# Consumer awareness campaign to reduce household food waste based on PLS-SEM behaviour modelling

Dávid Szakos – Barbara Szabó-Bódi – Gyula Kasza

National Food Chain Safety Office Hungary, Risk Management Directorate

7th International Conference on Sustainable Solid Waste Management

uropean situation in a nutshell

88 million tons

EU estimation:
46.5 million tons
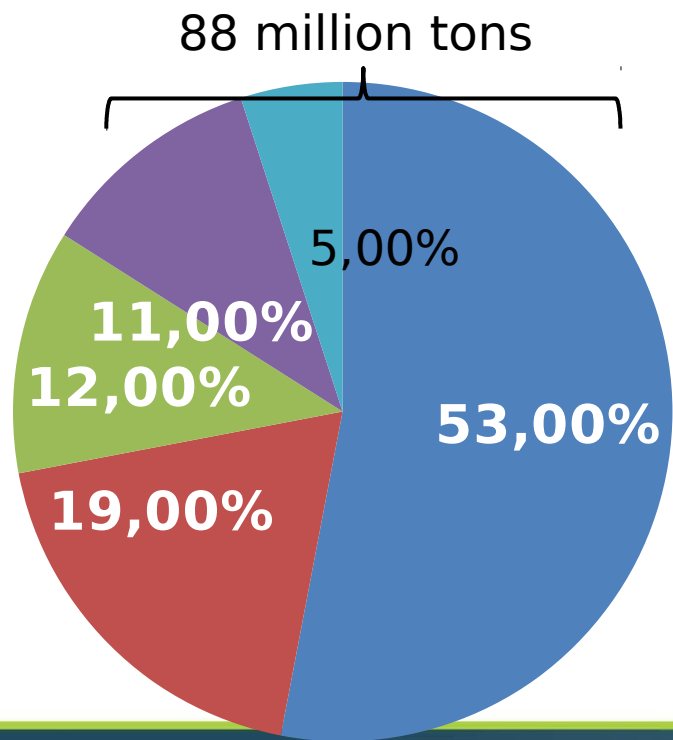
Households
Processing
Catering
Production
Retail

Average:
92 kg/capita/year

Pie chart values: 53,00% / 19,00% / 12,00% / 11,00% / 5,00%

National Food Chain Safety Office

- Central (national level) authority founded in 1888
- Food chain control from soil to retailers and restaurants
- Risk communication (2000 interviews and press releases annually)
- Well known, popular and credible organization amongst Hungarians (EFSA, 2018)

nébih

every complex problem there is an

swer

is **clear**,

nple,

wrong.

ncken

nébih

Typical **simple, clear and wrong** answers:
- Why not to give leftovers from event catering to poor people?
- Why not to give expired food to the poor?
- Why not to give all restaurant leftovers to animals as feed?
- Why destroying all those fine food stuffs that were confiscated by the authority instead of charity?

Further details:
Kasza, Gy., Szabó-Bódi, B., Lakner, Z., & Izsó, T. (2019). Balancing the desire to decrease food waste with requirements of food safety. Trends in Food Science & Technology 84: 74-76.

er years of answering press and NGO inquiries and suggestic

e-by-one,

have decided to start a public campaign and

te all interested partners as stakeholders:

PROJECT REFERENCE	LIFE15 GIE/HU/001048
DURATION	07/07/2016 - 30/06/2020
TOTAL BUDGET	964,468.00 €
EU CONTRIBUTION	578,680.00 €

KEYWORDS

- Environmental education
- Public awareness campaign
- Waste reduction

ACTIVITIES

- Awareness raising communication campaign
- School programme
- Working groups' good practices
- Scientific elements

nébih

Consumer studies

Scientific results to the communication campaign

1. Measurement of households' food waste*
2. Attitude reasons behind the routine – PLS-SEM modelling based on survey results

*Further details:
Szabó-Bódi B., Szakos D., & Kasza Gy. (2018). Assessment of Household Food Waste in Hungary. *British Food Journal 120*(3), 625-638.

nébih

Methodology – Sample collection

- Quantitative consumer survey (November-December 2016)
- N=1002
- Sample is representative to the total adult population of Hungary (by latest census data)
  - Age
  - Sex
  - Geographical distribution

Theoretical background

Theory of multidimensional attitudes (Allport, 1935)
1. Cognitive – thinking
2. Affective – feeling
3. Conative – doing

