Future Research on Obesogenic Environments

Building on what we know: – the IDEFICS/ I.Family children cohort

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Spotlight: The future of research on obesogenic environments,
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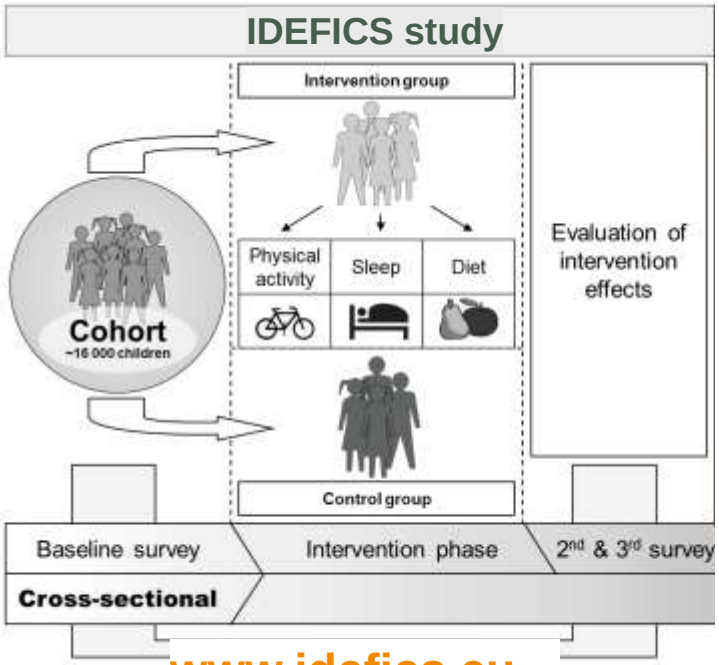
The IDEFICS-I.Family children cohort



www.idefics.eu

Deter-minants	Diet	Physical activity	Sleep	SES	Genes	Biomarker	Environ. & family life
Assess-ment	FFQ 24h dietary recall	Quest. Accelero-meters	Quest.	Quest.	Saliva	Urine Blood	Parental quest. School quest. GIS

per child

Outcome	Lifestyle & nutrition related diseases and disorders		
	Overweight & Obesity	Musculoskeletal disorders	Insulin resistance
Assess-ment	Anthropometry	Ultrasonography	Biomarkers

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IDEFICS intervention: 6 key messages

Diet	Physical activity	Stress
More water → **less softdrinks**	Less TV → **max. 1 (2) h/day**	More time with the family → **increase wellbeing**
More fruits & vegetables → **"5 a day"**	More PA → **at least 1h/day (MVPA)**	Sufficient sleep → **min. 11 (10) h/night**

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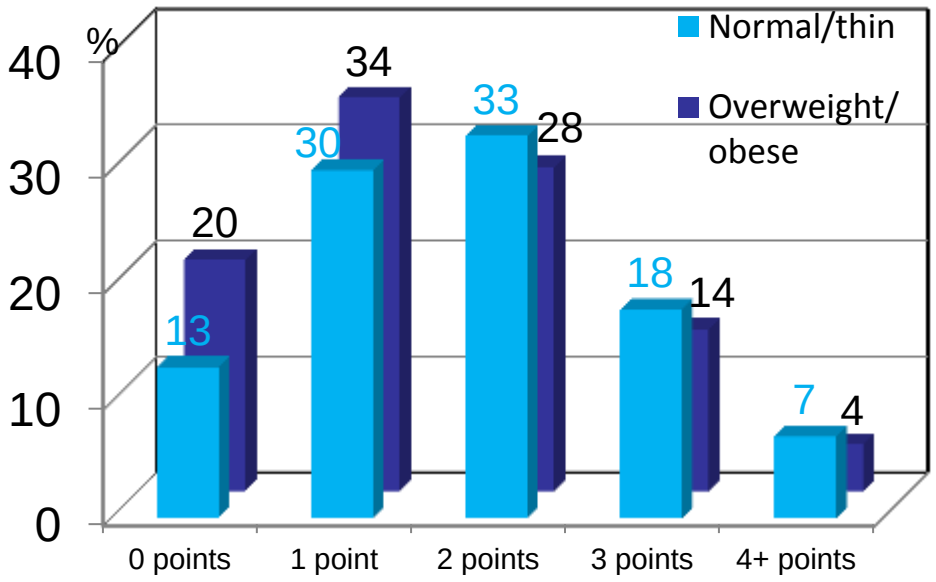
Additive score of all 6 key messages*: each 1 point



Score	Overweight (%)	Odds Ratio [1)]	95%-CI
0	27%	1.00	
1	22%	0.81	(0.65-1.01)
2	17%	0.65	(0.52-0.82)
3	16%	0.66	(0.51-0.86)
4+	12%	0.54	(0.37-0.80)

1) Adj. by age and sex

*Premise: no missings for the 6 variables (n=5.343)

Diet

Risk of increased BMI z-score (20+%) at 2-year follow-up by food pattern

Dietary pattern	Tertile (reference = low)	Adj. OR	95% CI
Snacking	middle	0.94	(0.85-1.05)
	high	0.99	(0.87-1.12)
Sweet & fat	middle	1.13	(1.01-1.25)
	high	1.17	(1.04-1.32)
Veg. & wholemeal	middle	0.93	(0.83-1.04)
	high	0.88	(0.78-0.99)
Protein & water	middle	0.94	(0.84-1.05)
	high	1.06	(0.94-1.20)

