



Public Health
England

Protecting and improving the nation's health

Behavioural Insights in Public Health England

Tuesday 24th January 2017

Dr Tim Chadborn
Elizabeth Castle
Karen Tan
Jet Sanders

PHE Behavioural Insights Team
PHE Behavioural Insights Team
PHE Behavioural Insights Team
University of York

Introductions



Tim Chadborn
Behavioural
Insights Lead
Researcher



Liz Castle
Behavioural
Insights Research
Analyst



Karen Tan
Behavioural
Insights Research
Analyst



Jet Sanders
ESRC Research
Fellow

Objectives



Gain overview of the behaviour change theories and frameworks used by the Public Health England Behavioural Insights Team.



Understand relevance and applicability of behavioural insights in public health.



Gain familiarity with key tools and methodologies used by the team to analyse and design population level behaviour change interventions.

Timings

12.00 Arrival and lunch

12.15 Introduction

12.20 Background to Behavioural Insights

12.45 PHE Behavioural Insights Team

13.00 How we apply Behavioural Economics

14.00 Examples of our work and results

14.30 Break and drop in session

14.45 How we apply Psychological frameworks

15.45 Wrap up



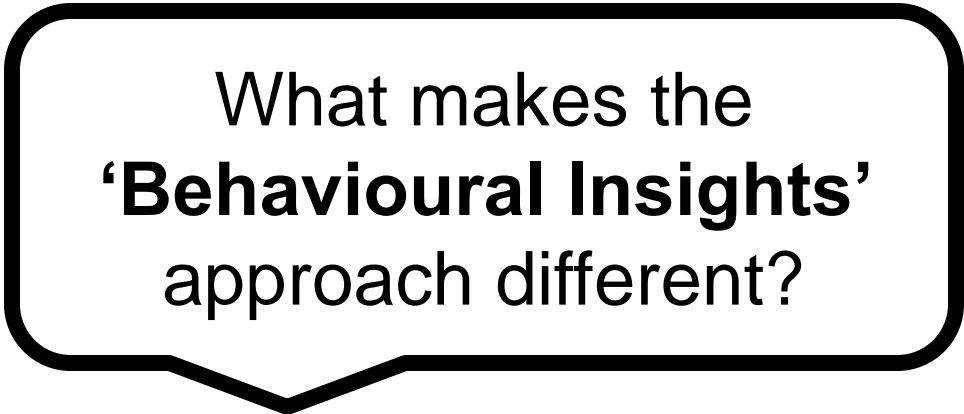
Public Health
England

Protecting and improving the nation's health

Background to Behavioural Insights



‘Behavioural Insights’



What makes the
'Behavioural Insights'
approach different?

