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Industry Funding Bias in Nutrition Science on Ultraprocessed Foods: A Cautionary Tale

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DISCLOSURE

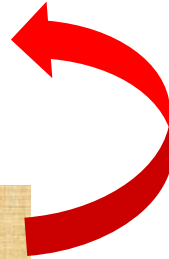
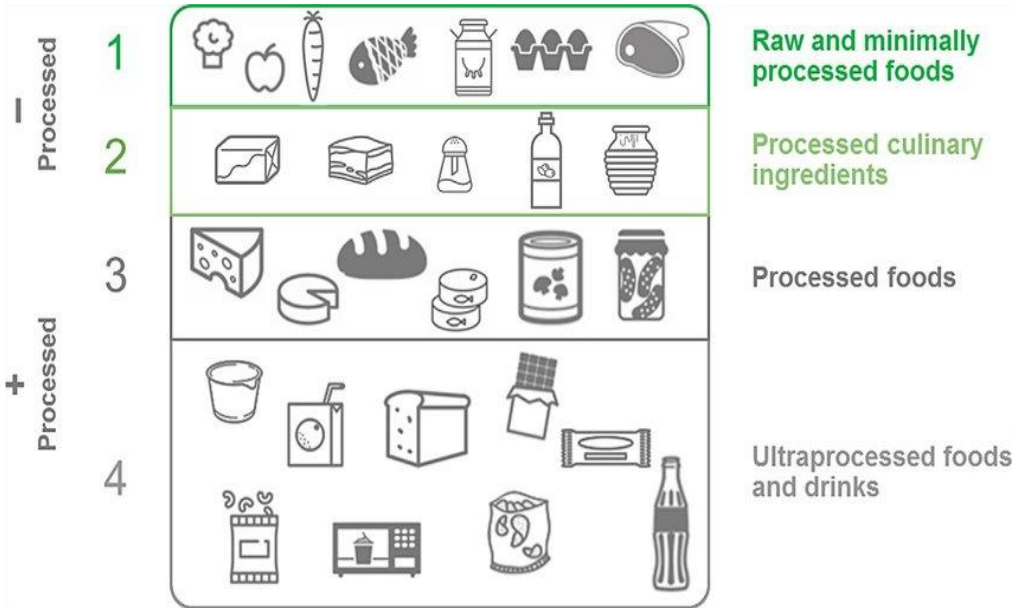
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Overview

- Why focus on sponsor influence in studies of ultraprocessed foods?
- Evidence from meta-research
- Roots of sponsor influence
 - Historical roots
 - The scientific paradigm
 - Structure of sponsor engagement in research
- Recommendations