Methodology
Background of PLS-SEM modelling

- Partial least squares structural equation modelling (variance based)
- Second generation data analysis
- Two operations simultaneously:
  1. Factor analysis (new latent variables)
  2. Regression analysis (relationship between new latent variables)
- Handles ordinal scales and does not require normal distribution
- Softwares: IBM SPSS Statistics 22.0, SmartPLS

Results

Normative model
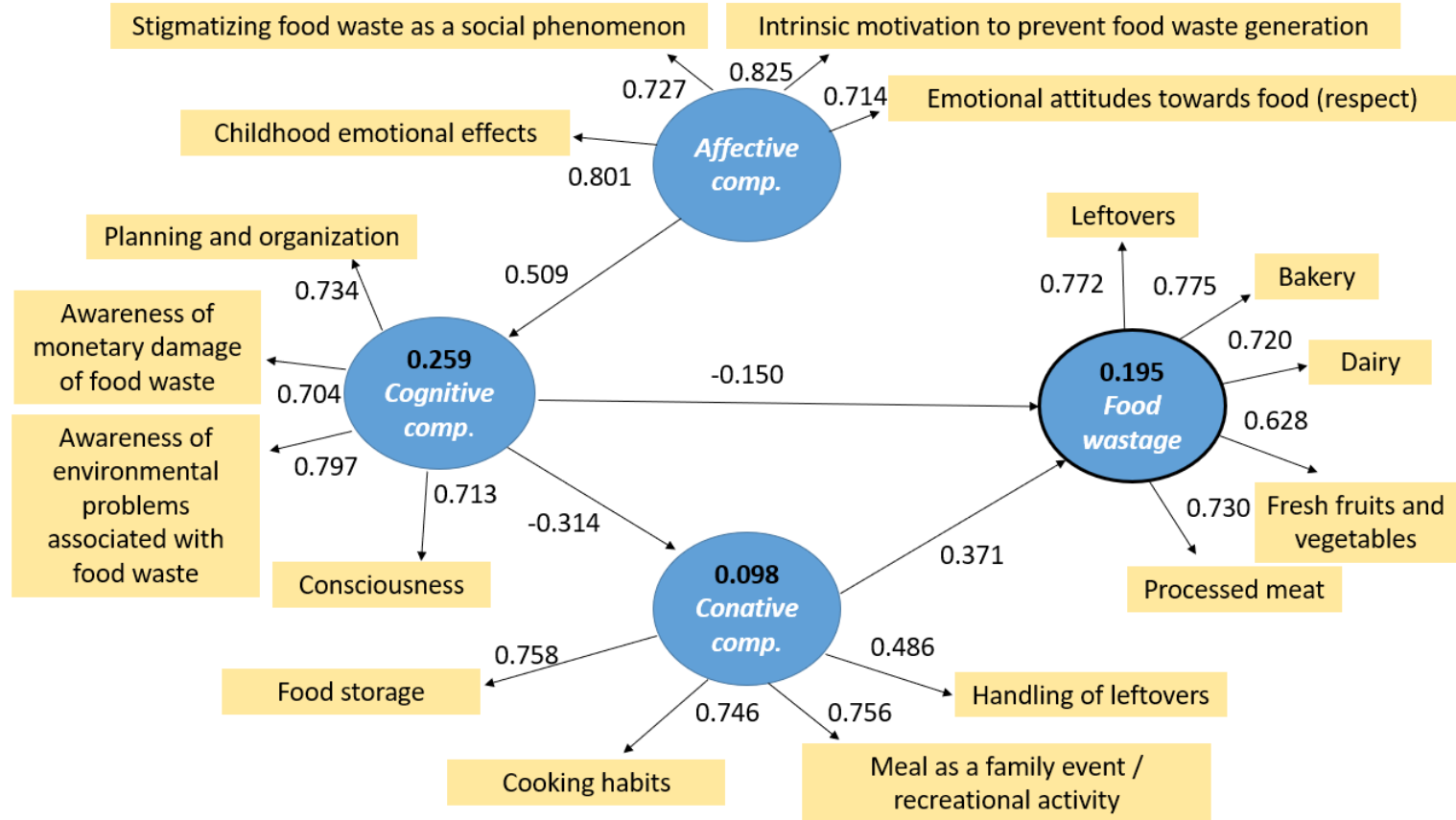
Routine (=conative component) is the most prominent!