**Choice
Architecture**



**Thinking
Fast and
Slow**



**Daniel
Kahneman**



**Cognitive
Bias**



Nudge



**Richard
Thaler**



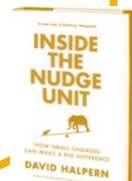
Heuristics

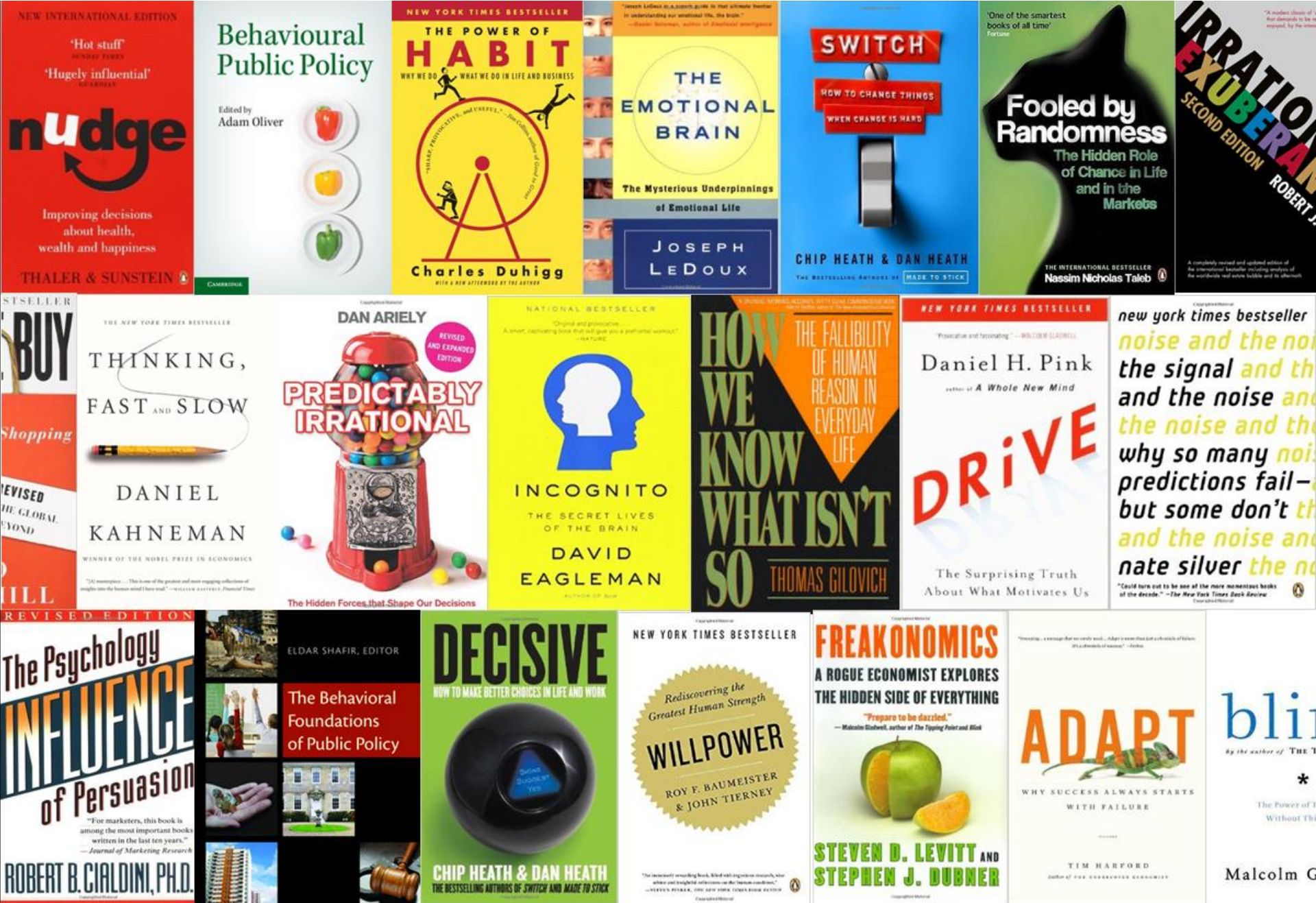


MINDSPACE



**The Nudge
Unit**





Behavioural ‘Definition’

The application of behavioural science to policy and practice with a focus on (but not exclusively) ‘automatic’ processes.

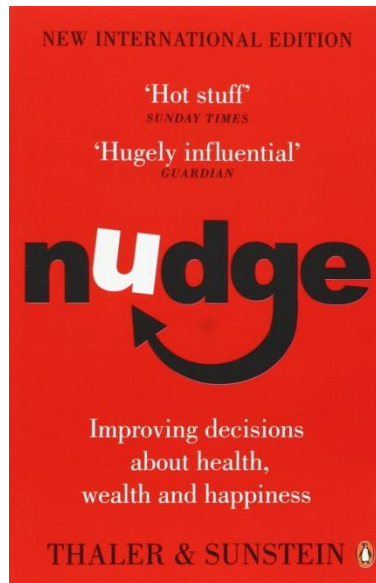
Michael Hallsworth, The Behavioural Insights Team

Daniel Kahneman wins the Nobel Prize in
Economics for the formulation of
Prospect Theory which better accounts
for observed behaviour



**October
2002**

Richard Thaler and
Cass Sunstein publish
the book 'Nudge'.



