The effect of attribute framing on consumers' attitudes and intentions toward food: A Meta-analysis

Irina Dolgopolova[a], Bingqing Li[b], Helena Pirhonen[b], **Jutta Roosen**[b]

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[a] School of Business and Economics, Maastricht University
[b] TUM School of Management, Technical University of Munich

Attribute framing and food choices

- Attribute framing refers to presenting food attributes in terms of gains and losses as often done in food marketing

Outline

1. Introduction
2. Objectives
3. Method
4. Sample
5. Results
6. Conclusion

Introduction: Framing effects and attribute framing

- The framing effect shows that decisions depend on the way in which outcomes are presented.
- Gains are valued different from losses.

Example (Kahneman & Tversky, 1981):
Outbreak of a disease which is expected to kill 600.

Program A: 200 people will be saved (72%)
Program B: P=1/3 - 600 are saved;
P=2/3 - nobody will be saved.

Preferences for certain outcomes when presentation in terms of gains

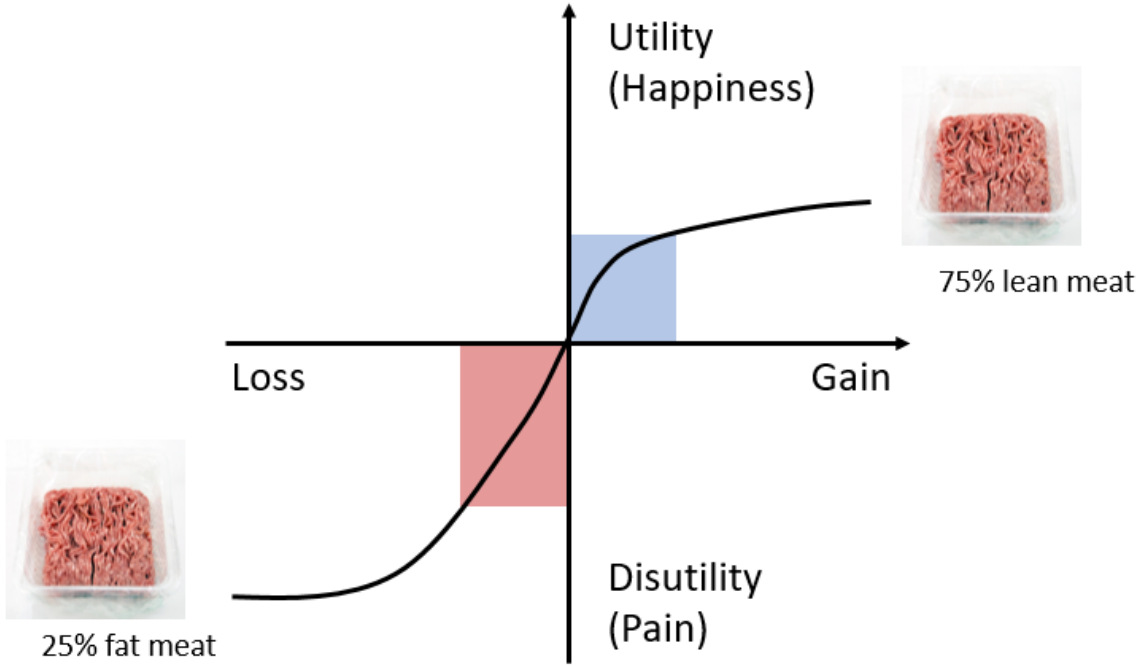
Program C: 400 people will die
Program D: P=1/3 - nobody will die,
P=2/3 - 600 will die. (78%)

Preference for uncertain outcome when presentation in terms of losses

Introduction: Attribute framing

- Framings of outcomes, context and goals matters for decision making
- Here: Attribute framing → describing the way that product attributes are communicated
- In food marketing attribute framing comes in different forms:
  - High versus low
  - Same meat
  - High tech

