What is really 'behavioural' in behavioural health policy?

Matteo M Galizzi
m.m.galizzi@lse.ac.uk

THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE ▪

LSE Behavioural Research Lab
LSE Health and Social Care
Department of Social Policy
Centre for the Study of Incentives in Health

Paris School of Economics, Hospinnomics
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One minute presentation

- **Risky health behaviours** are the new 'pandemics'
- Diverse health policies under 'behavioural' umbrella
- A taxonomy of 'behavioural health policies'
- Look at:
  - How they really inspire to 'behavioural economics' insights
  - How effective they are

Risky health behaviour

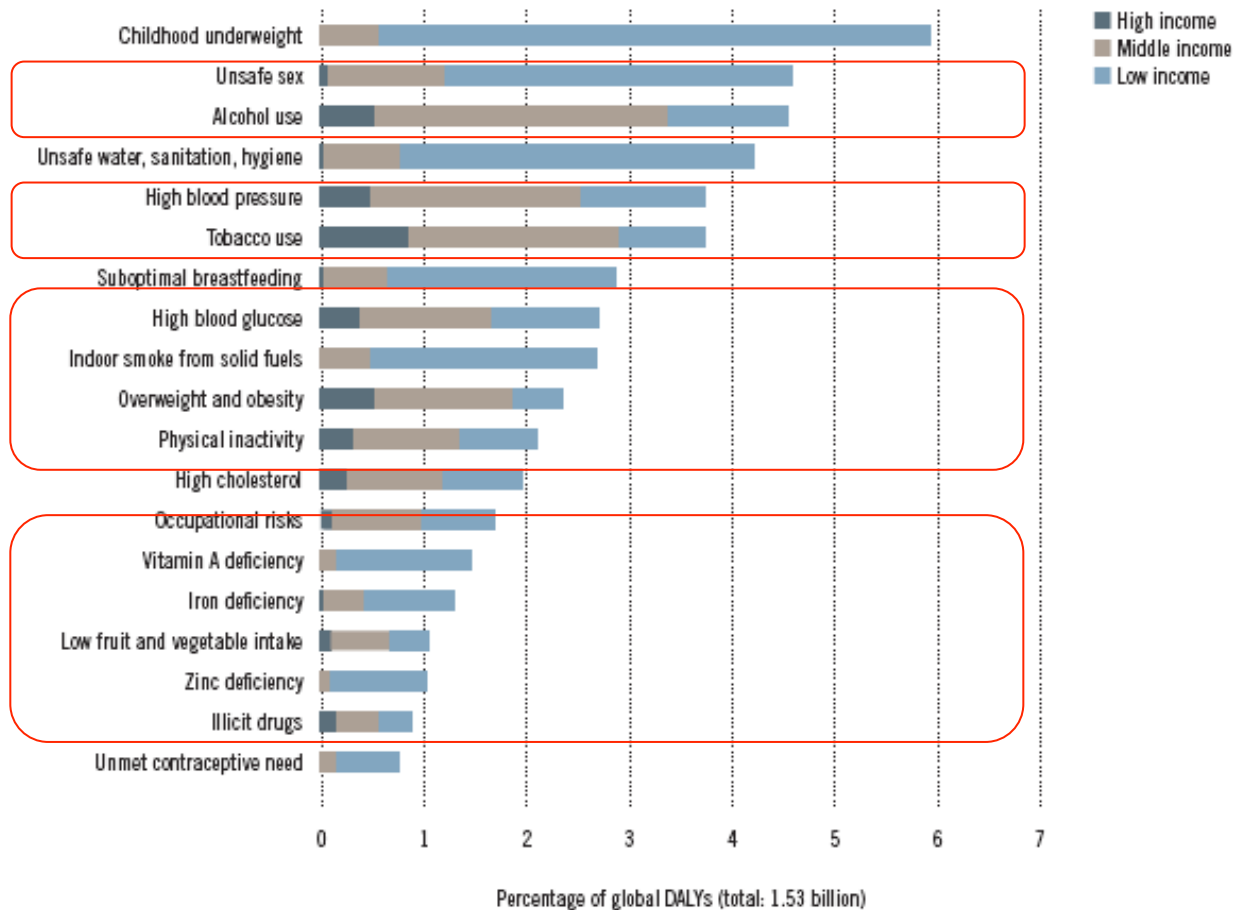# Non-communicable diseases: the '3 big killers'

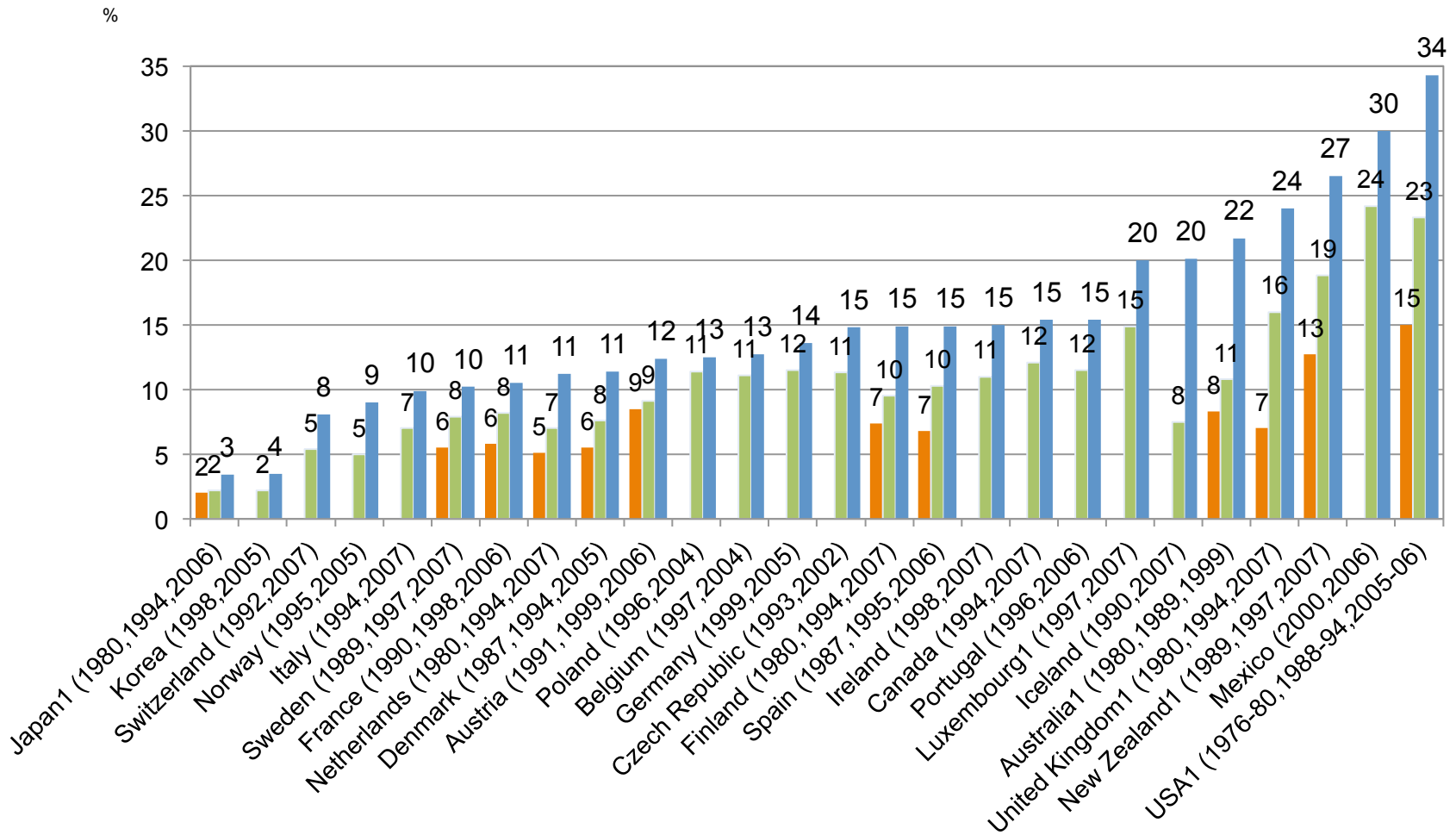|	Tobacco Use	Unhealthy Diet and Physical Inactivity	Harmful Use of Alcohol
Cardio-vascular	✔	✔	✔
Diabetes	✔	✔	✔
Cancer	✔	✔	✔
Chronic Respiratory	✔		

Burden of Disease

Figure 20. Global percentages of DALYs attributed to 19 leading risk factors by income group, 2004

Percentage of global DALYs (total: 1.53 billion)

Obesity trends

%

Source: OECD Health Data 2009.

Salient and popular figures...

US

- 29% of population is overweight (OW) and 34% is obese (OB)

UK

- 32% OW, 24% OB

All over the world

- By 2030, global number of OW and OB people may double to 3.3 billion

Costs of **obesity**, UK

Table 1: Estimated direct and indirect costs of obesity (1998 and 2002)

Estimated costs	1998 (£ millions)	2002 (£ millions)
Treating obesity	9.4	45.8 – 49.0[c]
Treating consequences of obesity	469.9	945 – 1,075[d]
Total direct costs	**479.3**	**990.8 – 1,124**
Lost earnings due to premature mortality	827.8	1,050 – 1,150
Lost earnings due to attributable sickness	1,321.7	1,300 – 1,450
Total indirect costs	**2,149.5**	**2,350 – 2,600**
Total economic cost of obesity	**2,628.9**	**3,340 – 3,724**

What can be done?

The '3 big killers' and 'behavioural change'

Big three killers:

- Excessive alcohol drinking
- Smoking
- Obesity, overweight, unhealthy eating, sedentary life

What can be done?

- Change behaviour
  - Different health policy interventions

Lots of 'behavioural' health policies…

- **Diverse policies under 'behavioural' umbrella**
  - Randomized field experiments
  - Comparison websites
  - Labels
  - Incentives to pregnant women to quit smoking
  - Fat taxes, thin subsidies
  - Nudges…

'Behavioural' health policy

- **High demand for 'behavioural' insights by policy-makers**
  - BIT ('nudge unit') and Mindspace in UK Cabinet Office
  - EU Commission: DG SANCO, JCT
  - OECD Workshop and Report (2015)
  - World Bank WDR (2015)
  - US Obama Administration: OIRA, SBSU
  - France: SGMAP
  - Canada, Australia, Sweden, Denmark
  - Italy…

Two mis-conceptions and an empirical question

- **Two common mis-conceptions: what is really 'behavioural'?**
  1. About the methods or the insights?
  2. Which insights are really 'behavioural'?

- **And the (most important) empirical question:**
  - Which 'behavioural' policies really work for behavioural change?

