

Factors of proenvironmental behavior of university students

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Motivation

- Present result of an empirical study on proenvironmental behavior of university students
- Discuss further ways to go



Target population

- Students living in student dormitories Koleje 17. listopadu
- 1400 students, 2 buildings, different study backgrounds



Target behaviors

1. Proenvironmental behaviors with non-negligible/ measurable effect in terms of energy consumption
2. Behaviors that are neglected

Out of list of 15 behaviors, these turned out to be good candidates in pre-survey:

- Defrosting of the refrigerator
- Turning off the stand-by mode of electric appliances
- Cooking with the remaining energy after the element has been switched off



Survey and the data

- Pre-survey 1
 - October 2009
 - Cca 50 structured self-administred questionnaires
- Pre-survey 2
 - November 2009
 - Cca 30 semi-structured interviews
 - Elicitation of relevant salient beliefs
- Main wave of data collection
 - January 2010
 - Sample
 - Self-administred questionnaire
 - Random sampling
 - 247 usable observations
 - Approx. 10 min.



Measurement of TPB constructs

- Indirect measurement of AT, SN, PBC
 - target some of the beliefs by an intervention campaign
- We assumed no direct effect of PBC on behavior
- Scales
 - **Behavioral beliefs** – unipolar (unlikely - likely)
 - **Evaluation of BB** – unipolar (unimportant - important)
 - **Normative beliefs** – bipolar (would not approve – would approve)
 - **Motivation to comply** – unipolar (would not follow his advice – would follow his advice)
 - **Control beliefs** – bipolar (disagree - agree)
 - **Perceived power of control factor** - bipolar (disagree - agree)
 - **Intention** – unipolar (unlikely-likely)
 - **Behavior** – cardinal scale, interval-censored