Dichotomous presentation of a product attribute often via labels



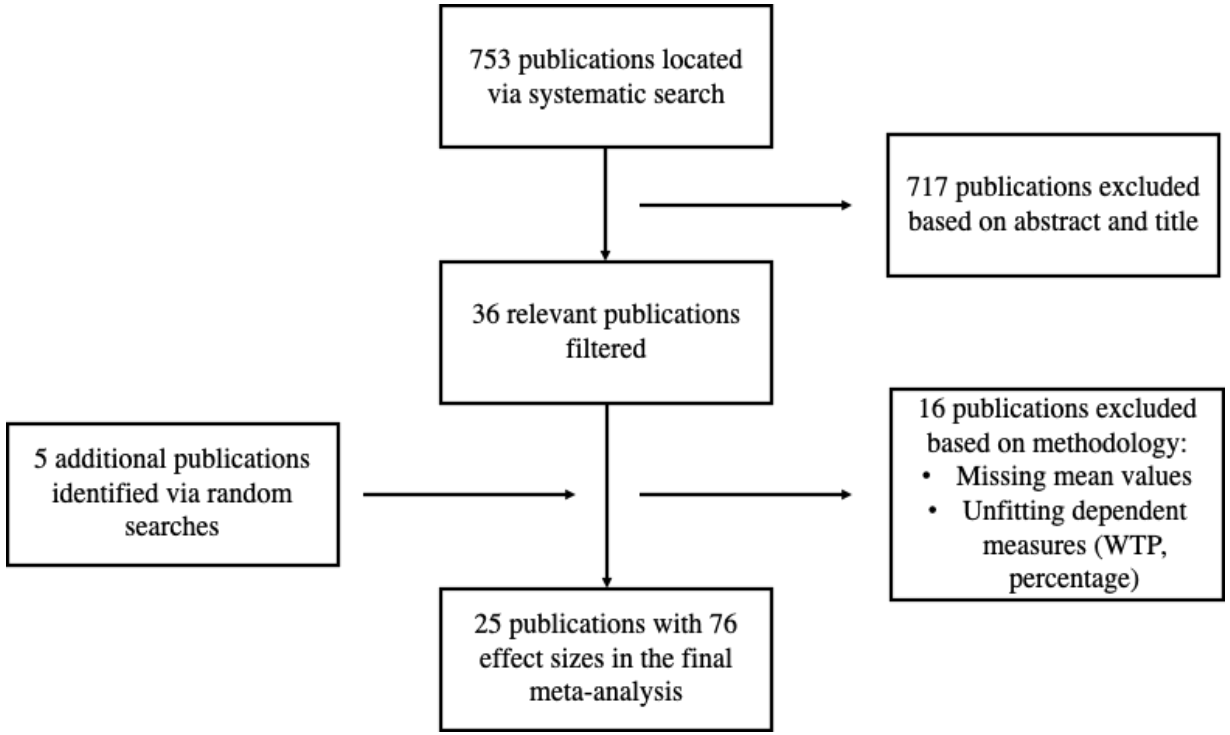
Objectives

1. Systematic review of the use of gain-loss attribute framing on food products

2. Meta-analysis identifying effects of framing on
   - consumer attitudes
   - consumer intentions

Method

- Identification of articles in peer-reviewed journals and conference proceedings via ScienceDirect, Web of Science, EBSCO host, & AgEcon Search
- Long Boolean search query with an intersection set of “framing”, “food”, and a union set of “consumer behavior”, “consumer decision making”, “consumer choice”, “consumer preference”, “consumer perception”, “consumer willingness to buy”, “consumer willingness to accept”, “consumer willingness to pay”, “consumer buying behavior”, “consumer purchase intention”, and “consumer buying intention”
- Additional search on Google Scholar
- 25 articles published between 1987 and May 2021



