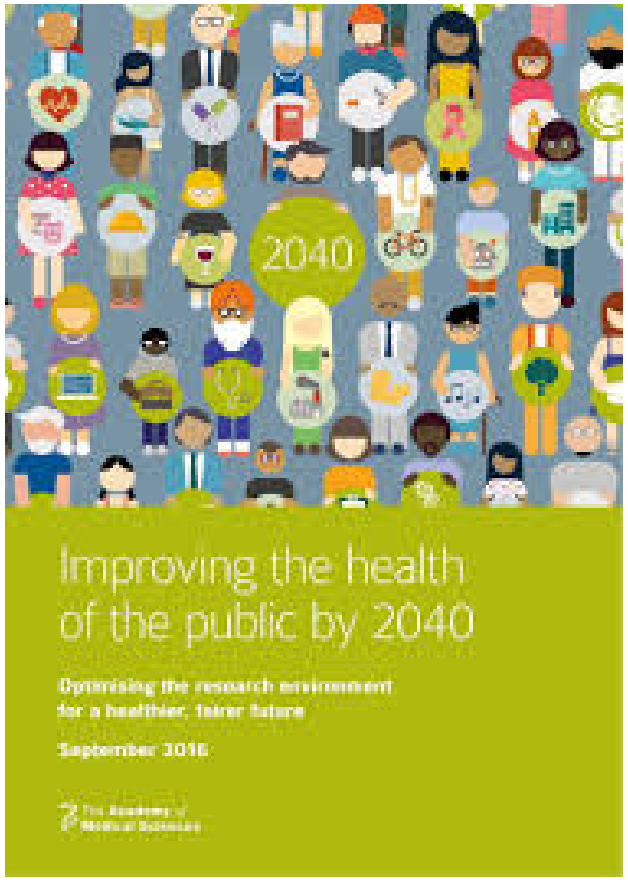
Behaviour Change to Improve Health for All

Theresa M Marteau
@MarteauTM @BHRUCambridge @BehavChangDesign

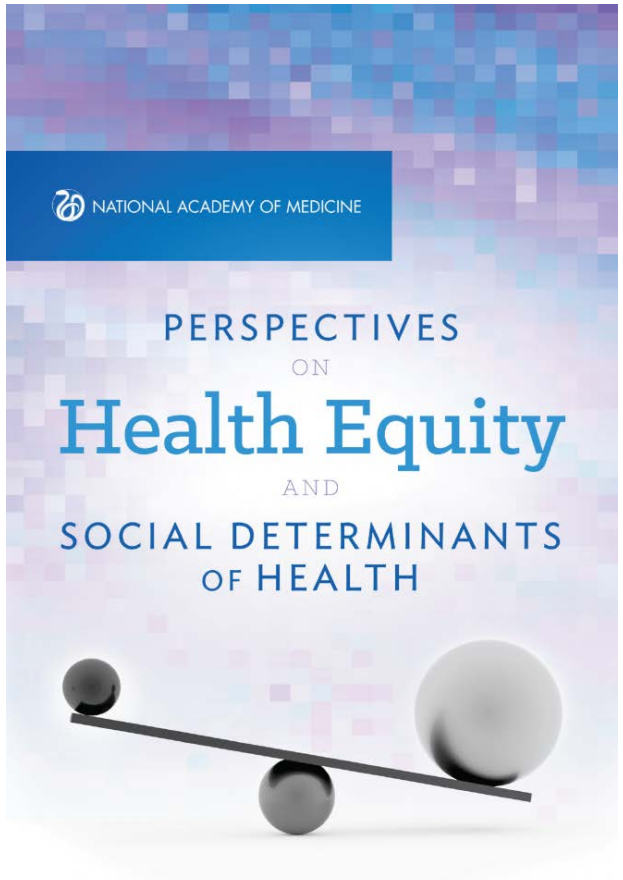
Rosenthal Symposium 17th January 2019

UNIVERSITY OF CAMBRIDGE
wellcome
MRC Medical Research Council
NHS National Institute for Health Research

Behaviour Change to Improve Health for All



The Academy of Medical Sciences



NATIONAL ACADEMY of MEDICINE

Rosenthal Symposium

To Change Behaviour to Improve Health for All:

I What are the gaps in evidence?

II What are the opportunities to accelerate the adoption of evidence-based strategies and policies?