Effect of demographical factors (p<0.05)

Age	Mean	Income	Mean	Education	Mean	Residence	Mean	Region	Mean
Under 30 years	0.415	Low	-0.268	Primary school	0.055	Municipality	-0.186	Central Hungary	0.212
30-39 years	0.372	Average	-0.003	Vocational school	-0.460	Town	-0.051	Transdanubia	-0.043
40-59 years	-0.045	High	0.315	High school graduation	-0.048	Capital city	0.261	Great Plain and North	-0.130
Over 60 years	-0.553			Higher education	0.094				

nébih
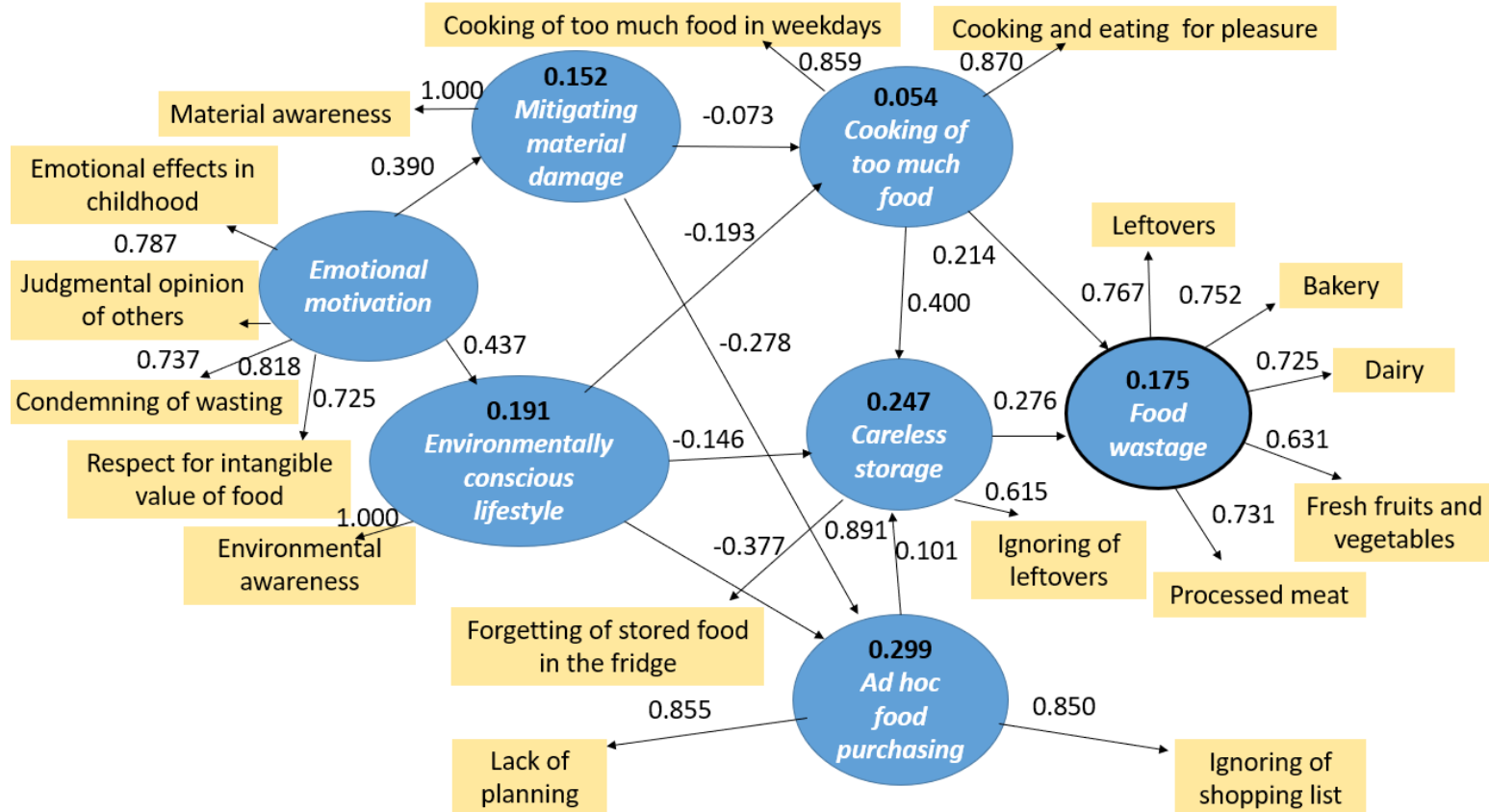
Explicative model

Conclusions

- Normative model proved: prominent role of conative attitude component: school programme is important!
- Explicative model: practical aspects of behaviour
- Most influential socio-demographical factors: income, age, education, residence and region: targeting communication
- PLS-SEM modelling is a great tool to design communication campaigns, as happened in the Wasteless campaign in Hungary

Thank you for your kind attention!