Method

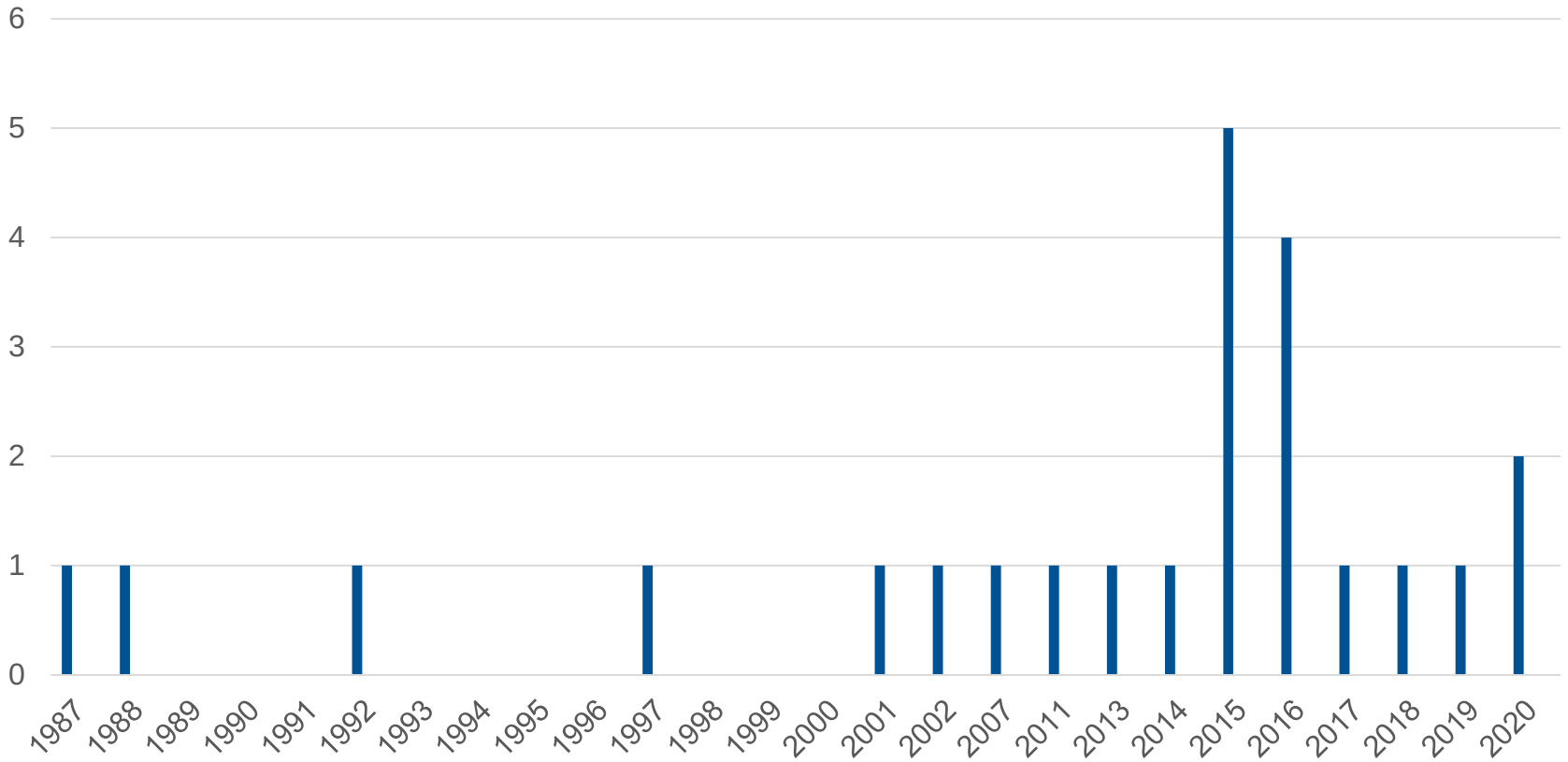
25 studies with attribute framing on
- health (nutrition and food safety)
- sustainability (environmental benefits, animal welfare, organic & ethnic food)

76 outcome measures
- 40 measures “attitudes”
- 36 measures “intentions”

Sample size varies between 25 and 433
- 32 % of the studies in the USA
- 13 % used product labels
- 30 % were done online

$$Mean_i = \beta_0 + \beta_1 Frame_i + \beta_2 USA_i + \beta_3 Outcome_i + \beta_4 Interaction_i + \beta_5 Product_i + \beta_6 Label_i + \beta_7 Student_i + \beta_8 Online_i + u_i + \epsilon_i$$

