

HabEat: understanding critical periods and critical factors of the formation and of the modification of food habits

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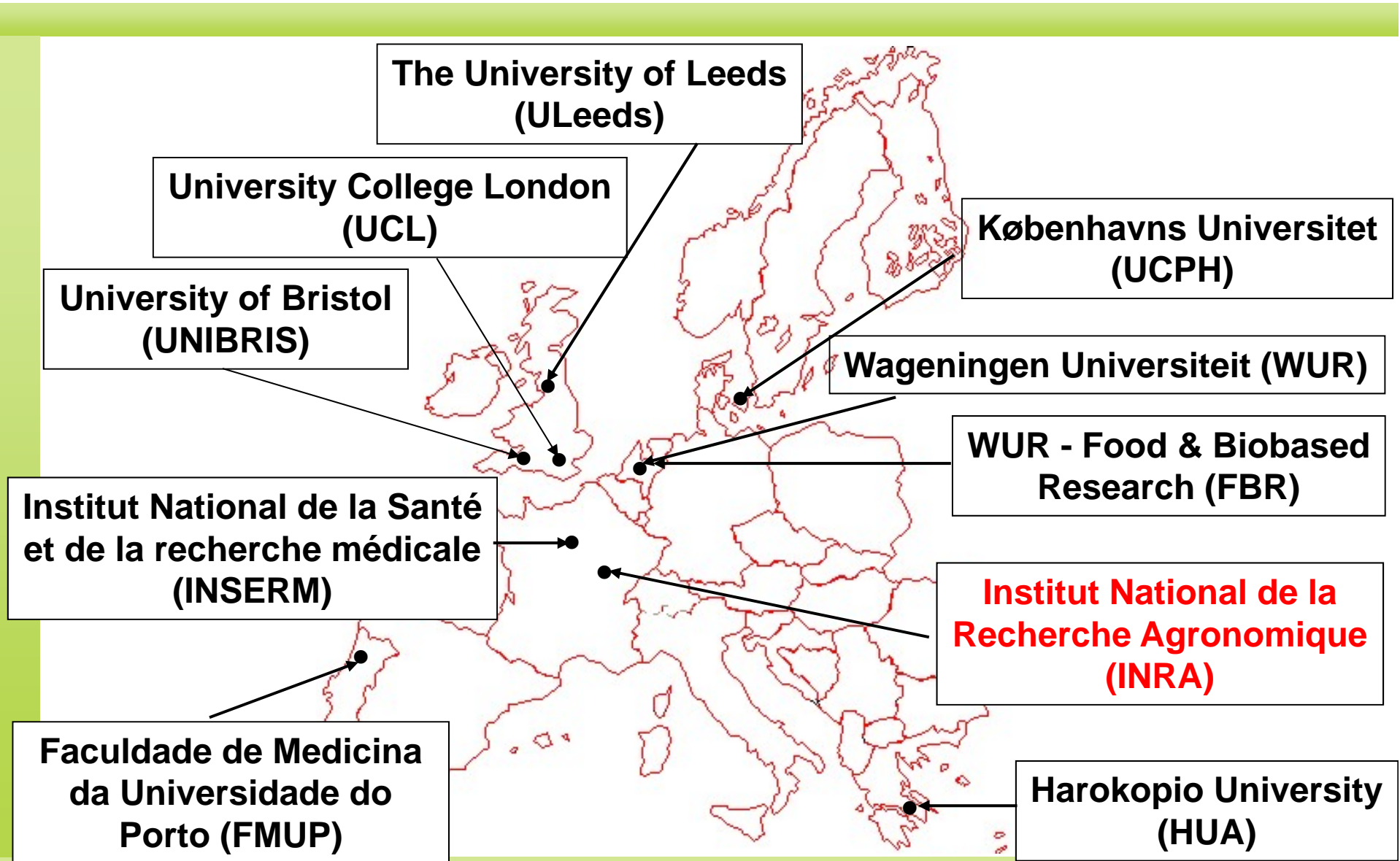
21st Workshop of ECOG
1st European Congress of Childhood Obesity
Pecs – 8-10th September, 2011



The HabEat project

- Determining factors and critical periods in food **Habit** formation and breaking in **E**arly childhood:
a multidisciplinary approach
- 11 partners from 6 European countries

