and Other Diet-Related Diseases

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Main Points

- **Obesity and diet-related chronic diseases are a consequence of the food environment**
- **The food environment should be regulated to protect the population**

Popular Understanding of Dietary Behaviors Focuses on the Individual

- **Diet is the sole result of an individual's conscious choices**
- **Overweight people lack willpower**
- **Adults should be able to ignore or resist the temptation to overeat**

Dramatic Changes Have Occurred in the Food Environment Over the Past 30 Years

- **Relative decrease in cost of food**
 - Today: 9 % of income spent on food
 - 1971: 13 % spent on food
- **Increase in food availability – and “cues” to eat**
 - Advertising, number of food outlets, vending machines, availability of food in non-food outlets
- **Larger portion sizes since 1970s**
 - Currently 2-5 times recommended amounts
- **Growing sophistication of marketing**
 - Eye-tracking technology, MRI, “atmospherics”

***How does too much food
make us eat too much?***

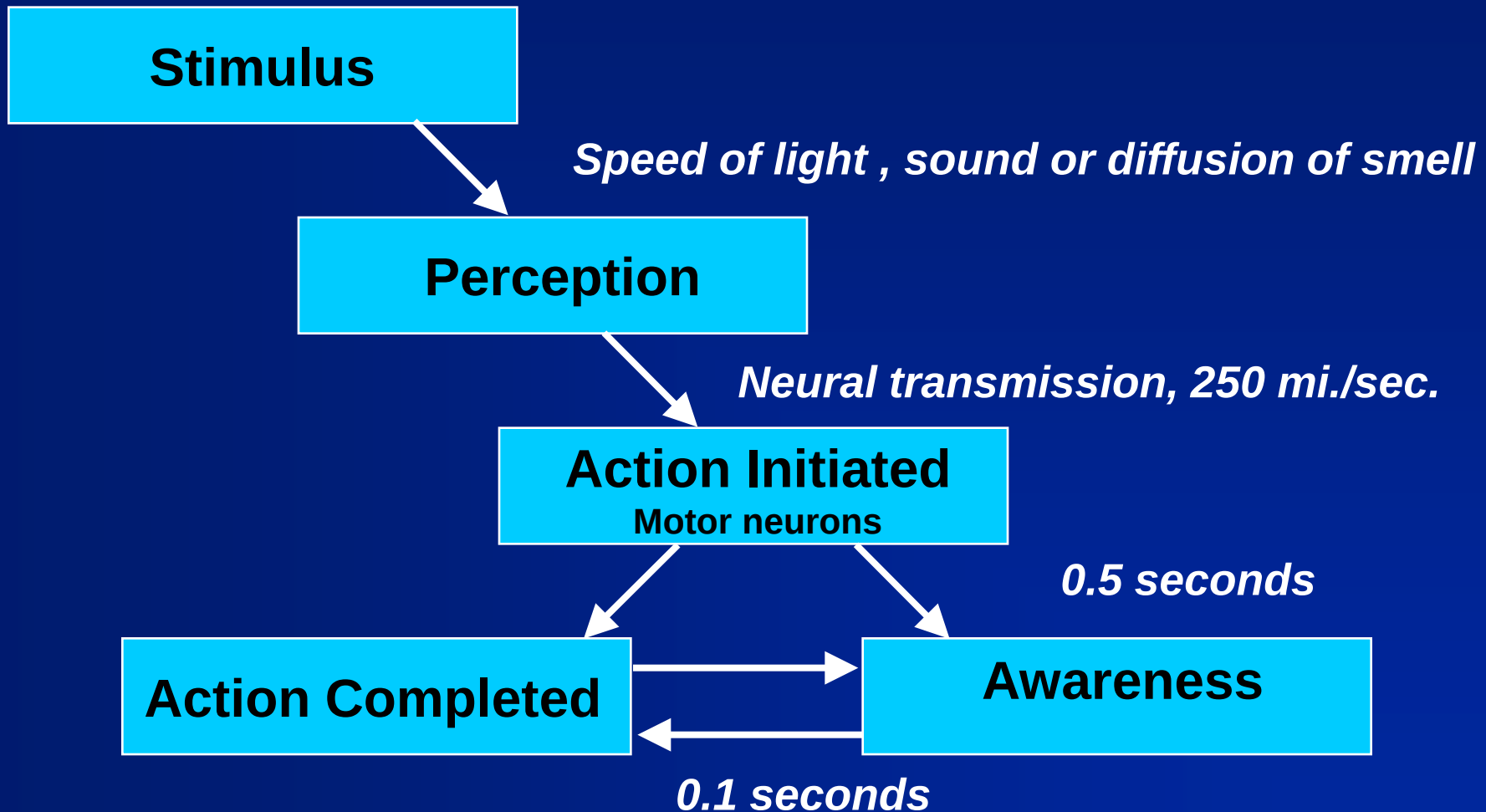
Eating is An Automatic Behavior

Automatic behaviors do not require conscious direction

- Lack of awareness**
- Lack of intent**
- Lack of effort**
- Lack of control, meaning the inability to stop if we choose**