Sample of studies (n = 25)



Descriptive statistics

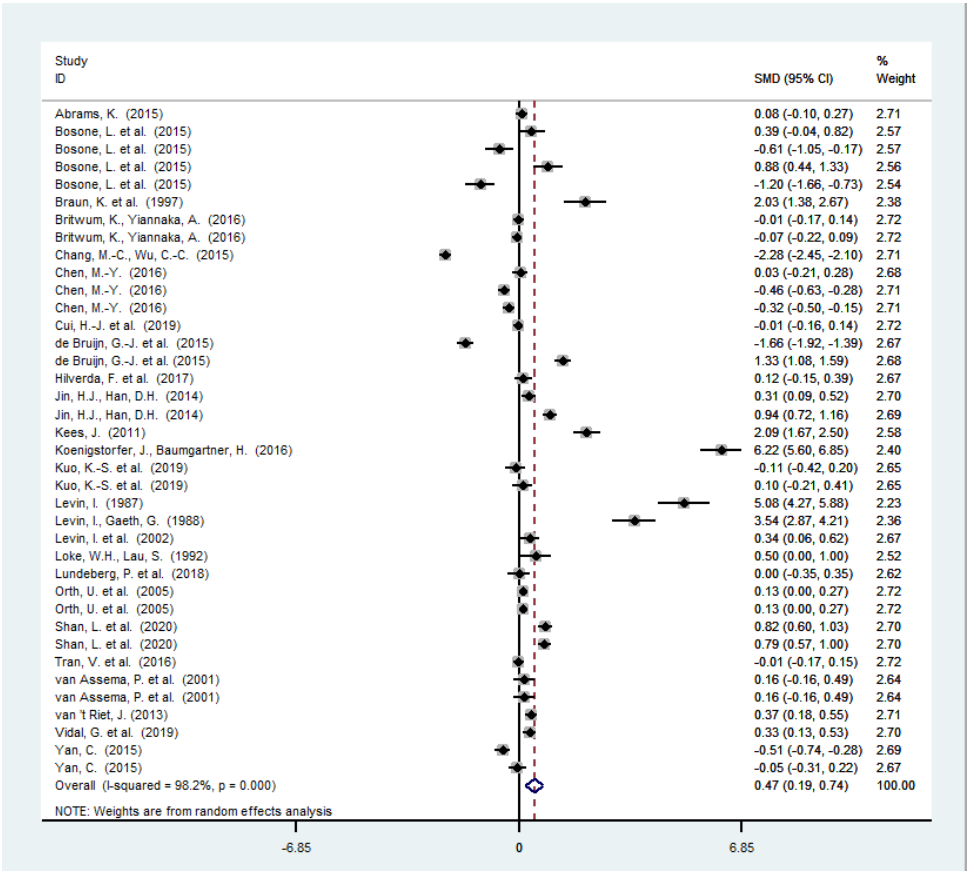
Variable	Definition	Mean (standard deviation)		
		Whole sample N=76	Attitude N=40	Intention N=36
DV	7-point likert scale	4.40 (0.86)	4.64 (0.64)	4.12 (0.99)
Frame	1 - gain frame, 0 - loss frame	0.50 (0.50)	0.50 (0.51)	0.50 (0.51)
USA	1 - if the study is conducted in the USA	0.32 (0.47)	0.50 (0.51)	0.11 (0.32)
Outcome	1 - attitude	0.53 (0.50)		
Interaction	1 - interaction term	0.51 (0.50)	0.48 (0.51)	0.56 (0.50)
Product	1 - specific product	0.53 (0.50)	0.75 (0.44)	0.28 (0.45)
Label	1 - label is used	0.13 (0.34)	0.25 (0.44)	0.00 (0.00)
Student	1 - student sample	0.50 (0.50)	0.45 (0.50)	0.56 (0.50)
Online	1 - online study	0.30 (0.46)	0.33 (0.47)	0.28 (0.45)

