How Are People Influenced to Eat Too Much Without Awareness?

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Outline

• Human “wiring”
• How marketers exploit human wiring
• “Atmospherics” and Proximal Cues
• The relevance of alcohol control policies in addressing marketing tactics;
• Using marketing strategies to control obesity
Popular Understanding of Human Eating Behavior is Incorrect

- Obesity is the result of an individual’s conscious choices
- Adults should be able to ignore or resist the temptation to overeat

Most Behaviors, Including Eating, are Automatic

Automatic behaviors do not require conscious direction
(To be considered automatic, it doesn’t have to be automatic all the time)

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

(Bargh, 1994)
People Cannot Easily Ignore External Stimuli

- People reflexively respond to external sensory stimuli:
  - orient gaze to visual stimuli
  - turn toward auditory and olfactory stimuli
- People pay more attention to novel stimuli
- We also pay more attention to negative stimuli/warnings

Dijksterhuis, 2002

Behavior Is Typically Caused by the Environment & Initiated Before Conscious Awareness

- Stimulus
  - Speed of light
  - Perception
    - Neural transmission, 250 mi./sec.
    - Action Initiated
      - Motor neurons
        - 0.5 seconds
      - Action Completed
        - 0.1 seconds
  - Awareness

Source: Libet B et al., 1991
People Have a Limited Cognitive Capacity

- 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

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

**Food Makes Us Hungry**

- 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.*

**Seeing + Convenience Creates Desire**

- Secretaries ate 46% more Hershey’s kisses when the candy was placed on desks in clear jars than when in opaque jars
- They ate 2.2 more chocolates per day when candy was placed on desk than when it was placed across the room


**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

Source: Shiv B, Fedorikhin A 1999

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**Limited Processing Resources Lead to More Cake**

<table>
<thead>
<tr>
<th>Percentage Choosing Cake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memorized 7 digits</td>
</tr>
<tr>
<td>Memorized 2 digits</td>
</tr>
</tbody>
</table>

Source: Shiv B, Fedorikhin A 1999
Implications

“……any factor that reduces the availability of processing resources in the shopping environment is likely to increase impulse buying by consumers. Marketers of … could therefore benefit from actions designed to constrain processing resources such as having distracting music or displays …

Another tactic … is to reduce the checkout time so that consumers deliberate less about what is in their shopping carts and end up leaving the store with products they chose on impulse.”

Ability To Use Analytic Processing Increases with Age

- a) Children use heuristic reasoning, like adults
- b) Competencies to inhibit heuristic reasoning improve from childhood to adolescence,
- c) Despite these improvements, most adolescents still use heuristic processing (as do adults).
- d) Youth don’t have better judgment than adults.
- e) They acquire more biased judgment strategies as they develop (increase knowledge of stereotypes) and use them inappropriately, like adults.

Jacobs and Klacynski, 2002
**Context Influences Choices**

- Decision errors are widespread and predictable. Choices influenced by framing and context
  - Order
  - Comparisons
  - Whether outcomes are losses or gains


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**Chocolate Chip Cookie or Yogurt?**

*Time Horizons Affect Choice*

N=160

<table>
<thead>
<tr>
<th>Choose Cookie</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Select one</td>
<td>47.5%</td>
</tr>
<tr>
<td>Same choice next week</td>
<td>70.0%</td>
</tr>
<tr>
<td>Yogurt next week</td>
<td>90.0%</td>
</tr>
</tbody>
</table>

People are optimistic about exerting self-control in the future

M & M's or Gluestick

Choose M & M
- Select one: 50%
- Give up one: 85%

When having to give a reason for choice
- Select one: 55%
- Give up one: 62%

Hedonic characteristics more salient when you have to diet.


How Do Food Outlets Make Us Eat Too Much Without Awareness?

- Atmospherics- (1970’s– Phil Kotler)
  - Engineering of displays, lighting, crowding, layout, scent, music, etc. to influence consumer purchases
  - Promote impulsive, automatic responses
Abundance Increases Consumption

Increase in Sales of Fruits and Vegetables Caused by Doubling of Display Space

<table>
<thead>
<tr>
<th>Type of fruit/vegetable</th>
<th>Percent increase in sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard fruit</td>
<td>44%</td>
</tr>
<tr>
<td>Soft fruit</td>
<td>49%</td>
</tr>
<tr>
<td>Cooking vegetables</td>
<td>59%</td>
</tr>
<tr>
<td>Salad vegetables</td>
<td>28%</td>
</tr>
</tbody>
</table>

Source: Curhan R. J Marketing Research 1974;11:286-94

Chips Are in Season!

Doubling shelf space increases sales by 40%

Source: Curhan RC, 1972
Placing products at eye-level triples sales compared to placement on second or bottom shelf.

End aisle display increases sales 2-5 fold.
Music Affects How Much We Consume Without Awareness

• Compared slow, fast and no music in supermarket.
• Customers walked through the store faster and bought less with fast music.
• Sales receipts increased 38% with slow music.
• No difference in customers recall of whether there was music or it was fast or slow.


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 *

* Source: North AC, Shilcock A, Hargreaves DJ, 2003
Restaurant Menus

Often designed using “choice architecture”

- The Upper Right-Hand Corner (people look there first)
- Use an Anchor (A high price item makes everything else look like a bargain)
- Boxes and larger, bolder fonts draw attention to items
- Pictures of food are powerful motivators
- Bury items they don’t want to sell as much at the bottom or in smaller fonts

Poundstone, 2009

Most Restaurant Meals Increase the Risk of Getting or Exacerbating Chronic Diseases

- Meals contain excess calories, fat, salt, too much red meat
- Meals have insufficient fruits, vegetables, fiber, vitamins, calcium
- Requires people to figure out how to compensate
- Too difficult for most people to track and replace missing nutrients over 24 hours, much less a few days or week.
People Naturally Attracted to Large Sizes

However, we are not able to judge volume

Source: Raghu P, Krishna A, 1999

Marketers Elongate Packages
**Portion Sizes 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.