Automatic behaviors do not have to be automatic all the time; Whether they are automatic or consciously controlled depends on environmental context.

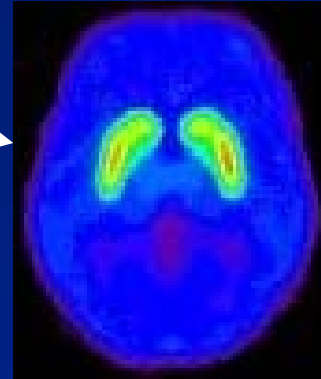
We Cannot Ignore Our Surroundings



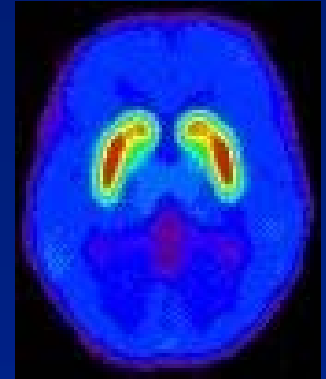
Food Makes Us Hungry



Food



Neutral

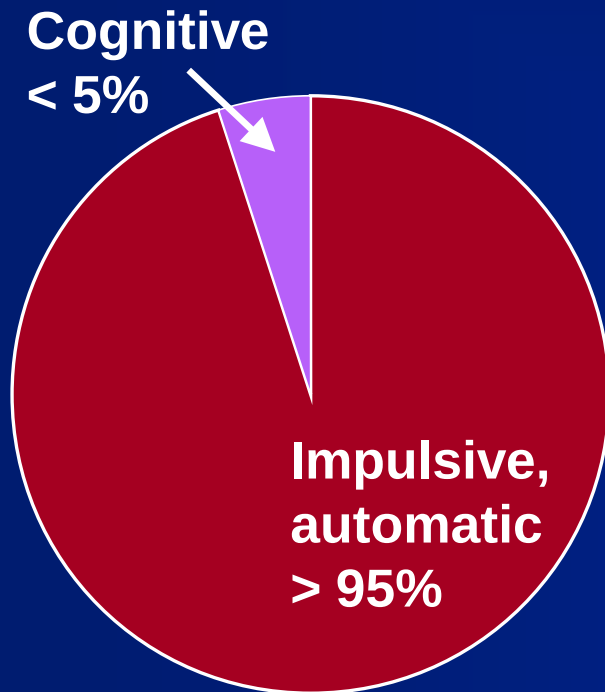


- Dopamine automatically secreted in response to food cues (and novelty)
- Brain dopamine is a powerful motivator, creating the desire to obtain the food and eat
- The pathways activated by food are the same ones responsible for addiction

Volkow ND. This is your brain on food.
Interview by Kristin Leutwyler-Ozelli. *Sci Am.* Sep 2007;297(3):84-85.

People Have Limited Cognitive Capacity

Brain Processes



- We can think about only one thing at a time
- Everything else functions automatically
 - Humans can process 40-60 bits per second
 - But entire processing capacity (including visual system and unconscious) can process ~11 million bits per second
 - Most actions and decisions are NOT consciously directed

Source: Dijksterhuis A, et al The Unconscious Consumer: Effects of Environment on Consumer Behavior. *Journal of Consumer Psychology* 2005;15(3):193-202.