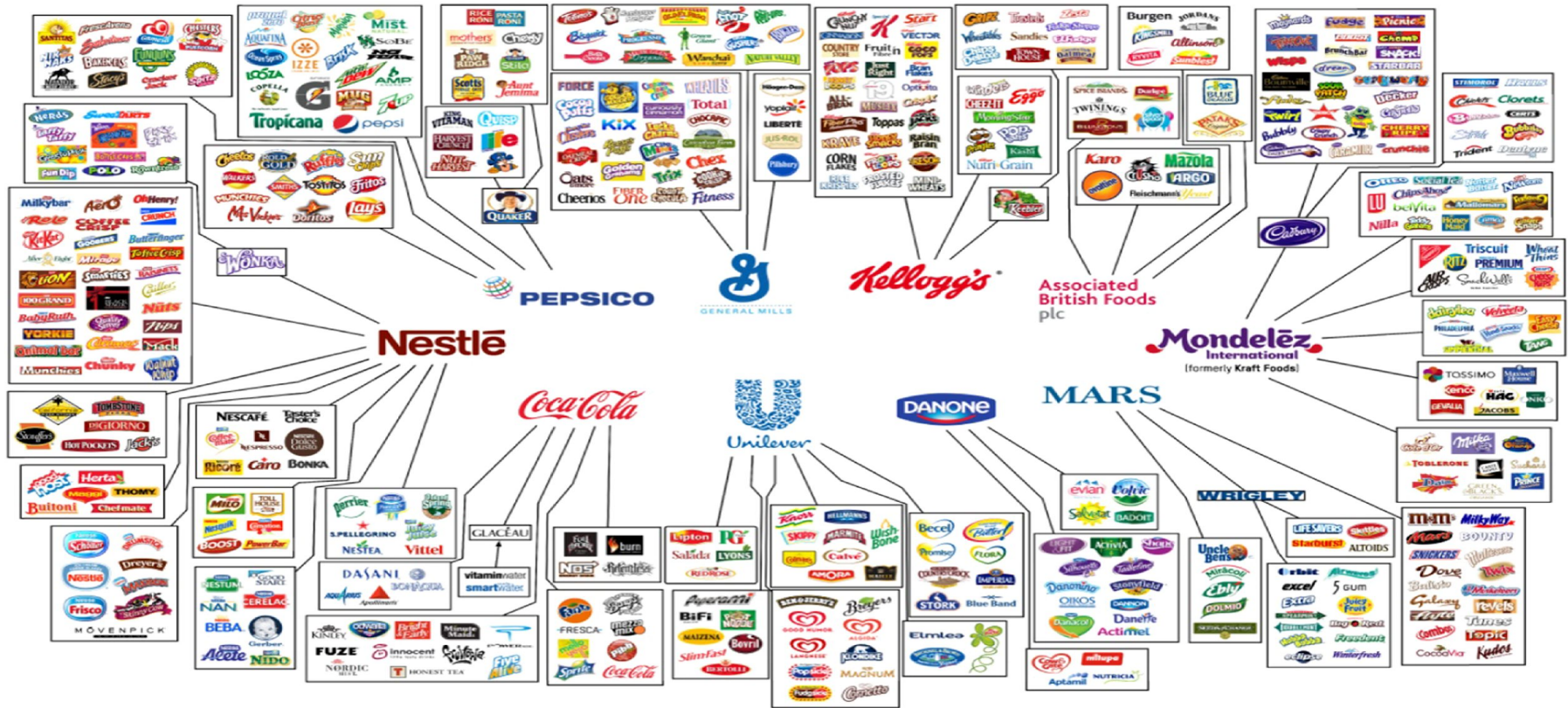
Why Focus on Ultraprocessed Food Research?

Defining Ultraprocessed Foods: The NOVA classification⁴



Industrially produced foods that combine refined sugars, fats and salt, and chemical additives

Industry Sponsors of Ultraprocessed Food Research



SOURCE: Oxfam International, 2020.

Why Focus on Ultraprocessed Foods Research?

- Simple way to identify foods most likely to harm health
- Abundant in the food supply: comprise 57.9% of calories consumed in the US⁴
- Observational studies link ultraprocessed foods to obesity, Type 2 diabetes, hypertension, heart disease, and some cancers
- Clinical trials show that diet of ultraprocessed food increases energy intake by ~500 calories per day⁵
- Habit-forming: ~60% of UPFs are “hyperpalatable” or industrially engineered to trigger the reward (dopaminergic) drive⁶

(4) Steele et al, *BMJ Open*, 2016; (5) Hall et al, *Cell Metabolism*, 2019; (6) Fazzino et al, *Appetite*, 2021.

