

Encouraging children's fruit & vegetable intake:

Research findings from various projects

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Consumer Science & Health



- Institute = Contract research organisation Wageningen
- Mission: To understand consumer behaviour to facilitate healthy and sustainable food choices
- Obtained insights for consumer-driven product development and for changing consumer behaviour
- Research in real-life settings



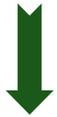
CHILDREN



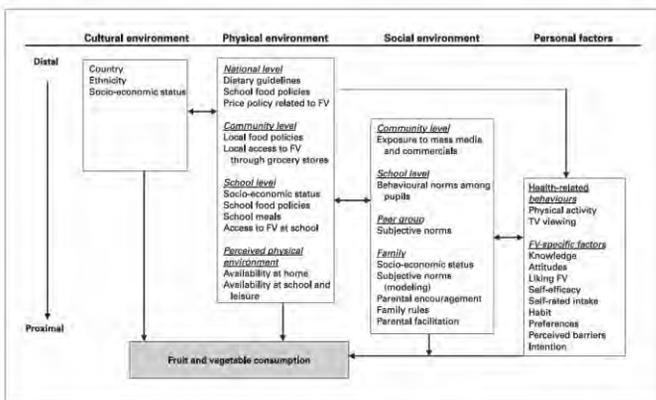
Background



- Children's fruit & vegetable intake too low
- Liking = important determinant of intake
- Some challenges for vegetables:
 - ✓ No innate liking for vegetables → low energy + bitter
 - ✓ Also: texture + context
 - ✓ Typical Dutch: vegetables mainly at dinner
- Eating habits at young age predict future eating habits



Background: Eating behaviour = complex

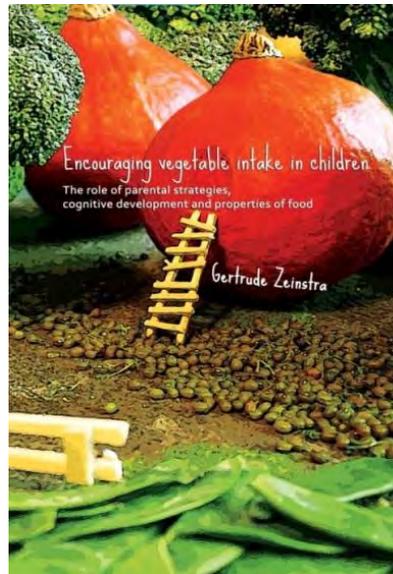


Pro-children: Factors influencing children's produce consumption



(Klepp 2005; Rasmussen 2006)

Thesis project G.G. Zeinstra



What do parents at home?

- 242 parents & 259 kids (4-12j)
- Fruit and vegetable intake
- Use of strategies (5-point scale: never → always)

"How often do you tell your child vegetables are healthy?"

- Atmosphere of eating more negative for vegetables
- Due to 'Using pressure'
- 'Choice/ autonomy' positively related to intake



Vegetable preparation study

- a. Effect of preparation method on preference?
b. Which attributes related to liking?

- 6 stimuli: boiled, grilled, puree, fried + stir-fried, steamed
- 100 children 4-12y made preference rank-order
- Step 1: dislike – neutral – like → step 2 'which one best'
- Adults scored attributes (appearance, taste, texture)



Results vegetable preparation study

- Relationships attributes + liking (PLS-regression)



Uniform appearance
Crunchy
Typical vegetable taste



Brown colouring
Granular texture



Zeinstra et al. 2010, FQP

Strategy: freedom of choice



- 303 parent-child couples
- Evening meal in restaurant

4-6j

No choice



Choice of 2



Choice & variation



- Measures: intake, liking, meal enjoyment



Results

- Children appreciated choice
- No differences in liking or intake
- Intake ~ 50 gram
- Restaurant situation ~ overwhelming



Zeinstra et al 2010 AJCN

No
choice



Reactant:
45 gram

Non reactant:
73 gram



Subsequent studies: De Wild et al. 2015, Appetite; Costarelli et al, in prep.; Olson et al, in prep.; Rohlfis-Dominguez et al. 2013 FQP; Bucher et al 2014 PHN