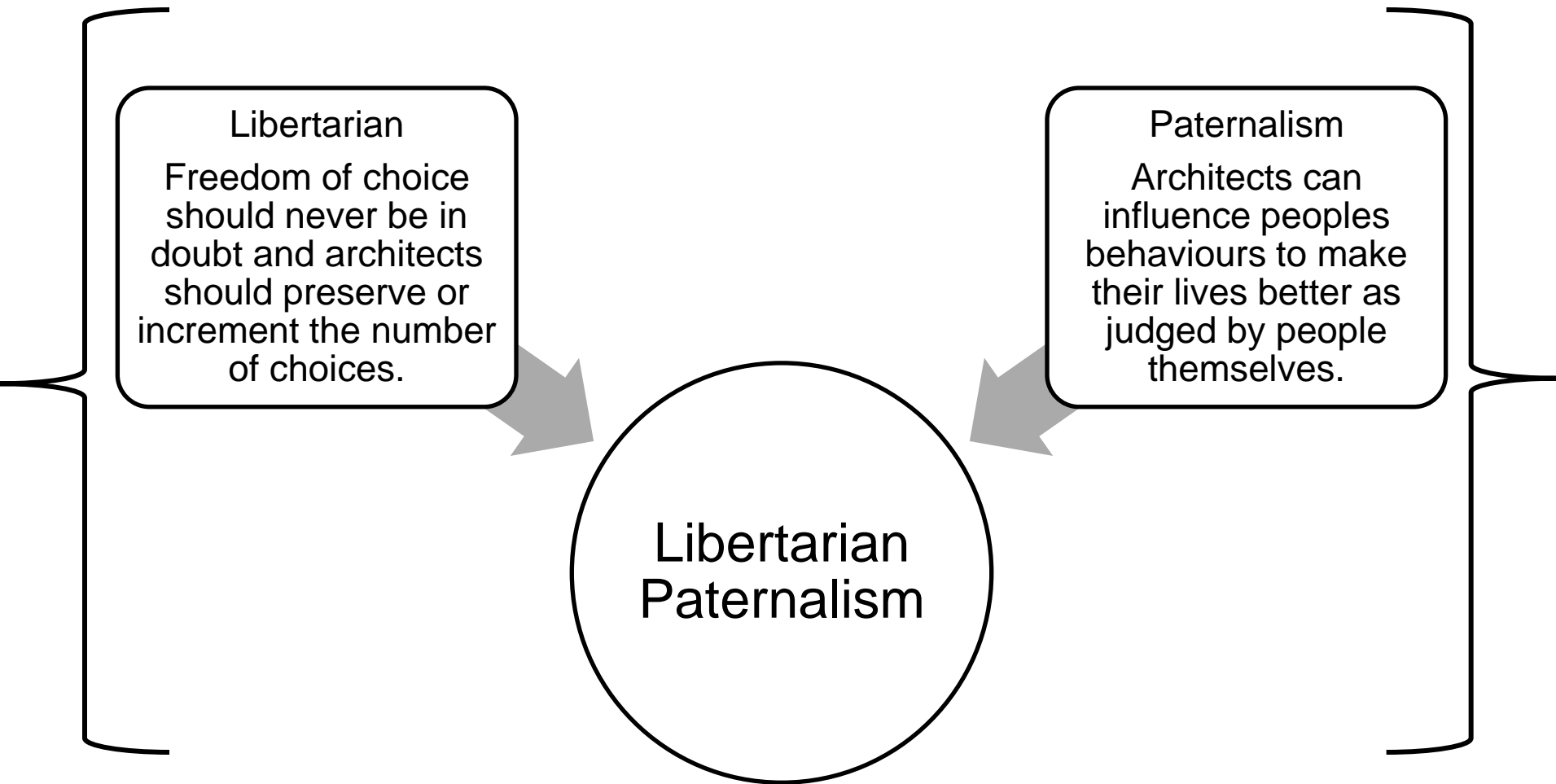
**April
2008**

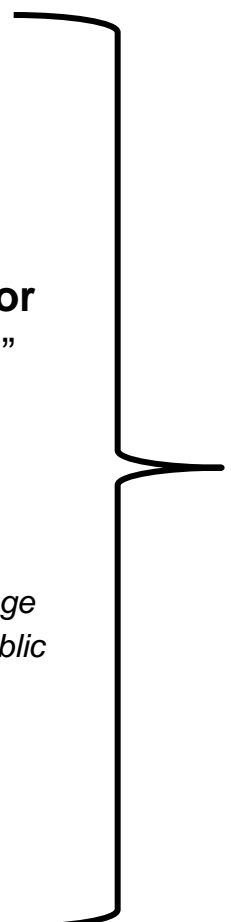
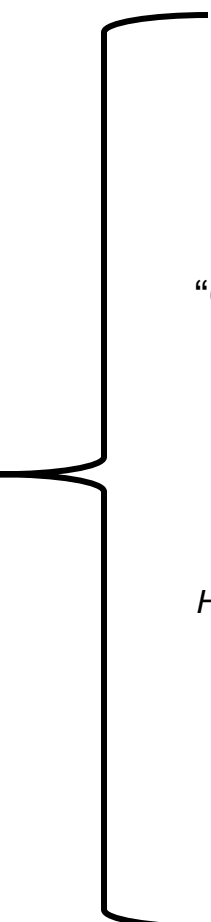
“Nudges are ways of **influencing choice without limiting the choice set** or making alternatives appreciably more costly in terms of time, trouble, social sanctions, and so forth. They are called for because of flaws in individual decision-making, and they work by making use of those flaws.”

(Hausman & Welch 2010, p. 126)

Classic example: An opt-in system in which people had to make a positive choice to set aside savings from their salaries was replaced by an opt- out system in which savings were made by default.







“Choice Architecture refer to interventions that involve **altering the properties or placement of objects or stimuli** with the intention of changing behaviour.”

Hollands G, Shemilt I, Marteau T, Jebb S, Kelly M, Nakamura R, et al. Altering micro environments to change population health behaviour: towards an evidence base for choice architecture interventions. BMC Public Health. 2013;13(1):1218

Examples of people who are choice architects:

The people who design ballot slips

A doctor who recommends treatment options

A parent describing educational choices to their children

An real architect who designs physical spaces

Restroom designers

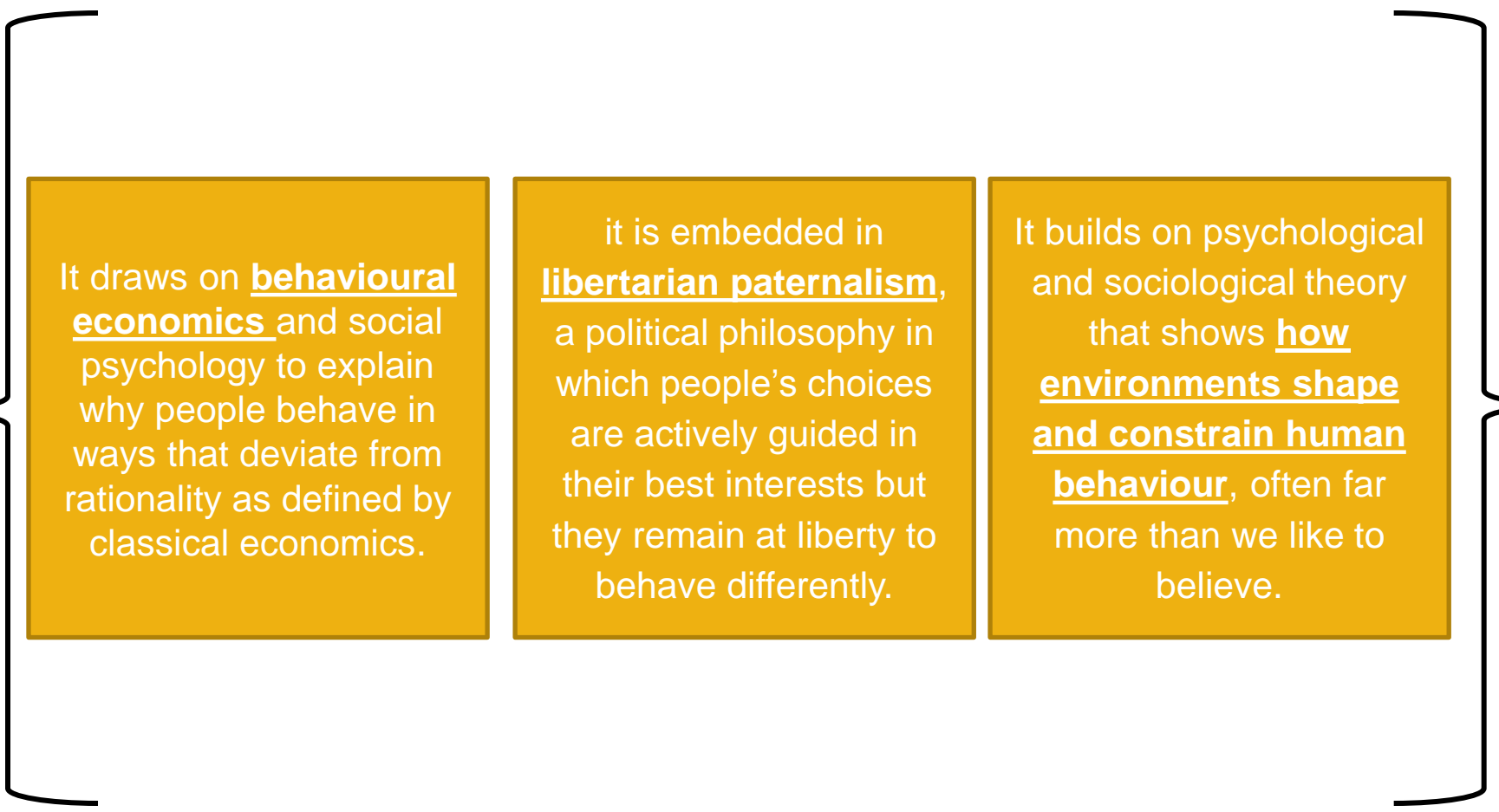




Resist Environments



Change Environments

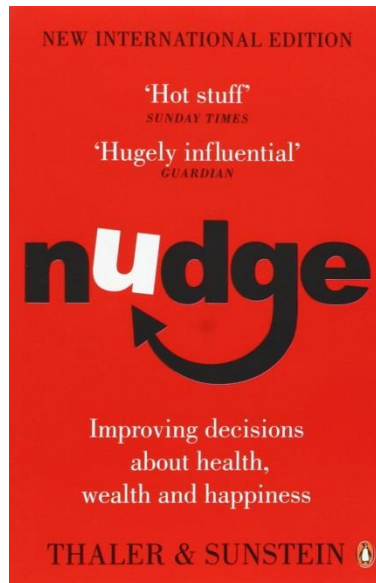


It draws on behavioural economics and social psychology to explain why people behave in ways that deviate from rationality as defined by classical economics.

it is embedded in libertarian paternalism, a political philosophy in which people's choices are actively guided in their best interests but they remain at liberty to behave differently.

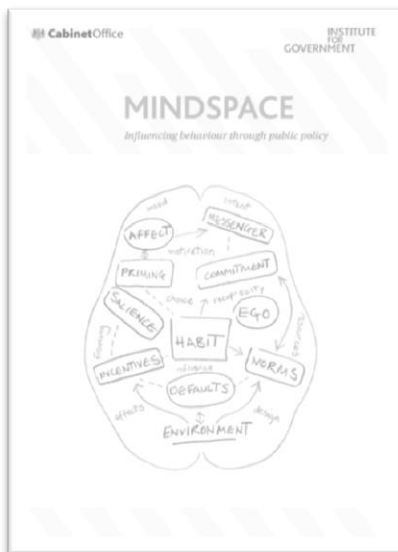
It builds on psychological and sociological theory that shows how environments shape and constrain human behaviour, often far more than we like to believe.

