Healthier eating: The role of environmental cues

Breakfast seminar NMBU January 31, 2014

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How many calories are in this meal?

meal 1

meal 2

Chernev, 2010
Increasing overweight rates

OECD report 2010
This morning

1) The power of food temptation
   Nature or nurture?

2) Opposing viewpoints on what to do
   ‘Food industry is evil’ versus ‘food industry can take the lead’

3) A few examples of win-win solutions
The power of food temptation
Shoe store in my home town
Nature or nurture?

Twin studies

- Physiological factors account for 14% of variance in daily *intake*, environmental factors for 86% (de Castro, 2010)

- Genetics account for 67% of variance in BMI (Ravussin & Bogardus, 2000)
  - Mainly because certain genes makes people hyperresponsive to food cues (Llewellyn et al., 2012)

‘*Genetics load the gun, environment pulls the trigger*’

Seidel, 2011; Brownell, 2004
Human migration

Goel et al., 2004; Levitsky, 2005
Why do you stop eating?

• Elderly with dementia ate a full second meal 10-30 minutes after they were told it time for dinner

Rozin et al., 1998
What determines how much we eat?

- **Consumption norms**

- **Food environment**
  - Salience
  - Package
  - Portion size
  - Assortment

- **Eat environment**
  - Atmosphere
  - Effort
  - Eating with others
  - Distraction

- **Monitoring of consumption**

Wansink, 2005
Young & Nestle, 2012
Explanations portion size effect

‘Value for money’

Portion distortion

• Unrealistic labels
• ‘Clean your plate’ phenomenon
• Starts young (3-5 year)
• Unit size bias
• Consumption illusions
Vertical-horizontal illusion

Consumption illusions

Delboeuf illusion

Smith et al., 2009
In which situation would you eat the most?
23% less chocolate small unit size

Unit size of chocolate

Calorie intake

large unit size  small unit size

package absent  package present

Van Kleef, Kavvouris & Van Trijp, under review
Larger portions usually not more satisfying and compensated

‘Just a bite’ study on snacks (n=105)
  – Small vs large portion of chocolate, chips and apple pie
  – Appetite / craving measured before, immediately after and 15 minutes after eating
Larger portions: 77% more calories

Satisfaction and craving: similar
Halo effect

If a person is judged to be performing well on one aspect, this positive evaluation extends to other (unrelated) aspects

Nisbett & Wilson, 1977
Health halos

- Claims as ‘low fat’, ‘sugar-free’
- Words as ‘diet’, ‘multi-grain’ and ‘fibers’
- Organic food
Health halos

In restaurants positioning themselves as ‘healthy’, consumers order more side dishes, up to 131% more calories.
Expectations

If it sounds good, it tastes good
Opposing viewpoints on what to do about overweight problem
<table>
<thead>
<tr>
<th>Entity</th>
<th>Primarily</th>
<th>Somewhat</th>
<th>Not at All</th>
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<tbody>
<tr>
<td>Individuals</td>
<td>80%</td>
<td>14%</td>
<td>6%</td>
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<td>Parents</td>
<td>58%</td>
<td>32%</td>
<td>9%</td>
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<td>Food Manufacturers</td>
<td>35%</td>
<td>47%</td>
<td>18%</td>
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<td>20%</td>
<td>53%</td>
<td>27%</td>
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<td>Gov Policy</td>
<td>18%</td>
<td>32%</td>
<td>50%</td>
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<tr>
<td>Grocers</td>
<td>10%</td>
<td>37%</td>
<td>53%</td>
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<tr>
<td>Farmers</td>
<td>4%</td>
<td>13%</td>
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Fig. 2 Percentage of respondents believing seven entities are not, somewhat, or primarily to blame for the rise in obesity (N=774; margin of error = ±3.5%).

Jayson L. Lusk, Brenna Ellison. Who is to blame for the rise in obesity? Lusk & Ellison, 2013
Opposing viewpoints

1) Food industry it to blame!
   - Adding addictive substances
   - Only look at share holder value at short-term
   - ‘Food industry is the new tabacco industry’
     Emphasizing personal responsibility, lobbying

Response: strong regulation, consumer empowerment (revolution!)
FOOD FIGHT

Lobbyists spent $175 million. Congress made pizza a vegetable. And insiders say the Obamas backed off the food industry.

How Washington went soft on childhood obesity

BY DUFF WILSON AND JANET ROBERTS
Bloomberg’s soda ban
2) Food industry can make profitable win-win adjustments

- Using marketing and sales techniques to sell healthy foods
- Recent hype; nudging research
Change the environment

- Consumers do not behave rational, but irrational at a predictable and systematic way
- Dual system thinking (Kahneman, 2012)
  Automatic and reflective decision processes

*Change the choice architecture*
The hit among policy makers and researchers

Sunstein and his wife with Obama (2010)
What is a nudge?

... Every aspect of the choice architecture that changes the people’s behaviour in a predictable way, without

- Banning products or
- Changing economic triggers
- Being expensive or hard to implement

Thaler and Sunstein, 2008
Is this a nudge?
Is this a nudge?
A few WIN WIN examples
Nudges outside the food domain

Mall in Singapore

Kopenhagen study: 46% less trash on ground (2011)
100 calorie packs
Inconsistent findings

- Less intake (zie o.a. Raynor et al., 2009; Wansink et al., 2011)
- Small sizes may ‘fly under the radar’ (Coelhoe et al., 2008)
What’s in a name?

28% higher sales of vegetables by changing expectations

- X-ray vision carrots, Power Punch Broccoli, instead of ‘food of the day’ of no name

Wansink et al., 2012
Edible ‘stop’ signals?

Geier et al., 2012
Nudge of the checkout snack assortment

- Snacks near checkout of hospital canteen
- We manipulated proportion and place of snacks
  - 25% vs 75% healthy snacks
  - Top vs lower shelves
- 4 weeks (every week another shelf)
- Daily sales data

Van Kleef, Otten and Van Trijp, 2012
Results

Bar chart showing the total number of snacks sold:
- 25% healthy at 25% healthy at 75% healthy at 75% healthy at top shelves bottom shelves bottom shelves top shelves
- Unhealthy snacks: 23 41 10 91
- Healthy snacks: 33 11 65 17

For quality of life
Nudging children towards whole wheat bread

Van Kleef et al., in preparation
Mirror in shopping cart
Suggestive selling

- Well-known marketing technique (Supersize me...), now a different goal
- Breakfast restaurant in Netherlands

Van Kleef, Van den Broek and Van Trijp, in preparation
Leuk dat je er bent
Results

% of breakfast customers purchasing a side dish depending on prompt made

- Week 1-10 (no prompt)
- Week 11-19 (orange juice prompt)
- Week 20 (fruit salad prompt)
- Week 21 (pancakes prompt)
- Week 22 (fruit salad or pancakes prompt)
- Week 23 (orange juice prompt)

- Orange juice sales
- Fruit salad sales
- Pancakes sales
Concluding remarks

Healthy foods do not sell themselves

Various approaches are needed

Food nudges are increasingly put to the empirical test
Thanks

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Blog Food Intake Control:
http://foodintakecontrol.blogspot.com/