Scoring of TPB constructs

$$A = \sum_{i=1}^n b_i e_i$$

$$PBC = \sum_{k=1}^n b_k p_k$$

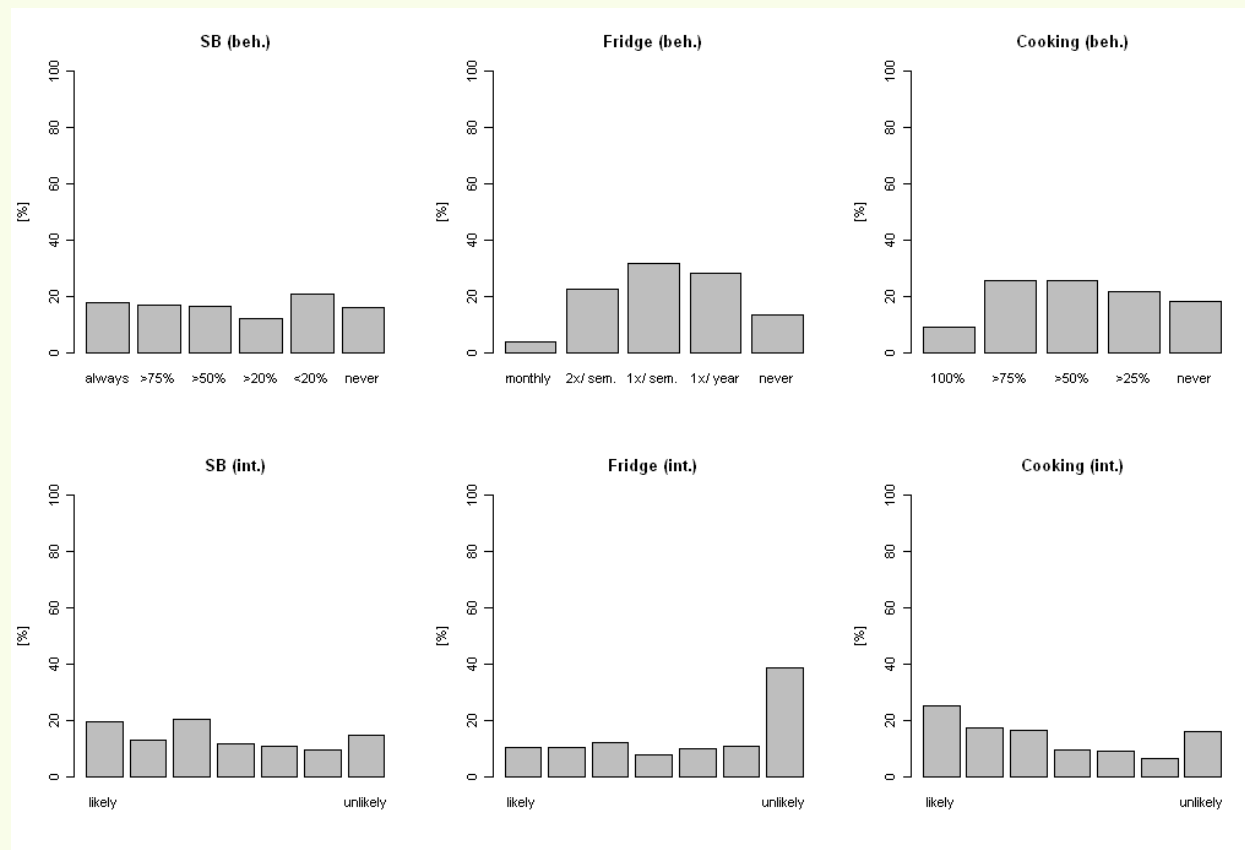
$$SN = \sum_{j=1}^n b_j m_j$$

