

The European Commission's science and knowledge service

Joint Research Centre



**- Update on ongoing JRC study -
Overview of existing and proposed FOP schemes,
including literature review of research regarding
the development of the schemes,
their impact on consumers and other effects**

Joint meeting on front-of-pack nutrition labelling between Working Group of the Standing Committee on Plants, Animals, Food and Feed - Regulation (EU) No 1169/2011 on the provision of food information to consumers (FIC) & Advisory Group on the Food chain, Animal and Plant Health

Brussels, 22 June 2018

Literature review methodology

1. Literature Review Methodology
 2. Types and quality of sources
 3. Relevant behavioural biases
 4. Impact of FoP on people's perception
 5. Impact across socio-economic groups
 6. Impact on Purchasing Decisions and Eating Behaviour
 7. Impact on Supply
 8. Remarks/ideas for future research
- 1st part
- 2nd part
- 3rd part

Literature review methodology

Review protocol, guided by PRISMA* methodology

Types of studies considered

- English language studies and reports
- Emphasis on qualitative and quantitative research
 - focus groups, online and in-store experiments and observations, impact modelling, questionnaire surveys
- Addressing one or more of below PICO outcomes

*PRISMA = Preferred Reporting Items for Systematic Review and Meta-Analysis

Literature review methodology

- **Population, Intervention, Comparator, Outcome (PICO) questions**

- **P**: General population
- **I**: Provision of front-of-pack (FOP) nutrition labelling information
- **C**: Alternative FOP nutrition labelling, mandatory (back-of-pack) nutrition labelling, or no FOP nutrition labelling information
- **O-1**: Consumer awareness of FOP nutrition labelling
- **O-2**: Consumer preferences for FOP nutrition labelling
- **O-3**: Consumer understanding of FOP nutrition labelling
- **O-4**: Consumer use of FOP nutrition labelling
- **O-5**: Impact of FOP nutrition labelling on purchasing
- **O-6**: Impact of FOP nutrition labelling on diet & health
- **O-7**: Impact of FOP nutrition labelling on food reformulation / innovation

Literature review methodology

- **Secondary outcomes**, e.g.
 - nutritionally undesirable changes in consumption patterns
 - price changes that might promote poorer food choices
 - stifling of food reformulation/innovation

Literature review methodology

- **Online databases**

- PubMed

- **Search string**

- "nutrition*[Title/Abstract] AND label*[Title/Abstract] AND front[Title/Abstract] AND pack*[Title/Abstract]"

Literature review methodology

- **Online databases**

- Web of Science
- Google Scholar
- OpenGrey

- **Search string**

- "food AND nutrition AND labelling OR label AND front-of-pack OR front of pack OR FOP AND health"

Literature review methodology

- **Screening of titles and abstracts**
 - Removal of duplicates and non-English publications
 - Simple eligibility check, based on predefined criteria
- **Full-text check of screened and included studies**
 - Double check (two independent reviewers)
 - Studies filed by outcome (see PICO questions)
- **Narrative summary of evidence**
 - By outcome, giving due importance to study limitations
 - To be merged with review by JRC I2 colleagues

2nd part (recall of content)

2. Types and quality of sources
3. Relevant behavioural biases
4. Impact of FoP on people's perception
5. Impact across socio-economic groups

Sifting through the available evidence

1. Nature and robustness of the study

Focus groups

Surveys

Lab experiments

Online experiments

Field experiments

2. Level of realism of the study

Piecemeal approach

Holistic approach

Sifting through the available evidence

3. Comparability of results

Familiarity of subjects with a specific scheme

=> Need to contextualise evidence

4. Independence of authors

Conflicts of interest

Relevant behavioural concepts

1. System 1 vs. System 2
2. Myopia
3. Loss aversion
4. Scarcity
5. Information overload
6. Overconfidence
7. Defaults
8. Rebound effect
9. Relativity and social norms

Impact on perceptions

Attention

Comprehension

Acceptability

On attention

Linked to the question of attractiveness (Grunert and Wills, 2007)

- FoP attended more often and earlier than BoP labelling
- Size matters, too (attention faster and more accurate)
- Colour
- Consistent position
- Combination of labels
- Overall amount of information

On comprehension

What factors do impact on understanding?

- 100g vs portion-based
- Various types of FoP schemes
- Gain vs. loss frame
- Simpler/evaluative vs. non-directive ones
- Colour codes
- Text descriptors
- Comparative assessment (amber =>red vs green=>amber)

On acceptability

Does the FoP label convey information adequately?

