

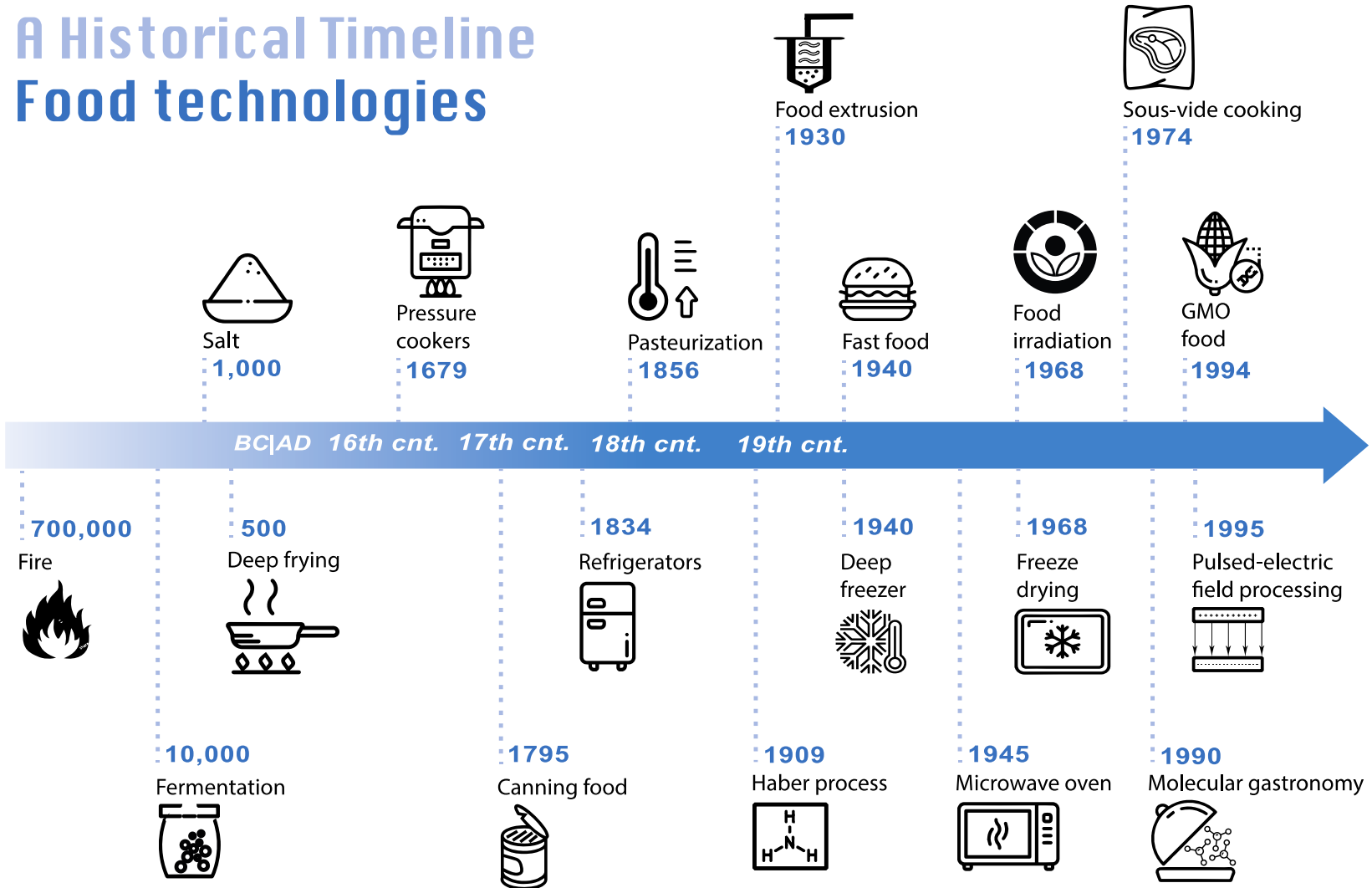


Factors influencing acceptance of novel food technologies

Prof. Dr. Michael Siegrist

Consumer Behavior