$$INT = \beta_1 A + \beta_2 SN + \beta_3 PBC + \varepsilon_1$$

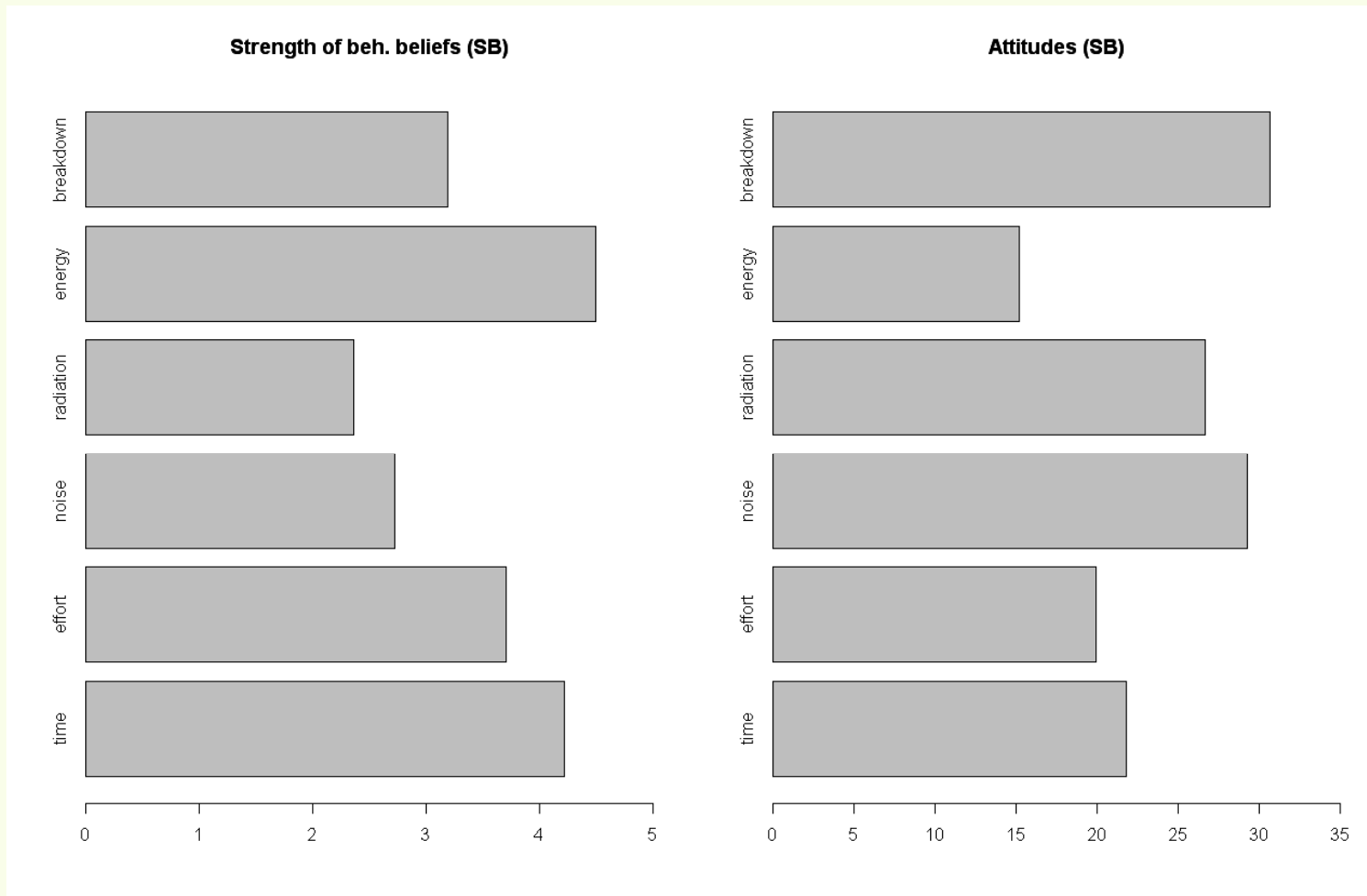
$$BEH = \beta_4 INT + \varepsilon_2$$