Behaviour Change to Improve Health for All

I Four behaviours

II Changing behaviour

Less promising: *targeting conscious processes*

More promising: *targeting nonconscious processes*

III Generating and Implementing Evidence

i. estimating effect sizes

ii. understanding mechanisms to optimise interventions

iii. implementing interventions at population-level

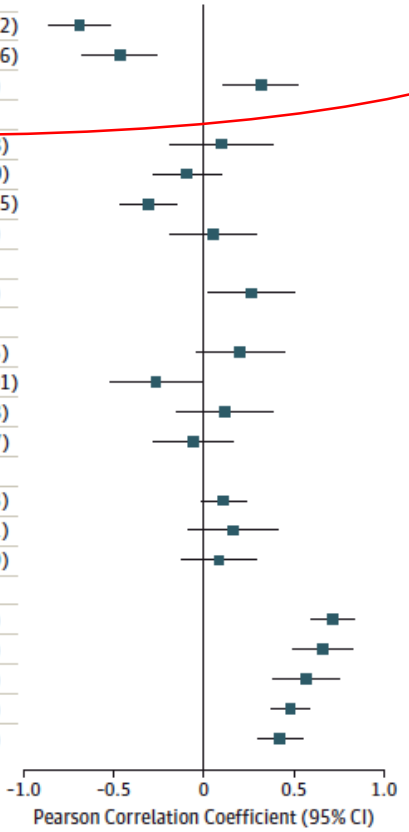
Four behaviours contribute most to early death, poor health and health inequalities

Rank	England	PAF (%)
1	Tobacco	19·26
2	Dietary risks	14·41
3	High blood pressure	13·04
4	High body-mass index	9·57
5	Alcohol and drug use	9·52
6	High total cholesterol	7·44
7	Occupational risks	4·85
8	High fasting plasma glucose	4·84
9	Air pollution	4·04
10	Low physical activity	2·16

GBD Lancet 2018

Figure 8. Correlations Between Life Expectancy in the Bottom Income Quartile and Local Area Characteristics, 2001-2014

	Pearson Correlation Coefficient (95% CI)
Health behaviors[a]	
Current smokers	-0.69 (-0.86 to -0.52)
Obesity	-0.47 (-0.67 to -0.26)
Exercise rate	0.32 (0.11 to 0.52)
Access to health care	
% Uninsured	0.10 (-0.19 to 0.38)
Medicare $ per enrollee	-0.09 (-0.28 to 0.10)
30-d Hospital mortality rate index	-0.31 (-0.46 to -0.15)
Index for preventive care	0.05 (0.19 to 0.29)
Environmental factors	
Income segregation	0.26 (0.02 to 0.51)
Income inequality and social cohesion	
Gini index	0.20 (-0.04 to 0.45)
Index for social capital	-0.26 (-0.52 to -0.01)
% Religious	0.12 (-0.15 to 0.38)
% Black adults	-0.06 (-0.28 to 0.17)
Local labor market conditions	
Unemployment rate in 2000	0.11 (-0.01 to 0.23)
% Change in population, 1980-2000	0.16 (-0.09 to 0.41)
% Change in labor force, 1980-2000	0.09 (-0.12 to 0.29)
Other factors	
% Immigrants	0.72 (0.60 to 0.84)
Median home value	0.66 (0.50 to 0.83)
Local government expenditures	0.57 (0.38 to 0.75)
Population density	0.48 (0.38 to 0.58)
% College graduates	0.42 (0.30 to 0.55)



Chetty JAMA 2016

Behaviour Change to Improve Health for All

I Four behaviours

II Changing behaviour

- Less promising: *targeting conscious processes*
- More promising: *targeting nonconscious processes*

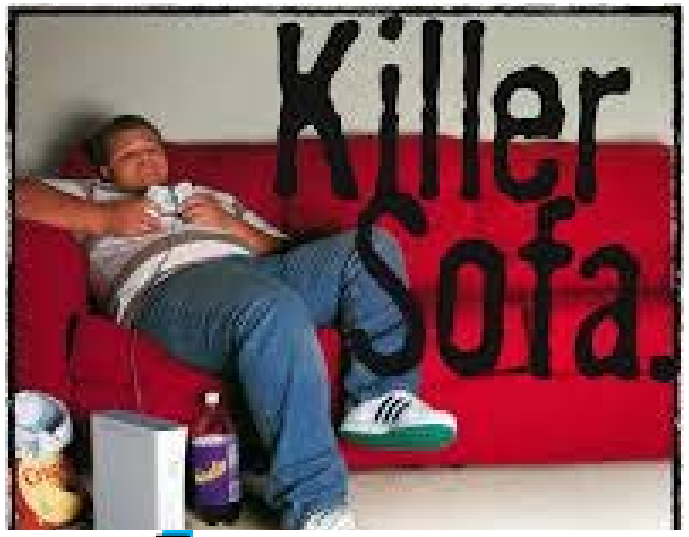
III Generating and Implementing Evidence