Roadmap

- A definition of 'behavioural' policy

- A taxonomy of 'behavioural' policies

- A review of the evidence

A definition

'Behavioural' policy, and economics

- **Behavioural policy**
  - Behavioural policy is a policy directly inspired by the insights from behavioural economics (Shafir, 2012; Oliver, 2013)

- **Behavioural economics**
  - Behavioural economics is application to 'conventional' economics of insights…
  - from cognitive and social psychology, as well as from cognate disciplines
  - 1992 Round Table for Behavioral Economics at Russel Sage Foundation
  - *"Behavioral economics uses facts, models, and methods from neighboring sciences to establish descriptively accurate findings about human cognitive ability and social interaction and to explore the implications of these findings for economic behavior. The most fertile neighboring sciences in recent decades has been psychology, but sociology, anthropology, biology, medicine and other fields can usefully influence economics as well."*

Then, what about 'conventional' economics?

- **'Conventional' economics**
  - *'rational people who engage in maximizing behavior'* (Lazear, 2000)

- **Four stylized 'pillars'**
  1. We have complete and comprehensive set of preferences, and a clear, conscious, and consistent representation of those preferences: stable across time/domains.
  2. These preferences drive behavior: we process all available information, rationally calculate benefits and costs of each course of action, and deliberately pick the one which best match our preferences.
  3. Our rational behavior best serve our own interests (maximize our utility) when interacting with others in markets: markets aggregate individual costs/benefits values and translate into prices.
  4. Public intervention is needed only when markets fail to translate some costs/benefits values into prices: 'externalities'

A taxonomy

First mis-conception

- **Behavioural policy entails use of 'randomized' experiments**
  - Main message from EC workshop: http://ec.europa.eu/dgs/health_consumer/information_sources/consumer_affairs_events_en.htm
  - Most cited report by CO BIT:

Test, Learn, Adapt:

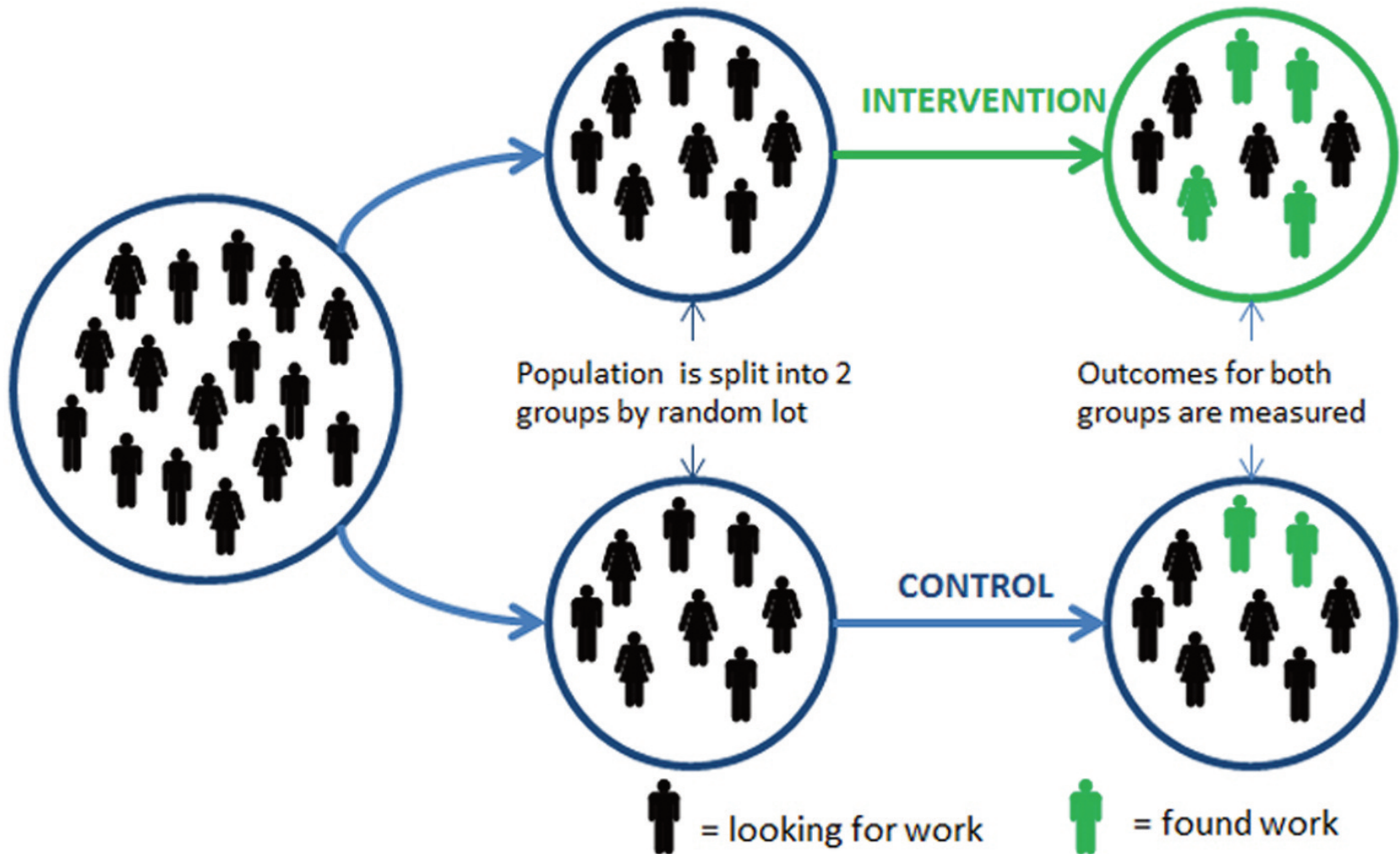Developing Public Policy with Randomised Controlled Trials
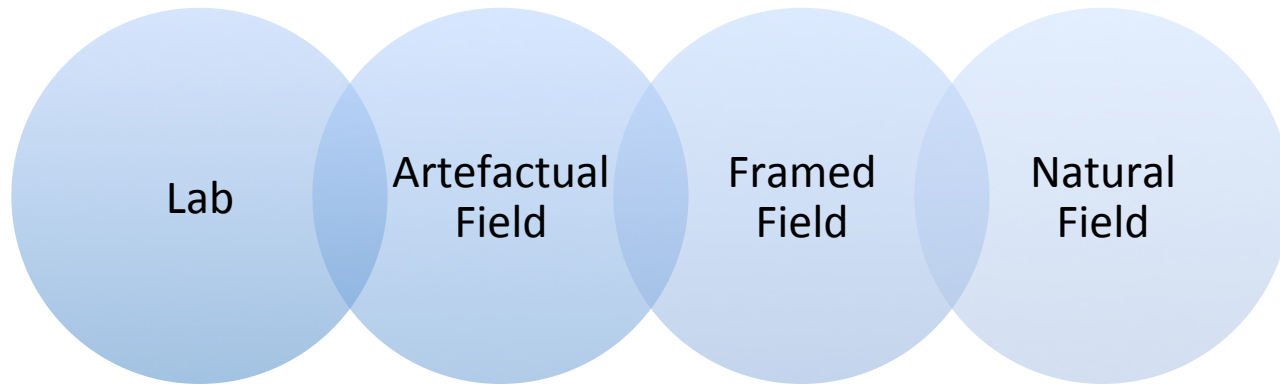
Laura Haynes

Owain Service

Ben Goldacre

David Torgerson

Cabinet Office
Behavioural Insights Team

'Experimental' ≠ 'behavioural'

- **'Behavioural' is not about method, is about insights**
  - Experimental (scientific) method has to be welcome to support policy decisions
  - But is a necessary pre-condition!
  - All (health) policies should be tested through rigorous randomized controlled experiments: World Bank, J-PAL, nudge units

  - But (finally) embracing the experimental method does not automatically qualify a policy as 'behavioural'…

  - And certainly RCTs were not invented by behavioural economists!
  - Peirce & Jastrow (1885), Neyman (1923), Fisher (1925, 1935) Bradford Hill (1937, 1948), Cochrane Library

A typical randomized controlled experiment (Haynes et al., 2012)

INTERVENTION

Population is split into 2 groups by random lot

Outcomes for both groups are measured

CONTROL

= looking for work   = found work

Question is: which randomised controlled experiment in health?

Administrative & biomarkers data … … Naturally occurring data

Lab | Artefactual Field | Framed Field | Natural Field

Question is: which randomised controlled experiment in health?

Administrative & biomarkers data → ... → ... → Naturally occurring data

Data linkage

Lab | Artefactual Field | Framed Field | Natural Field
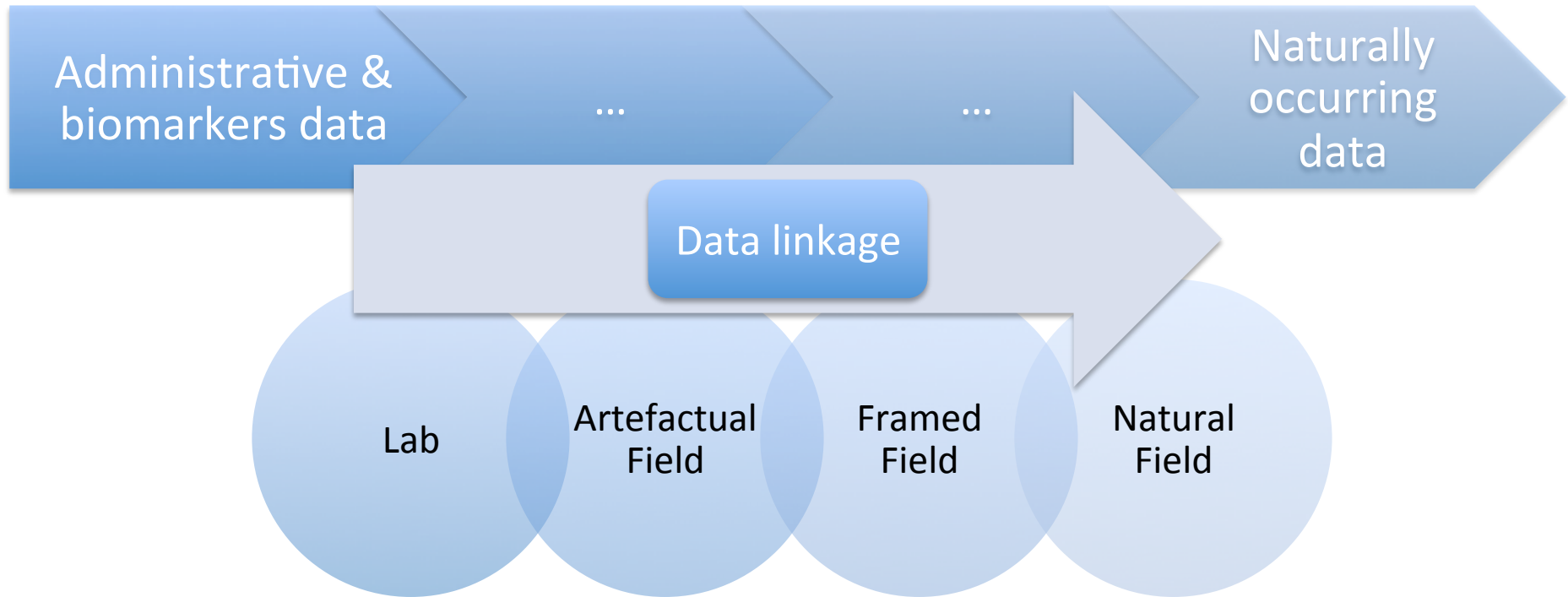
A taxonomy

A taxonomy

- **Preference-based policies**
  - Comparison portals and websites
  - Broader menus of choices

- **Information-based policies**
  - Nutritional labels

- **Financial incentives**
  - Monetary rewards to lose weight

- **Taxes and subsidies**
  - Fat/soda taxes, 'thin' subsidies

- **Nudges**
  - Change location of food items in cafeteria

Insights from 'behavioral' or 'conventional' economics?