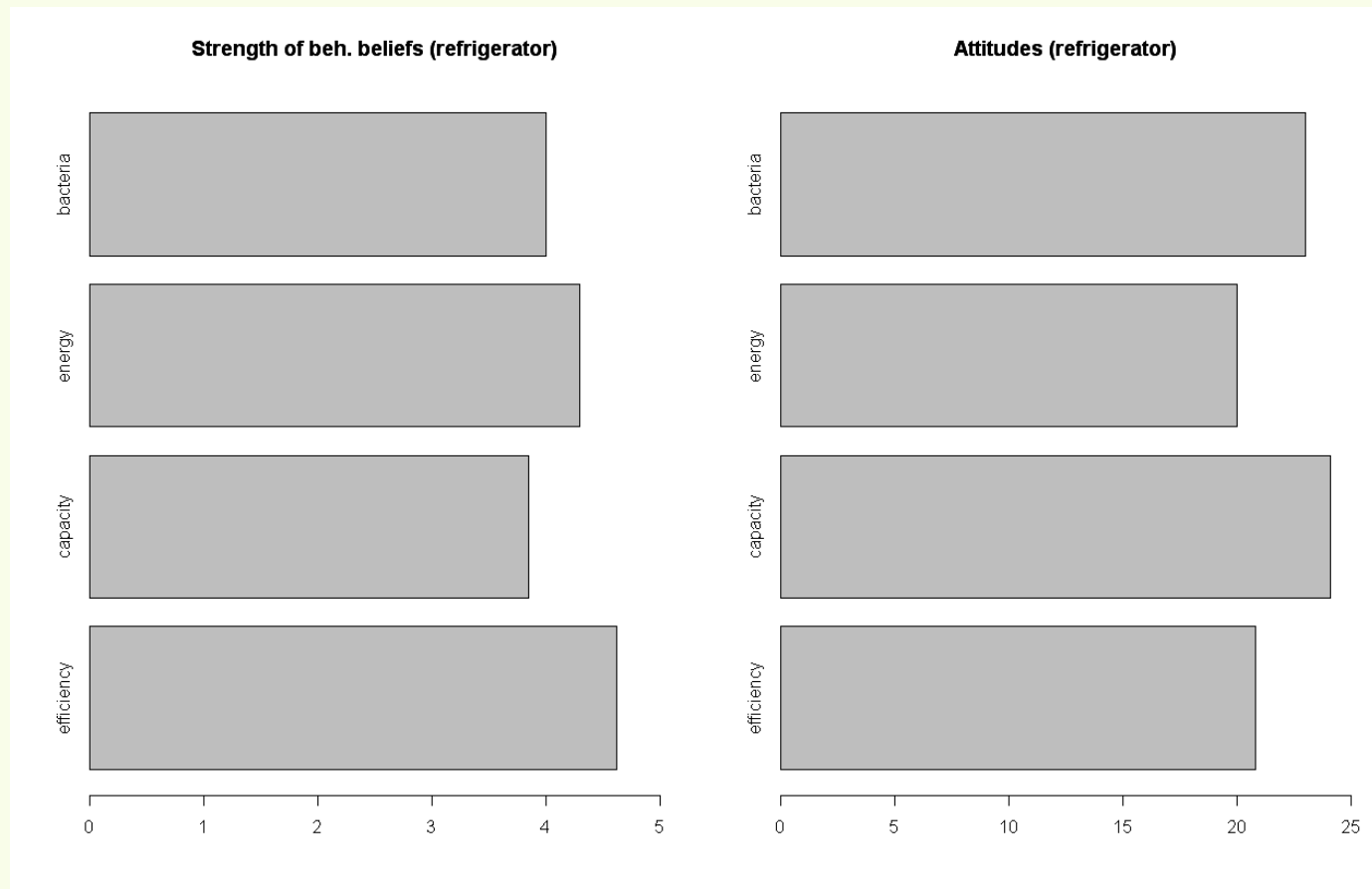
Results: behavior and intention



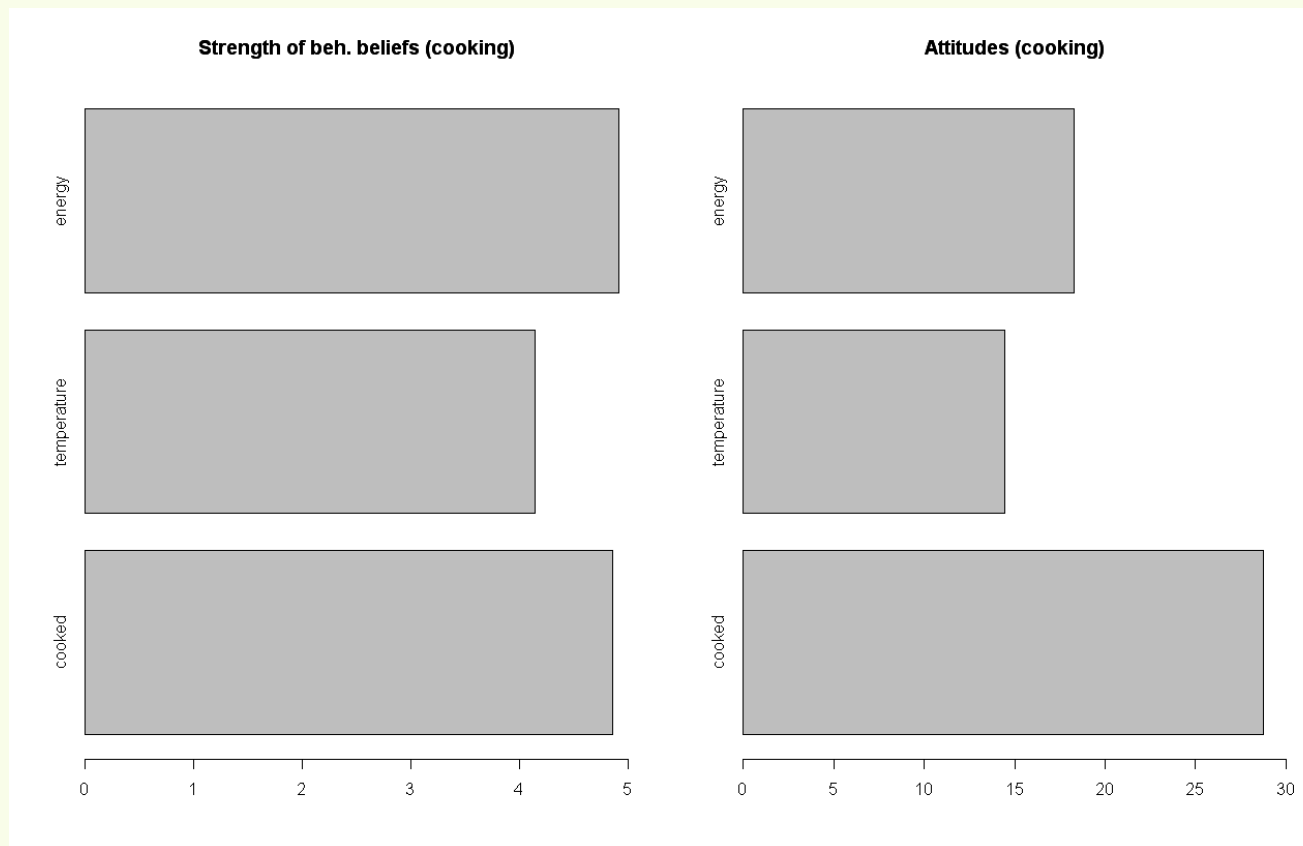
Beh. bel. and attitudes (stand-by)