i. estimating effect sizes

ii. understanding mechanisms to optimise interventions

iii. implementing interventions at population-level

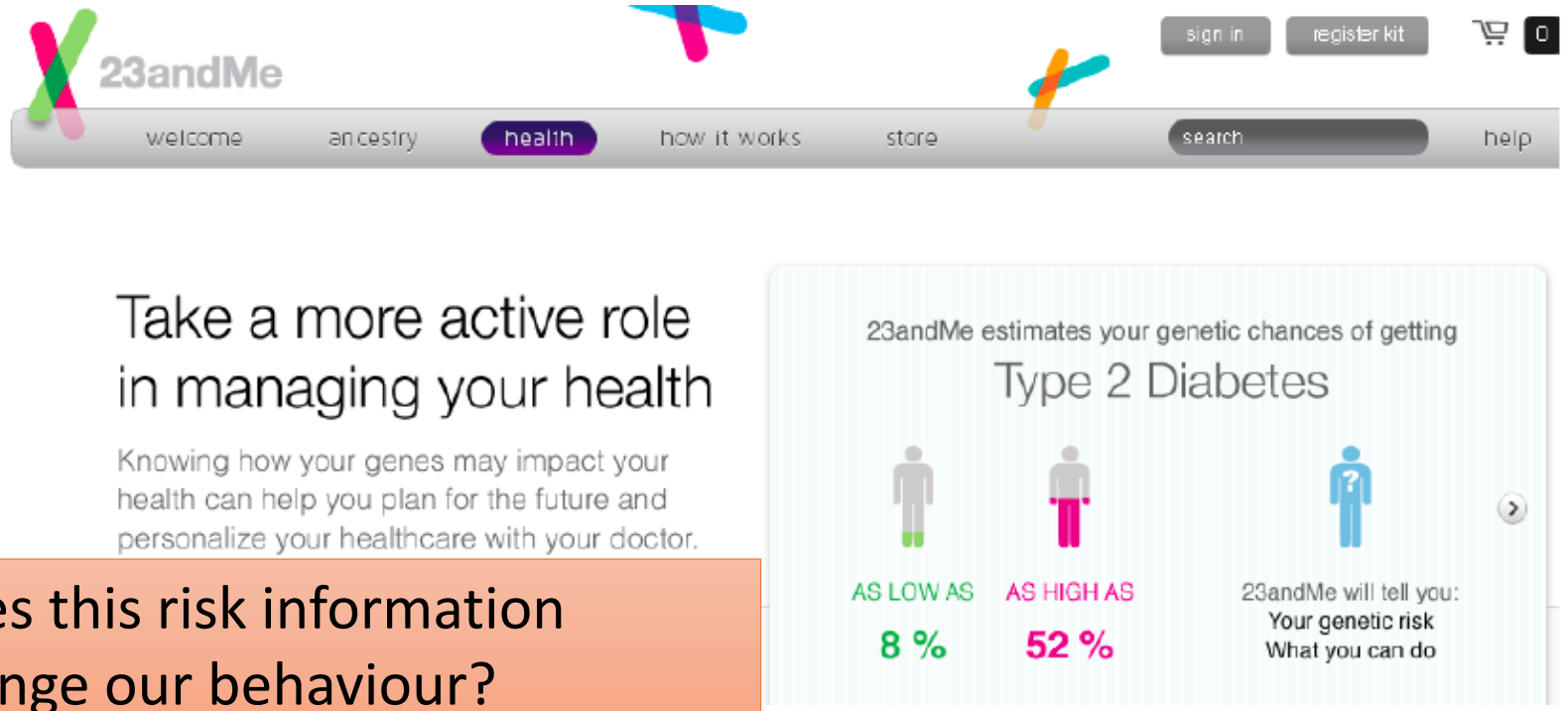
Targeting Conscious Processes
Risk Information: Not Personalised



change 4 life

Eat well Move more Live longer

Targeting Conscious Processes
Risk Information: Personalised



Does this risk information change our behaviour?