Beneficiaries



Aims

- **To understand better**
 - how eating habits are formed
 - how eating habits can be changed**in infants and young children (< 6 years)**
- **To identify critical periods**
- **To identify critical factors**
- **To explore key mechanisms of food preferences learning**
- **To explore new strategies for breaking habits**



- **Core concepts of eating habits:**
 - The **‘WHICH’** i.e. the qualitative dimension
 - The **‘HOW MUCH’** i.e. the quantitative dimension
 - The **‘WHEN’** i.e. the temporal dimension
 - The **‘HOW’** i.e. the contextual dimension
- **Factors important in the formation and breaking**
 - Characteristics of the child (food temperament)
 - Characteristics of the parents (parenting style)

Approach

- **Combines**
 - **Epidemiologic studies** based on existing human cohorts from 4 countries : **WP1**
 - **Experimental studies** carried out in 6 countries
 - Formation of food habits : **WP2**
 - Modification of food habits : **WP3**
- **Disseminates**
 - Results toward end-users: **WP4**
 - Recommendations in parental practices for promoting healthier food habits in infants and children
 - Guidelines for policy makers & stakeholders (paediatricians, maternity clinics, child care centres, food industry...)



WP1: Identification of critical periods and critical factors in the development of food habits

- **To review existing assessment tools** for both describing **parental feeding practices in infancy** and for identifying child **food habits/preferences**
- **To develop new tools** that could be used in large scale studies
 - Quantitative dimension of eating habits:
 - Parental attention to child's hunger and satiety cues
 - The degree of control left to children in feeding events
 - Children's food preferences
- **To identify critical factors and critical periods** in the development of food habits/preferences in infancy and early childhood based on existing cohorts
 - Breastfeeding
 - Weaning practices
 - Other



WP1: Identification of critical periods and critical factors in the development of food habits

- Based on the data from 4 European cohorts
 - The French **EDEN** study
1800 newborns whose mothers had been recruited early in pregnancy included between 2003 and 2005
 - The Portuguese **Generation XXI** Birth Cohort
8654 newborns at birth included between 2005 and 2006
 - The British **ALSPAC** (Avon Longitudinal Study of Parents and Children) study
14 000 newborns whose mothers were recruited between 1991 and 1992 early in pregnancy
 - The Greek part of the **EUROPREVALL** study (Prevalence, Cost and Basis of Food Allergy across Europe)
1091 newborns whose mothers have been recruited in pregnancy between 2005 and 2007



WP2: Exploring key learning mechanisms and individual variations

- **To compare different forms of learning** in the acquisition of food preference in young children (mere exposure, flavour-flavour, flavour-nutrient learning) and identify critical periods for each form of learning
- **To examine** the sustainability of food preference acquired through various forms of learning
- **To identify factors** (children's characteristics, parenting styles) that influence learning



WP3: Exploring new strategies for breaking habit and individual variations in responsiveness to these strategies

- **To develop and apply new strategies for breaking eating habits**
- **To examine their sustainability**
- **To compare the efficiency of the different strategies**
- **To identify factors** (children's characteristics, parenting styles) **that influence breaking of eating habits**

WP3 Investigations

- **WP 3.1: focus on the quantitative dimension**
 - Which factors influence the ability to self-regulate food intake?
 - Can self-regulation be improved with an intervention to teach children to focus on their internal cues of hunger and satiety ?

- **WP 3.2: focus on the qualitative dimension**
 - How variation in sensory characteristics such as texture and flavour and repeated exposure can induce acceptance of originally disliked foods

- **WP 3.3: focus on the qualitative dimension**
 - Exploration of social learning techniques such as
 - imitation of a teacher or an idol
 - freedom of choice of vegetables
 - experiencing food preparation & eating self-prepared food



Study objectives

- **1. Evaluation of food intake regulation (FIR) in children**
 - Caloric compensation (CC)
 - Eating in the Absence of Hunger (EAH)

- **2. Evaluation of the impact of individual characteristics on FIR**
 - Children's age [2-6y]
 - Child & parent's BMI
 - Parental feeding habits

- **3. Development, diffusion and evaluation of an intervention aimed at children or parents designed to improve the FIR of children**