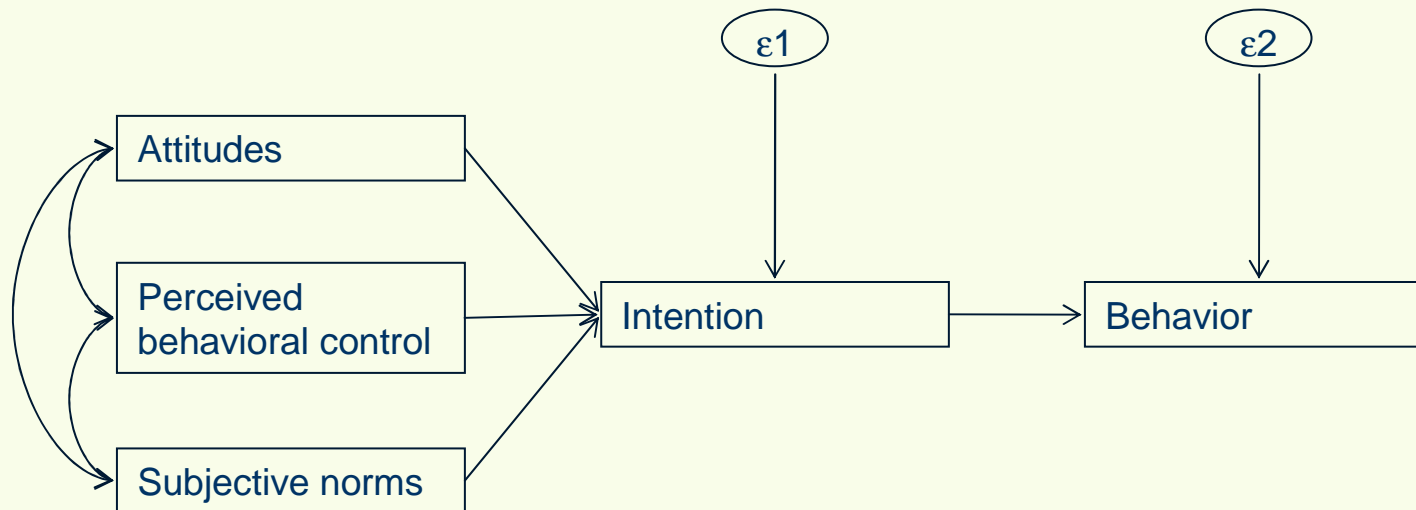
Beh. bel. and attitudes (defrosting)



Beh. bel. and attitudes (cooking)



The model



Estimation of the model

- Formal expression of the model:

$$\text{INT} = \beta_1 A + \beta_2 \text{SN} + \beta_3 \text{PBC} + \varepsilon_1$$

$$\text{BEH} = \beta_4 \text{INT} + \varepsilon_2$$

- Path analysis

$$\Sigma = \Sigma(\theta)$$

- Full information estimation

- Model is overidentified

- Fix regression weights of etas to 1
- Recursive model
- no latent variables
- 15 nonredundant elements - 12 parameters = 3 df