From 18 studies...

Communicating genetic-based disease risks does not change behaviour to reduce these risks

Hollands, French, Griffin, Prevost, Sutton, King, Marteau *BMJ* 2016

Targeting Conscious Processes
Risk Information: Personalised

Four Reviews .....

I. **Any disease - Genetic biomarkers**
Hollands *et al BMJ* 2016

II. **Cardiovascular disease - Any biomarker**
Usher-Smith *et al BMJ Open* 2015

III. **Cancer - Any biomarker**
Usher-Smith *et al BMJ Open* 2018

IV. **Any disease - Any biomarker**
French *et al Ann Behav Med* 2017

Little or No Behaviour Change

Why doesn't risk information (always) change our behaviour?

Less effective Information

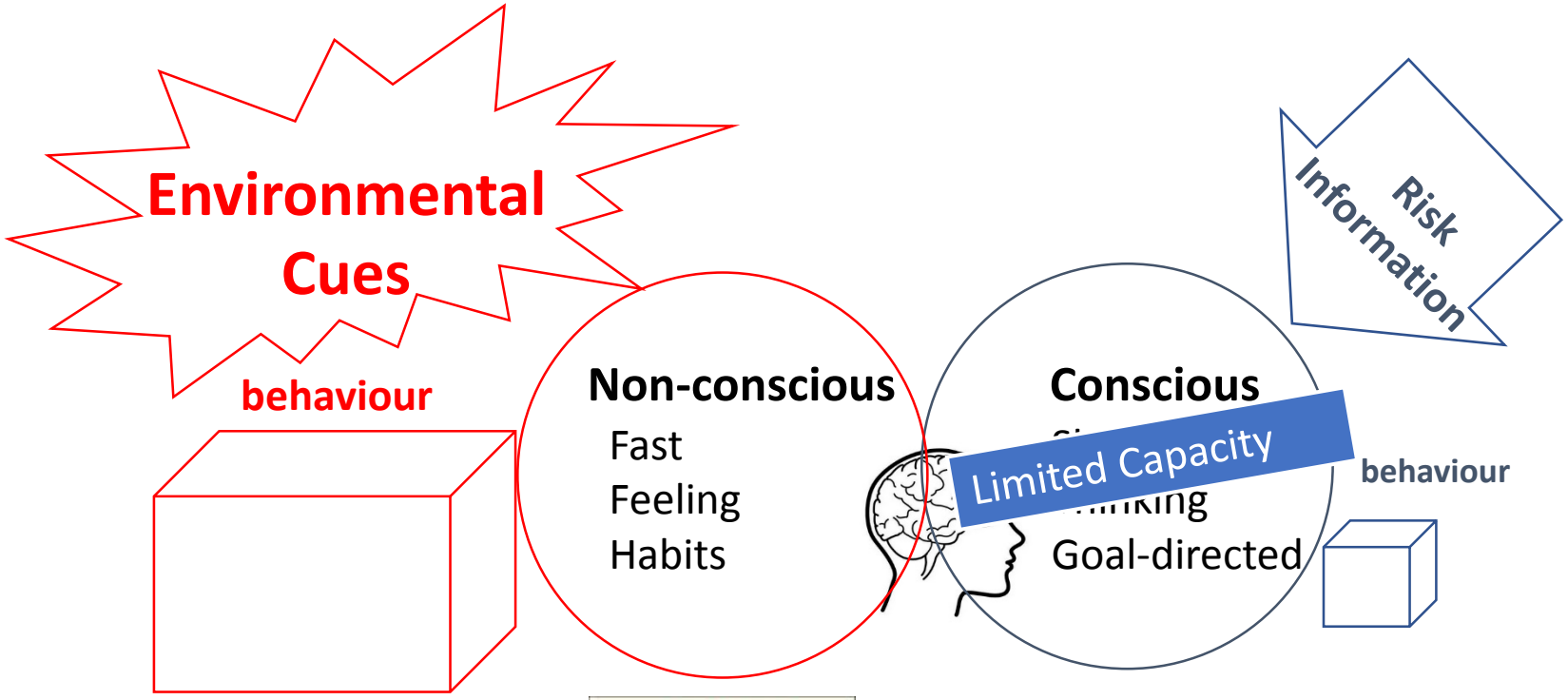
Perception of Threat
Not big enough

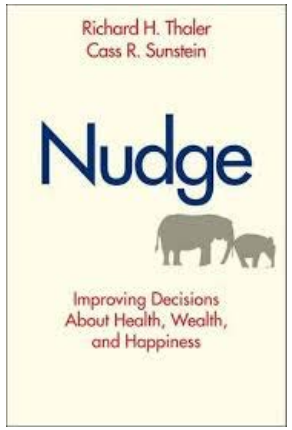
More effective Information

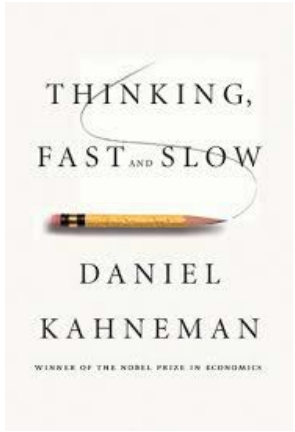
Behaviour
Even if motivated to change
Environments have a strong influence on much of our behaviour

Marteau *Lancet* 2018

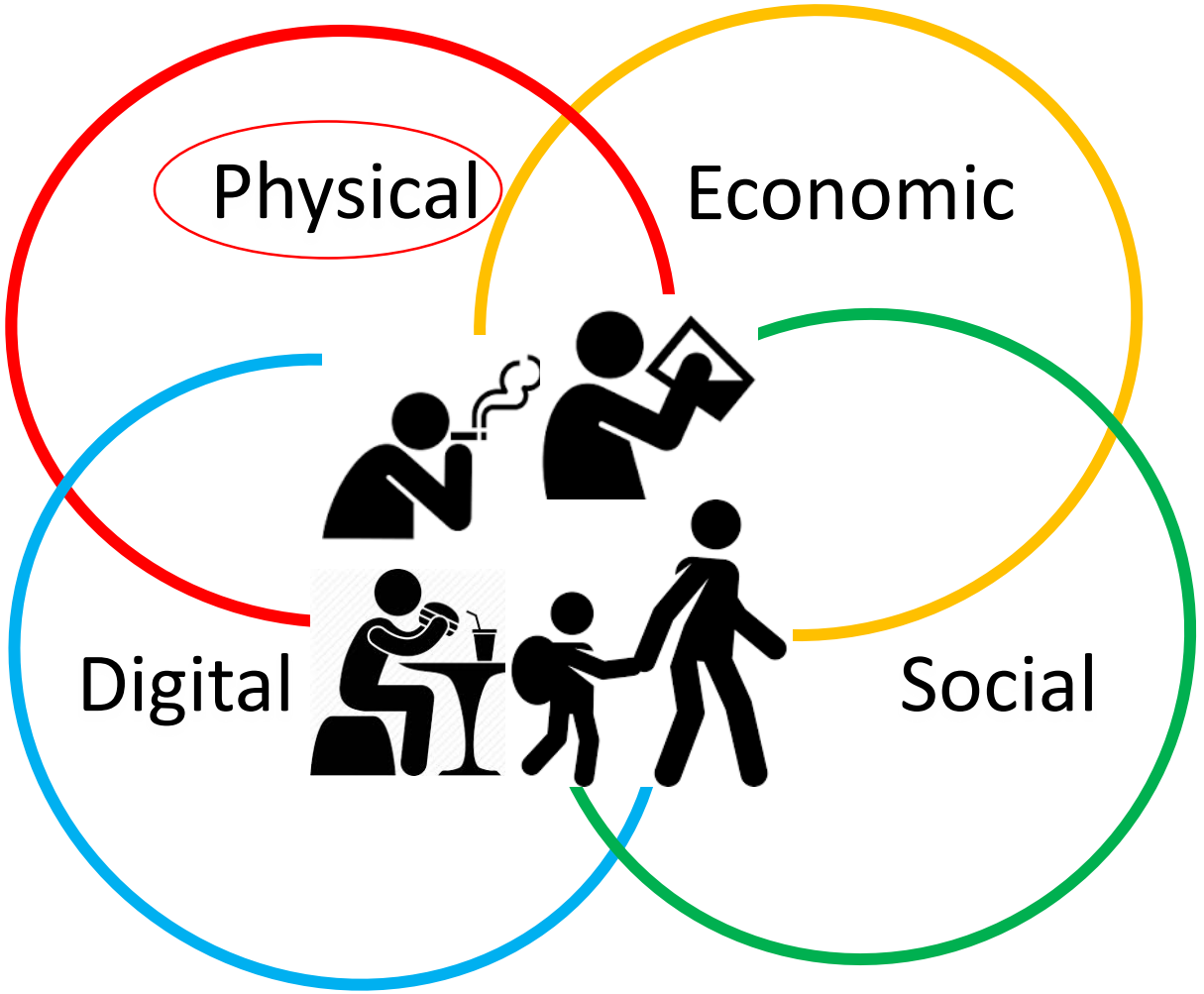
Conscious and Non-Conscious Processes Regulating Behaviour