A Historical Timeline Food technologies



Siegrist & Hartmann, 2020

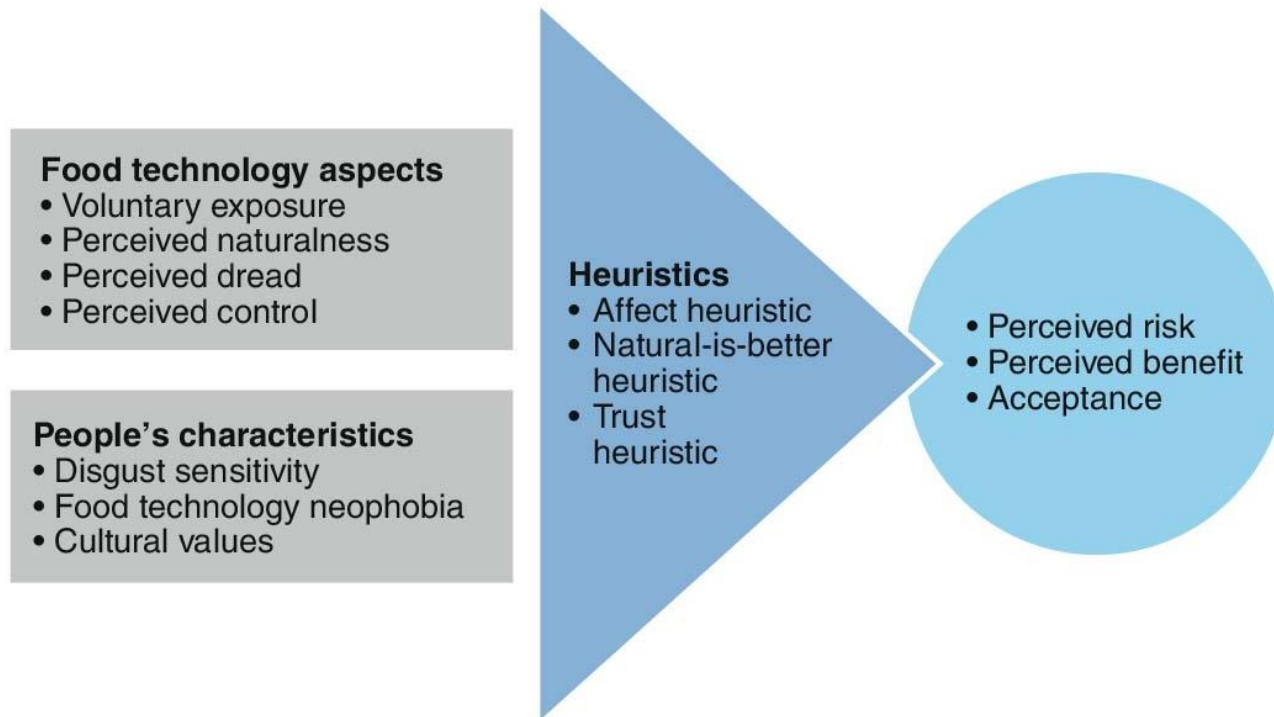
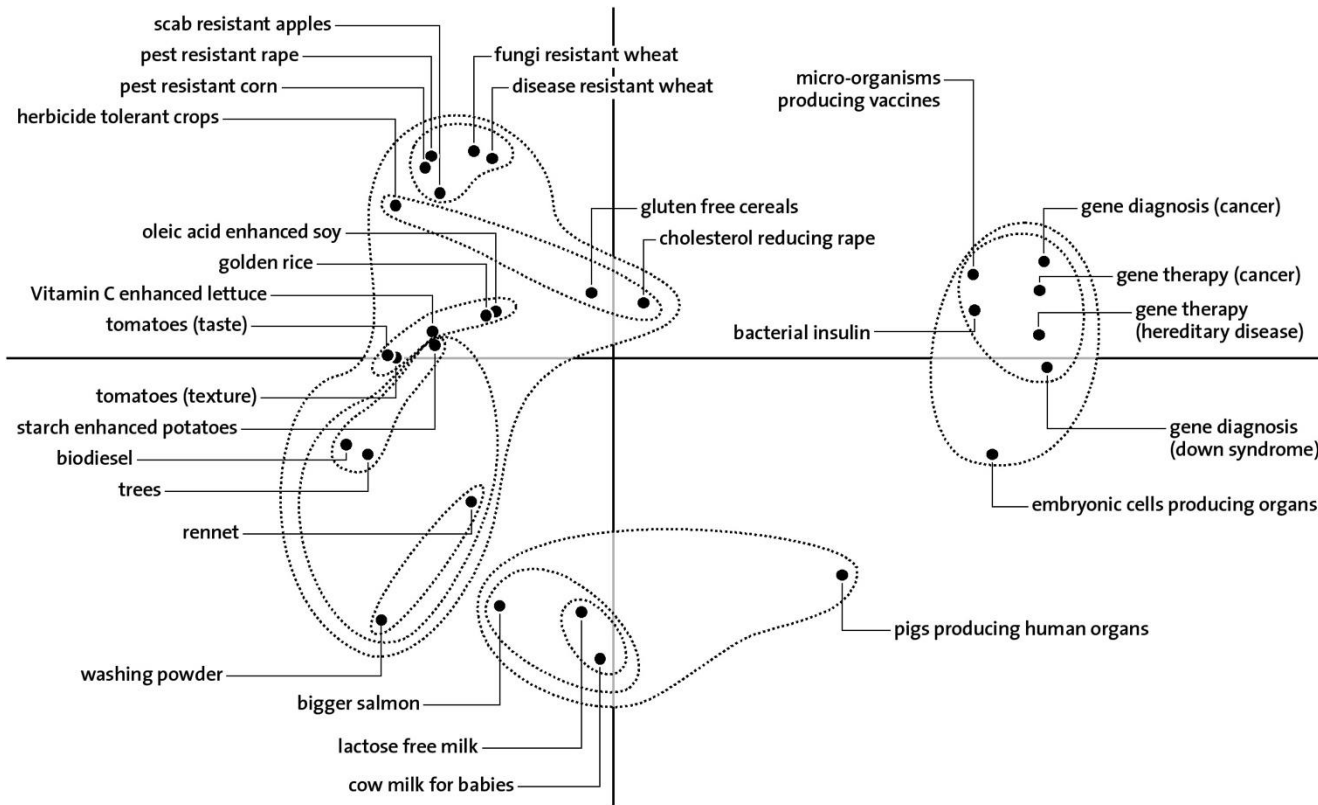