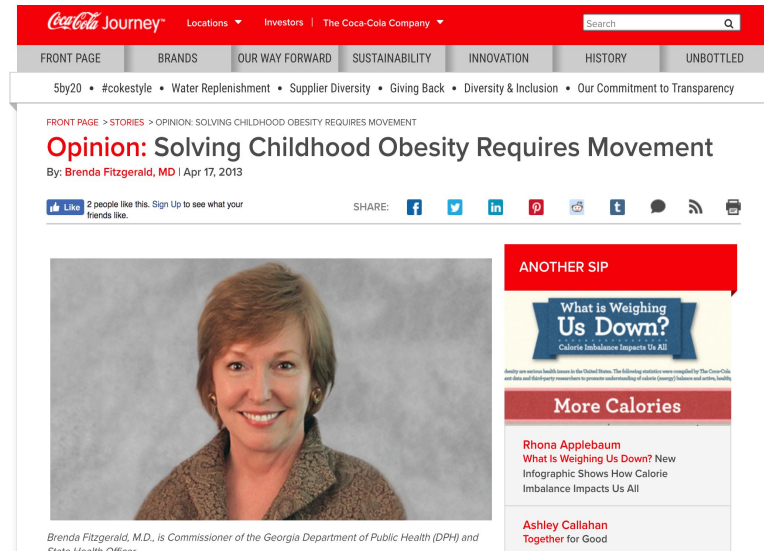
Evidence from Meta-research

Meta-Studies on Funding Bias in Literature on Ultraprocessed Foods

Study	Design	Topic	Key Findings on Effects of Industry Funding
Lesser et al., PLoS One. 2006	Systematic review (N=206)	Effects of soft drinks and other beverages on health	Industry-sponsored studies were approximately 4-8 times more likely to report results favorable to industry
Vartanian et al., AM J Public Health, 2007	Systematic review and meta-analysis (n= 88)	Effects of soft drinks on calorie intake and weight	Average overall effect sizes for industry-sponsored studies were significantly smaller (r=.05 vs .23 for calories; r=.05 vs .10 for weight)
Bes-Rastrollo et al., PLoS Med. 2013	Systematic review and meta-analysis (n=17)	Effects of sugar-sweetened beverages on weight gain and obesity	Industry-sponsored studies were 5.0 times more likely to find no increased risk
Massougbodji et al., AM J Clin N. 2014	Systematic review of reviews (n=20)	Effects of sugar-sweetened beverages on weight	Industry-funded reviews were significantly more likely to suggest that causal evidence is weak (score of 1.78 vs. 3.39)
Mandrioli et al., PLoS One. 2016	Systematic review of reviews (N=31)	Effects of artificially sweetened beverages on weight	Industry-sponsored studies were 17.25 times more likely to report results favorable to industry
Schillinger et al., Ann Intern Med. 2016	Systematic review and meta-analysis (n=60)	Effects of sugar-sweetened beverages on diabetes	Industry-sponsored studies 32.7 times more likely find no increased risk
Litman et al., Public Health Nutr. 2018	Systematic review (n=133)	Effects of sugar-sweetened beverages on health risks	Industry-sponsored studies 57.3 times more likely to report weak/null findings than
Sacks et al., PLoS One. 2020	Systematic review and meta-analysis (n=1461)	Food industry sponsorship in leading nutrition journals	Industry-sponsored studies more likely to report findings favorable to industry (55.6% vs 9.7%)

A Well Documented Case Study of Sponsor Influence

- Focus on physical activity as cause of obesity
- Systematic review found 389 Coca-Cola-sponsored studies in 169 journals 2008-2016⁷
- 2015 scandal led to “transparency initiative” but only 5% of studies disclosed⁷



Roots of Sponsor Influence in Research on Ultraprocessed Foods

Historical Roots

Most nutrition research is industry funded: 1.5 billion in federal spending on nutrition science in 2009 vs. \$60 billion in industry spending¹

- Long history of industry-academic ties in agricultural research descendant from land grant universities
- Fragmentation of research authority between USDA and NIH, FAO and WHO
- No National Institute on Nutrition
- Many industries have a stake in nutrition research: Agriculture, chemical, agrochemical, fossil fuel, pharmaceutical, and even the tobacco industry

(1) Mozaffarian and Forouhi, *BMJ*, 2018

TOBACCO-OWNED
FOOD BRANDS



SOURCES: Nguyen, et al. *BMJ* 2019; Nguyen et al. *AJPH* 2020.

The Scientific Paradigm for Nutrition Research

Nutritionism: *Research focused on the health benefits or harms of a single food or single nutrient.*²

- Holdover from a field historically focused on vitamin deficiencies and global undernutrition
- Problems with Nutritionism:
 - Whole diets matter more for health than single nutrients today
 - Gives rise to “food fads” that demonize sugar, fat or salt
 - Confusing for the public
- Single nutrient studies are a critical food industry “marketing strategy”^{3,4}

FOOD POLITICS

by Marion Nestle

DEC
5
2022

Industry funded studies of the week: meat!

