The impact of food and beverage advertising to children

Dr Emma Boyland
Department of Psychological Sciences
University of Liverpool, UK
Obese children recognised more food adverts than toy but all children responded to them by increasing gram intake and altering food choice.
Effects of exposure to TV food advertising on children’s food intake
(Halford, Boyland et al., 2008 Public Health Nutrition)

- Food advert exposure increased intake in all children.

- However, the increased was greater in the obese children (155%) and the overweight children (101%) than the NW children (89%).

![Bar chart showing the amount eaten in Kcal for Normal Weight, Overweight, and Obese children with food adverts and toy adverts.](chart.png)
Effects of exposure to TV food advertising on children’s food preferences
(Boyland et al., 2011 Pediatrics)

- All children selected more non-branded and branded items after FA compared to TA.
Effects of exposure to television food advertising on children’s food preference

(Boyland et al., 2011 Pediatrics)

High TV viewers had a higher mean BMI SDS than the low TV viewers.

The food preferences of high TV viewers were more affected by food ad exposure than low TV viewers.

Increased media use increases susceptibility?
## Food Choice and Overconsumption: Effect of a Premium Sports Celebrity Endorser

Emma J. Boyland¹, Joanne A. Harrold¹, Terence M. Dovey², Maxine Allison, BSc¹, Sarah Dobson, BSc¹, Marie-Claire Jacobs, BSc¹, and Jason C. G. Halford¹

<table>
<thead>
<tr>
<th>Video Condition</th>
<th>Crisp consumption (g)</th>
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<tbody>
<tr>
<td>Walkers advert</td>
<td>45 ± 5</td>
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<tr>
<td>Match of the Day advert</td>
<td>42 ± 4</td>
</tr>
<tr>
<td>Other Food advert</td>
<td>30 ± 3</td>
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<tr>
<td>Toy control</td>
<td>20 ± 2</td>
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</tbody>
</table>

Significant main effect of crisp brand (p<0.001) and an interaction between crisp brand and advert condition (p<0.001).
This advertisement was shown on ITV during ‘Toonattik’, a programme aimed at children.

“Did you know Scoob...”
“Run Scoob!!”

“At McDonalds kids can join us on our hunt...”

“A hamburger, mineral water and juicy fruit pack”

“Some fun, some food its all inside this happy meal”
Participants
N=59 children
Aged 7-10y

Study Protocol

View materials
Control (5 + 5 non-food ads) OR experimental (2 replaced with McD ads)

Hypothetical menu
Select main, side and drink items from images of products

Other measures
Liking ratings for fast food and McDonalds & Nutritional Knowledge

Height and weight measured

2 weeks later
Repeat (other materials seen)
Main

- Cheeseburger
- Chicken McNuggets
- Fishfingers
- Hamburger

Sides

- Carrot sticks
- Fruit bag
- Fries
Results

• No significant difference between the two advert conditions for the kcal, fat, CHO, sugar or salt content of the meal bundles ($p > 0.05$).

• Children’s liking for fast food in general (not specific to McDonald’s) increased after exposure to food ads relative to control ($p = 0.004$).

• Compared to those with high nutritional knowledge, those with low scores selected a meal with greater kcal content in the food advert condition only ($p = 0.016$).
Children who see Happy Meal advertising 'put burger and fries before healthy choice' 

Researcher questions whether fast food giants should be allowed to advertise on TV to children.
Effects of TV food adverts on food intake – role for eating in the absence of hunger?

When sated, OW/OB children showed a trend towards greater food intake after food ads compared to non-food ads (300.4g v 273.0g; t(12)=1.857; p=0.088) whereas NW children did not.
Effects of exposure to internet ‘advergames’ on eating behaviours in children

Harris et al., 2012. Journal of Children and Media.

152 children, 7-12 years old (m 9.4y).
Effects of exposure to internet ‘advergames’ on eating behaviours in children

Folkvord et al., 2013. AJCN. 270 children, 8-10 years old (m 8.9y).