Conventional Economics

Behavioral Economics

	Conventional	Behavioral
1	Preferences	Nudges
2	Info	*Behaviorally inspired information based policy*
3	Financial Incentives	*Behaviorally inspired incentives*
4	Tax/subsidies	
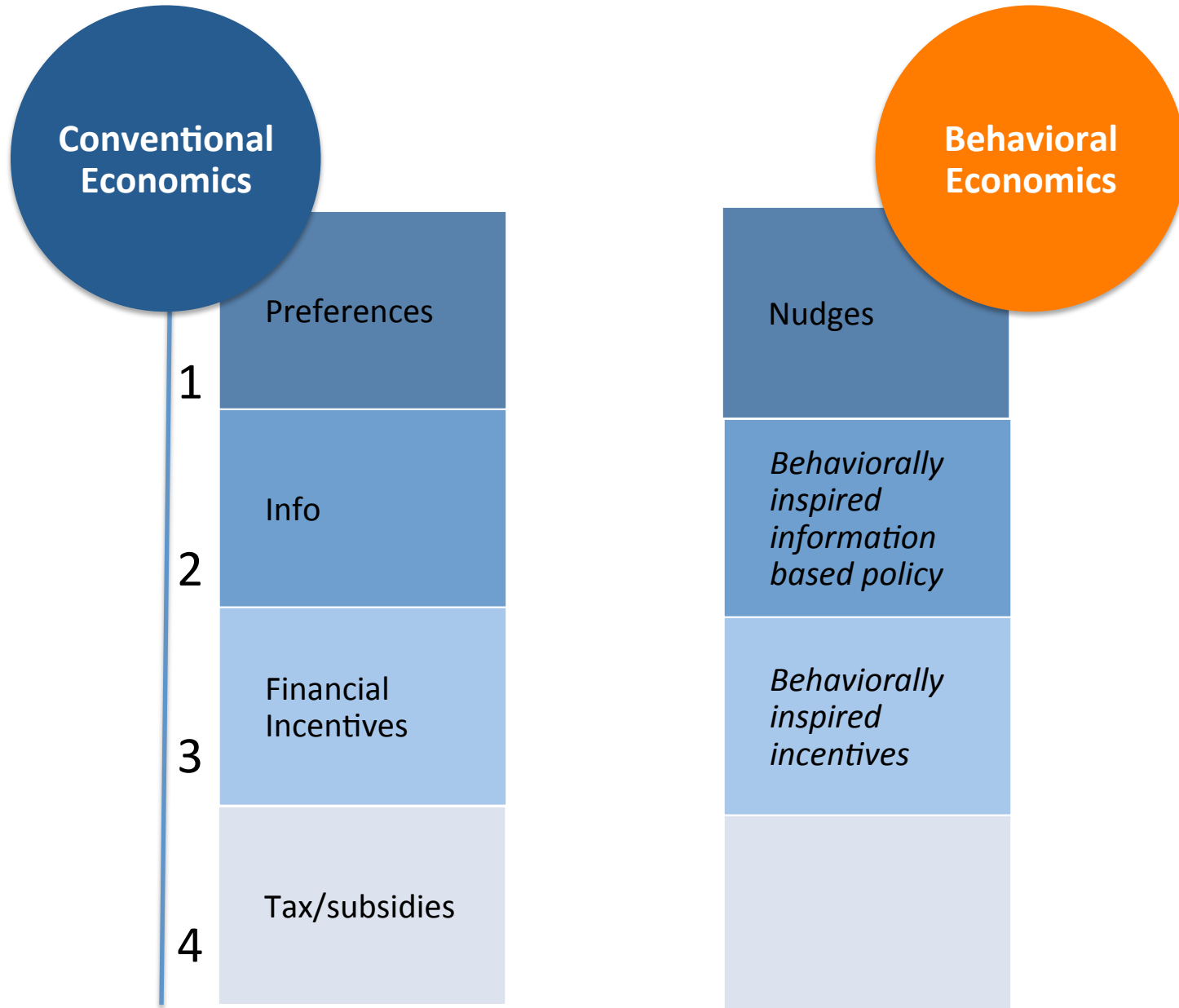
What does it work?

- Focus on risky health behavior
  - Unhealthy/excess eating
  - Physical exercise

Five policy clusters

1. Preference-based
2. Information-based
3. Financial incentives
4. Taxes and subsidies (regulation)
5. Nudges

A review

Insights from 'behavioral' or 'conventional' economics?

Conventional Economics

1. Preferences
2. Info
3. Financial Incentives
4. Tax/subsidies

Behavioral Economics

Nudges

Behaviorally inspired information based policy

Behaviorally inspired incentives
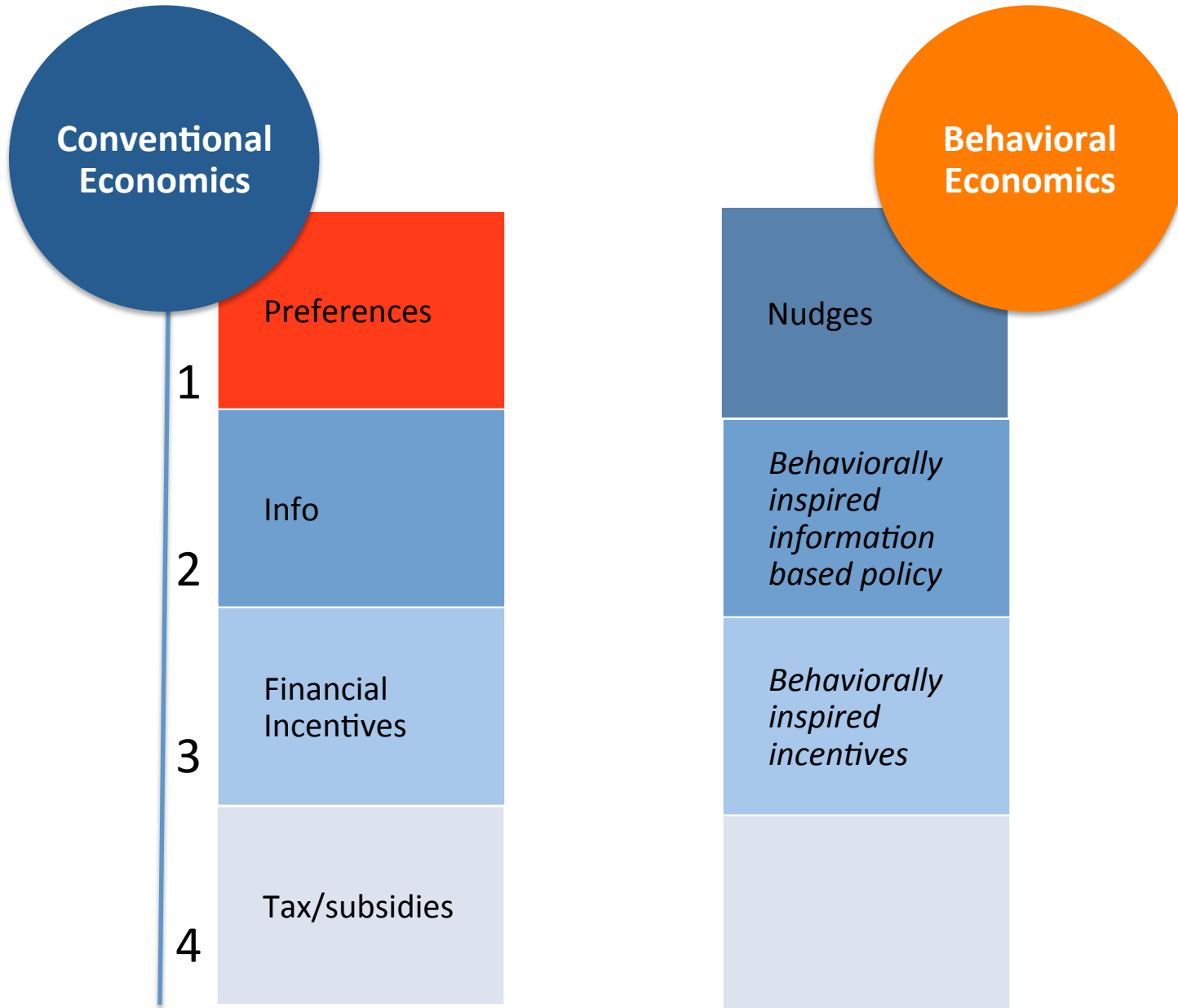
Broader sets of options

The larger the menu, the easier to pick your favourite option:

- Empowerment revolution in doctor-patient relationship (Ubel, 2012)
- Obama Admin's portal to browse health insurances: www.healthcare.gov
- Bush Admin's Medicare Plans D Website for US seniors
- Doctor rating websites
- Hospitals' rankings
- Menus of branded versus generics options in pharma…

'The more choices you have, the more likely it is you'll be able to find a program that suits your specific needs. In other words, one-fits-all is not a consumer friendly program' (George W Bush, 2006).

Preference-based policies

Really 'behavioural'?

- Just conventional economics: pillar 1

Do they work?

- We do not know

- Two reasons

1. Mixed evidence on benefits and potential costs from having more options
2. Methodologically difficult to draw a map between preferences and behaviour

Always good to have more choices?

More choices are good

- Better matches
- Foster competition

But what if they are 'too many'?