The Brain Relies on Shortcuts Called “Heuristics”

- **Simple, efficient rules, hard-coded by evolutionary processes which have been proposed to explain how people make decisions, come to judgments, and solve problems-- “shortcuts”**
 - **Sugar and fat**
 - **Brands**
 - **Prices**
 - **Salience**
 - **What other people do**
 - **Appearance/ color/ size/ shape**
- **Whether we use heuristics or analytic processing depends on the environmental context**

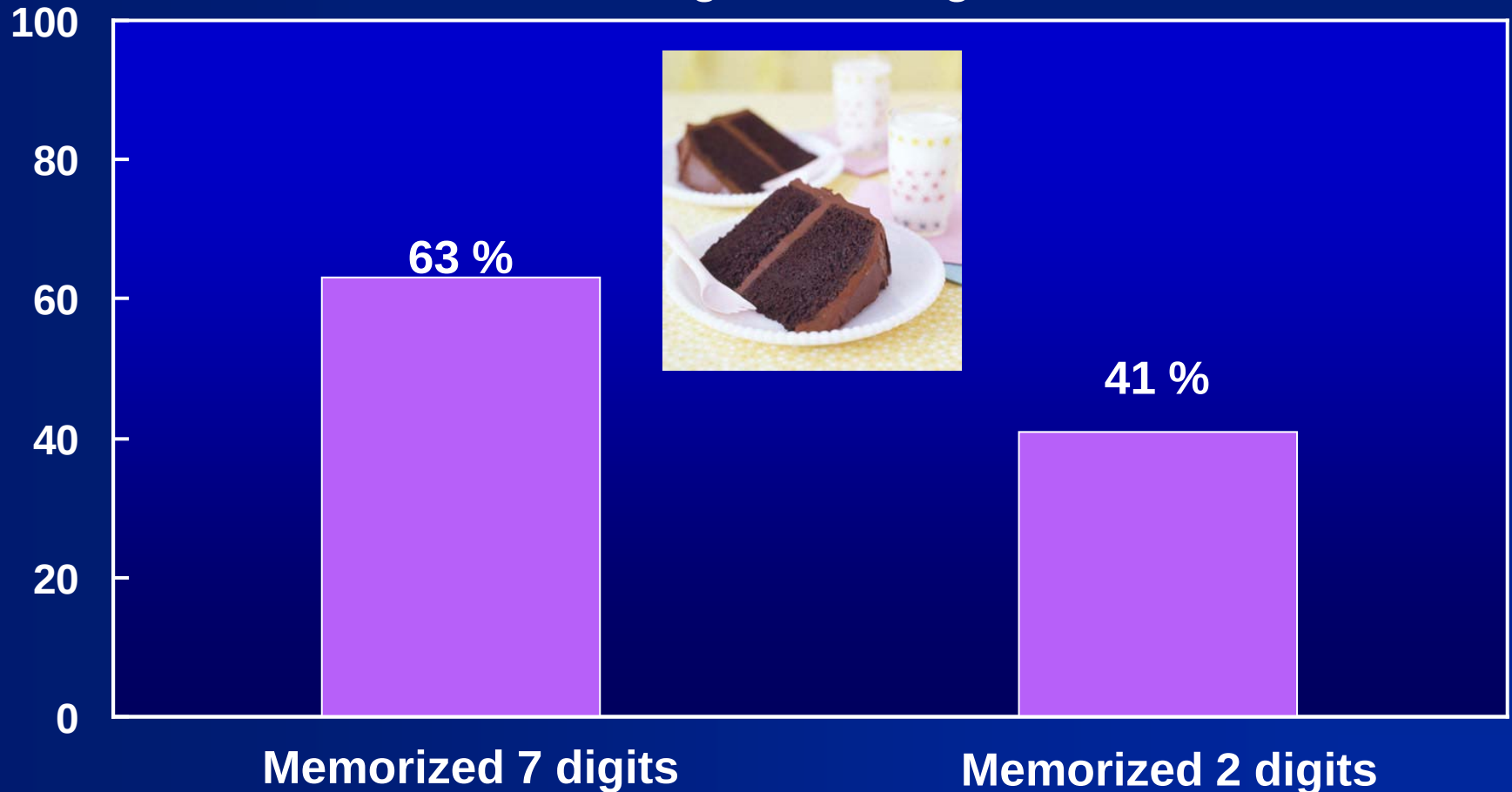
Fruit Salad or Chocolate Cake?

- Study participants asked to choose snack
- Before choosing snack
 - First group memorized 2-digit number
 - Second group memorized 7-digit number



Limited Processing Resources Lead to More Cake

Percentage Choosing Cake



Decisions are Context Dependent

- **Decision errors are widespread and predictable. Choices are not always rational; influenced by framing and context**

- **Order**
- **Comparisons**
- **Whether outcomes are losses or gains**

Source: Kahneman D. A perspective on judgment and choice: mapping bounded rationality. *Am Psychol.* Sep 2003;58(9):697-720.

Chocolate Chip Cookie or Yogurt?