The meat industry is hard at work these days to overcome concerns about the effect of high-meat diets on health and the climate. Here are two recent examples.

I. Early Life Beef Consumption Patterns Are Related to Cognitive Outcomes at 1–5 Years of Age: An Exploratory Study. Victoria C Wilk, Michelle K McGuire, Annie J Roe. *Nutrients*. 2022 Oct 26;14(21):4497. doi: 10.3390/nu14214497.

- **Conclusion:** Higher intake of beef...at 6-12 months was associated with better attention and inhibitory control at 3-5 years of age. These findings support the role of beef as an early food for cognitive development, although controlled dietary intervention studies are needed.
- **Funding:** This research was funded by the Idaho Beef Council, grant number AL5329 AL5544.

II. Approximately Half of Total Protein Intake by Adults Must be Animal-Based to Meet Nonprotein, Nutrient-Based Recommendations, With Variations Due to Age and Sex. Florent Vieux, Didier Rémond, Jean-Louis Peyraud, Nicole Darmon. *The Journal of*

Structure of Sponsor Influence in Research on Ultraprocessed Foods

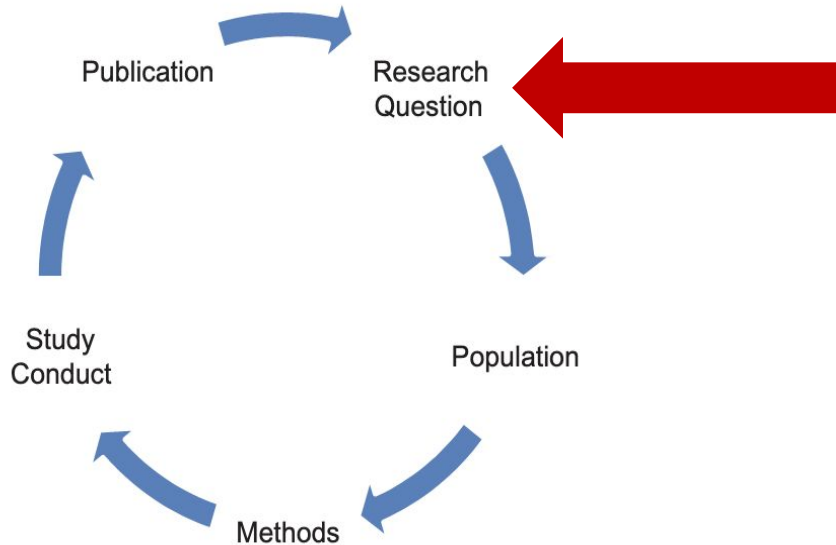


Figure 1: Cycle of Bias Framework for Evaluating Health Studies (color figure available online).

Industry Sponsors of Nutrition Science Organizations and Scientific Journals

Professional Organization	Sponsored Journals	Selected Corporate Sponsors
American Society of Nutrition	Journal of Nutrition American Journal of Clinical Nutrition Advances in Nutrition Current Developments in Nutrition	Danone General Mills Mars Mondelez Nestle The Sugar Association
American Academy of Nutrition & Dietetics	Journal of the Academy of Nutrition & Dietetics	Abbott National Confectioners Association Quaker Wyman's of Maine General Mills
The Obesity Society	Obesity	Novo Nordisk Lilly Pacira Biosciences

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Meta-Analysis

Volume 80, Issue 12, December 2022

META-ANALYSIS

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Recommendations

- Increase government and philanthropic funding to better balance the funding arena
- Fund research on whole diets and foods based on level of processing
- Apply more scrutiny of COIs in ultraprocessed food research due to health harms (e.g., WHO's Framework for Engaging Non-State Actors)
- Earmark proceeds of soda and fat taxes for independent research on ultraprocessed foods
- Create a central public repository of information on scientists' COIs (e.g., clinicaltrials.gov)

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