Richard Thaler and
Cass Sunstein publish
the book 'Nudge'.



**April
2008**

The Institute for
Government and the
Cabinet Office publish
'MINDSPACE'.



**March
2010**

Journal of Economic Psychology 33 (2012) 264–277



Contents lists available at SciVerse ScienceDirect

Journal of Economic Psychology

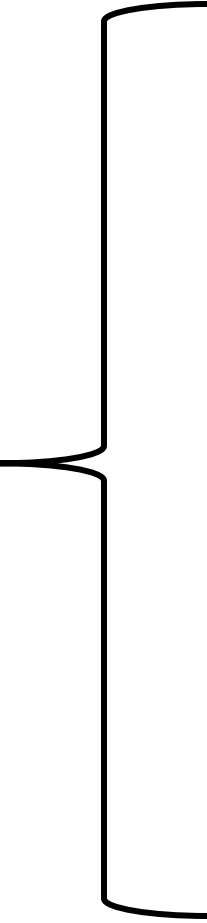
journal homepage: www.elsevier.com/locate/joep



Influencing behaviour: The mindspace way

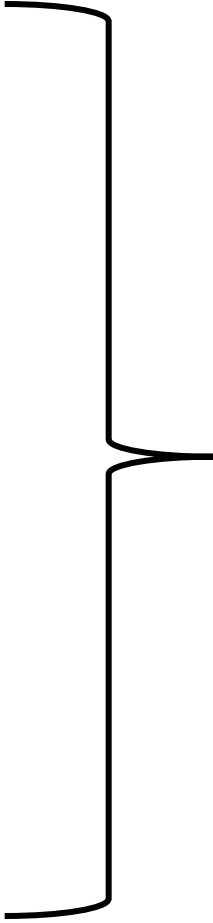
P. Dolan^a, M. Hallsworth^b, D. Halpern^c, D. King^d, R. Metcalfe^e, I. Vlaev^{f,*}

Dolan, P., Hallsworth, M., Halpern, D., King, D., Metcalfe, R., & Vlaev, I. (2012). Influencing behaviour: The mindspace way. *Journal of Economic Psychology*, 33(1), 264–277.

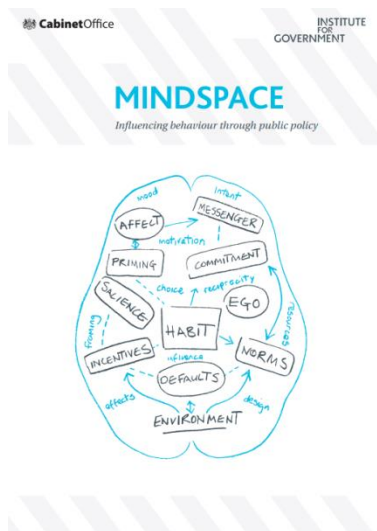


Low delivery intensity –
adding value to existing
processes by applying
behavioural science

Small changes can have
significant impacts, thus,
the approach is **scalable**,
practical and
affordable.



The Institute for Government and the Cabinet Office publish 'MINDSPACE'.



**March
2010**

The Behavioural
Insights Team is
established.



2010

The Behavioural Insights Team started life inside 10 Downing Street as the world's first government institution dedicated to the application of behavioural sciences.





HM Revenue
& Customs

Control

Control group

“9 out of 10
people in **Britain**
pay their tax on
time”