Fig. 2 | Factors influencing the perception of food technologies. How a food technology is perceived by consumers depends both on the perceived aspects of a food technology and on the individual characteristics of the consumers. Furthermore, both of these factors influence the heuristics that consumers rely on when evaluating the benefits, risks and acceptance of food technologies.

Siegrist & Hartmann, 2020

Food Technology Aspects

Perception of various gene technology applications



Connor & Siegrist, 2009

People's Characteristics

Knowledge, Trust, Personality

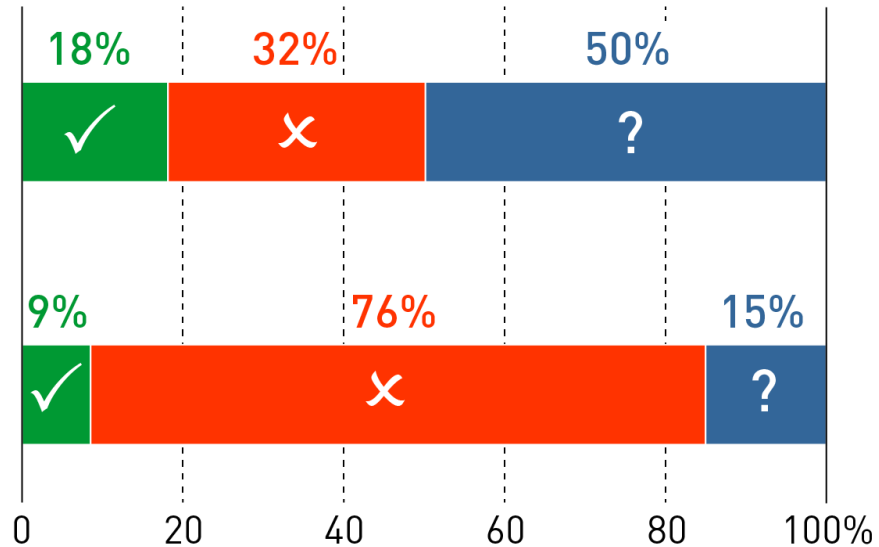
- Lay people may have misconceptions about novel technologies that are barriers for acceptance
- Lay people often have to rely on experts
 - Trust is a key factor
- Personality related factors influence acceptance
 - Food neophobia
 - Disgust sensitivity
 - Health concerns