Subjects

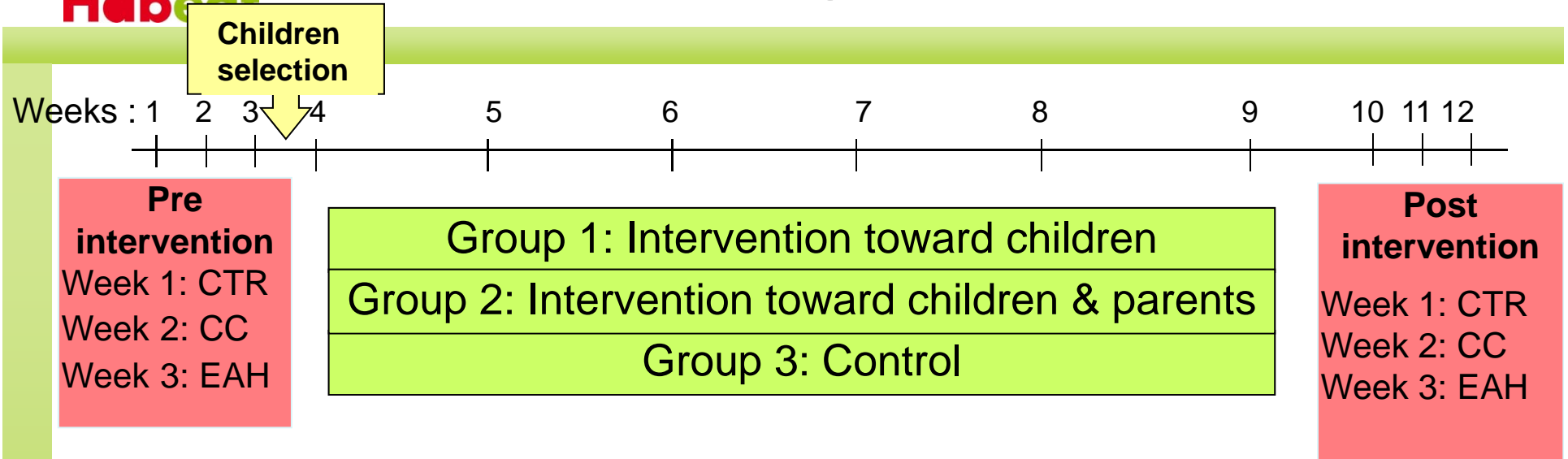
- 4 preschool canteens in different areas in Dijon, France :

Schools	1	2	3	4	Total	%
N children	101	152	174	98	525	
Attending canteen	72	131	145	64	412	100
Accepted to participate	47	84	98	47	276	67
Participed	37	72	88	29	226	55

226 children aged from 2 to 6 years old



Design



Child BMI
Parental BMI
& feeding
habits

CTR



Meal

CC: Caloric compensation



Preload

+



Meal

EAH: Eating in Absence of Hunger



Meal

+



'Post' load

- **For children**
 - Aim : Focusing the child on internal cues of hunger and fullness
 - 8 group sessions of ~10 minutes
 - 1 or 2 sessions by week at meal time
 - Use of easy to understand material
 - Story telling, puppets, mannequin...
- **For parents**
 - Aim : Help their child to focus on his/her internal cues of hunger and fullness
 - 1 group session of 1 hour
 - Energy balance
 - What is a meal/regularity
 - Portion size
 - Availability
 - Forcing or pressuring
 - Division of responsibility



Questionnaires : parents

Demographic features

Age

Occupation type, full/part time

Education

Marital status

Region of origin

Anthropometrics

Weight

Height

Perceived weight status

Food behaviour & attitudes (1)

Emotivity

Restriction

Externality

Parental feeding practices (2)

Food as reward

Emotion regulation

Pressure

Monitoring

Child Control

Restriction for weight

- (1) Van Strien & al (1986). "Dutch Eating Behaviour Questionnaire for assesment of restrained, emotional, and external eating behaviour", Fench traduction by Ann Luch,
- (2) Musher-Eizenman, D. and S. Holub (2007). "Comprehensive Feeding Practices Questionnaire: Validation of a New Measure of Parental Feeding"



