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Adolescents’ perceptions of healthy eating and attitudes toward regulatory measures: A Denmark-Hong Kong comparison

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background

- Obesity is a global problem
- Estimated economic costs of obesity in developed countries: 2-7% of health care costs
- Obesity is related with psycho-social problems
Communicating healthy eating to children/adolescents

- Seen as a socialization process
- Socializing agents: parents, government, teachers/schools, peer groups, food marketers
- Health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO)
Obesity problem in Denmark

- Estimated that over 155 million overweight children and youth in the world
- Over-weight among children and adolescents aged 4-18 in Denmark increased from 11% in 1995 to 14% in 2000-2
- One in every seven children is obese
Government publicity in Denmark

- Aimed at balanced diet, encourage an increase in fruit and vegetable intake
- Limited success
- Messages too abstract (Holms, 2003)
Obesity problem in Hong Kong

- Estimated that over 155 million overweight children and youth in the world
- In HK: obesity among primary school students in HK increased from 16% in 97/98 to 21% in 07/08
- Over one in every five children in HK is obese
Hong Kong context

- Densely populated
- Educational system: exam-oriented, spoon-feeding, emphasis on academic performance
- Favorite leisure activities: TV, computer games, surfing on the Internet
- HK children extremely inactive
Government publicity in HK

- Launched since 2005
- 3 series of TVC that aim at parents and children
  - Healthy diet: 3+2 is the way
  - Healthy lunch box for elementary school students
  - Healthy snacks at schools for elementary school students
- No publicity targeted at adolescents
Healthy lunch box
Healthy snacks at schools
Promote healthy eating to adolescents

- Need to understand their perception of healthy or unhealthy eating
- The contexts of healthy or unhealthy eating
- Their perception of regulatory measures
- Psychological factors that may affect their perceptions
Research questions

1. How do Danish and Hong Kong adolescents differ in their perceptions of healthy and unhealthy eating?
2. How do Danish and Hong Kong adolescents differ in the contexts of healthy and unhealthy eating?
3. How do Danish and Hong Kong adolescents differ in their responses to regulatory measures that discourage the consumption of unhealthy food?
4. Do adolescents endorsing different levels of individualistic/collective values respond differently to regulatory measures that discourage unhealthy eating?
method

- Sample: grades 7-9 students (aged 12 to 15): 152 in HK; 234 in Denmark
- Response rate: 95% (HK), 98% (Denmark)
- Conducted in 2007
- Established scale of measuring individualism and collectivism at individual level
questions

- Conduct a focus group study in HK for Q check from a list of six dieting practices that they found healthy (e.g. eat according to the food pyramid) and another list of six dieting practices that they found unhealthy (e.g. eating too fast)
- Also for contexts of healthy or unhealthy eating
- Perceived effectiveness of four measures that discouraged the consumption of soft drinks (5-point scale)
Figure 1. Perception of healthy eating among Danish and HK adolescents

<table>
<thead>
<tr>
<th>Perception</th>
<th>Denmark</th>
<th>HK</th>
</tr>
</thead>
<tbody>
<tr>
<td>A balanced diet</td>
<td>60</td>
<td>93</td>
</tr>
<tr>
<td>According to food pyramid</td>
<td>69</td>
<td>71</td>
</tr>
<tr>
<td>Eat at regular times</td>
<td>39</td>
<td>78</td>
</tr>
<tr>
<td>3 meals a day</td>
<td>44</td>
<td>61</td>
</tr>
<tr>
<td>Natural foods</td>
<td>44</td>
<td>46</td>
</tr>
<tr>
<td>Eat similar amount each meal</td>
<td>22</td>
<td>26</td>
</tr>
</tbody>
</table>
Figure 2. Perception of unhealthy eating among Danish and HK adolescents

%
Figure 3. Contexts of healthy eating among Danish and HK adolescents

<table>
<thead>
<tr>
<th>Context</th>
<th>Denmark</th>
<th>HK</th>
</tr>
</thead>
<tbody>
<tr>
<td>at home</td>
<td>89%</td>
<td>72%</td>
</tr>
<tr>
<td>sick</td>
<td>44%</td>
<td>65%</td>
</tr>
<tr>
<td>in schools</td>
<td>55%</td>
<td>21%</td>
</tr>
<tr>
<td>parents around</td>
<td>42%</td>
<td>41%</td>
</tr>
<tr>
<td>in good mood</td>
<td>40%</td>
<td>24%</td>
</tr>
<tr>
<td>holidays</td>
<td>22%</td>
<td>24%</td>
</tr>
</tbody>
</table>
Figure 4. Contexts of unhealthy eating among Danish and HK adolescents