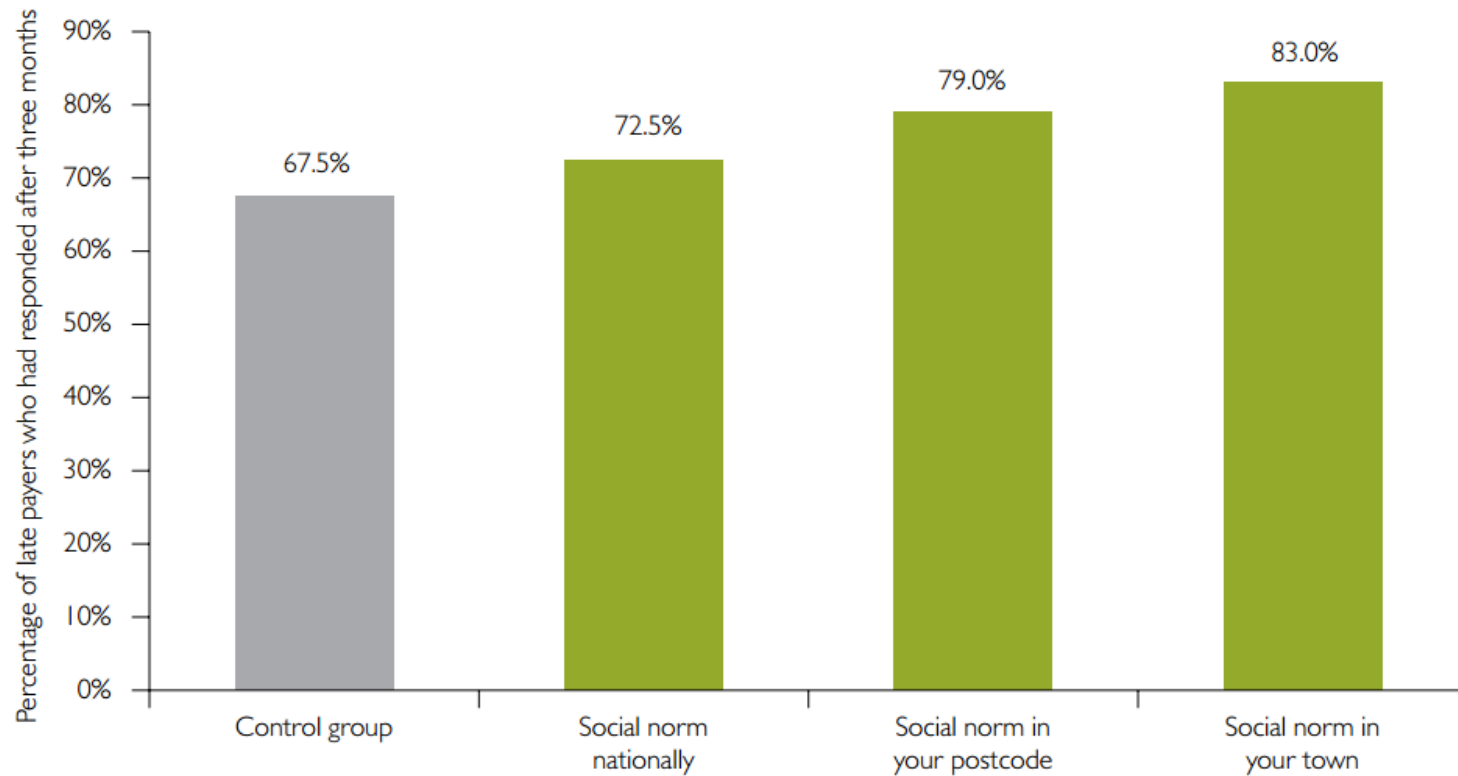
Social norm
nationally

“9 out of 10
people in
B15 1AY pay
their tax on time”

Social norm in
your postcode

“9 out of 10
people in
Birmingham pay
their tax on time”