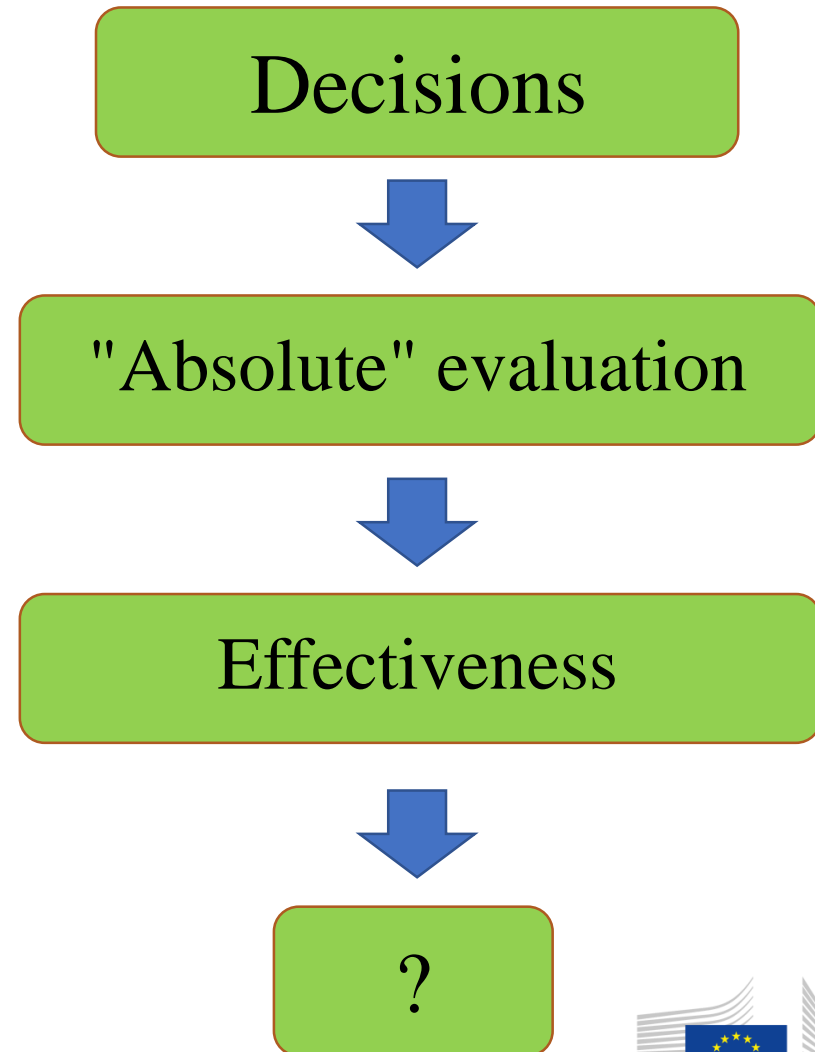
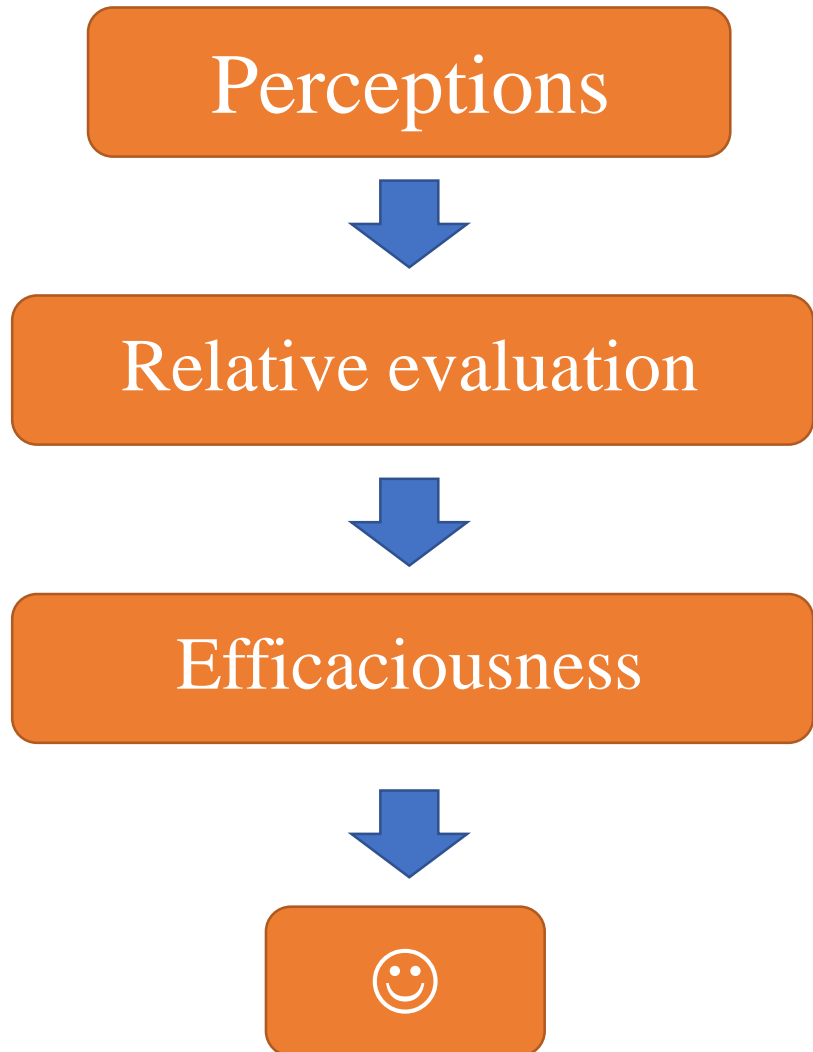
- Colour
- Level of directiveness
- Complexity
- FoP label preferred to health claims
- Different FoP schemes