Results

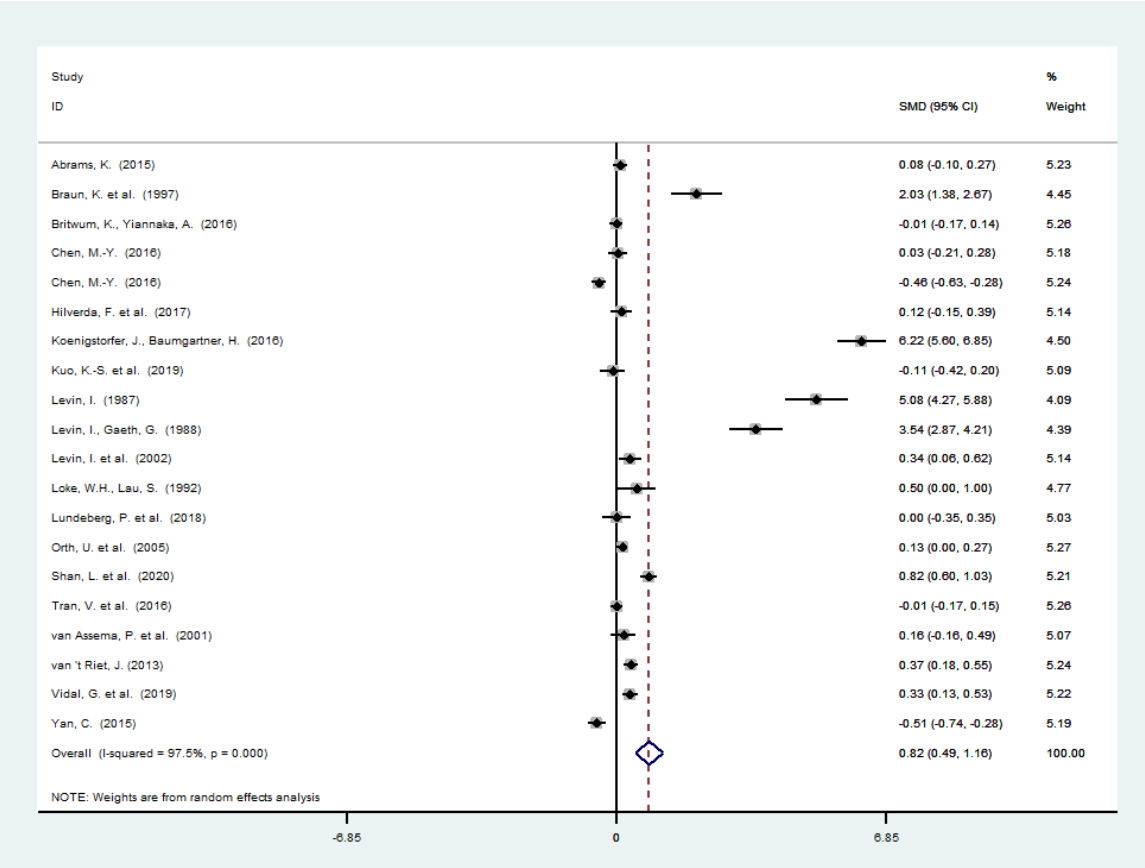
- Forest plot from meta analysis (“metan” stata 13)
- Overall a positive effect

