Determining factors and critical periods in food habit formation and breaking in Early childhood: a multidisciplinary approach

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## Fruit and Vegetable acceptance

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Vegetables</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sweet 😊</td>
<td>• Bitter 😒</td>
</tr>
<tr>
<td>• Acid 😒 😊</td>
<td>• Salty 😊</td>
</tr>
<tr>
<td>• Juicy 😊</td>
<td>• Fibrous 😒</td>
</tr>
<tr>
<td>• Astringent 😒</td>
<td></td>
</tr>
</tbody>
</table>

*Low in energy 😒*
Both well accepted from the beginning of complementary feeding period to 15 months

Fruit and Vegetable acceptance

Liking decreases from 15 to 24 months, in particular for vegetables

Fruit

Vegetables

School Fruit Scheme, 20th May 2014 – Brussels, Belgium
Objective 1

To examine association *between* breastfeeding duration, age at complementary feeding and eating habits in young children from 4 European countries with different feeding practices.
Positive association between breastfeeding duration and later vegetable intake

Logistic regressions adjusted for age of introduction to vegetables, age of introduction to other foods, child’s age and sex, maternal education & except in EuroPrevall, maternal age and smoking during pregnancy
Logistic regressions adjusted for age of introduction to vegetables, age of introduction to other foods, child’s age and sex, maternal education &, except in EuroPrevall, maternal age and smoking during pregnancy.
Key results

de Lauzon-Guillain et al., AJCN, 2013

Complementary feeding and vegetable intake

(>1 serving/day, except in GENERATION XXI >3 serving/day)

Negative association between age of introduction to vegetables and later vegetable intake only in ALSPAC

No consistent association across cohorts between age of introduction to fruit and later fruit intake

Logistic regressions adjusted for any breastfeeding duration, age of introduction to other foods, child’s age and sex, maternal education & except in EuroPrevall, maternal age and smoking during pregnancy
Learning to like fruit and vegetables

• Incidental learning
  – By experience:
    ➔ repeated exposure: familiarity increases acceptance
    ➔ flavour-flavour learning
    ➔ flavour-energy learning
  – Via observation:
    ➔ children learn by watching others

• Intentional learning
  ➔ teaching children to eat some foods
Objective 2

• To study learning by experience in infants and children up to 3 years old

• To study the efficiency of different strategies in 3-6-year-old children

• To examine the individual reactions and the impact of
  ▪ Maternal feeding practices
  ▪ Maternal characteristics
  ▪ Children’s eating traits
Key results

- Early variety of different vegetables increases later acceptance of novel vegetables
- Older children are more food avoidant
- Repeated exposure: a powerful learning strategy to increase novel vegetable intake in children, even for food avoidant children
- Increasing intake of relatively familiar vegetables seems a great challenge in children aged 2-6y
- Choice-offering may have some potential
Learning to like fruit and vegetables

- 21 school-based interventions on fruit and vegetable intake in children aged 5–12 years entered into a meta-analysis
- Improvement of 0.25 portions of daily fruit and vegetable intake (excluding fruit juice)
- Intake of fruit increased by 0.24 portions (excluding fruit juice)
- Intake of vegetables increased by 0.07 portions
- Interventions selectively improve fruit not vegetable intake

Evans et al., AJCN, 2012
Learning to like fruit and vegetables

• To examine in a global model, the influence of maternal fruit and vegetable consumption frequency, parental feeding practices, child fruit and vegetable consumption frequency, and child’s food neophobia on fruit and vegetables liking among children aged 5 years
  – 1142 pairs from the EDEN mother-child cohort
  – Fruit and vegetable liking measured at 5 years with an hedonic test based on food photographs

Yuan et al., HabEat final symposium, 2014
Learning to like fruit and vegetables

- Maternal fruit and vegetable consumption frequency is related to child fruit and vegetable consumption frequency at 3 years and through this pathway to fruit and vegetable liking at 5 years.
- Determinants of child fruit and vegetable liking at 5 years:
  - food neophobia
  + child consumption frequency at 3 years
  - Higher “child control” at 2 years

Yuan et al., HabEat final symposium, 2014
Thanks for your attention

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http://www.habeat.eu/