- 'Tyranny of choice'
    - Harder to pick your favourite exotic jam (and regret your choice more) when choosing from 24 jams than from subset of 6 (Iyengar & Lepper, 2000)
    - More difficult to ascertain how options differentiate from one another (Steffel & Shafir, 2009)

- 'Fatigue' of choice ('ego depletion')
    - If you have to pick your favourite one in a series of pairwise choices, then…
    - You give up quicker to keep your hands in cold water, or to solve puzzles than just contemplating choices (Vohs et al., 2008)

Swamped by the number of options…

Paralysis by analysis

- In some states, seniors had to choose from 46 (and up to 225) drug plans!
- After 1 year, 73% seniors say Medicare Plan D was '*too complicated*'

- Even in online dating and 'absurdly picky'…
  - Compared to 'speed daters' whose only had 12 options…
  - Premium online seekers who had countless potential daters' profiles…
  - Kept browsing and browsing and dated less often! (Ariely et al., 2005)
  - *'When you have so many option to choose from , you start striving for perfection'*

Methodological hurdle

Revealed preferences argument

- In data, we do not normally observe preferences, just behaviour
- 'Revealed preferences' argument can justify any preference, even the most exotic (Loewenstein, 2007)

- Rational addictions models (Becker and Murphy, 1987)
- Behaviour manifests preferences: smoking are *ipso facto* myopic or risk seeking (Viscusi, 1999)

Really?

Something really not 'behavioural' here…

- If we really want to establish a link between preferences and (health) behaviour…
- We need to directly measure preferences!
- Key in health: preferences for health states, risk preferences, time preferences (Wlliams, 1989; Dolan et al., 1993; Gafni and Torrance, 1989; Cairns and van der Pol, 1996).

What do we know about this link?

- Focus on risk/time preferences and risky health behaviour

- Several methods and tests: hypothetical versus incentive-compatible (IC) rewards
- Experimental economists: real money on the table ensures consistency of responses, and minimises noise
- Arguably best measure to catch underlying preferences, if any: most conservative option

Risk Preferences

☐   How people trade off risks and money

We toss a fair coin...

Lottery Blue

Heads: win £12

Tails: win £8

Lottery Red

Heads: win £20

Tails: win £0

Which do you prefer?
- Lottery Blue
- Lottery Red
- Whichever

We toss a fair coin...

Lottery Blue

Heads: win £12

Tails: win £8

You expect to gain

50% x 12 + 50% x 8 =

0.5 x 12 + 0.5 x 8 =

½ x 12 + ½ x 8 =

=10

Lottery Red

Heads: win £20

Tails: win £0

You expect to gain

50% x 20 + 50% x 0 =

0.5 x 20 + 0.5 x 0 =

½ x 20 + ½ x 0 =

=10

We toss a fair coin...

Lottery Blue

Heads: win £10

Tails: win £6

Lottery Red

Heads: win £20

Tails: win £0

Which do you prefer?
- Lottery Blue
- Lottery Red
- Whichever

We toss a fair coin...

Lottery Blue

Heads: win £10

Tails: win £6

You expect to gain

50% x 10 + 50% x 6 =

0.5 x 10 + 0.5 x 6 =

½ x 10 + ½ x 6 =

=8

Lottery Red

Heads: win £20

Tails: win £0

You expect to gain

50% x 20 + 50% x 0 =

0.5 x 20 + 0.5 x 0 =

½ x 20 + ½ x 0 =

=10

Risk Preferences

Risk Averse

- Lottery Blue

Risk Lover

- Lottery Red

Risk Neutral

- Either

Time Preferences

☐ How people trade off benefits between two different periods in time

Would you rather receive:

Choice 1

○ £20 today

         or

○ £22 tomorrow?

Would you rather receive:

Choice 2

○ £20 today

 or

○ £25 tomorrow?

Would you rather receive:

Choice 3

○ £20 today

　　　　or

○ £40 tomorrow?

Choice 4

- £20 in a week

or

- £22 in a week and a day?

Would you rather receive:

Choice 5

○ £20 in a week

or

○ £25 in a week and a day?

Would you rather receive:

Choice 6

○ £20 in a week

or

○ £40 in a week and a day?

Externally valid? The case of risk preferences…

External (ecological) validity in health

- Correlation with smoking status?
  - Yes & No: Dohmen et al. (2009) but not all measures
  - No: Harrison et al. (2010); Galizzi & Miraldo (2012); Szrek et al. (2012)

- Correlation with excess drinking?
  - Yes & No: Anderson & Mellor (2006): not robust to thresholds for heavy drinking
  - No: Szrek et al. (2012)

- Correlation with obesity/overweight?
  - Yes & No: Anderson & Mellor (2006): not robust to thresholds based on BMI
  - No: Galizzi & Miraldo (2012): no effect of BMI but yes with HEI (2006), for men

Need more, direct, evidence on validity/stability

On-going ESRC project (Galizzi, 2012)

Linking experimental, survey, administrative, and biomarkers data for a representative sample of the UK population

Using Understanding Society panel

Moving beyond self-reported health behaviour

Current projects linking randomized controlled experiments with :
- Large longitudinal surveys and cohort studies in UK and France containing a wealth of
- Administrative and biomarkers data

Five policy clusters

1. Preference-based
2. Information-based
3. Financial incentives
4. Taxes and subsidies (regulation)
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Insights from 'behavioral' or 'conventional' economics?

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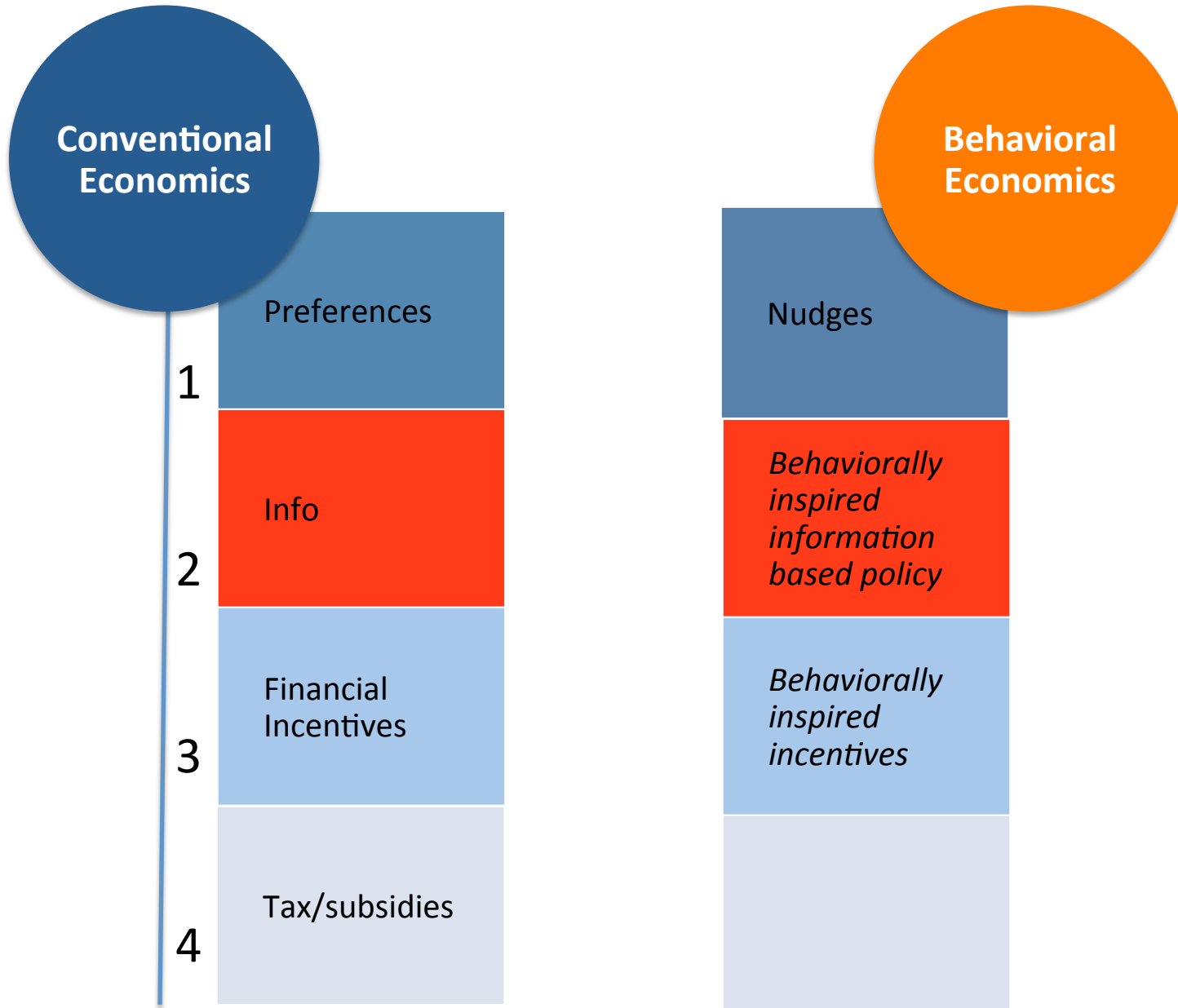
More information

Policies in OECD countries

- *Smoking kills*: health information on cigarettes' packages
- *Low fat/5 a day*: food labelling, calories and nutrition information
- *2(3) alcohol units a day*: any alcohol drink show # of units; pregnant women
- *Walk to work*: campaigns to induce mild physical exercise

Information-based policies

Really 'behavioural'?

- Just conventional economics: pillar 2
- The more information you have the better it is
- Information is beneficial even if produces no changes in health behaviour
    - Fully informed decisions
    - Enable people to choose what they really prefer

Do they work?

- Yes and no, but mainly no

- Raise awareness
- Do not change behaviour
- Can have 'perverse' unintended consequences
- Can work better when more closely inspired to behavioural insights

Types of policies

Information campaigns on healthy eating

- Info to promote consumption of healthy goods: 5 a day type of campaign
- Food labelling

What are the effects?

Does more information work for eating behaviours?

5-a-day campaign

- informational campaign run in UK between 2002-2004
- educate people to eat at least 5 portions of fruits/vegetables a day

3 January 2013 Last updated at 03:11

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Five-a-day campaign: A partial success

💬 COMMENTS (161)

Michael Mosley
From BBC Radio 4's You and Yours

Does more information work for eating behaviours?

Evidence

•   Raises awareness of the need to consume more fruit/veg

•   Some modest change in behaviour, when correcting for changes in prices (increased)

•   But, even after 5-a-day info campaign, the **lower income families still consume half fruit/veg** than the richer families and react much less (+20% vs +36%) (Mazzocchi, Trail & Shogren, 2009)

Food labelling

Types

- GDA: guidelines for daily amounts: full nutritional facts
- Signposts: simplified labels with green, amber, red on selected categories

Does more information work for labelling food?

Which one is better?

- Nutrition experts: favour GDA, as signposts tend to over-simplify the nutrition info, on the other hand…

- Michelle Obama in march 2010 to American Association of Grocery Manufacturers:

"The last thing i had time to do was to stand in a grocery store aisle squinting at ingredients that i couldn't pronounce to figure out whether something was healthy or not".