Impact across socio-economic groups

Kelly et al (2009): some benefit more from specific schemes

- No "average consumer"
- Consumers of lower socio-economic status
- Impact by age (children and adolescents)
- Impact of emolabels on children
- Impact on adolescents (who are more sensitive about their body)
- Impact by nutritional knowledge

In a nutshell



3rd part (recall of content)

6. Impact on Purchasing Decisions and Eating behaviour
7. Impact on Supply
8. Remarks/ideas for future research

Impact on Purchasing Decisions and Eating Behaviour

- FoPs labels are intended to "enable consumers to make more informed and healthier choices"

In the literature there are two prevalent approaches to measure FoPs effectiveness in affecting consumers' behaviour:

INTENTIONS TO PURCHASE

(surveys, lab experiments, eye tracking)

PROS:

Identification of causal effect

CONS:

Low external validity

ACTUAL PURCHASING BEHAVIOUR

(empirical data or large scale trials)

PROS:

More realistic environment (external validity)

CONS:

- Hard to control for confounding factors

- Overall, the evidence is mixed (Andrews et al. 2014; Van Kleef & Dagevos 2015)

Impact on Purchasing Decisions and Eating Behaviour

Main Results:

- ❖ **Significant effect in presence of a dietary goal** (Machin et al. 2018; Van Herpen & Van Trijp 2011)
- ❖ **Non-existent or marginal effect** due to:
 - More salient factors: prices and discounts (Waterlander et al. 2013); time constraint (Cohen & Babey 2012); taste (Koenigstorfer et al. 2014)
 - Behavioural biases:
 - negative association between healthfulness and tastiness (Bialkova et al. 2016)
 - habit (Boztug et al. 2015)
 - cognitive load and fatigue (Cohen & Babey 2012)
- ❖ **No clear evidence on the best label:** Evaluative and reductive systems are related to **opposite cognitive processes** (Sanjari et al. 2017)

Impact on Purchasing Decisions and Eating Behaviour

Unintended consequences:

- ❖ Potential **Malfunctioning** of the FoP labels (Hamlin & McNeill 2016; Bialkova et al. 2014)
- ❖ Nutritional improvements can come at an **economic cost** (Crosetto et al. 2018)

- ❖ Potential effects on consumption quantity:
 - portion sizes and guilt (Chandon & Wansink 2007)
 - norms (Herman & Polivy 2008)
 - Brown et al. (2017) and Vermeer et al. (2011) find **no effect on portion sizes**.

Impact on the supply side

- ❖ There is some evidence that FoPs influence food composition (Netherlands, Canada, Australia, New Zealand)
- ❖ However, better nutrition composition not always correlated with FoPs' frequency (Van Camp et al. 2011)

- ❖ Potential reasons:
 - Reformulation occurs only for nutrients highlighted by FoPs (Carter et al. 2013)
 - Low incentives within same labelling grade (Van Camp et al. 2010)
 - FoP labelling as marketing strategy for producers and retailers (Newman et al. 2014)
 - More likely to be present on private label products (Van Camp et al. 2011)

Remarks/ideas for future research

GAPS in the literature

1. Methodological issues
 - artificial attention to FoPs
 - no consequences for choices
2. Underexplored aspects
 - Diverging effects of reductive and evaluative FoPs
 - Graphic-design related issues
 - Interaction between FoPs and other interventions (awareness campaigns, warnings)
 - Interaction between FoPs and other moderating conditions

IDEAS for future research

1. More research:
 - based on field experiments or natural experiments
 - with incentives (lab experiments)
 - with the support and data by the industry
2. More research :
 - based on structured theoretical models
 - on graphic features
 - on how to complement FoPs
 - on fatigue, time constraints, motivation, literacy, socio-demographics, marketing, prices.



Thank you

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