Odd ratios (OR) with 95% confidence intervals from mixed effects logistic regression with country as "random effect"; **adjusted** for sex, age, hours of physical activity/week (continuous), country specific income (low, low/medium, medium, medium/high and high)

Pala V *et al. Dietary patterns and overweight in children: a follow-up study on the European IDEFICS multicentre cohort.* Eur J Clin Nutrition 2013; doi:10.1038/ejcn.2013.145

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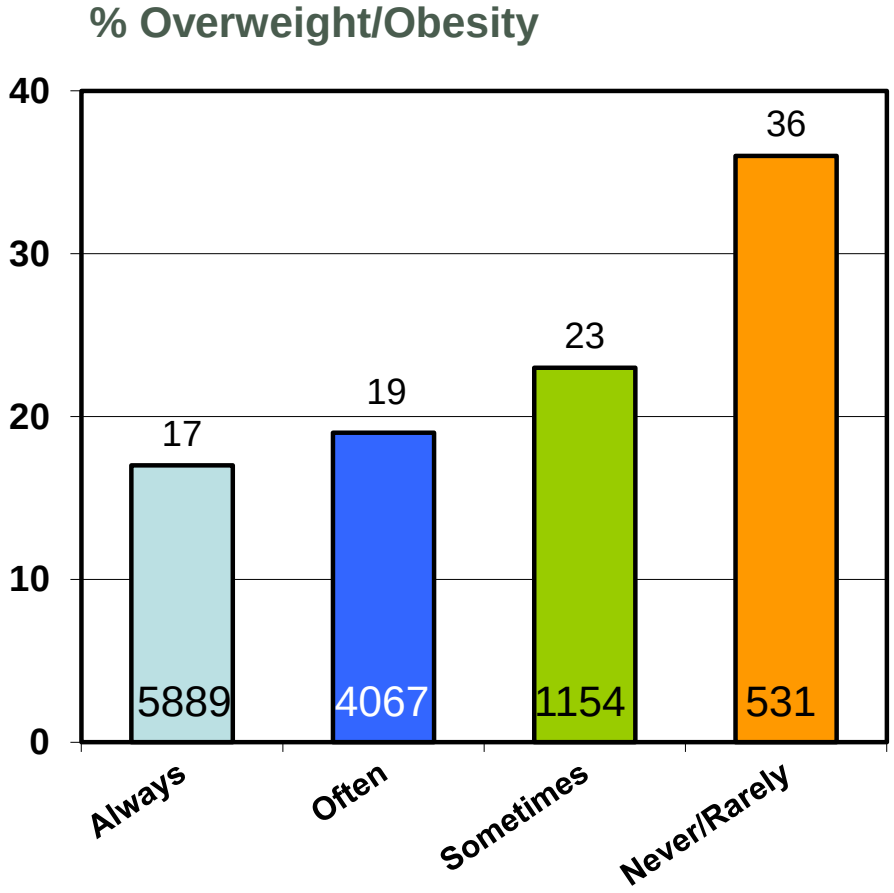
Dietary Patterns
IDEFICS (longitudinally, T0-T1)

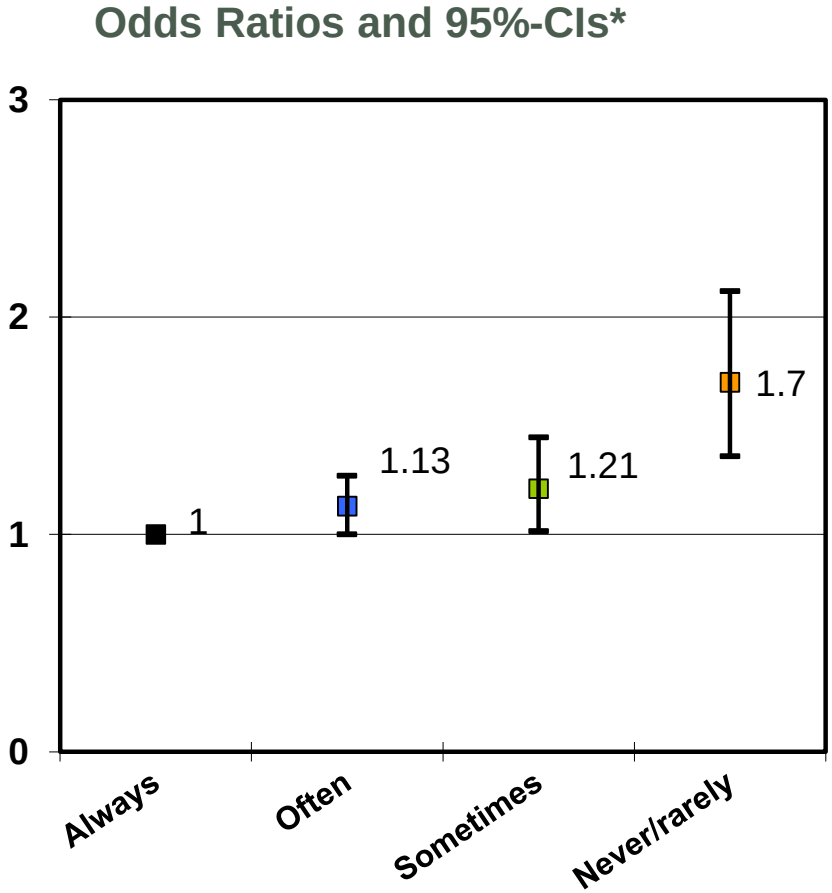
- Dietary patterns rich in vegetables, wholemeal cereals, fruit, and low in animal products and energy-dense snacks are associated with lowered risk of overweight/obesity.
  - **[1] an a-posteriori approach classified dietary patterns by principal component analysis based on dietary questionnaire data.**
  - **[2] an a-priori approach developed a Mediterranean-like dietary score.**
  - **[3] an a-posteriori approach was used to cluster memberships of IDEFICS children over time in association with SES using the K-means clustering algorithm.**
- High SES children (parental education / income) are more likely to show a healthy dietary pattern at baseline and at follow-up and are less likely to adhere to a sweet pattern. Migrant children are more likely consume processed foods at baseline and follow-up [3].