<table>
<thead>
<tr>
<th>Condition</th>
<th>Total intake (kcal)</th>
<th>Total energy-dense snack intake (kcal)</th>
<th>Total fruit intake (kcal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy-dense snack advergame</td>
<td>202 ± 111</td>
<td>170 ± 107</td>
<td>32 ± 27</td>
</tr>
<tr>
<td>Fruit</td>
<td>183 ± 117</td>
<td>150 ± 116</td>
<td>33 ± 28</td>
</tr>
<tr>
<td>Non-food</td>
<td>130 ± 83</td>
<td>106 ± 83</td>
<td>24 ± 24</td>
</tr>
<tr>
<td>Control</td>
<td>106 ± 75</td>
<td>80 ± 71</td>
<td>29 ± 29</td>
</tr>
</tbody>
</table>
Individual susceptibility to advergame impacts – role of impulsivity?

261 children, 7-10 years old (m 7.7y).

<table>
<thead>
<tr>
<th></th>
<th>Energy-dense snack advergame WITHOUT inhibition task</th>
<th>Energy-dense snack advergame WITH inhibition task</th>
<th>Non-food advergame WITHOUT inhibition task</th>
<th>Non-food advergame WITH inhibition task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total intake (kcal)</td>
<td>156.3 ± 135.2</td>
<td>87.3 ± 114.3</td>
<td>101.3 ± 74.1</td>
<td>33.2 ± 74.4</td>
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</tbody>
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Influence of Licensed Characters on Children’s Taste and Snack Preferences

**AUTHORS:** Christina A. Roberto, MS, Jenny Baik, BA, Jennifer L. Harris, MBA, PhD, and Kelly D. Brownell, PhD

*Rudd Center for Food Policy and Obesity, Yale University, New Haven, Connecticut*
Do brand characters have a similar effect?

Congruent versus incongruent character-product combinations.

Congruent phase (n = 60):

- Of those detecting a taste difference, 60% of children rated the character food as tasting nicer.
- 69% of children chose the character food for a snack.
Receptivity to Television Fast-Food Restaurant Marketing and Obesity Among U.S. Youth

Auden C. McClure, MD, MPH, Susanne E. Tanski, MD, MPH, Diane Gilbert-Diamond, ScD, Anna M. Adachi-Mejia, PhD, Zhigang Li, PhD, Zhongze Li, MS, James D. Sargent, MD

National sample of 2541 US youth aged 15-23 years.

Viewed random subset of 20 advertisement frames (with brand names removed).

Assessed recognition of ad, liking, ability to name brand -> receptivity score (based on exposure and response).

Increased receptivity -> increased odds of obesity (19% per point increase).
Neural correlates of behavioural preference

• Behavioural taste test:
  ➢ Approximately half of sample report preferring each brand.

• ‘Anonymous’ delivery of Coke/Pepsi sample in fMRI scanner:
  ➢ Consistent neural response in the ventromedial prefrontal cortex that correlated with subjects' behavioral preferences.

Sensory info.

• Brand-cued delivery:
  ➢ Significant differential activity in hippocampus, dorsolateral prefrontal cortex, midbrain for Coke delivery only. Cultural info.

McClure et al., 2004
Bruce et al., 2012

- Food and non-food logos activated object identification regions of the brain (visual cortex/ventral stream).

- Compared to non-food logos, food logos resulted in greater activation in occipital and parietal cortex and posterior cingulate cortex (vision, awareness, memory, control).

- No areas significantly more active to non-food than food logos.
• When shown food logos vs. baseline (blurred images).
  • HW children - greater activation in middle frontal gyrus and middle temporal gyrus.
  • OB children - greater activation in postcentral gyrus and midbrain.
  ➢ *All showing motivation/reward?*

• HW children demonstrated greater brain activation in regions associated with cognitive control and self-control (Brodmann’s area 10 and inferior frontal gyrus) when viewing food logos compared to obese children.
  ➢ *Better inhibitory control? (OB more impulsive)*
Thank you for listening

e.boyland@liverpool.ac.uk

@EmmaBoyland