Questionnaires : children

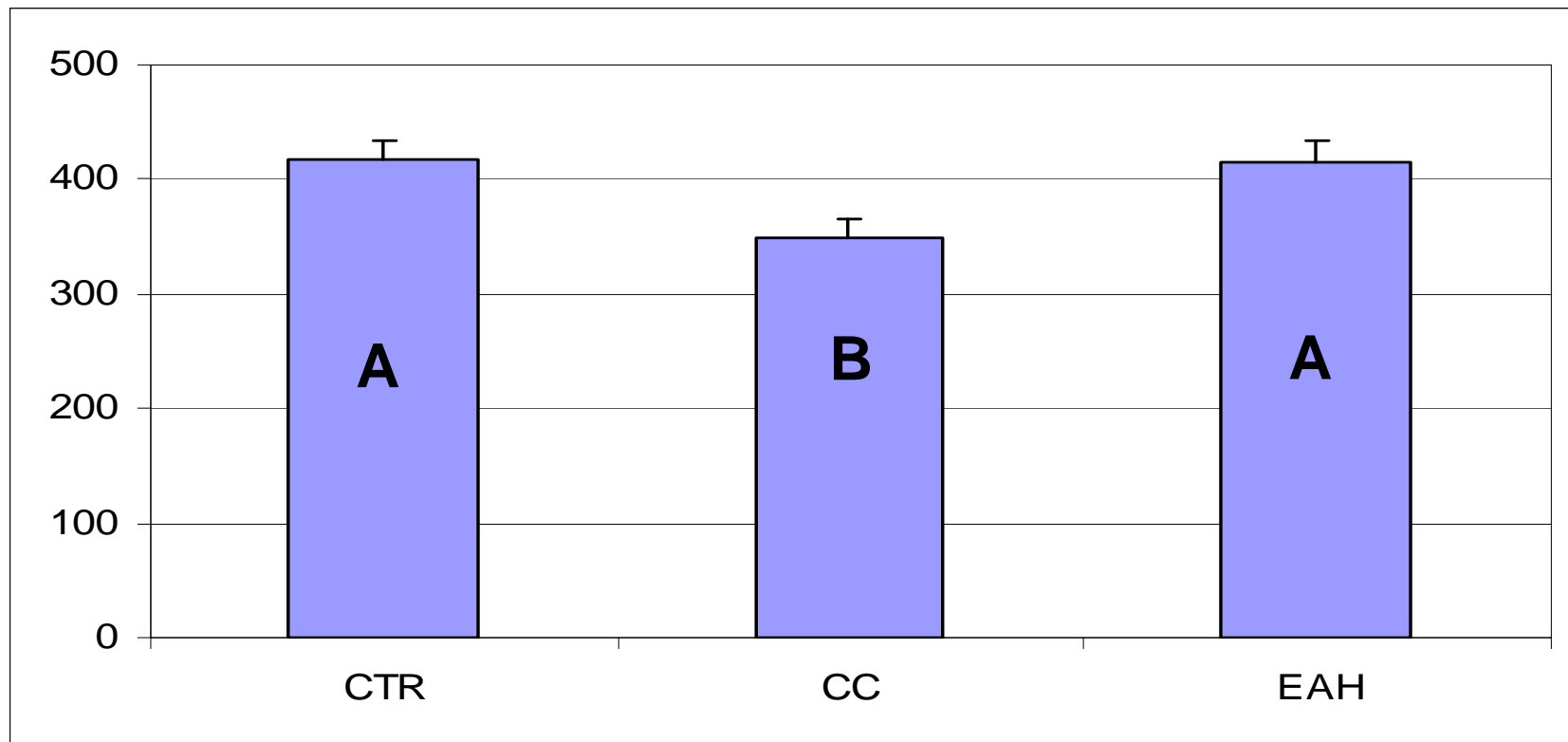
General
Gender
Birth date
Gestational age
Mode of delivery
Age at weaning initiation
Age and number of other children
Time spent at school
Child care
Anthropometrics
Weight at birth
Height at birth
Perceived weight by year
Physical activity
Duration of sleeping

Semi quantified FFQ
Food intake Regulation
Ability of the child to regulate his/her food intake
Mother's sensitivity to her child's cues of hunger and fullness
Mother's reactions to her child's cues of hunger and fullness
Child eating behaviour (1)
Satiety responsiveness

(1) Wardle, J, Guthrie CA, Sanderson, S and Rapoport, L. Development of the Children's Eating Behaviour Questionnaire. *Journal of Child Psychology and Psychiatry*. **42**, 2001, 963-970.