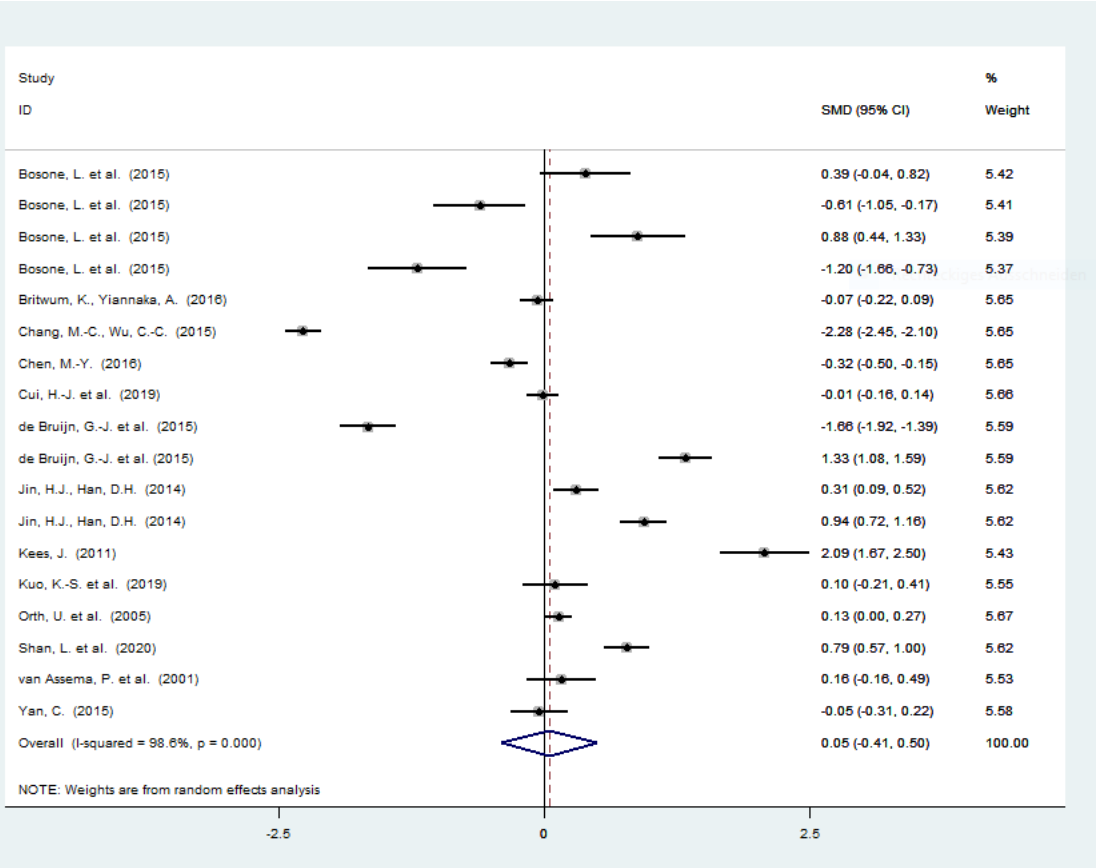
→ The gain frame results in higher attitudes and intentions than the loss frame

- High heterogeneity in the studies



Subgroup analysis for attitude (left) and intentions (right)





Meta-regression results

- Analysis by full sample and by dependent measure
- A gain frame, use of interaction terms, a specific product and a student sample show an impact on DV.
- The effects can be different depending on the outcome measure. E.g., for US samples have a positive impact on Intention, but not attitude.
- A specific products leads to lower attitudes.
- The framing effect is not present in studies focusing on intentions rather than attitude.

	Whole sample N=76	Attitude N=40	Intention N=36
Frame	0.27 (0.13)**	0.51 (0.09)***	-0.01 (0.09)
USA	0.10 (0.20)	-0.74 (0.20)***	1.01 (0.34)***
Interaction	0.30 (0.14)**	-0.18 (0.14)	0.33 (0.14)**
Product	-0.32 (0.18)*	-0.93 (0.46)*	-0.09 (0.44)
Label	0.30 (0.20)	0.59 (0.12)***	---
Student	-0.57 (0.31)*	-0.02 (0.45)	-0.71 (0.55)
Online	0.28 (0.29)	0.83 (0.51)	0.88 (0.49)*
Intercept	4.60 (0.30)***	5.27 (0.41)***	4.14 (0.51)***
Adj. R^2	72.32%	100.00%	98.74%
τ^2	0.07	0.00	0.00
I^2	17.84%	0.00%	0.00%

Conclusion

- Overall, framing effect is detected leading to a positive effect of gain framing on attitudes and intentions (whole sample), but when split by outcome only for attitudes
- Interaction effects and setting of studies play an important role
- Expression is stronger for product categories than for specific products
- Effects are more readily observed when labels are used for communication

Thank you!

Contact:
Jutta Roosen
Technical University of Munich
jroosen@tum.de