1. Pala V, et al. (2013) Dietary patterns and longitudinal change in body mass in European children: a follow-up study on the IDEFICS multicenter cohort. Eur J Clin Nutr 67: 1042-9.
2. Tognon G, et al. (2014) Mediterranean diet, overweight and body composition in children from eight European countries: cross-sectional and prospective results from the IDEFICS study. Nutr Metab Cardiovasc Dis 24: 205-13.
3. Fernández-Alvira JM, et al. (2015) Prospective associations between socioeconomic status and dietary patterns in European children: the IDEFICS study, Br J Nutr, 113:517-525

Stress/ well-being

Family Lifestyle: Do you sit down with your child when he/she eats meals?





*: adjusted for sex, age, country

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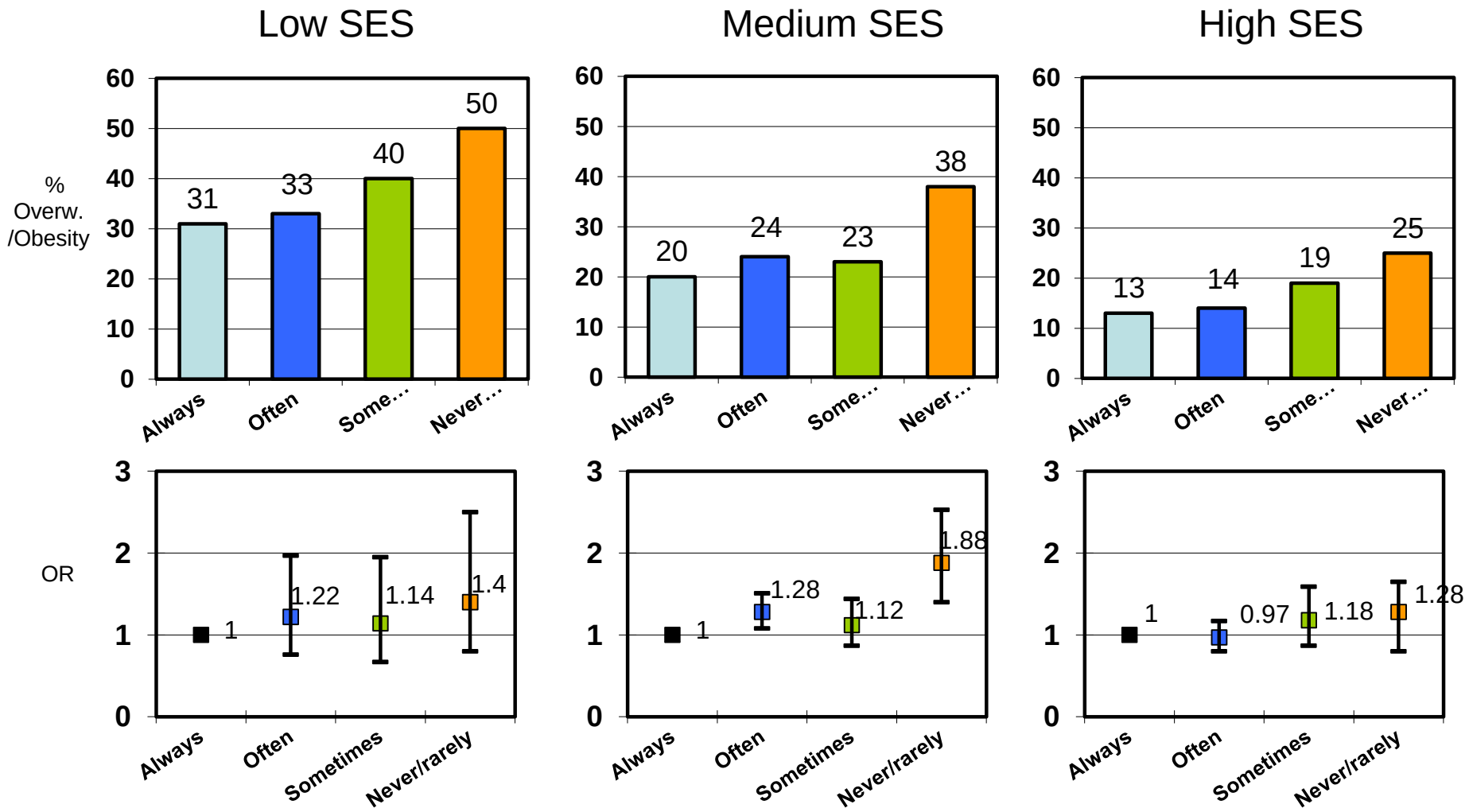
Family Lifestyle: Do you sit down with your child when he/she eats meals? – Stratified by SES