Knowledge of European consumers

(N = 5,631)

✓ Correct response
 ✗ Incorrect response
 ? Don't know

The chemical structure of the synthetically produced salt (NaCl) is exactly the same as that of salt found naturally in the sea.



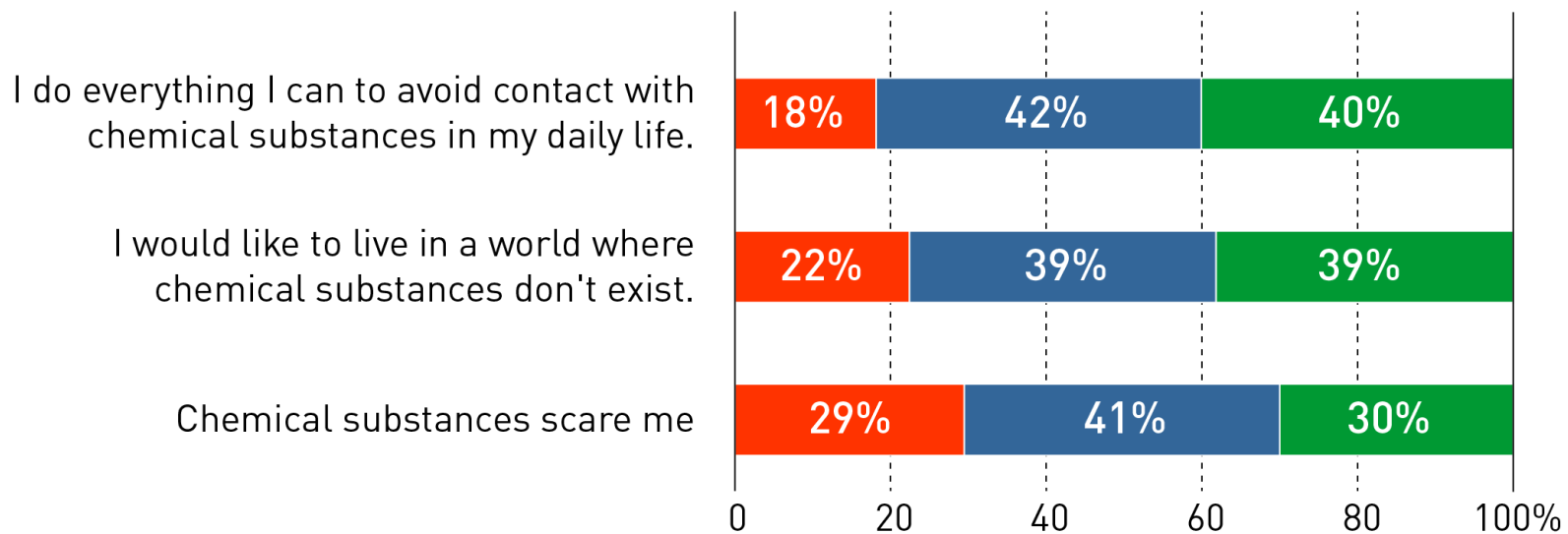
* Incorrect statement (reverse-coded)