Time Horizons Affect Choice



N=160

Choose Cookie

Select one

47.5%

Same choice next week

70.0%

Yogurt next week

90.0%

People are optimistic about exerting self-control in the future

How Do Food Outlets Make Us Eat Too Much?

- **Atmospherics- (1970's– Phil Kotler)**
 - **Engineering of displays, lighting, crowding, layout, scent, music, etc. to influence consumer purchases**
 - **Promote impulsive, automatic responses, without awareness of influences**

Doubling shelf space increases sales by 40%



Source: Curhan RC, 1972



End aisle
display
increases
sales 2-5
fold

Portion Sizes and Variety Play a Role in How Much People Eat

- When offered the largest portion rather than the smallest portion, subjects consumed 30% more calories
- Larger portions led to greater calorie intake regardless of serving method and subject characteristics
- People consume more when offered more variety



or



or



Other Environmental Influences

(Priming)

- Music influences purchases:
 - People at restaurant playing classical music (compared to those listening to pop or no music)
 - spent more money
 - ordered more appetizers and coffee
 - ordered more desserts *



TV Commercials Influence What People Eat Without Awareness (Priming)

- **Children watching TV with food commercials ate 45% more goldfish crackers than those watching the same show with non-food commercials**



Multiple Mechanisms Lead People to Consume Too Much Without Awareness

- **Conditioning**
- **Mere exposure conditioning (product placement)**
- **Automatic stereotype activation**
- **Mimicry**

**People cannot control what
they are not aware of!**

Most People Lack the Capacity to Compensate

- If people eat too much at one meal they don't naturally eat less at subsequent meals
- People cannot accurately recall what and how much they ate in the past 24 hours (under-report by 25-32%)
- People cannot accurately judge volume; we tend to underestimate
- People tend to automatically choose foods of poorer nutritional quality when they are distracted or overwhelmed

Summary

- Strong evidence indicates the environment influences eating behaviors in a causal fashion
- People are often unaware of the causes of their excessive eating and they cannot avoid exposure to these causes

Limited Portfolio of Interventions

- Menu calorie-labeling
- Guidelines for food at school
- Taxes
- Advertising regulations/guidelines (for children)
- Incentives to sell fruits and vegetables, add supermarkets

We Need to do MUCH MORE!

- 1) Stop blaming individuals**
- 2) Regulate the food environment**
- 3) Adapt effective policies used for tobacco and alcohol control**

EXPAND CURRENT POPULATION STRATEGIES

Regulations that Control Tobacco Use

- **Restricting places where smoking is allowed (clean air laws)**
- **Reducing tobacco accessibility (removing vending machines, placing machines behind counters)**
- **Taxing cigarettes**
- **Media campaign against the tobacco industry**
- **Frequent cues reminding people not to smoke**

Alcohol Control Policies Are More Promising

- Licensing alcohol outlets
- Limiting alcohol outlet density
- Limiting hours of operation
- Prohibiting alcohol specials (e.g. 2 for 1)
- Prohibiting “all you can drink”
- Portion control (0.6 oz/drink)
- Alcohol taxes
- Banning drive-up window sales
- Social reference pricing
- Controls on displays
- Limiting sales of alcohol by age

Restaurants Need to Be Regulated for Chronic Disease Prevention

- **Most menu choices currently increase the risk of or exacerbate chronic diseases**
- **Restaurant staff not required to have any nutrition expertise**
- **Default choices should be healthy choices**

Potential Regulations for Chronic Disease Prevention

- **Standardized portion sizes**
- **Standardized menu designs and labels**
 - **Develop order, designate where foods located**
 - **Make healthiest choices most salient**
 - **Highlight risks/benefits**

Require All Restaurants to Have at Least One Choice That Won't Increase Chronic Disease Risks

- **“Ideal Meal” Combo– supplies $\frac{1}{4}$ - $\frac{1}{3}$ of daily nutrient requirements for average person:**
 - **1 cup fruit,**
 - **1.5 cups vegetables,**
 - **< 3 oz meat or meat equivalent,**
 - **1-3 oz whole grain,**
 - **$\leq 30\%$ fat, $\leq 10\%$ saturated fat, $\leq 500\text{mg}$ sodium, ≤ 650 calories + available in 500 calories as well**