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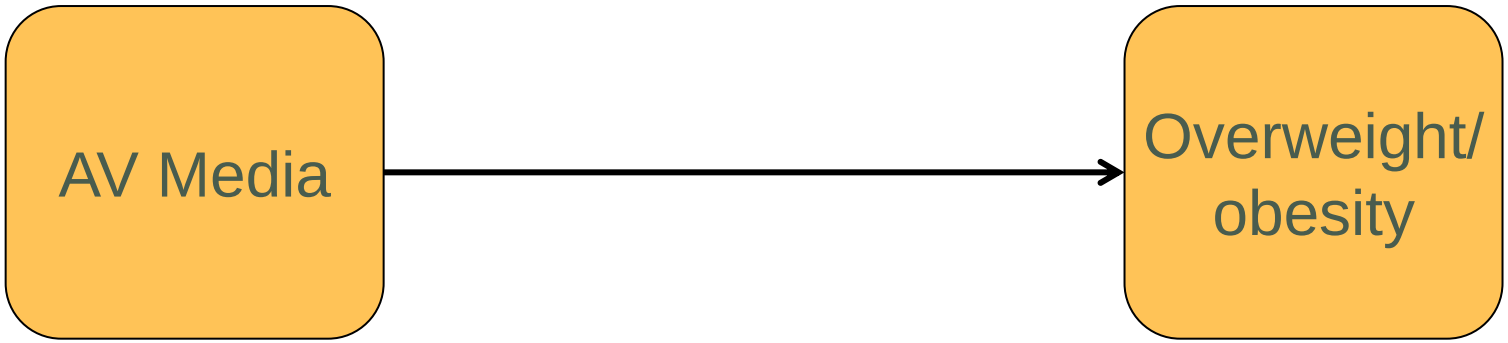
TV consumption



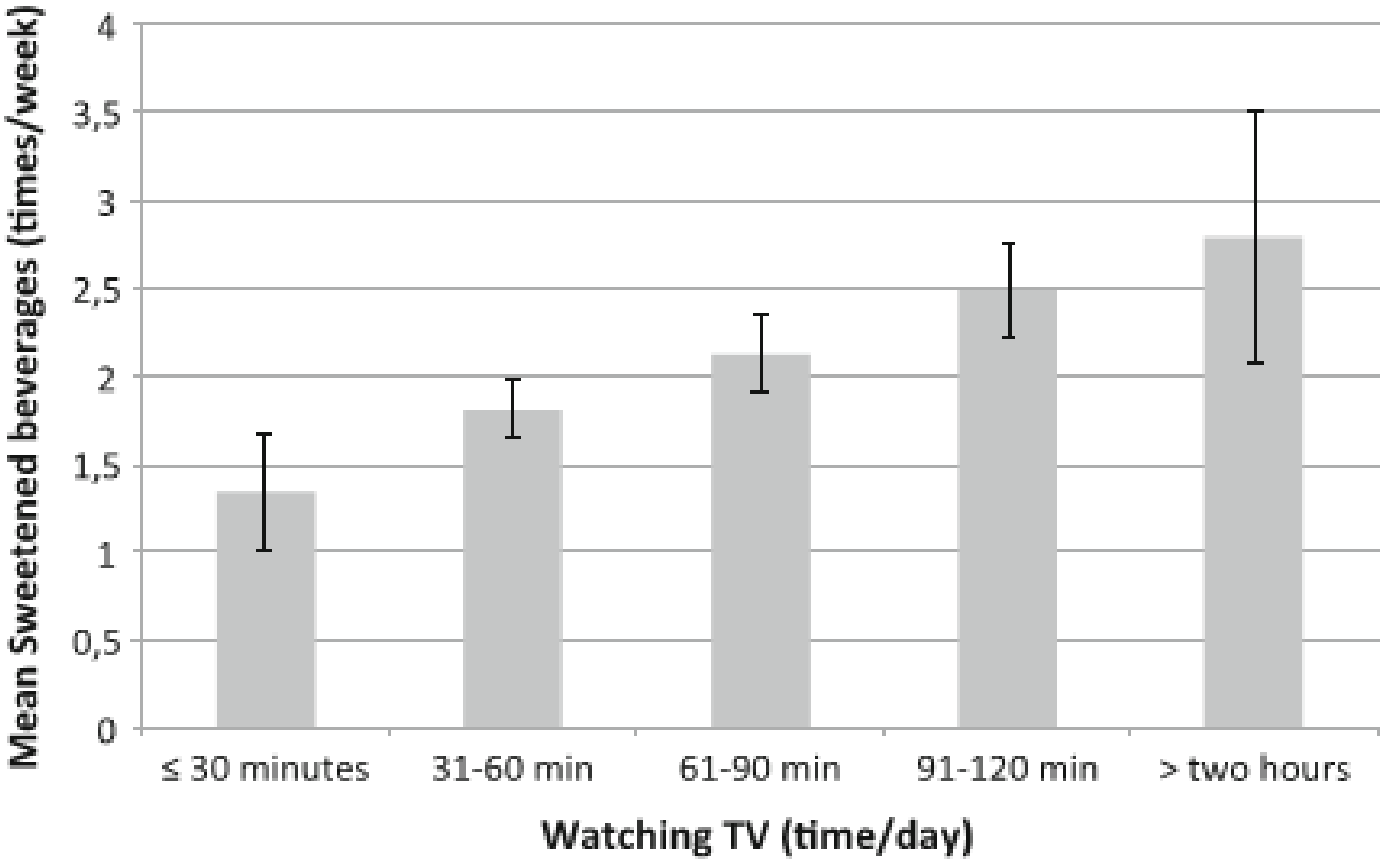
TV-/ screen-time and risk of excess weight gain at 2-year follow-up