(Source: George Loewenstein's slides "The price is wrong")

- Under experimental test by EC DG SANCO

- In UK the two schemes are voluntary and supermarkets choose one they prefer:
  - TESCO and Waitrose use GDA
  - M&S and Sainsbury's the signposts

Evidence on food labelling: US

Evidence

- Evidence on pure labelling is disheartening, and comes from US or UK
  - Modest effects, if any
  - But even unintended perverse effects!

- Better evidence from 'behaviorally' inspired labelling: saliency, visual heuristic versus numeric cues
  - Salient visual cues win over full nutritional labels

Information and healthy eating
Labelling

Evidence on 'pure' nutritional labelling

Evidence of minimal or modest impact of calories labelling

- Traffic lights: avoiding really "bad" foods (red light), than choosing genuinely healthy food (green light): local substitution effects (amber light) (Fox et al., 2002)
  - Generally negative messages tend to work better than positive: bad is stronger than good (Vohs et al., 2005)
  - Similar findings: Downs et al. (2009), Elbel et al., (2009); Harnack et al. (2009)…

Even evidence of 'perverse' effects of calories labelling!

- Calories and GDA information on sweetened/zero calories fizzy drinks: increased consumption of sweetened drinks! (Jue et al., 2012)

'Perverse' effects of 'low fat' labelling

- Subjects given 'low fat' labels consumed +50% snacks (84Kcal) more and underestimate calories more seriously than without labels (Wansick and Chandon, 2006)

Interaction between different labels

- Labelling on many attributes: calories vs other food facts

Labels for other nutritional claims:

Good for your health / Organic / High in Omega 3 / Fair Trade / Zero Emission…

- Labels for other food facts reduce searching for calories information (Roe et al., 1999)
- Halo effect: induce positive perception from other attributes to calories information:
  - When asked to rate taste and caloric intakes of crisps/yogurts labelled as 'organic', subjects rate them tastier and with less calories than regular ones (Wan-Chen et al., 2013)

George Loewenstein's questions:

Nutritional labeling *as it has been implemented* has not been successful in cutting calorie consumption

Could it be more successful if implemented in more innovative fashion?

Evidence on 'behaviorally' inspired food labelling I

Experimental evidence: scarce

Wisdom, Downs and Loewenstein (2009)

o   Sample *n=610* subjects

o   Participation in exchange for free snacks

o   Randomly assigned to one of **12 labelling conditions**

1. Control group with no information
2. Calorie info only
3. Calorie info + daily intake reference
4. Calorie info + daily snack intake reference
5. Percentage of daily calories
6. Percentage of daily snack calories
7. Minutes on a treadmill
8. Heuristic cue 1: nutrition grade
9. Heuristic cue 2: expected body size
10. Heuristic cue 3: traffic lights/signposts rating

Control (no information)

Item	
Lays Classic Potato Chips	
Snickers candy bar	
York Peppermint Pattie	
Apple Crisps	
Choc. Chip Cookie 2 pack	
Lays Baked Potato Chips	
Hostess apple pie	

Control (no information)

Numerical Values:

- Calorie Info Only

Item		Calories
Lays Classic Potato Chips		230
Snickers candy bar		280
York Peppermint Pattie		140
Apple Crisps		40
Choc. Chip Cookie 2 pack		340
Lays Baked Potato Chips		130
Hostess apple pie		470

Control (no information)

Numerical Values:

- Calorie Info Only

- Calorie Info + Daily Intake Reference

Item		Calories
Lays Classic Potato Chips		230
Snickers candy bar		280
York Peppermint Pattie		140
Apple Crisps		40
Choc. Chip Cookie 2 pack		340
Lays Baked Potato Chips		130
Hostess apple pie		470

Nutrition experts recommend that men should eat about 2,400 calories per day, and women should eat about 2,000 calories per day.

(Source: George Loewenstein's slides "Behavioural economics and diet")

Control (no information)

Numerical Values:

- Calorie Info Only

- Calorie Info + Daily Intake Reference

- Calorie Info + Daily Snack Intake Reference

Item		Calories
Lays Classic Potato Chips		230
Snickers candy bar		280
York Peppermint Pattie		140
Apple Crisps		40
Choc. Chip Cookie 2 pack		340
Lays Baked Potato Chips		130
Hostess apple pie		470

Nutrition experts recommend 200 calories per day for snacks or dessert (10% of a 2,000 calorie per day diet).

(Source: George Loewenstein's slides "Behavioural economics and diet")

Control (no information)

Numerical Values:

- Calorie Info Only

- Calorie Info + Daily Intake Reference

- Calorie Info + Daily Snack Intake Reference

- % of Daily Calories

Item		% Daily Calories*
Lays Classic Potato Chips		12%
Snickers candy bar		14%
York Peppermint Pattie		7%
Apple Crisps		2%
Choc. Chip Cookie 2 pack		17%
Lays Baked Potato Chips		7%
Hostess apple pie		24%

Based on nutrition experts' recommendation a 2,000 calorie per day diet.

(Source: George Loewenstein's slides "Behavioural economics and diet")

Control (no information)

Numerical Values:

- Calorie Info Only

- Calorie Info + Daily Intake Reference

- Calorie Info + Daily Snack Intake Reference

- % of Daily Calories

- % of Daily Snack Calories

Item		% Daily Snack Calories*
Lays Classic Potato Chips		115%
Snickers candy bar		140%
York Peppermint Pattie		70%
Apple Crisps		20%
Choc. Chip Cookie 2 pack		170%
Lays Baked Potato Chips		65%
Hostess apple pie		235%

*Based on nutrition experts' recommendation of 200 calories per day for snacks or dessert (10% of a 2,000 calorie per day diet).

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Control (no information)

Numerical Values:

- Calorie Info Only

- Calorie Info + Daily Intake Reference

- Calorie Info + Daily Snack Intake Reference

- % of Daily Calories

- % of Daily Snack Calories

- Minutes on a Treadmill

Item		Min. on Treadmill*
Lays Classic Potato Chips		23
Snickers candy bar		28
York Peppermint Pattie		14
Apple Crisps		4
Choc. Chip Cookie 2 pack		34
Lays Baked Potato Chips		13
Hostess apple pie		47

*To burn the calories in the snack (this assumes you burn 10 calories per minute).

Heuristic Cues
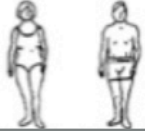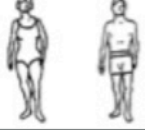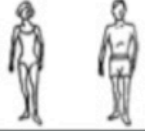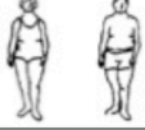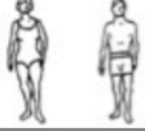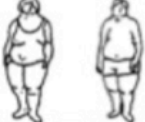
- Nutrition Grade

Item		Nutrition Grade*
Lays Classic Potato Chips		C
Snickers candy bar		C
York Peppermint Pattie		B
Apple Crisps		A
Choc. Chip Cookie 2 pack		D
Lays Baked Potato Chips		B
Hostess apple pie		F

Based on nutrition experts' recommendation of 200 calories per day for snacks or dessert (10% of a 2,000 calorie per day diet)

(Source: George Loewenstein's slides "Behavioural economics and diet")

Heuristic Cues

- Nutrition Grade

- Expected Body Size

Item		Expected Body Size*
Lays Classic Potato Chips		
Snickers candy bar		
York Peppermint Pattie		
Apple Crisps		
Choc. Chip Cookie 2 pack		
Lays Baked Potato Chips		
Hostess apple pie		

*For someone who eats this snack routinely over time, based on nutrition experts' recommendation of 200 calories per day for snacks or dessert (10% of a 2,000 calorie per day diet)

(Source: George Loewenstein's slides "Behavioural economics and diet")
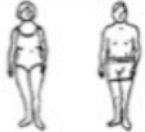
Heuristic Cues

- Nutrition Grade

- Expected Body Size

- Traffic Light Rating

Item		Traffic Light Rating*
Lays Classic Potato Chips		🟡
Snickers candy bar		🟡
York Peppermint Pattie		🟢
Apple Crisps		🟢
Choc. Chip Cookie 2 pack		🔴
Lays Baked Potato Chips		🟢
Hostess apple pie		🔴

Based on nutrition experts' recommendation of 200 calories per day for snacks or dessert (10% of a 2,000 calorie per day diet)

(Source: George Loewenstein's slides "Behavioural economics and diet")

Only % daily snack calories did as well as heuristic cues…
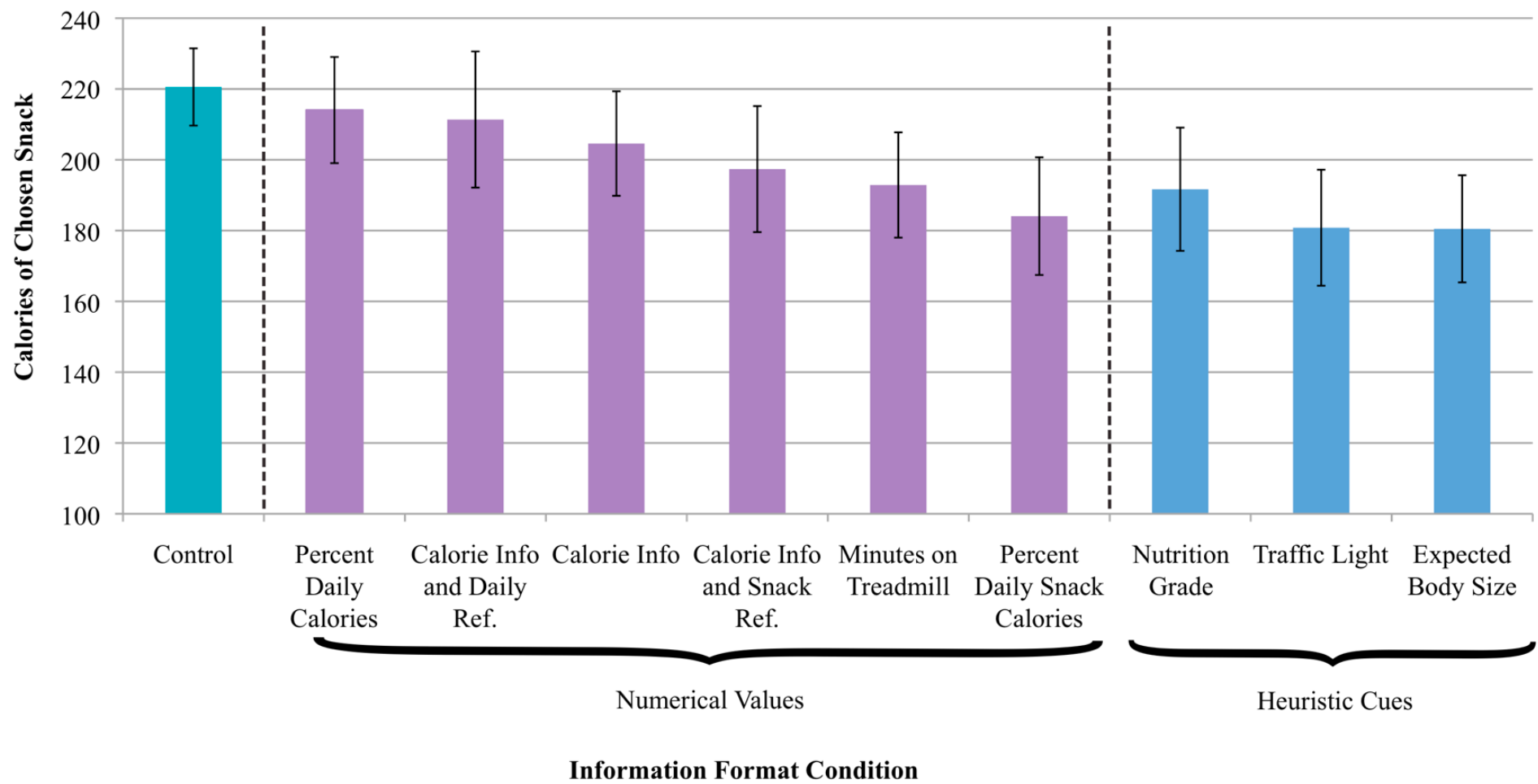
(Source: George Loewenstein's slides "Behavioural economics and diet")