Social norm in
your town



Request: To donate one days salary to charity

Control

Control Group



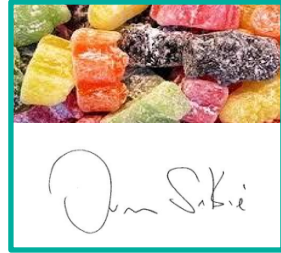
Celebrity



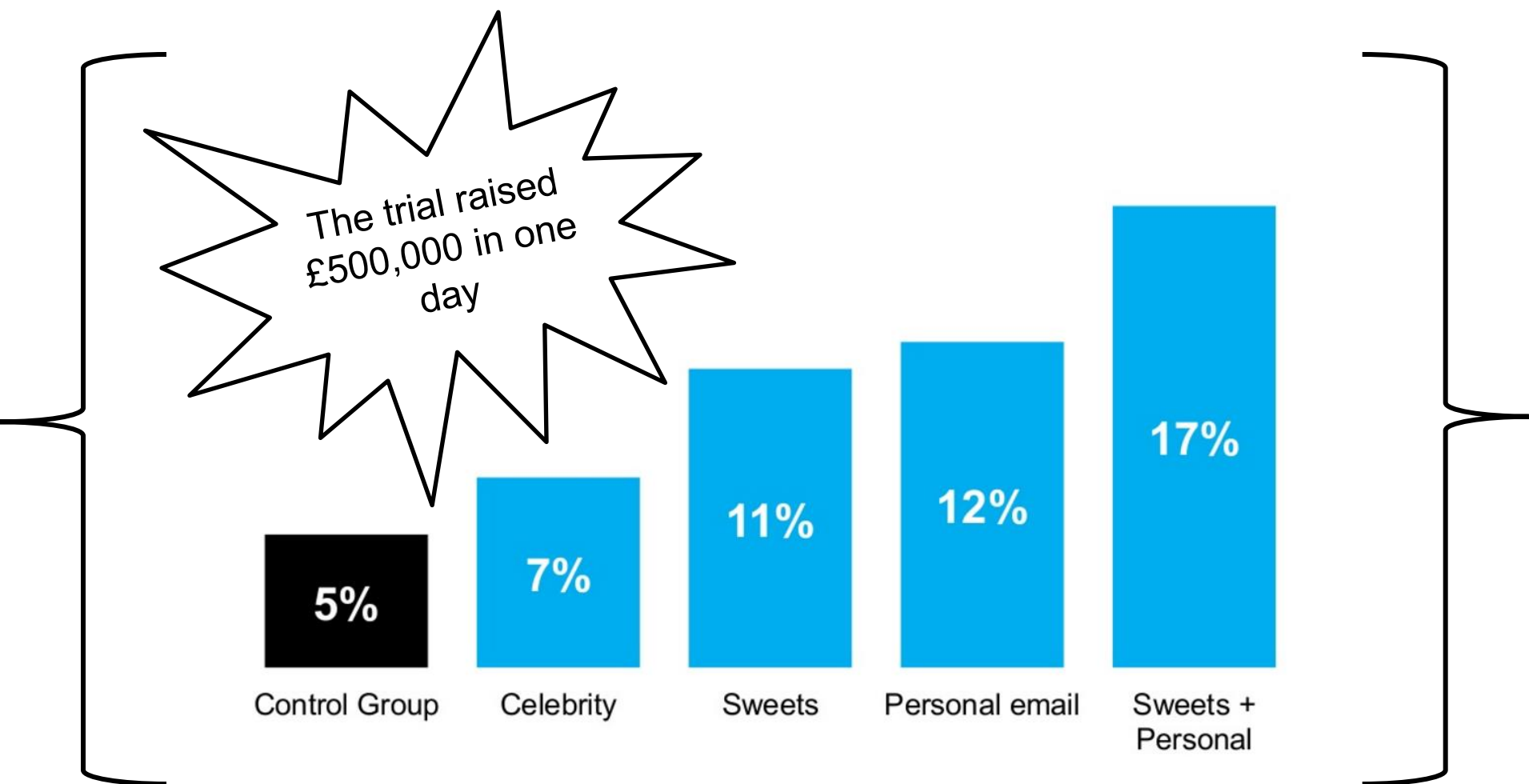
Sweets



Personal email



Sweets +
Personal



'Nudge unit' defies sceptics to change Whitehall thinking

The rise of nudge – the unit helping politicians to fathom human behaviour

Nudge unit: our quiet revolution is putting evidence at heart of government

How The Government's Nudge Unit Makes Tiny Changes To Foment A 'Quiet Revolution' In Policy

Nudge theory trials 'are working' say officials

Give us a nudge and we'll behave ourselves

The nudge, nudge unit has ways to make you pay

How organ donation is getting nudge in the right direction: trial could pave way for 100,000 extra donors each year

Psychology and 'nudges': Five tricks the taxman uses to make you pay £210m extra

Giving bankers sweets makes them donate more, Nudge Unit research finds

Nudge, nudge. Think, think. Say no more
Government departments are queueing up to Nudge



The "Nudge" to Good Behaviour

The 'nudge' that could generate £4bn annual bequest to charities

UN calls for help of Cameron's 'nudge unit'



HM Revenue
& Customs



Public Health
England



Department for
Business, Energy
& Industrial Strategy



Department
for Transport



Department
for International
Development



Department
of Health



Department
for Education



HM Courts
and Tribunals
Service



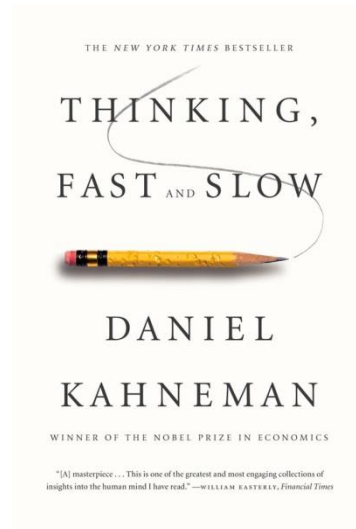
Cabinet Office

The Behavioural
Insights Team is
established. Originating
in No. 10 Downing St.
and the Cabinet Office.