Exposure variable	OR (95% CI)*	
	BMI increase#	WtHR increase#
TV and TV+PC time (h/day)		
TV viewing	1.22 (1.13-1.31)	1.26 (1.17-1.36)
Total screen time	1.17 (1.11-1.23)	1.18 (1.12-1.25)

WtHR = Waist-to-Height Ratio
# Highest quintile of relative change between baseline and follow-up

Olafsdottir et al. Young children's screen activities, sweet drink consumption and anthropometry: results from a prospective European study. Eur J Clin Nutr. 2014 ;68(2):223-8.

Consumption of sweetened beverages and watching TV



Frequency of sweetened beverage consumption (95 % CI) (IDEFICS study, cross-sectional, Gothenburg centre, 2007–2010)

Olafsdottir et al. Young children's screen habits are associated with consumption of sweetened beverages independently of parental norms. Int J Public Health (2014) 59:67–75.

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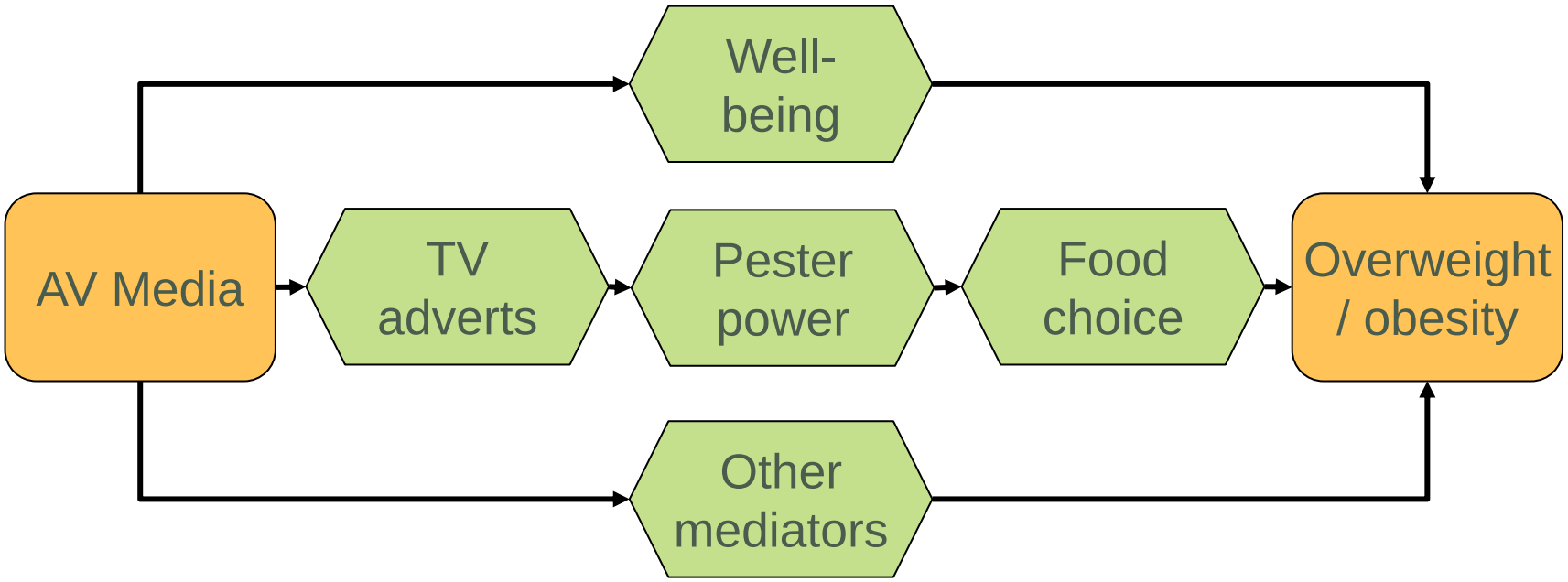
Pathways explaining the association between AV media consumption and children's weight status