Traffic lights seem especially promising..
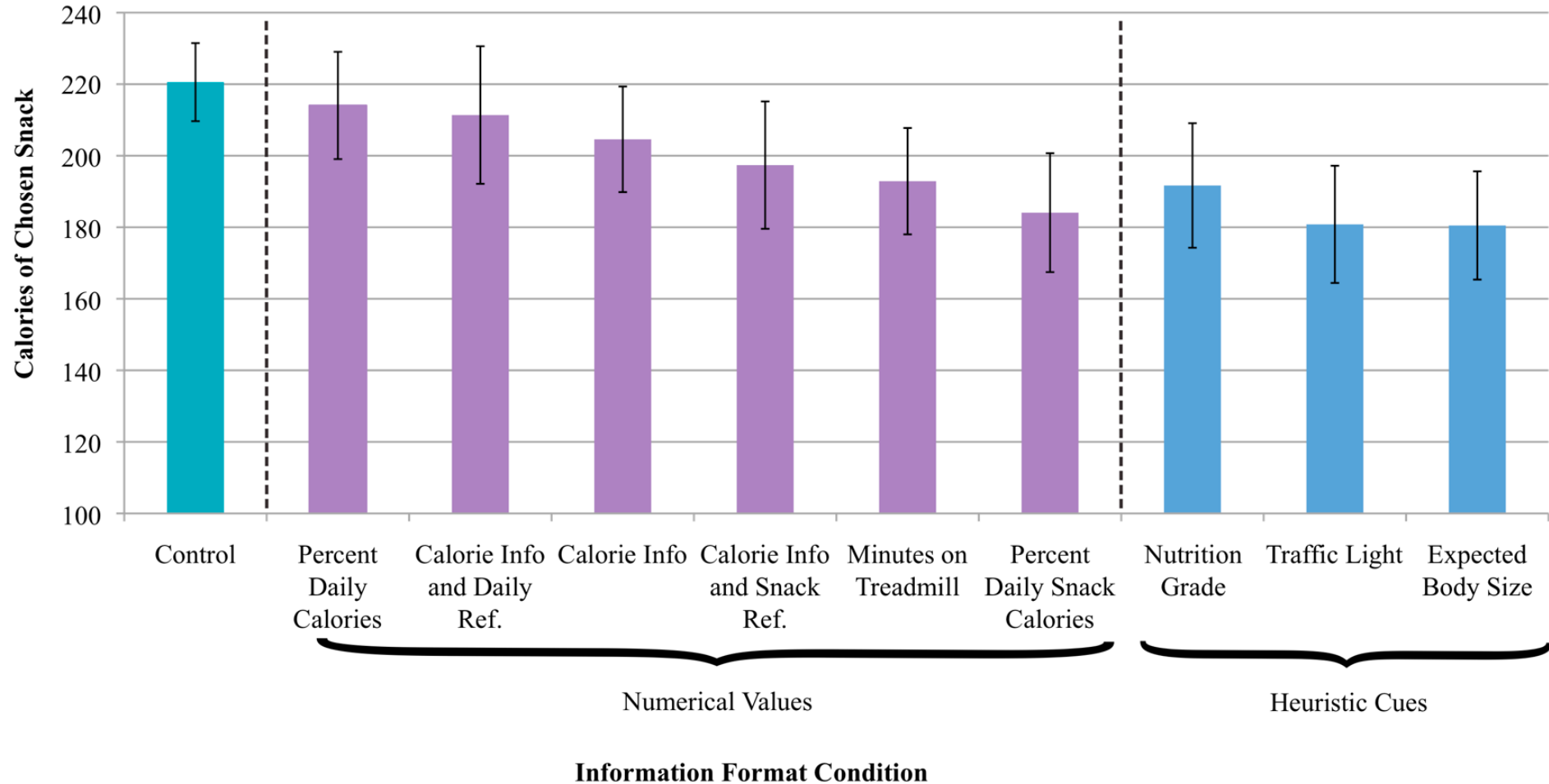
Evidence on 'behaviorally inspired' food labelling II

Wisdom, Downs and Loewenstein (2009)

Results

- Effects of numerical values are rarely significant and lower than heuristic cues
  - Significant decrease (-10% or more) in calories of chosen snacks only when numeric information is in terms of minutes on treadmill
  - Effects was much more significant when labelling used heuristic cues such as traffic lights (-20%) and expected body size (-25%).

- Moreover, no effect in normal weight, but significant effect in overweight sample

Food labelling and meals out

- Evidence on food labels focus on food purchased in supermarkets BUT
- Increasingly **more meals are consumed out**, especially in UK and US

Source: The Economist Special Report on Obesity, 2012

Source: The Economist Special Report on Obesity, 2012

No country has yet fully implemented a policy imposing nutritional information and food labelling on all meals out

Calories labelling in New York City

- 2009
- Calories next to prices
- Wendy's, KFC, McDonalds, Burger King

- Obama's reform intends to extend it to all US

Similar voluntary practices in UK

- 2011
- McDonald's, KFC, Pizza Hut, Pret A Manger

Food labelling and meals out: effects on consumers

(No) effects on consumers

- In principle, consumers will be able to choose healthier option
- Evidence is either of no effects, or of perverse effects

Dumanovsky et al (2011)

Compare Taco Time restaurants where calorie information was mandatory and where not

- Only 15% of customers used calories information
- Who did, chose meals with 106 Kcal less
- Little impact in calories bought, in general
- Increase consumption of iron & fibres
- No impact on total fat, saturated fat or cholesterol
- No impact on obesity

Food labelling and meals out: effects on consumers (II)

(Perverse) effects on consumers

Wisdom, Downs and Loewenstein (2010)

- Field experiment conducted at *Subways* with real consumers
- Win a meal to participate into a survey: choose a sandwich
- Menu reported calories information for all items
- For some subjects healthy options default in front page
- More consumers chose healthy food option
- But, chose higher-calories side dishes and drinks in back page!

Chandon and Wansink (2007)

- Field experiment conducted at *Subways* or *MacDonald's* with real consumers
- Consumers who had a 'healthy' main dish more likely than ones having 'unhealthy' dish to purchase a side dish/drink/dessert, containing +131% calories
- Consumers in fast food perceived as 'healthy' (*Subways*) more likely to underestimate their intakes by an average 150 Kcal than…
- If eating in fast food perceived as 'unhealthy' (*MacDonald's*)

Five policy clusters

1. Preference-based
2. Information-based
3. Financial incentives
4. Taxes and subsidies (regulation)
5. Nudges

Insights from 'behavioral' or 'conventional' economics?
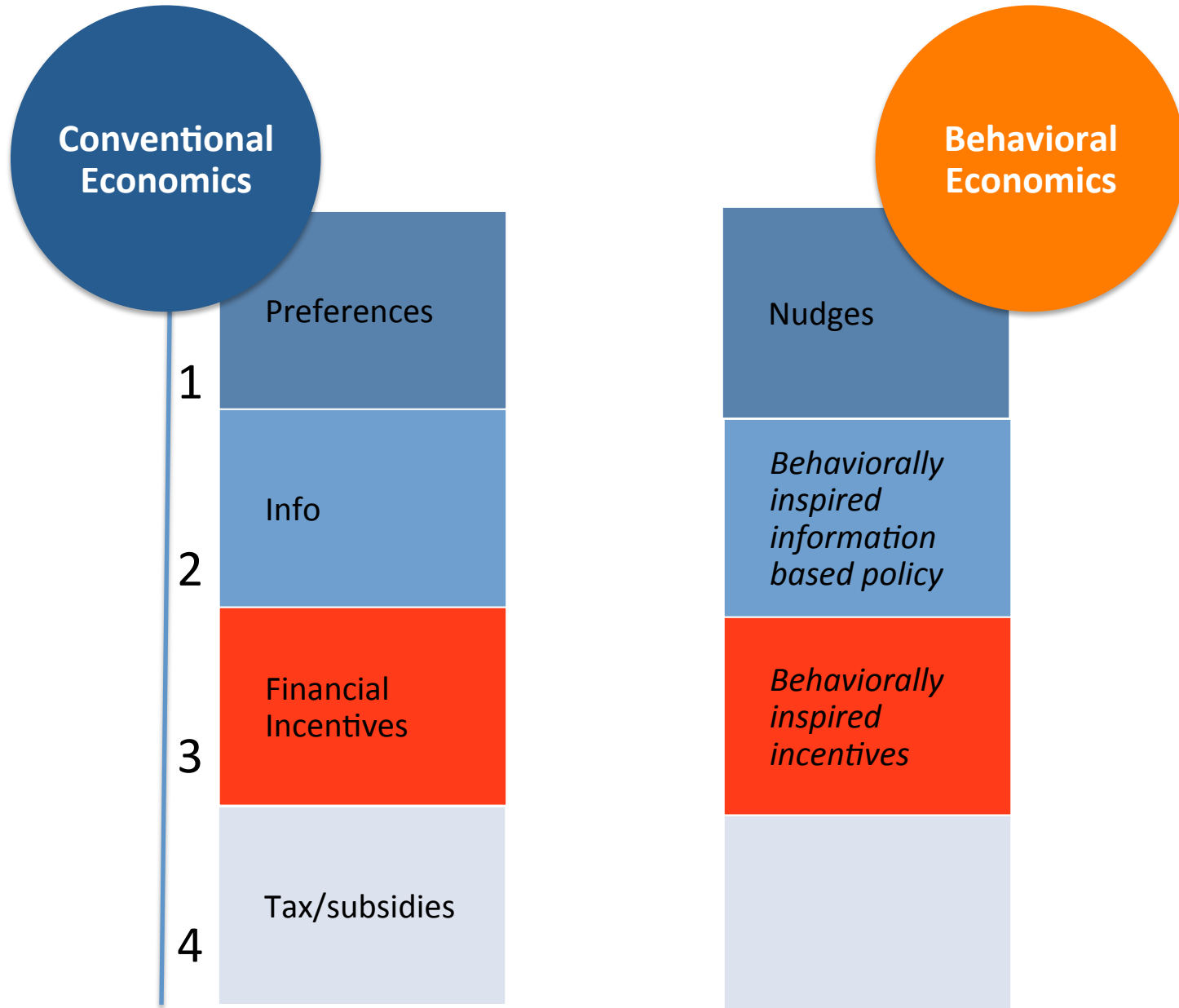
Purely monetary incentives

Pay to change health-related behavior:

- Target subject: consumers, workers, kids, mothers; patients; doctors, nurses

- Target behaviour: risky behaviors; medical treatments; diagnostic/screening tests

- Characteristics of the behaviour:
  - Health-deteriorating behavior (smoking, drinking, over-eating, sedentary lives) vs socially desirable activities (blood/organs donation);
  - repeated vs one-off changes;
  - removing unhealthy behaviour (quit smoking) vs promoting healthy (eat veg)

- Characteristics of the incentive: cash, vouchers, prizes, deposits, lotteries....