Preliminary results

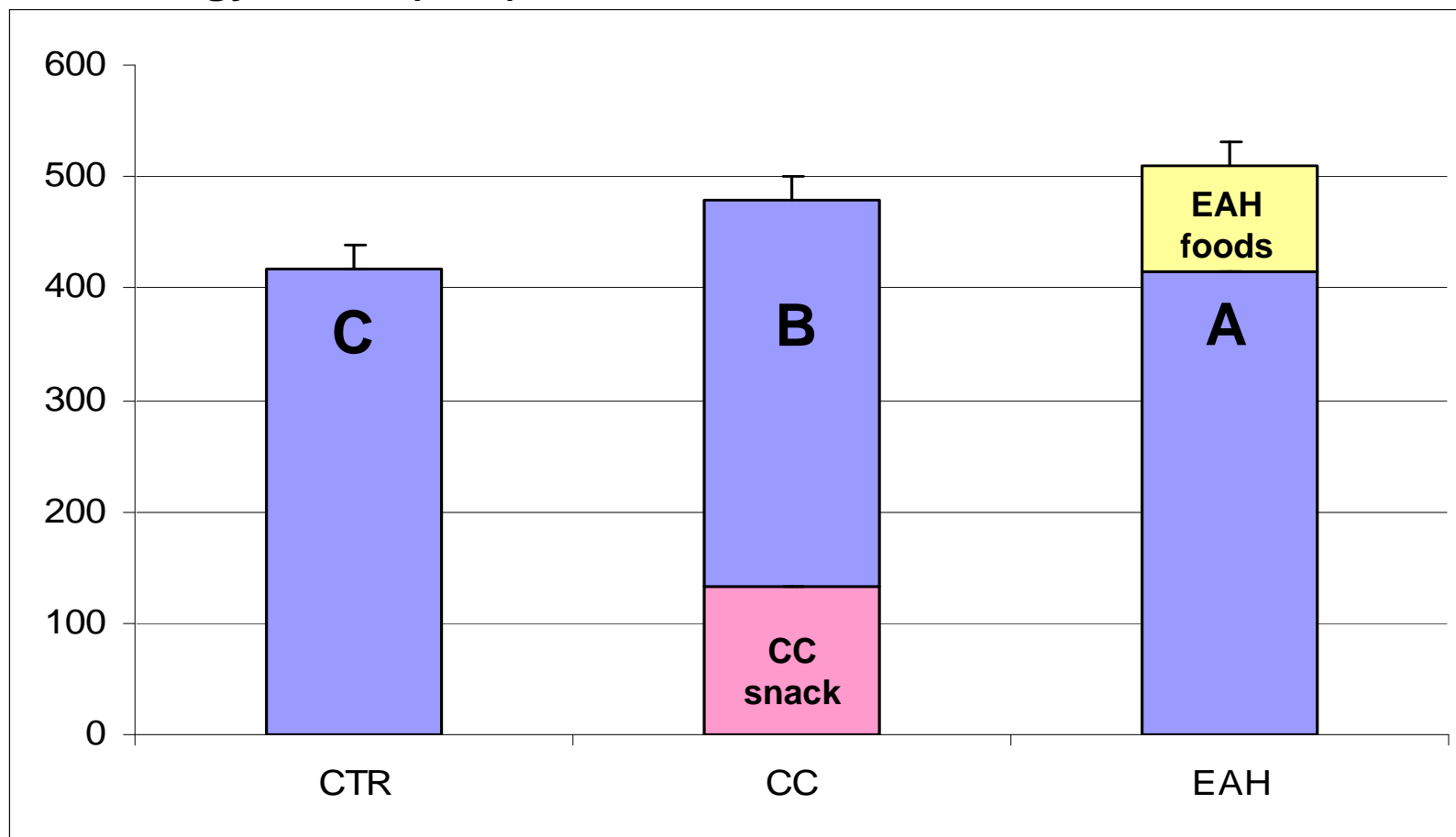
Meal energy intake (kcal)



Means with the same letters are not different (T-test ; $P < 0.001$)

Preliminary results

Session energy intake (kcal)



Means with the same letters are not different (T-test ; $P < 0.001$)