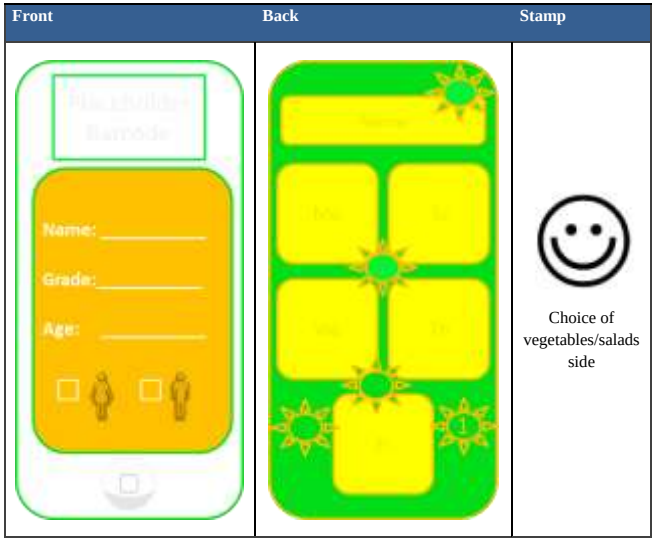
- Clear prevention messages:
  - **No TV in children's bedrooms, please!**
  - **Parental limits** (TV commercials, pester power) → **more favourable food choices**
  - **Limiting TV advertising may foster healthier outcomes**

Environment

School canteens – pilot study design

Pilot study to promote vegetable consumption with a non-monetary reward (smiley stamp)

- 10 primary schools in 5 European countries (1 control and 1 treatment school in each country)
- 6-week experiment split into three two-week periods before, during, and after the experimental treatment
- Treatment: Smiley stamp for choosing a portion of vegetables or salad



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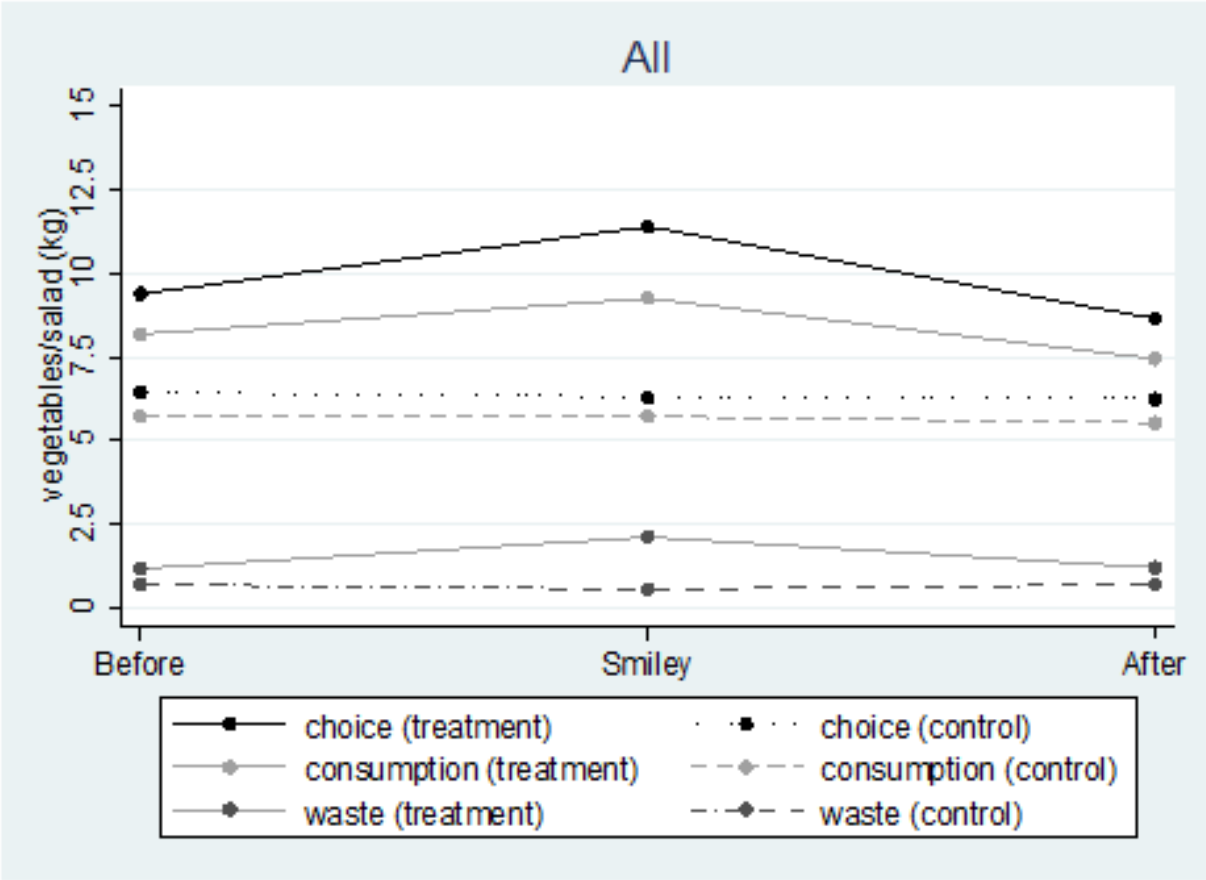
School canteens – pilot study results

In 3 of 5 countries significant increase in both, choice and consumption, but also in waste.

- A low-cost motivational incentive can be used to motivate school children to increase their vegetable and salad consumption and make healthier eating choices.