Focus on risky health behavior
- Unhealthy/excess eating
- Physical exercise

Purely monetary incentives

Really 'behavioural'?

- Just conventional economics: pillar 3
- 'Basic law of behaviour' (Gneezy et al., 2011): we react to incentives
- Financial incentives   ➡️   change health behaviors

Do they work?

- Yes, not big surprise, but…
- Two caveats

1. Evidence of behavioural change is mainly for short run
2. Can also have unintended 'perverse' consequences

'Behaviourally' inspired incentives

Better evidence when incentives are closely 'inspired' to behavioural insights

Incentives for weight loss

Jeffery at al. (1978, 1984)

- RCT to lose weight

Results

- Incentivized groups had immediate weight loss, significantly higher than C
- Substantial amounts of **weight regained 3 months after** end of incentive
- Incentives not sustainable after 3 months
    - Maintaining weight loss is key problem

Purely monetary incentives

Incentives for exercising

Charness and Gneezy (2009)

- RCT with students: randomized in 3 groups
- Control (C): handouts about benefits of exercise
- Low incentive (L): $25 to attend gym once in a week
- High incentive (H): $100 to attend gym 8 times in a month
- Subjects observed before and 7 weeks after incentive is removed

Result

- Post-intervention attendance in H significantly higher than in C and L
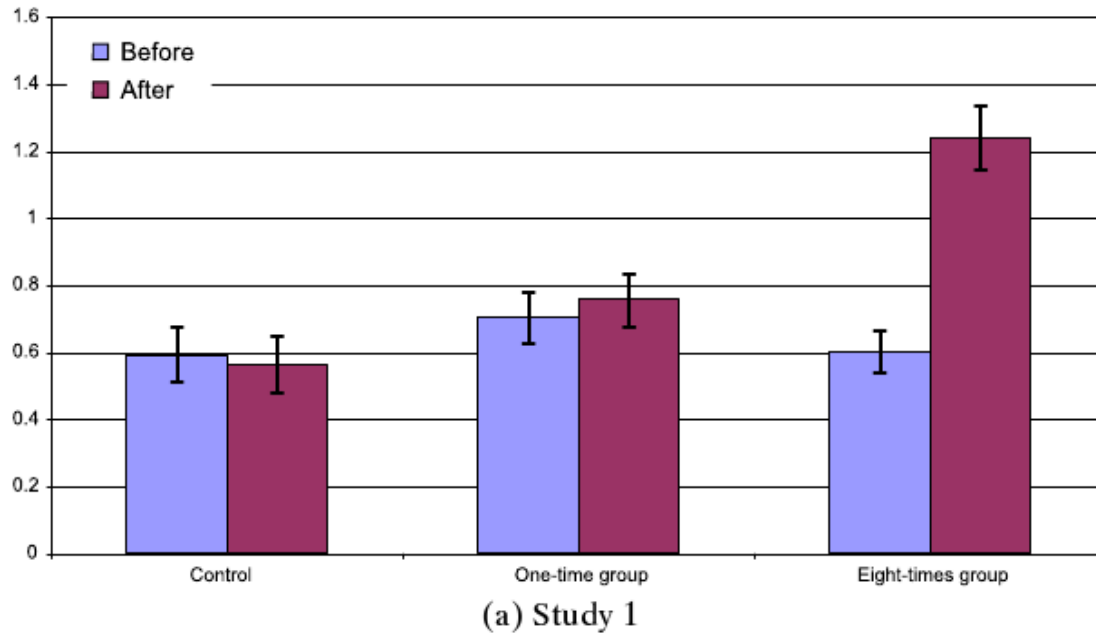
(a) Study 1
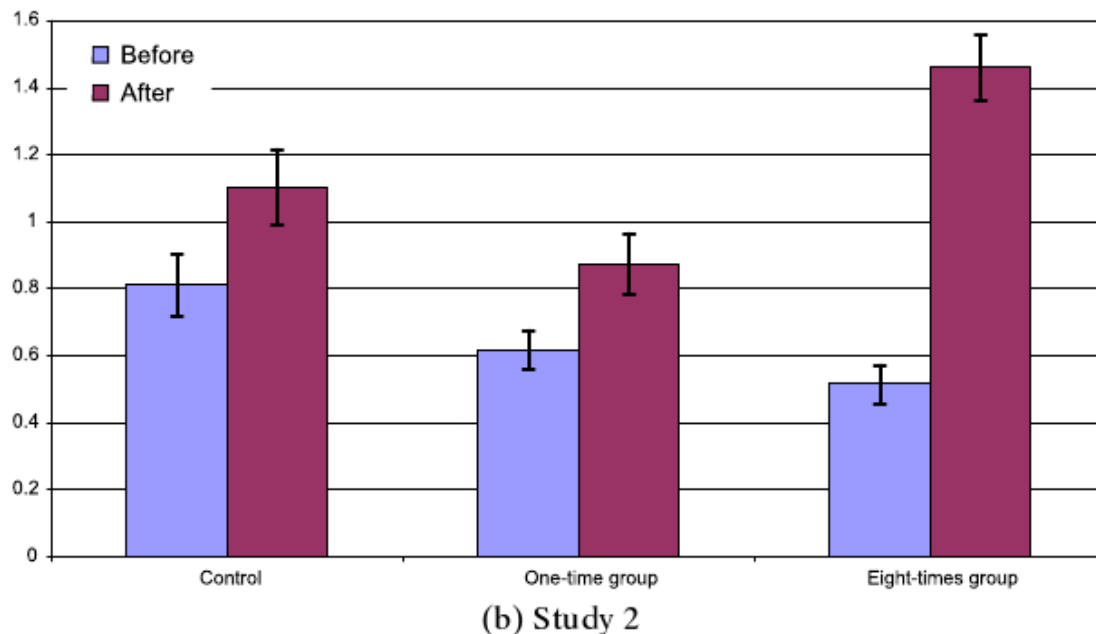
(b) Study 2

FIGURE 1.—Average weekly gym visits. Error bars reflect 1 standard error.

Source:
Charness and Gneezy (2009)

Purely monetary incentives

But, can also have 'perverse' effects…

Dolan and Galizzi (2014)

- Stepping 2 minutes
- **Paid 10p per step** (H), **2p per step** (L), verbally encouraged to work hard (E), paid nothing (C)
- Heart rates directly measured (as well height and weight)
- After experiment, subjects offered a buffet lunch in another room…
- Unbeknownst to them, we recorded the foods/snacks/drinks they had…

Results

- Subjects in H and L did more steps: 103 (H) and 106 (L) vs 89 (C)
- Burning about 17 Kcal vs 11 Kcal in C…
- But subjects in H also consumed 200 Kcal more than in C: 432 (H) vs 233 (C)!
- Effects mediated by 'satisfaction' with the task (not in L)
- 'Licensing' effect: felt to deserve a 'treat' to have done well…

Monetary incentives can have 'spillovers' on behaviours other than one targeted

Consistent with other 'licensing' effects in health…

- Subjects with healthy options as default were more likely to order healthy sandwiches but then have more side dishes/drinks/desserts: Wisdom et al. (2010)

- Subjects who had healthy main dishes more likely to have side dishes/drinks/ desserts: Chandon & Wansink (2007)

- Subjects asked to read a scenario there they walked 30 minutes: then serve +51.8-59.8% more snacks than reading a neutral scenario (Werle et al., 2010)

- Subjects given placebo pills and said they were either multivitamins supplements or placebo: subjects told they were multivitamins then expressed higher preferences for unhealthy activities and walked less to return a pedometer than subjects told they were placebo (Hanks et al., 2010)

- More generally, consistent with the evidence on the pervasive impact of 'behavioral spillovers' (Dolan & Galizzi, 2014; 2015):
  - How one behaviour spills over to the next?
  - Different behaviours for the same individual.
  - Different from behaviour spilling over on other people (Glennerster & Takavarasha, 2013)

Behavioural spillovers

First behavior		Second behaviour	
		Eat healthily	*Eat less healthily*
	A run after work	**1. Promoting** I ran an hour, let's keep up the good work	**2. Permitting** I ran an hour, I deserve a big slice of cake
	Sofa-sitting after work	**3. Purging** I've been lazy today, best not eat so much tonight	**4. Promoting** I've been lazy today, so, what the heck, let's have a big slice of cake

'Behaviourally inspired' incentives

Designing more effective financial incentives using insights from behavioural economics

Volpp et al (2008)

- RCT on financial incentives to lose weight
- 57 obese men randomly assigned to 3 groups and followed 16 weeks + follow-up

- Control (C): **weight-monitoring program** with monthly weigh-ins

- **Deposit contract** (D): subjects can contribute between $0.01-3.00 each day of month
  - 1:1 matched from intervention, plus $3 a day: could gain up to $252 a month
  - Money refundable if they met or exceed target weight loss

- **Lottery** (L): eligible for a daily lottery only if they reported weight below or at goal
  - Frequent small payoffs ($10) and infrequent large payoffs ($100)

'Behaviourally inspired' incentives

Volpp et al (2008) (cont.)

- **Weigh every morning** before eating/drinking and call to report

- **Txt messages** to tell them how much money they earned that day
  - Or, if unsuccessful, how much **would have earned** if they had reached target

- Every end of month, all subjects had to **weigh on clinical scale** to see if they were below target, and, if so, then actually paid money earned the month

- Successful subjects followed for **6 months after** end of incentives

'Behaviourally' inspired incentives work!