Preliminary results

- On average **CC score = $52 \pm 8\%$**
 - Children compensated about half of the CC snack, with important individual differences
- On average **EAH score = $24 \pm 3\%$**
 - Children ate about 25% of the energy intake of the previous meal, with important individual differences
- The two scores were **not correlated** with each other ($r=0.03$, $P=0.64$)
- CC and EAH scores **were not correlated** with the child's **age** (CC: $r=-0.06$, $P=0.41$; EAH: $r=-0.02$, $P=0.73$)

- **Study data analysis**
 - **Take into account the child's & parent's BMI**
 - **Study the effect of the intervention**
 - **Analyse and validate the questionnaire to evaluate the parental feeding practices, incorporate this aspect in the analysis**
- **Study children's BMI at +2 years and examine its relationship to CC and EAH at inclusion**
- **Develop tools to evaluate the child's ability to self-regulate in large scale studies**



→ **HabEat project**
Aiming to understand how infants develop food habits and to propose strategies for changing these habits within early childhood (< 5 years)

www.habeat.eu

The 1st HabEat STAKEHOLDER WORKSHOP

3rd November 2011
Warsaw, Poland

OPEN TO: Scientific community, health professionals, consumer associations, policy makers, childcare professionals, parents, students and industry

"Come and help us draw up recommendations on how childcare professionals and parents from different EU regions can improve children's food habits"

TAKE PART IN THE FREE WORKSHOP!

Registration is mandatory – Lunch is offered

It will take place at the Warsaw University of Life Sciences, Faculty of Human Nutrition and Consumer Sciences in Warsaw, Poland

From 9am to 4.30pm

Registration [click HERE](#)
Login: **habeat-stakeholder**
Password: **habeat1**

More information available on request via caroline.sautot@paris.inra.fr



- 09:00-09:15 Introduction by Dr Sylvie Issanchou - HabEat Coordinator - INRA – 15' P*
- 09:15-09:35 **HabEat general overview** by Dr Sylvie Issanchou, INRA – 15' P + 5' Q*
- 09:35-10:20 **Presentation of external invited 1:** "Infant feeding - impact on lifelong health" by Prof Berthold V. Koletzko, Dr. von Hauner Children's Hospital, University of Munich Medical Centre – 35' P + 10' Q
- 10:20-10:50 **Presentation of external invited 2:** "International and national weaning feeding guidelines: strengths and weaknesses" by Dr Camille Schwartz - Institute of Psychological Sciences, University of Leeds – 20' P + 10' Q
- 10:50-11:15 *Coffee break*
- 11:15-11:30 **Presentation of key question 1:** "Age for the beginning of complementary feeding and duration of breastfeeding: relations with child's food habits/preference" by Dr Marie-Aline Charles, INSERM – 10' P + 5' Q
- 11:30-11:45 **Presentation of key question 2:** "Learning mechanisms: which one does promote the highest food acceptance at weaning?" by Dr Sophie Nicklaus, INRA – 10' P + 5' Q
- 11:45-12:00 **Presentation of key question 3:** "Quantities to be served and maternal attention and responses to child hunger and satiation cues: relations with child's food habits/preference" by Dr Pauline Emmett, University of Bristol – 10' P + 5' Q
- 12:00-13:15 *Lunch*
- 13:15-14:30 **Table discussion for the 3 key questions in parallel sessions**
Chairpersons of key question 1: Dr Marie-Aline Charles (INSERM) and Dr Carla Lopes (University of Porto Medical School)
Chairperson of key question 2: Dr Sophie Nicklaus (INRA)
Chairpersons of key question 3: Dr Pauline Emmett and Dr Louise Jones (University of Bristol)
- 14:30-15:00 Preparation of feedbacks
- 15:00-15:15 *Coffee break*
- 15:15-15:30 Feedback of table discussion 1 – 10' P + 5' Q
- 15:30-15:45 Feedback of table discussion 2 – 10' P + 5' Q
- 15:45-16:00 Feedback of table discussion 3 – 10' P + 5' Q
- 16:00-16:15 General discussion and questions to be discussed at the next workshop - 15' Q
- 16:15-16:30 Conclusion of the meeting by Dr Marie-Laure Frelut (Secretary of the European Child Obesity Group)
Announcement of the second stakeholder workshop by Dr Sylvie Issanchou (INRA) - 15' P
- 16:30 *End of meeting*

* P: Presentation – Q: Questions





Many thanks for your attention



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