Source: Rolls BJ, Morris EL, Roe LS, 2002

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**Multi-packs Increase Consumption**

- Groups asked to watch TV, help themselves to potato chips while they watch.
- Half of each group offered 200 gm bags, half offered 45 gm bags.
- Measured how much they ate.
- People offered the small bags ate more because they were more likely to open the bag.

Variety Increases Consumption

Subjects offered 3 different shapes of pasta ate 14% more than those offered only 1 shape

Source: Rolls BJ, Rowe EA, Rolls ET, 1982

More than 10,000 New Products Introduced Annually
How Does Advertising Influence Choices to Make Us Eat Too Much Without Awareness?

- Conditioning
- Mere Exposure Conditioning
- Priming
- Automatic Stereotype Activation
- Mimicry
- Incentives

Conditioning: Pavlov’s Dog

- Pavlov conditioned dogs by ringing a bell when food was available
- Dogs salivated when they heard the bell
- Humans are also conditioned to “feel hungry”
  - stimulated by symbols, smells, memories associated with food, and especially food itself
**Marketing: Creating Associations Between a Product and Human Desires**

- Branding - people buy brand, rather than product
- Celebrity endorsements
- Appeals to needs (fun, power, status, sex)

**Easy to condition; Hard to extinguish conditioned responses**

**Mere Exposure (e.g. Product Placement)**

- Seeing or perceiving something without it being paired with any other stimulus.
- Seeing something repeatedly increases our preferences for that object.
- Effect is stronger when we don’t remember that we saw it.
- The object becomes part of the familiar background that we evaluate as safe

**Pepsi vs. Coke**

*(Coke more popular in England 3:1)*

Group 1: Children saw a “Home Alone” clip of family eating pizza, milk, and Pepsi, Pepsi spills

Group 2: Watched star eating macaroni and cheese and drinking only milk.

After the showing, children were invited to help themselves to either Coke or Pepsi.

Among children who had seen the picture before:

- **Group 1:** 67% chose Pepsi
- **Group 2:** 42% chose Pepsi.


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**People Perceive Ads on the Side Columns, But Don’t Know It**

From Shapiro et al, 1999
Priming

• Sensitizing someone to activate specific memories or associations so that it influences a subsequent behavior.

• Works when people are unaware of the intention or existence of the prime

Automatic Stereotype Activation

• People respond to others based upon stereotypes and that the responses are unintended, efficient, and outside the awareness of the perceiver.

  e.g. People automatically have favorable attitudes towards people who look like they do, and negative reactions to those who appear different
Mimicry Leads to Unconscious Eating

- Participants invited to judge ice cream quality. Confederate took a sample of ice cream first.
- Participants ate more if the confederate took a large amount, and less if the confederate took a small amount.
- Participants did not know how much the other person ate and did not believe they were influenced.

...and more favorable ratings
- Subjects mimicked drank 60% more of an energy drink and enjoyed it more than those not mimicked.


Incentives Change Our Behaviors

- People who preferred vanilla ice cream, worked harder for and chose pistachio because it was valued more highly
- People who though they would enjoy a chocolate heart candy chose a chocolate cockroach when valued higher
- People who get a frequent customer purchase card, buy at a higher rate when getting close to completing the card

60 pts. 100 pts. Hsee & Hastie, 2006;10(1):31-37.
Goal-gradient hypothesis
Self-Control is a Reflection of Cognitive Capacity

• Self-control is limited and behaves like a muscle— it fatigues over time

• Dieters relapse under stress and at the end of the day

• Studies indicate that dieters have impaired “executive functioning” (decision-making, thinking tasks due to preoccupation)

Refusing Chocolate Chip Cookies Takes a Toll

Subjects in lab setting divided into three groups, then asked to solve puzzle

- Food available:
  - None

- Subjects told to help themselves

- Food available:
  - Cookies
  - Candy
  - Radishes

- Subjects told to eat only radishes

Source: Baumeister RF, et al., 1998
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<table>
<thead>
<tr>
<th>Group</th>
<th>Food Available</th>
<th>Worked</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None</td>
<td>21 minutes</td>
</tr>
<tr>
<td>2</td>
<td>Cookies, Candy, Radishes</td>
<td>19 minutes</td>
</tr>
<tr>
<td>3</td>
<td>Cookies, Candy, Radishes</td>
<td>Not specified</td>
</tr>
</tbody>
</table>

Gave up after 8 minutes

Too Much Food

People are designed to over-consume when food is available:

- Too many calories (esp. energy dense, low in nutrients)
- Too convenient
- Too many cues to eat
- Portion sizes too large

We can’t train people to ignore the environment.
Policies That Work for Alcohol Control: Reduce Accessibility, Cues, & Impulsive Behavior

- Licensing Alcohol outlets
- Limiting Alcohol outlet density
- Limiting hours of operation
- Prohibiting alcohol specials (e.g. 2 for 1)
- Prohibiting “all you can drink”
- Quality control and 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

Front of Package Labeling Could Be Promising

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

- Increased risk of obesity
- Balanced meal
- Increases risk of heart disease
- Increases risk of cancer