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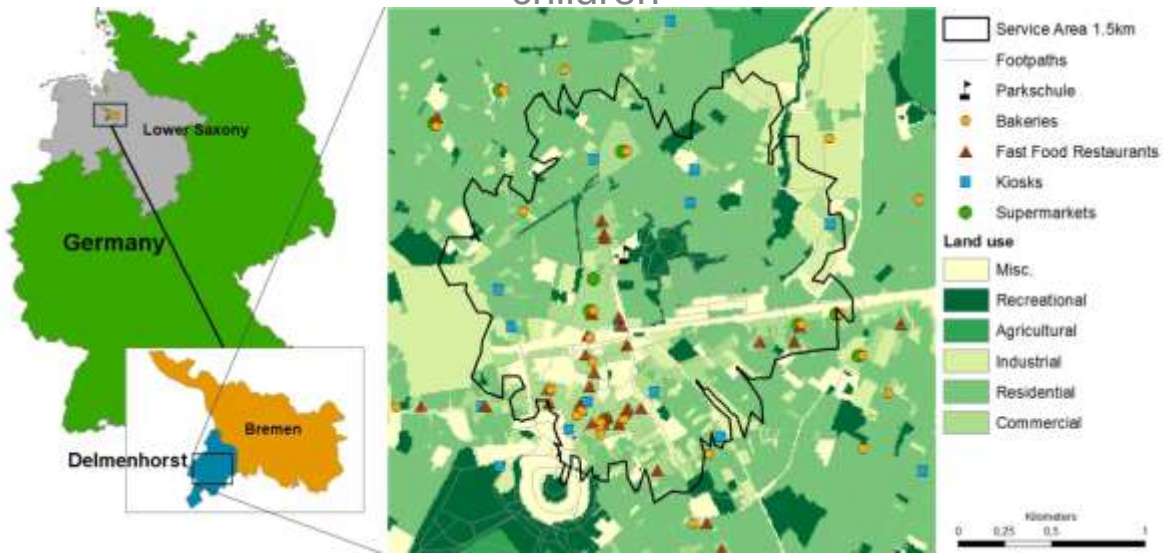
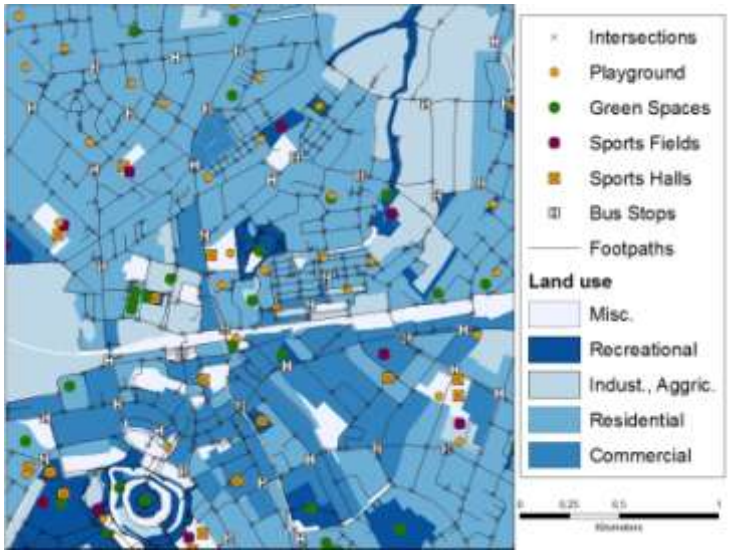
Built environment

- Unhealthy food choices
  - Availability and clustering of fast food restaurants in the school environment
  - FFQ of junk food and “simple sugar” foods of 384 school children
- Urban moveability
  - Opportunities for physical activity in the residential environment
  - Moderate-to-vigorous physical activity (MVPA) in 400 pre-school and school children





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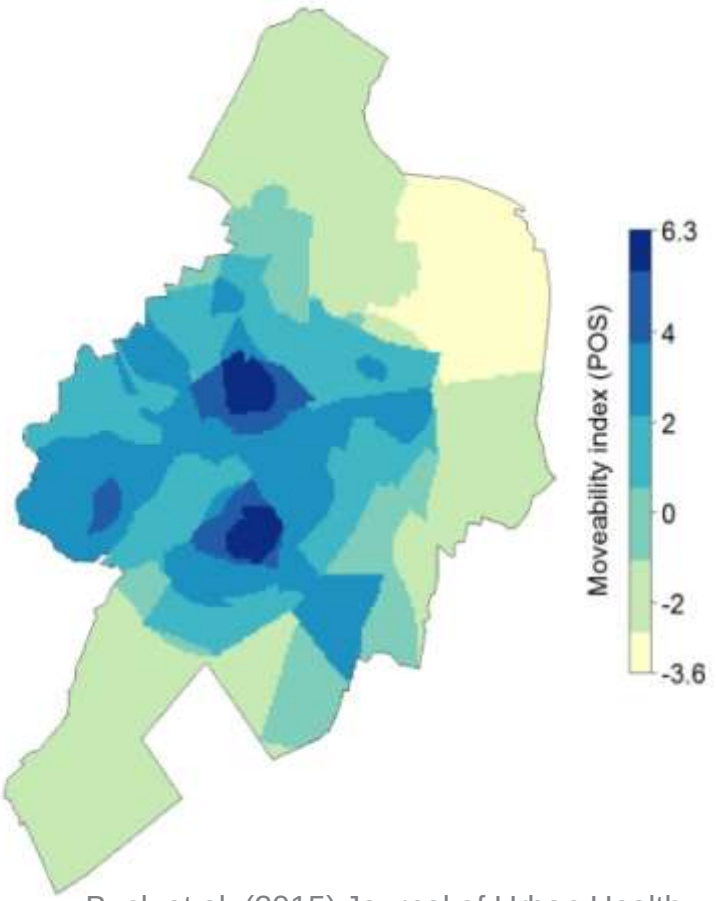
Urban moveability