EU-project HabEat



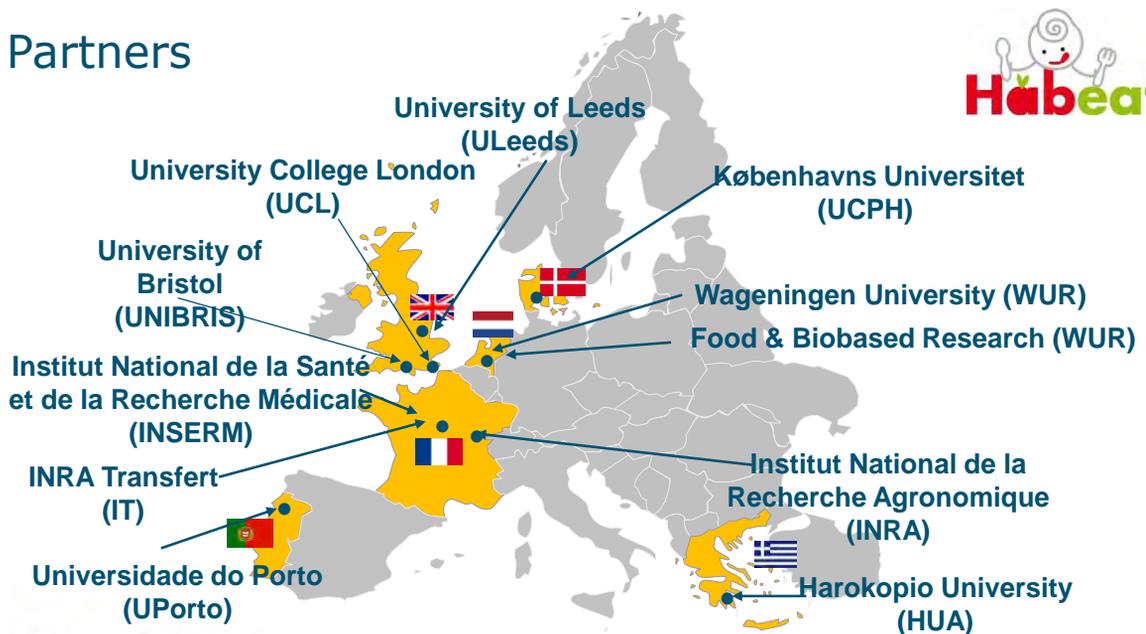
- Determining factors and critical periods in food **Habit** formation and breaking in **Early** childhood:
a multidisciplinary approach



- A focus on fruit and vegetables
- Infants & young children: 0 to 6 years
- Learning techniques: study & compare effectiveness



Partners



www.habeat.eu



Repeated exposure to vegetables further studied



- Children between ½ – 4 years
- Number of exposures: 6 – 10x
- Three conditions compared
 - Repeated exposure (RE)
 - RE + energy
 - RE + liked taste

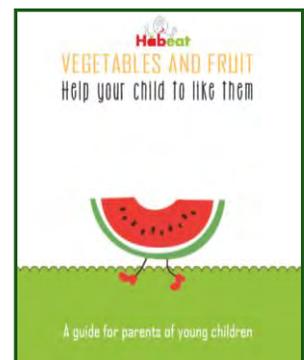
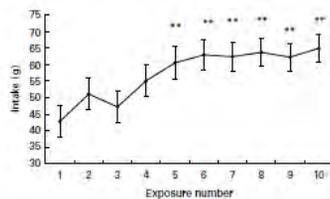


Ahern et al 2014; Bouhlal et al 2014; Caton et al 2012; De Wild et al 2014, De Wild et al 2015; Hausner et al 2012; Remy et al 2012

Some results



- Repeated exposure powerful strategy to increase intake of new vegetable
- Adding energy or flavour not more effective than RE alone
- → but it may help tasting...
- Effects were maintained up to 6 months



Research Project: **Veggie Time**



- Repeated exposure effective, but researcher-led + 1 vegetable

Does repeated exposure also work for *various* unfamiliar vegetables in *daily practice* of day care setting?



Do children learn to like novel vegetable tastes?

Does this increase their intake?

- Data not yet published -



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Take home messages 1

- Eating behaviour is complex
- Vegetable liking < fruit liking
- Eating vegetables needs to be learned
- Start early < 2 years: window of opportunity
- Repeated exposure (10-15x) effective strategy for unfamiliar vegetables



Take home messages 2

- Familiar vegetables; various strategies
 - Vary with preparation & product form → texture
 - Increase number of eating (snack) times
 - Make it available + accessible
 - Autonomy child: grow, choice, prepare
 - Not 'health' as only selling argument → fun
 - Setting good example



Thank you for
your attention



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