Environments: Multiple and Overlapping



Cues in **Physical** Environments Shaping Behaviour

Properties of objects or stimuli

- **SIZE**

- **PRESENTATION**

- **INFORMATION**

- **FUNCTIONALITY**

Placement of objects or stimuli

- **AVAILABILITY**

- **POSITION**

Cochrane Public Health

Hollands, Bignardi, Johnston, Kelly, Ogilvie, Petticrew, Prestwich, Shemilt, Sutton & Marteau, *Nature Human Behaviour* 2017

Behaviour Change to Improve Health for All

I Four behaviours

II Changing behaviour

- Less promising: *targeting conscious processes*
- More promising: *targeting nonconscious processes*

III Generating and Implementing Evidence

i. estimating effect sizes

ii. understanding mechanisms to optimise interventions

iii. implementing interventions at population-level

Generating and Implementing Evidence: An example of Size Interventions

Effect Size

Evidence synthesis

Making sizes smaller for all foods and tableware on all occasions could reduce energy consumed by:

12% to 16% in UK adults =

279 calories a day

Hollands et al *Cochrane Library* 2015

Field studies

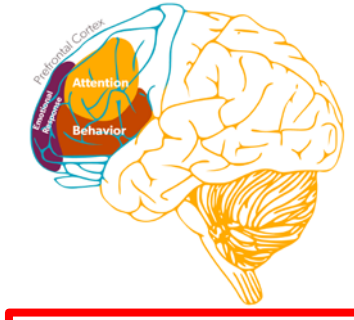
RESEARCH

Impact of reducing portion sizes in worksite cafeterias: a stepped wedge randomised controlled pilot trial

Hollands et al *IJBNPA* 2018

Mechanism

Reward system



Keller et al *Appetite* 2018

Self control system

RESEARCH ARTICLE

Poverty Impedes Cognitive Function

Mani et al *Science* 2013

Implementation

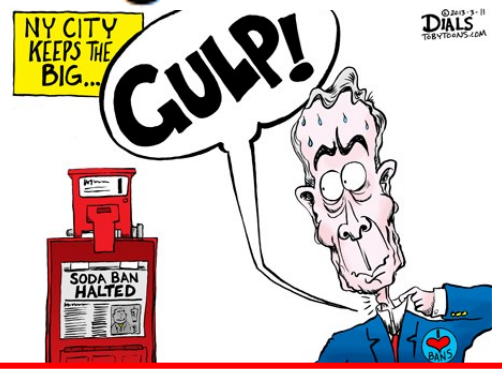
Voluntary

Article

The Public Health Responsibility Deal: Using a Systems-Level Analysis to Understand the Lack of Impact on Alcohol, Food, Physical Activity, and Workplace Health Sub-Systems

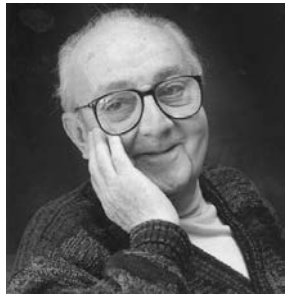
Knai et al *IJERPH* 2018

Regulation



Pomeranz & Brownell *NEJM* 2014

Keep in Mind…



Essentially, all models are wrong but some are useful – *George Box*

The single most important intervention for changing behaviour is to understand that there is no single most important intervention – *after Harry Rutter*

NATIONAL ACADEMY of MEDICINE

The Academy of Medical Sciences

Beyond the Rosenthal Symposium

Set up new collaborations across Sciences, Methods and Geographies to Change Behaviour to Improve Health for All