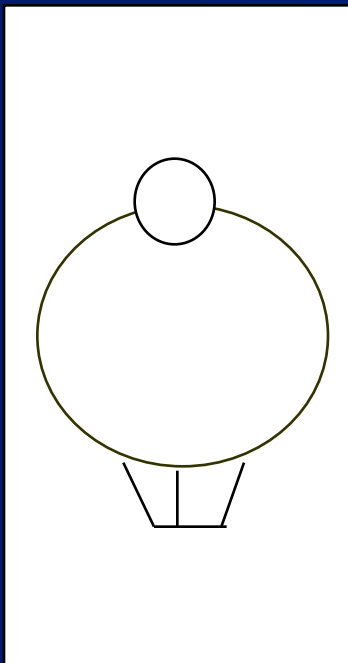
(Less than 50% of restaurants have non-fried vegetables on menu, <12% have fruit*)

*Saelens BE, Glanz K, Sallis JF, Frank LD. Nutrition environment measures study in restaurants (NEMS-R) - Development and evaluation. Am J Prev Med 2007;32(4):273-81



Front of Package Labeling Could Be Promising

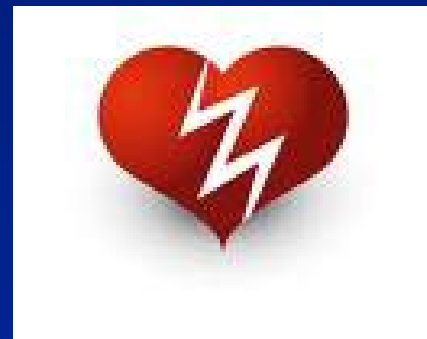
Use easy to understand icons and symbols to convey risks and benefits, like energy savings symbols



Balanced meal



**Increases risk
of hypertension**



**Increases risk of
heart disease**

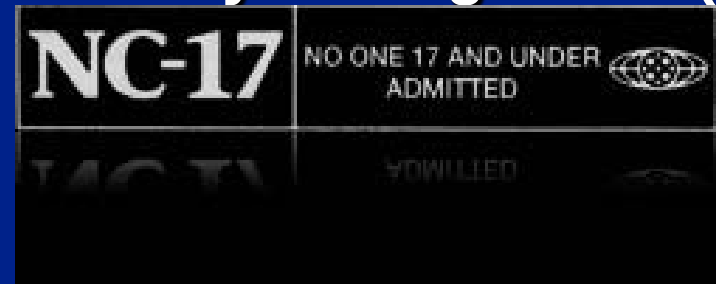
**Increased risk
of obesity**

RAND

Officially Classify “Junk Food” as Unhealthy Impulse Food and Restrict It

- IOM recommends removing foods that are > 35% fat, > 10% Saturated fat, >35% sugar, snacks > 200 cal/portion from public schools

- Why not restrict access in community settings too? (like alcohol for underage youth)



- Restrict placement of “impulse” buys near cash registers, end aisles, special displays

License Food Outlets and Implement Density Restrictions

- Prohibit non-perishable foods to be sold without a license (hardware stores, bookstores, car washes, vending machines in office building)
- Reduce access to most problematic foods: salty snacks, candy, sweetened baked goods, sugar-sweetened beverages



Media Campaigns

- Initiate “Truth”-style campaign about food marketing
- Negative messages make people more alert and thoughtful
- Reinstate the Fairness Doctrine to counter TV food commercials



British Heart Foundation Crusade, 2006



**“What goes into crisps goes into you.
Some crisps contain 33% cooking oil...”**

NYC Campaign Against Soda



ARE YOU POURING ON THE POUNDS?

DON'T DRINK YOURSELF FAT.

Cut back on soda and other sugary beverages.
Go with water, seltzer or low-fat milk instead.



Department of
Health & Mental
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Develop New Business Models for Supermarkets/Groceries

- Display foods so automatic choices are healthy choices
- Manage shelf space
- Limit displays targeting children
- Prohibit impulse marketing strategies for problematic foods



Reframe Dietary Choices as Not Solely a Matter of Personal Responsibility

- People are designed to overeat: typically eat without conscious direction and often make choices without conscious deliberation
- Unlikely that people are less responsible than 30 years ago; the changed environment overwhelms us
- Most people do not want to be overweight; among those who are, most have tried to lose weight unsuccessfully
- People are trying as best they can
- We overestimate individual capacity
- We underestimate environmental influences

What Works?

- **Most options not attempted or evaluated**
- **Much uncertainty about potential effect**
- **We need to expand the portfolio of control options**
- **More than one policy likely necessary to stop obesity and other chronic diseases**

Conclusion

- **We cannot change people's automatic responses to the environment and we cannot ignore the environment**
- **The environment is the source of health and illness**
- **Changing food availability, salience, and countering food cues may be more promising than expecting people to resist the environment on their own.**