Bearth, Saleh & Siegrist, 2019

Chemophobia: views of European consumers

(N = 5,631)

Do not agree Slightly agree/disagree Agree



Bearth, Saleh & Siegrist, 2019

Impact of Symbolic Information: Sensory Experience

- Participants were invited to a sensory experiment
- Evaluate a “mousse au chocolat”
- Three groups
 - No information
 - Natural Vanilla
 - Artificial Vanillin



Food Irradiation

- Irradiated food has to be labeled in Switzerland
 - „Mit ionisierenden Strahlen behandelt“
 - „bestrahlt“
- Benefits associated with food irradiation are not tangible for consumers; they must be communicated
- This may be difficult due to the associations evoked by the term irradiation



Food Irradiation

- Radiation is strongly associated with nuclear power that tends to evoke negative associations and images
- These negative attitudes may shape attitudes toward food irradiation, helping to explain why a number of consumers perceive food irradiation as a risky technology
- Several studies suggest, that knowledge positively influences acceptance

Consumer Perception of Food Irradiation



Consumers' affect evoked by nuclear power and quality perception of the irradiated food were large and significantly correlated ($r > .52$, $p < .001$)

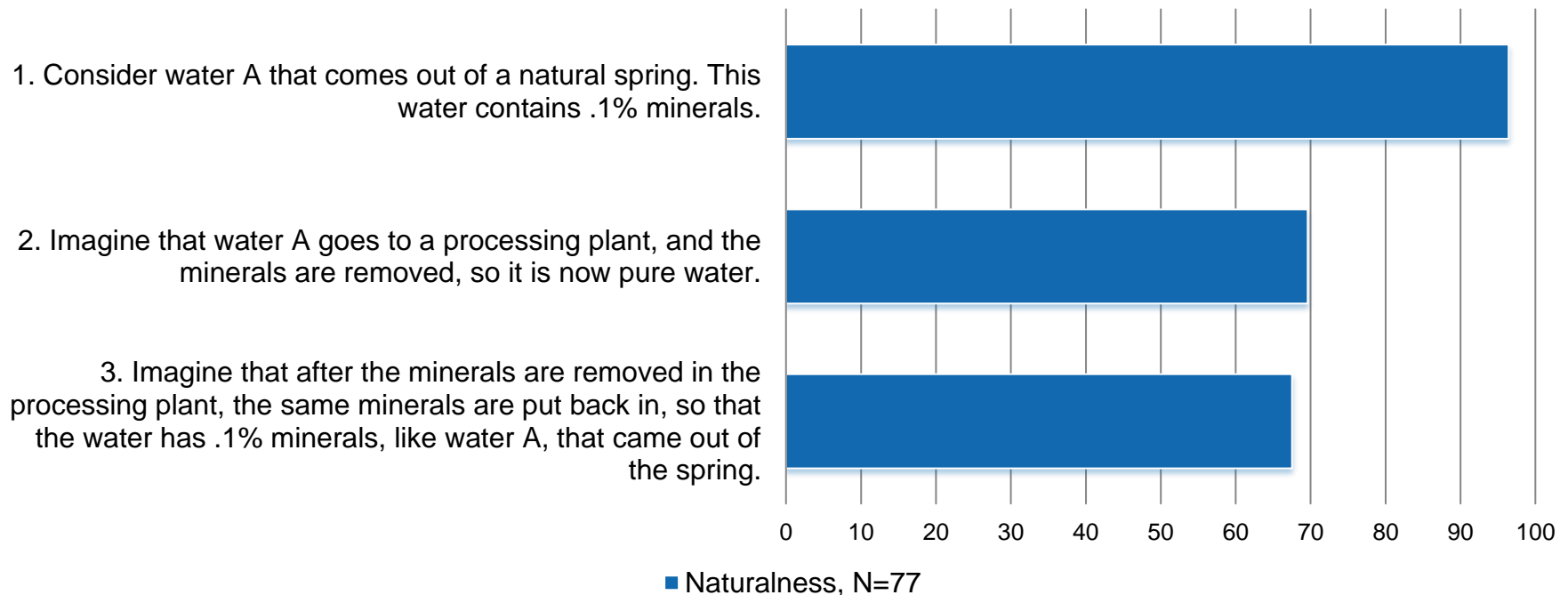
Bearth & Siegrist, 2019

Biases Related to the Evaluation of Naturalness

- Process is more important compared with outcome
- Dose insensitivity
- E-numbers refer to synthetic ingredients