<table>
<thead>
<tr>
<th>Context</th>
<th>Denmark</th>
<th>HK</th>
</tr>
</thead>
<tbody>
<tr>
<td>parties</td>
<td>86</td>
<td>77</td>
</tr>
<tr>
<td>festivals</td>
<td>78</td>
<td>57</td>
</tr>
<tr>
<td>gathering with friends</td>
<td>62</td>
<td>61</td>
</tr>
<tr>
<td>eat outside</td>
<td>41</td>
<td>70</td>
</tr>
<tr>
<td>in hurry</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>in bad mood</td>
<td>27</td>
<td>13</td>
</tr>
</tbody>
</table>
Figure 5 Perceived effectiveness of regulatory measures of soft drinks

- **Free cold water everywhere**: 3.7 (Denmark), 2.8 (HK)
- **Ban on soft drinks in schools/sports center**: 2.8 (Denmark), 2.8 (HK)
- **Make soft drinks more expensive**: 3.0 (Denmark), 2.7 (HK)
- **Ban ads for soft drinks**: 2.1 (Denmark), 2.2 (HK)
Perceived regulatory measures

- Make tanks of cold water freely available perceived to be most effective for Danish respondents, followed by make it more expensive
- Make tanks of cold water freely available perceived to be and impose a ban on sale of soft drinks perceived most effective for Hong Kong respondents
Value orientation

Danish adolescents more collective; HK adolescents more individualistic

![Bar chart showing value orientation between Denmark and HK. Denmark is more collective, while HK is more individualistic.](chart.png)
Possible explanation

- the different approaches to primary school learning and socialization in the two culture
- Danish primary schools have traditionally been more attentive towards the weaker students and the creation of a sense of community among all students
- schools in Hong Kong have their roots in the British educational system, and focus on the development and performance of the individual student
Table 4. Summary of regression analysis predicting perceived effectiveness of the regulatory measures

<table>
<thead>
<tr>
<th></th>
<th>Denmark</th>
<th>Hong Kong</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>sex (0=F; 1=M)</td>
<td>age</td>
</tr>
<tr>
<td>Impose a ban on the sale of soft drinks in schools/sports centers</td>
<td>-0.16*</td>
<td>-0.04</td>
</tr>
<tr>
<td>Impose a ban on ads for soft drinks</td>
<td>-0.23***</td>
<td>-0.06</td>
</tr>
<tr>
<td>Make the purchase of soft drinks more expensive</td>
<td>0.02</td>
<td>-0.14*</td>
</tr>
<tr>
<td>Make tanks of cold water freely available everywhere</td>
<td>-0.06</td>
<td>0.04</td>
</tr>
<tr>
<td>Impose a ban on the sale of soft drinks in schools/sports centers</td>
<td>-0.18*</td>
<td>-0.16*</td>
</tr>
<tr>
<td>Impose a ban on ads for soft drinks</td>
<td>-0.09</td>
<td>-0.23**</td>
</tr>
<tr>
<td>Make the purchase of soft drinks more expensive</td>
<td>-0.08</td>
<td>0.03</td>
</tr>
<tr>
<td>Make tanks cold water freely available everywhere</td>
<td>0.08</td>
<td>-0.10</td>
</tr>
</tbody>
</table>
Value orientation and perceived effectiveness of regulatory measures

- impact of individualism/collectivism on perceived effectiveness of regulatory measures was controversial and non-conclusive
- For Danish respondents, individualism scores showed a positive correlation with perceived effectiveness of imposing a ban on the sale of soft drinks
- For HK respondents, collectivism scores demonstrated a positive correlation with perceived effectiveness of two regulatory measures
Conclusion: to promote healthy eating

- respondents frequently consume unhealthy foods in social contexts
- Danish schools were found to be facilitating healthy eating while Hong Kong schools were not
- healthy eating was most often practiced at home in both societies
- Adolescents from two societies differed much in their perceptions and contexts of healthy/unhealthy eating
Conclusion: to promote healthy eating

- Two of the four regulatory measures were perceived differently in effectiveness among Danish and Hong Kong respondents.
- The result suggests that different regulatory measures should be adopted in different societies when communicating healthy eating to adolescents.
- Respondents endorsing different levels of individualism/collectivism values respond to regulatory measures in significantly different ways.