- The data are not multivariate normal - platycurtic distribution of INT and BEH

- We use asymptotically distribution-free method



Model fit

Model	N	Chi-square	Df	P-value	RMSEA	RMSEA HI (90)	R2 Intention	R2 behavior
Cooking	225	6.416	3	0.093	0.071	0.149	0.276	0.561
Defrosting	192	7.371	3	0.061	0.087	0.169	0.133	0.168
Stand-by	227	2.32	3	0.509	0.000	0.102	0.217	0.406

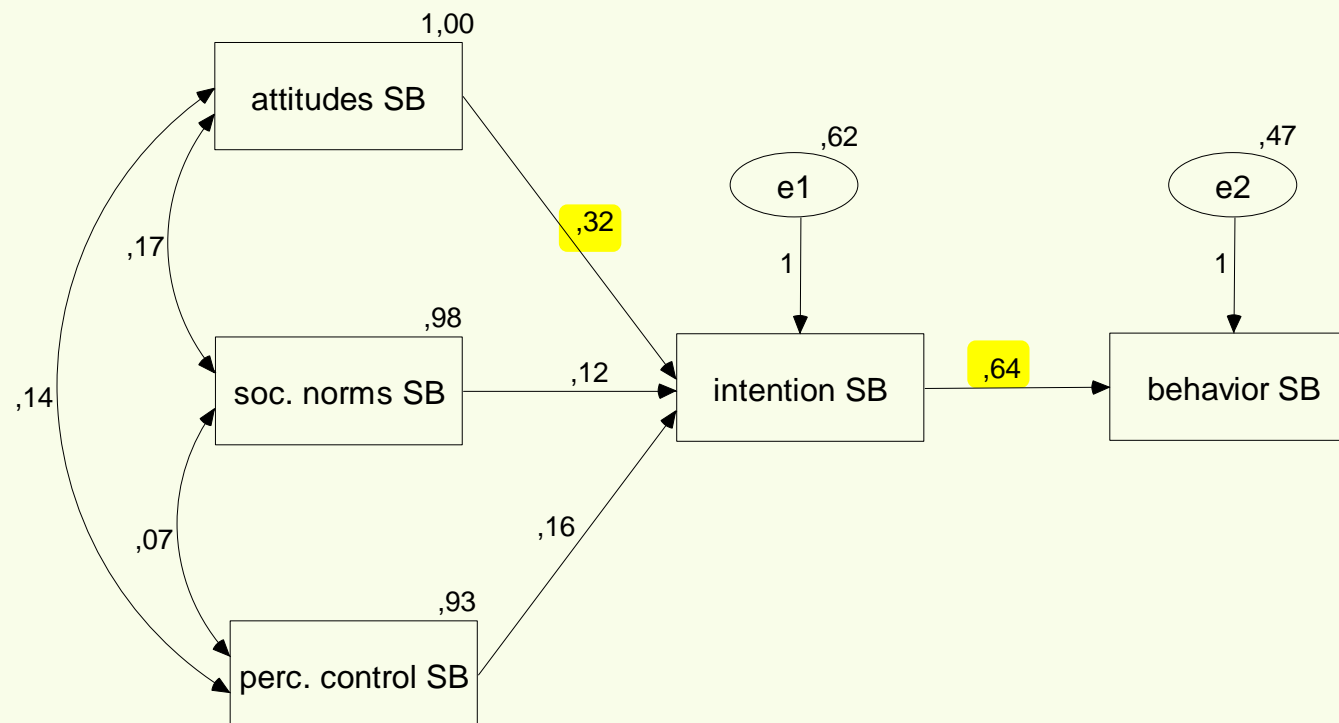


Fit of the models in detail

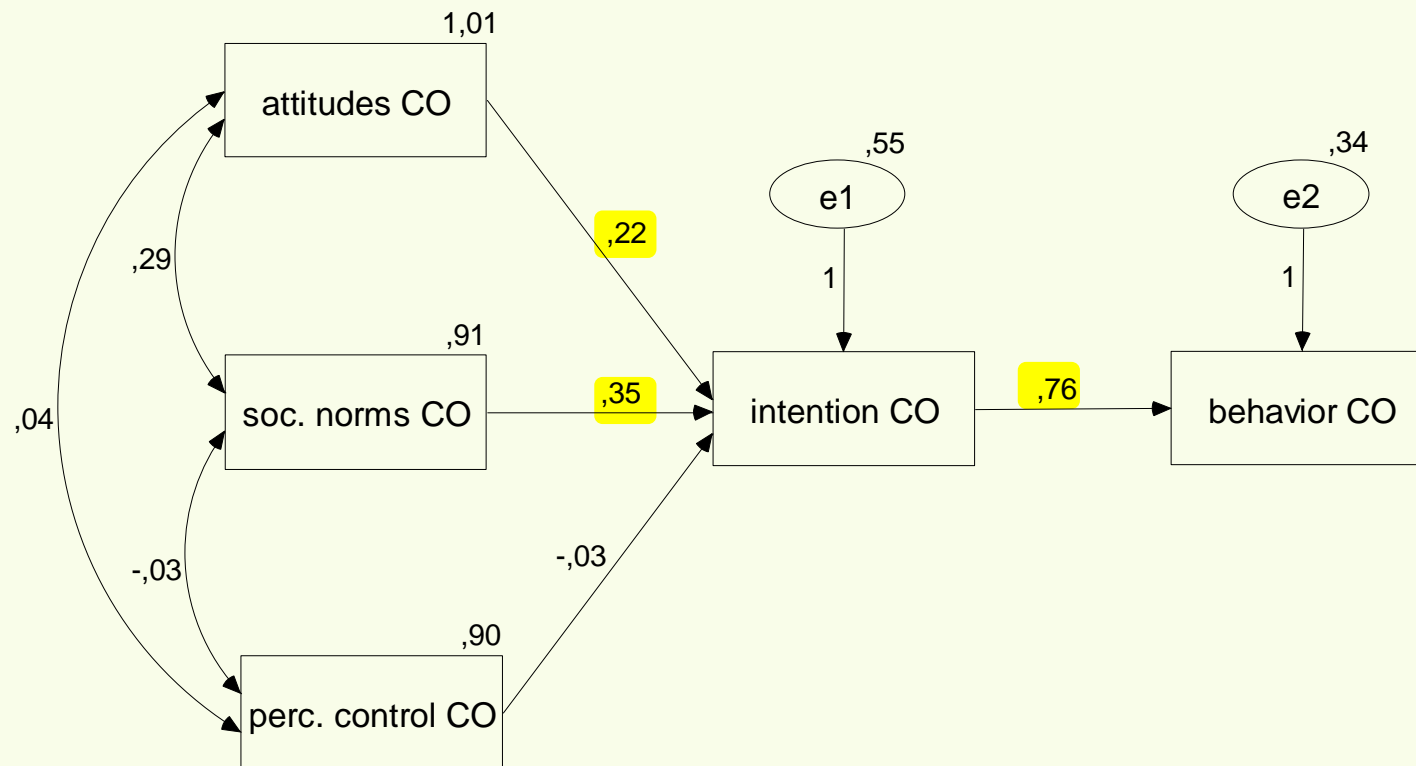
- Inspection of residual matrix
 - Models seem to be empirically well specified
 - Except for the residual covariance PBC*BEH, which is between 1.2 and 1.6
 - Direct effect of PBC on B should be probably included (but chi-square test indicates no improvement in the fit)