The Importance of the Process

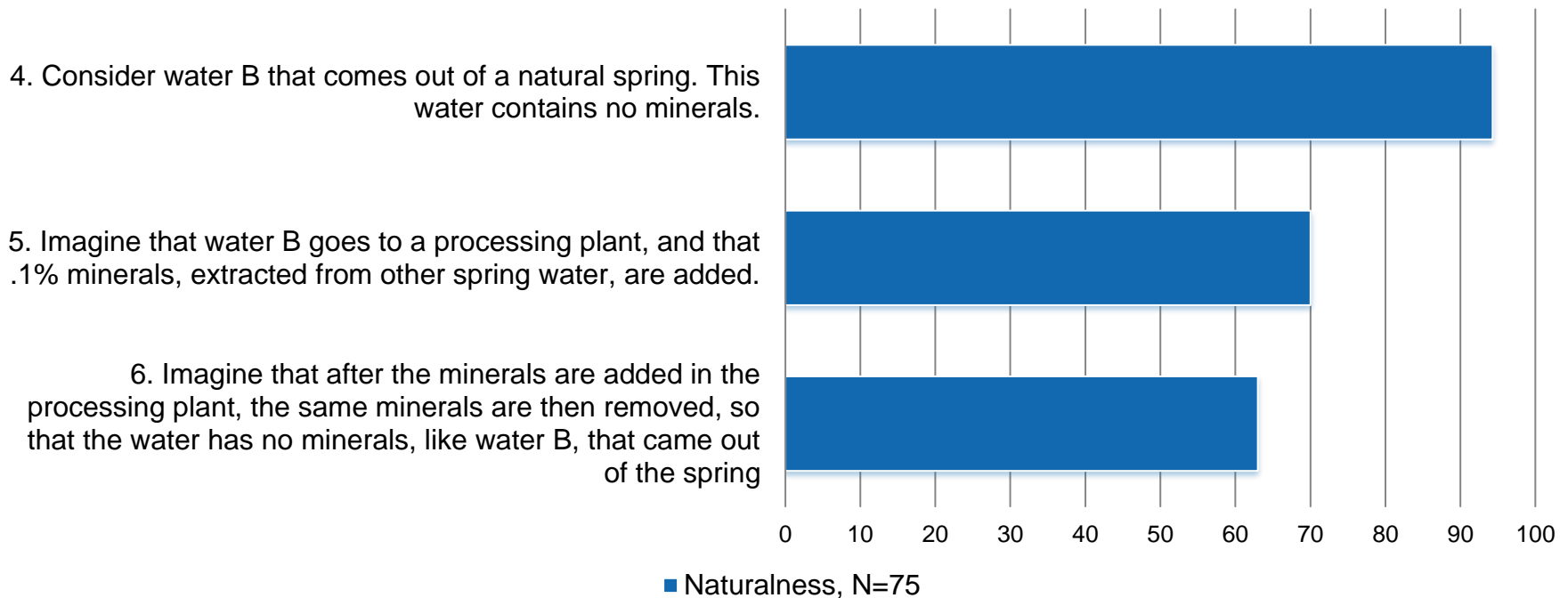
Water, removing natural minerals (.1%)



