Tomo Ridley-Siegert’s
Inside the food lab
The stats

- Percentage of obese in UK?
  25%
- Most overweight city in UK?
  Glasgow
- Fattest country in Europe?
  Hungary
- Every 1.7 mins an American will die from inactivity and poor nutrition
- Overweight and obesity are linked to more deaths worldwide than underweight
- Child-safety seat manufacturers are starting to make bigger models after a recent study showed that over 250,000 U.S. children age 6 and under are too fat to use them
Factors Affecting Food Choice

- Parental/Family Culture/Religion Social Class/Status Beliefs
- As a Social Experience
- Marketing Media Advertising/Branding
- Taste, Food preferences, Habit, Mood
- Hunger
- Skills: Cooking Skills Budgeting Skills Shopping Skills
- Nutritional Labelling & Packaging
- Availability of Food
- Knowledge about healthy eating
- Cost of food
- Income
- Time Convenience
- Access to Food Transport to Shops
Overview

• Background

• Study 1

• Study 2
Cues associated with food increase eating in non-human animals.

Weingarten (1983) limited cue-potentiated feeding research in humans.
Experiment 1

Pavlovian conditioning
Method

- **Sweet-likers** (screening session); rated pleasantness of a 10% sucrose solution as >55/100 pt.

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Cue-potentiated eating
Thomas Ridley-Siegert
# Conditioning (triangle-test disguised training method)

<table>
<thead>
<tr>
<th>Tray</th>
<th>Drink 1</th>
<th>Drink 2</th>
<th>Drink 3</th>
<th>CS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10% sucrose</td>
<td>10% sucrose</td>
<td>10% sucrose</td>
<td><strong>CSsweet</strong></td>
</tr>
<tr>
<td>B</td>
<td>Artificial saliva</td>
<td>Artificial saliva</td>
<td>Artificial saliva</td>
<td><strong>CSneutral</strong></td>
</tr>
<tr>
<td>C</td>
<td>Weak Acai</td>
<td>Weak Acai</td>
<td>Strong Acai</td>
<td><strong>CSacai</strong></td>
</tr>
<tr>
<td>D</td>
<td>Grapefruit</td>
<td>Grapefruit</td>
<td>Water</td>
<td><strong>CSgrapefruit</strong></td>
</tr>
<tr>
<td>E</td>
<td>Raisin</td>
<td>Water</td>
<td>Water</td>
<td><strong>CSraisin</strong></td>
</tr>
</tbody>
</table>

Conditioning (triangle-test disguised training method) is a method used to study the effects of conditioned stimuli (CS) on behavior. In this study, different stimuli were paired with different drinks to observe how the animals responded. The CSs are indicated in red, highlighting the specific stimuli paired with the corresponding drinks.
Method

- Standard lunch
  - 2 hours
- Pavlovian Conditioning Phase
  - 30 mins
  - Hunger Ratings
  - Contingency Awareness Test
- Intake Test
- Debriefing

Cue-potentiated eating
Thomas Ridley-Siegert
How to measure intake

- Self-report
  - Underreported (which increases with intake) (Schoeller, 1990)
- 24hr recall
- Food Frequency Questionnaires
- Observer-recorded food records
Intake Test

- Water
- Fruit squash
- Flapjacks
- Pretzels
- Cheese crackers
- Chocolate buttons

5 mins
Results

- CS+ group ate more than CS-group
- General increase in eating (not specific to sweet foods)
- No effect of contingency awareness

Figure 1. Mean sweet and savoury calories eaten. Error bars show ±1 SEM.
Experiment 2

Instrumental conditioning
Discriminative Stimuli

$S_1 \rightarrow R_1 \rightarrow O_1$

$S_2 \rightarrow R_2 \rightarrow O_2$

Specificity of response

Stimuli predict which response
Instructions

In this game, you may collect points by pressing the 'm' or 'z' key.

By pressing these keys you may earn one point for crisps or chocolate.

You may earn multiple points per trial.

Pay attention! Not every 'z' or 'm' key press will give you a point. You may have to press more than once.

You will have 30 seconds per trial.

Press SPACE to begin.

Based on Havermans et al. (2009)
Press z or m
Press z or m
Press z or m
Results

- Significant effect of condition on intake
  - Choc group ate sig more than CS-
- Not specific to food type
- Contingency awareness had no effect

* Figure 2. Total calories eaten across condition. Error bars show ±1 SEM.
* p = .013
So what...

• Could I use this for good?
• Stop-eating cue
• Healthy eating
• Clinical applicability

• But should I...
Tips from a 3\textsuperscript{rd} year

• Write continuously
  – Summer is perfect for this
• 2\textsuperscript{nd} year sucks
• Undergraduates are free-labour
• Do something impactful
• Stop, collaborate and listen
Thank you.

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BBSRC bioscience for the future