- Positive association between urban moveability and physical activity
  - Pilot study in one German study region
  - Moderate-to-vigorous physical activity (MVPA) in 400 pre-school and school children
- Predominantly residential home neighbourhoods and high availability of public open spaces positively influence MVPA in school children
- Physical activity in pre-school children restricted by parental safety concerns



Buck et al. (2015) Journal of Urban Health

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Healthy cities

Assess which urban characteristics have beneficial effects on children

- Impact on physical activity
  - Opportunities for physical activity
  - Safe and aesthetic routes for active travel

- Impact on emotional well-being
  - Visual contact with natural spaces (biophilia)
  - Green (park), blue (river/lake) and yellow (beach)

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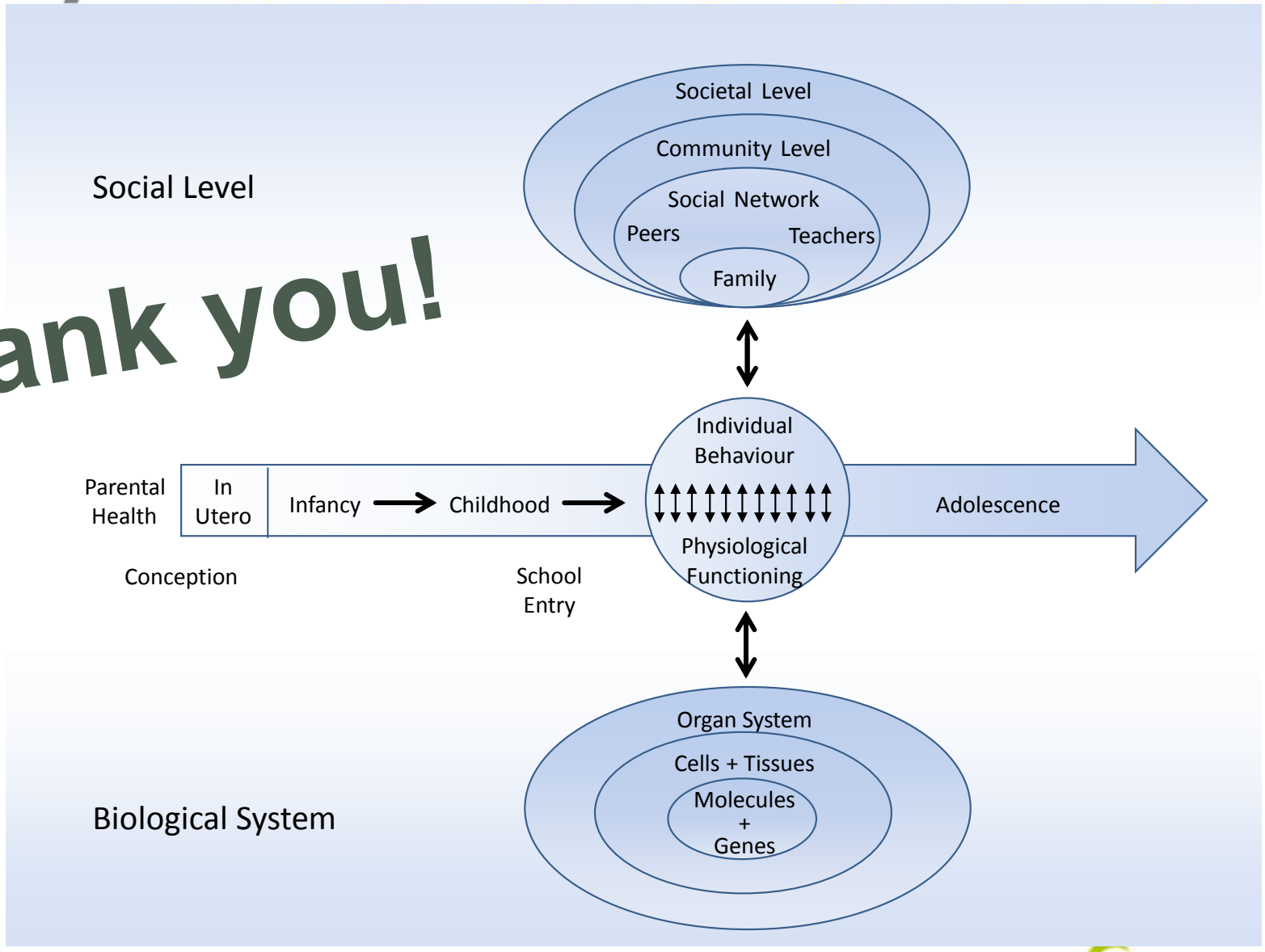
Consider the individual in a wider context



Thank you!

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