Rozin, 2006

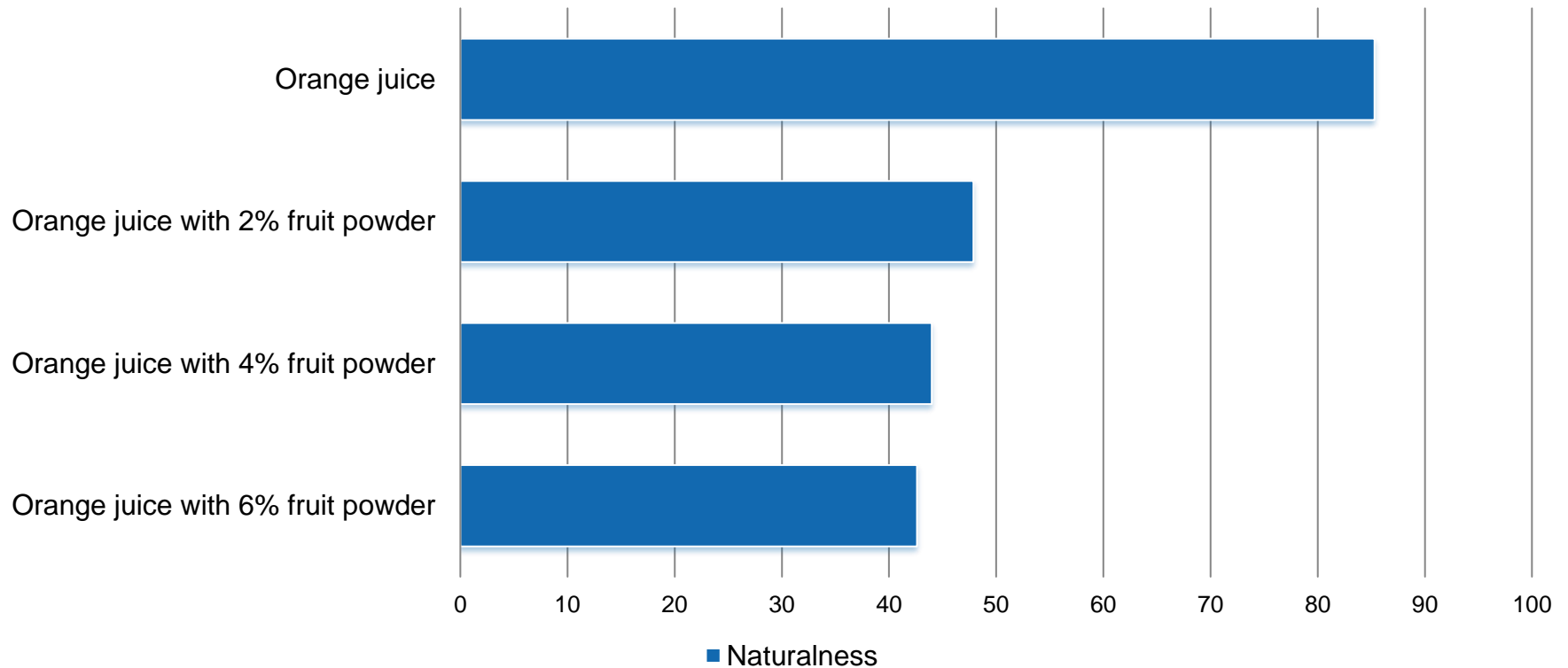
The Importance of the Process

Water, adding natural minerals (.1%)