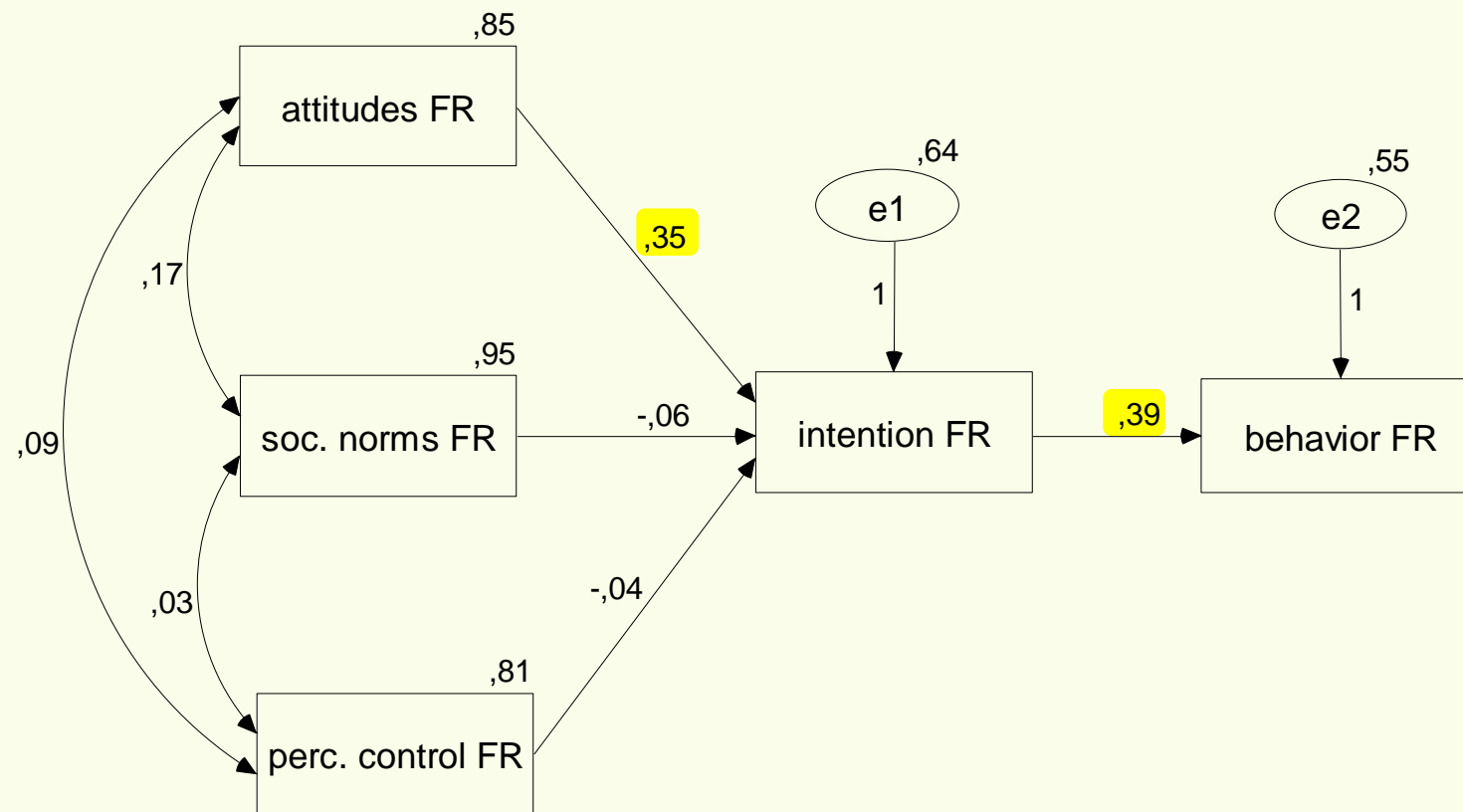
Parameter estimates (stand-by)



Parameter estimates (stand-by)



Parameter estimates (defrosting)



Conclusions 1

1. From the empirical point of view, the model specified on the basis of TPB has not been rejected by our data
2. The explanatory power of the model has been quite high, with R2 in the range of
 - 0.133 and 0.276 for intention
 - 0.168 and 0.561 for behavior
3. Strength of energy-related behavioral beliefs is quite high, but their evaluation is not that positive, resulting in weak energy-related behavioral attitudes



Conclusions 2

1. Attitudes are always significant predictor of intention
2. Social norms are significant predictor only in case of cooking
3. PBC is not significant predictors for neither of the 3 behaviors