Results

- Significantly higher weight losses for D and L than C groups

- **Higher success rates** after 16 weeks

- Longer term effects: after <u>7 months </u>from end of incentives

- **No significant differences in weight loss between D and L**

- Still, subjects in D and L weight significantly less than in C

Why do 'behaviourally' inspired incentives work?

- **Asked to put money down as deposit**: anyone accepts it
  - Evidence: **over-optimism**

- **Deposit contract** in which cumulated money can be lost if unsuccessful:
  - Evidence: **loss aversion**, people react more strongly to losses than equal gains

- **Txt messages** and feedback immediately after daily weigh in and reporting:
  - Evidence: even **small rewards** and punishment have great incentive value

- Txt message feedback on what **they could have gained** if successful:
  - Evidence: desire to **avoid (anticipated) regret** drives decisions under risk

- **Frequent small payoffs** and infrequent large payoffs:
  - Evidence: **overweighting of small probabilities:** people is **less risk averse** and more attracted by large stakes

Challenges for 'behaviourally inspired' incentives

Use people's biases to help them

- Consistent with 'nudging' and 'asymmetric paternalism' (Camerer et al., 2003; Thaler and Sunstein, 2003; 2008)
  - Play on default and status quo bias: make healthy options the default
  - Play on present-bias: give immediate rewards for healthy behaviours
  - Regret lotteries
  - Loss aversion: Deposit contracts, e.g. StickK.com

'Behaviourally inspired' incentives to lose weight have been extended to:

- Longer period of times: 1:1 deposits, with effects up to 32 weeks (John et al., 2011, 2012).
  - No evidence available on more than 8 months.
- Group versus individualized incentives: group incentives more effective: add peer pressure and social norms (Kullgren et al., 2013)

Main challenge is long-term effectiveness/sustainability: 36 months after incentives are removed, there is weight regain: difference with C no longer significant.

Further boosts in matches? Smooth vs abrupt phase out?

Five policy clusters

1. Preference-based
2. Information-based
3. Financial incentives
4. Taxes and subsidies (regulation)
5. Nudges

Insights from 'behavioural' or 'conventional' economics?

Conventional Economics

Behavioral Economics

Preferences
1

Info
2

Financial Incentives
3

Tax/subsidies
4

Nudges

Behaviorally inspired information based policy

Behaviorally inspired incentives
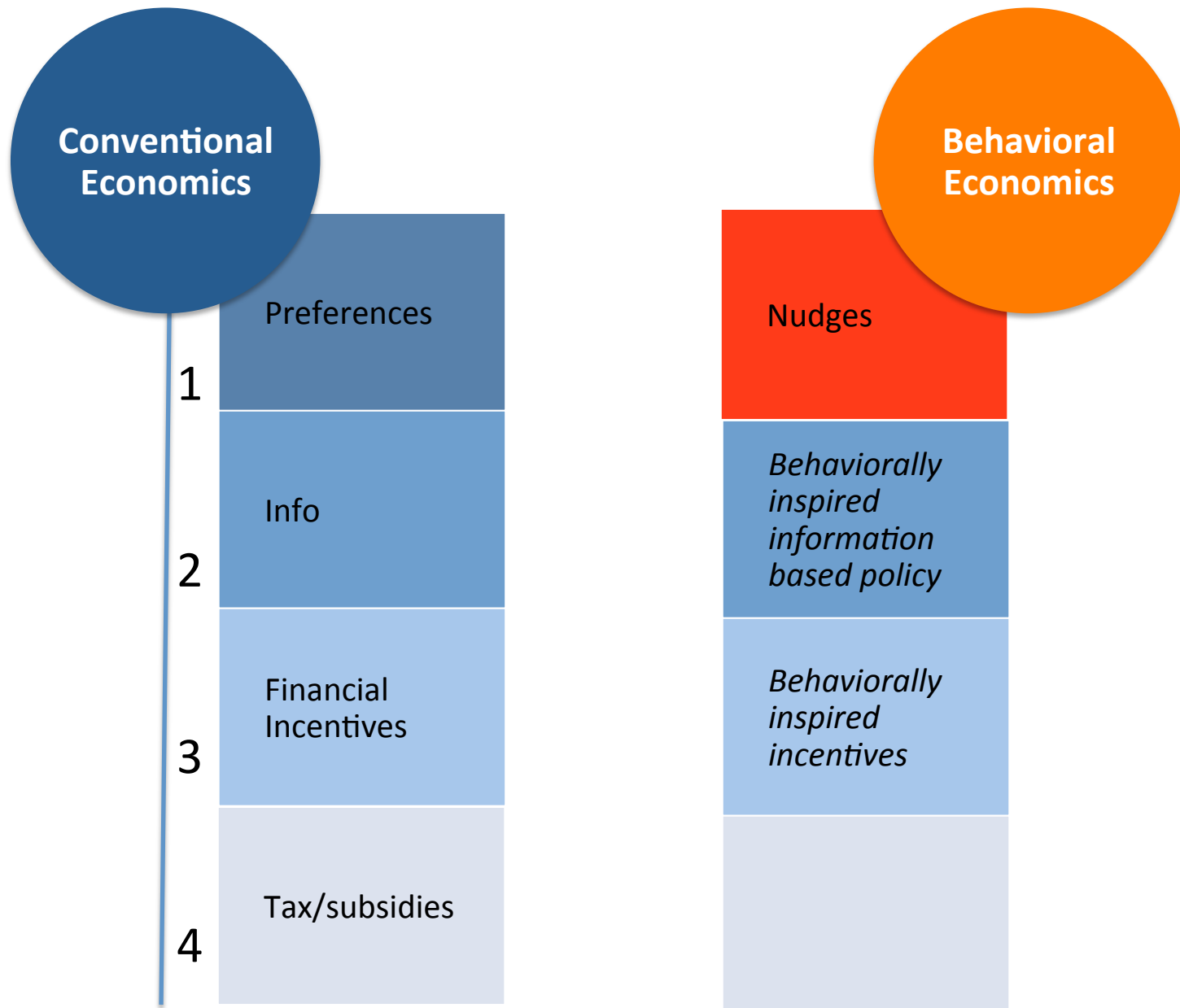
Changing the 'choice' architecture

Directly based on 'behavioural' insights:

- Change choice environment
- To 'nudge' behavioural change
- Mostly occurring at automatic or unconscious level

- Consistent with idea that most our behavior is automatic and non-conscious
  - System 1 versus System 2 (Kahneman, 2003; 2009; Chaiken & Trope, 1996)

- Also consistent with 'asymmetric' paternalism (Camerer et al., 2003) and 'libertarian' paternalism (Thaler and Sunstein, 2003; 2008)
  - Use human biases and errors to help the 'worse off' to make better decisions
  - Without altering/restraining the set of choices available to all others
  - Biases: default/status quo, loss aversion, over-weighting of small probabilities…

- Broad range of policies

Genuinely inspired to 'behavioural' science

Really 'behavioural'?

- Yes
- Does not directly intervene in markets (like taxes/subsidies)

- But directly challenges 'conventional' economics' : pillar 1 (and 2, and 3…)
  - We do not have consistent preferences, may be 'constructed' at the moment
  - Make errors and mistakes, do not plan coherent plans of actions
  - Suffer from 'internalities':

Internalities
  - Costs that we impose on ourselves, and do not (sufficiently) take into account in our decisions

What about effectiveness?

Do they work?

- Probably too early for a comprehensive evaluation of 'nudging' approach (Marteau et al., 2011; Loewenstein et al., 2012)

- But evidence from many streams of literature suggests it is effective
- Even subtle changes in choice architecture lead to substantial changes in behaviour

Nudging and healthy eating

- Relocation of food items in cafeteria: +18-25% increase in consumed fruit/vegs (Wansink et al., 2010)

- Eat twice more healthy food if you can pre-order meal at cafeteria: commitment, hot/cold empathy gap (Hanks et al., 2010)

- Serving larger portions led to consume +77% more foods, +103Kcal than smaller portions (Van Kleef et al., 2010)

- Larger plates/bowls +16% consumed food (Wansink and Van Ittersum, 2006)

- Color of the plates: low color contrast between food and plate (tomato spaghetti on red plate) +22% (32 gr) than high contrast (white plate) (Wansink and Van Ittersum, 2012)

- Less calories if eat intact fresh fruit with fibers/bones than processed food: softer/easier to swallow without chewing, also more added sugars/fats/salt (Kessler, 2009)

- Opposite for fruits: more fruits eaten if sliced (Wansink et al. 2013)

- Smaller packages: -25.2% (75 Kcal) when given box with 100 Kcal individually wrapped packages than standard 400Kcal (Wansink et al, 2011): remind the bottomless bowls…

- Visual 'stop' cues: Pringles from tubes: eat -50% less if one every seven yellow chips is tomato-and-basil red (Gerter et al. 2012)

A tentative mapping

Conclusions (I)

- High demand for 'behavioural' health policies
- Bunch of diverse health policies under same 'behavioural' umbrella
- Two common mis-conceptions
  - Behavioural: methods or insights?
  - What insights are really from behavioural economics?
- An empirical question: do they work
- Propose a taxonomy to classify 'behavioural' policies in 5 clusters
  - Preference-based policies
  - Information Release
  - Financial Incentives
  - Taxes/subsidies
  - Nudges

Conclusions (II)

- We argue that 4 out of 5 of these clusters have in fact very little insights from behavioural economics

- Only 'nudges' substantially depart from 'conventional' economics

- Evidence shows:
  - Preference-based policies are difficult or impossible to evaluate.
  - Information is not enough to change behaviour, and can have perverse effects.
  - Purely monetary incentives lead to changes in behavior only in the short-run.
    - They, however, can also have unintended spillovers that can offset the envisaged impact.
  - Too early to evaluate them comprehensively, but sparse evidence on nudges strongly suggest they can effectively work in dealing with 'internalities'.
    - 'Nudges' can also inform the design of effective 'behaviourally inspired', information-release policies and financial incentives.
  - But to effectively deal with the many and major 'externalities' related to risky health behavior, we need to also resort to more 'conventional' policies
  - Simultaneous introduction of fat taxes and thin subsidies seems the way to go.

Conclusions (III)

- Whether a health policy is genuinely 'behavioural' or not is perhaps not the most important question
- What pragmatically matters is whether the health policy intervention succeeds to effectively change behaviour
- Especially in the long run and taking into account all possible spillovers

- Randomized controlled experiments in health policy…
  - Possibly supercharged by behavioural economics insights,
  - And linking survey, administrative, and biomarkers data
- …are likely the beginning of an evidence-based revolution!

Thank you very much

m.m.galizzi@lse.ac.uk

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