Rozin, 2006

Dose Insensitivity



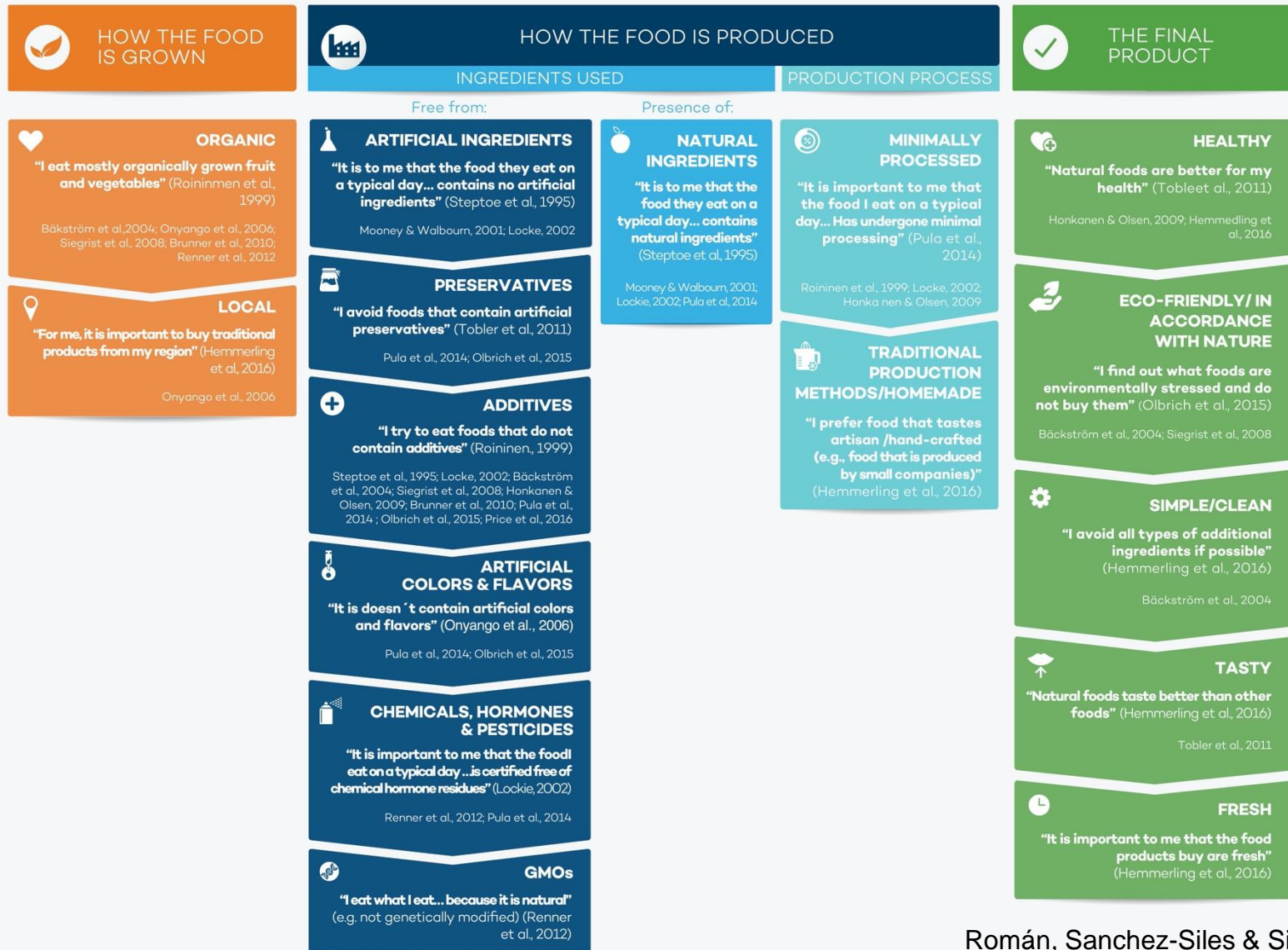
Evans et al., 2013

Food Additives: The Symbolic Power of E-Numbers

As how artificial or natural do you evaluate the following food additives?
(0=artificial, 100=natural)

	With E-Number (M, SD) (N=121)	No E-Number (M, SD) (N=123)	t-value
(E 100) Curcumin, natural food color (orange-yellow)	65.10 (32.26)	75.89 (26.42)	2.86**
(E 220) Sulfur dioxide, blocks browning reactions in dry fruits	39.55 (33.29)	46.72 (33.93)	1.66*
(E 620) Glutamic acid, flavor enhancer	30.62 (29.11)	37.89 (33.58)	1.81*

** $p < .01$; * $p < .05$, one-tailed



Román, Sanchez-Siles & Siegrist, 2017

Conclusions

- People are rather conservative when it comes to food
- Aspects of a food technology influence acceptance
- Large individual differences
- Naturalness evokes positive evaluations of foods
 - Tastier, healthier, more sustainable
- Biases related to the evaluation of naturalness
 - Process is more relevant than outcome
 - Dose insensitivity