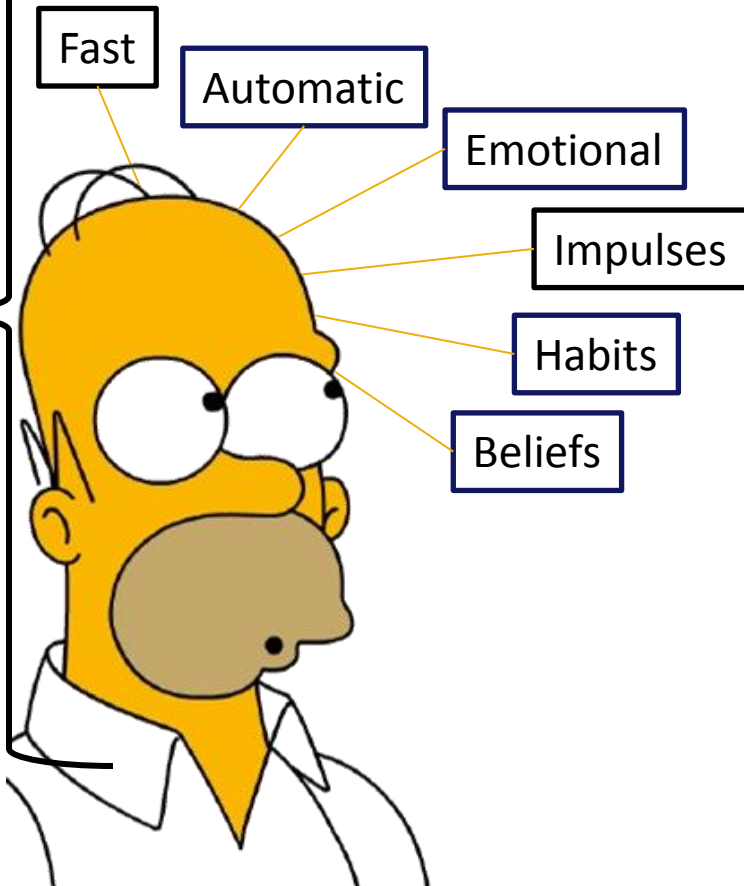
2010

Daniel Kahneman
publishes 'Thinking
Fast and Slow'.

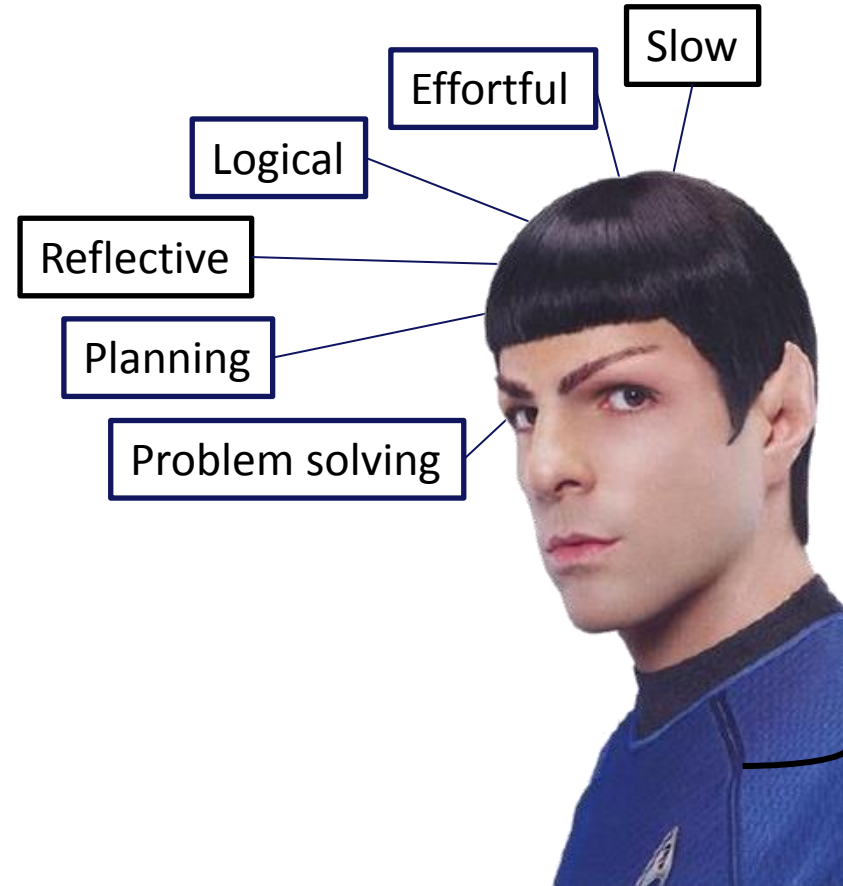


**October
2011**

System 1: Automatic



System 2: Reflective



System 1

Fast thinking/Automatic
intuitive, effortless

2x2


Taking your daily commute

System 2

Slow thinking/Reflective –
deliberate, analytic

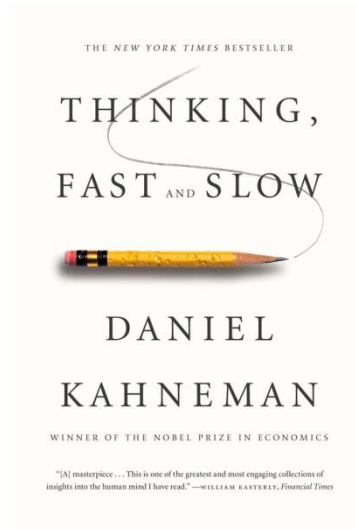
24x17

Planning a trip overseas



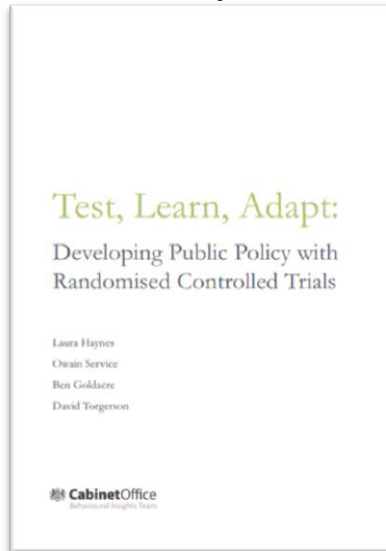
Dual process models of behaviour – focus on interventions that work through the automatic system

Daniel Kahneman
publishes 'Thinking
Fast and Slow'.

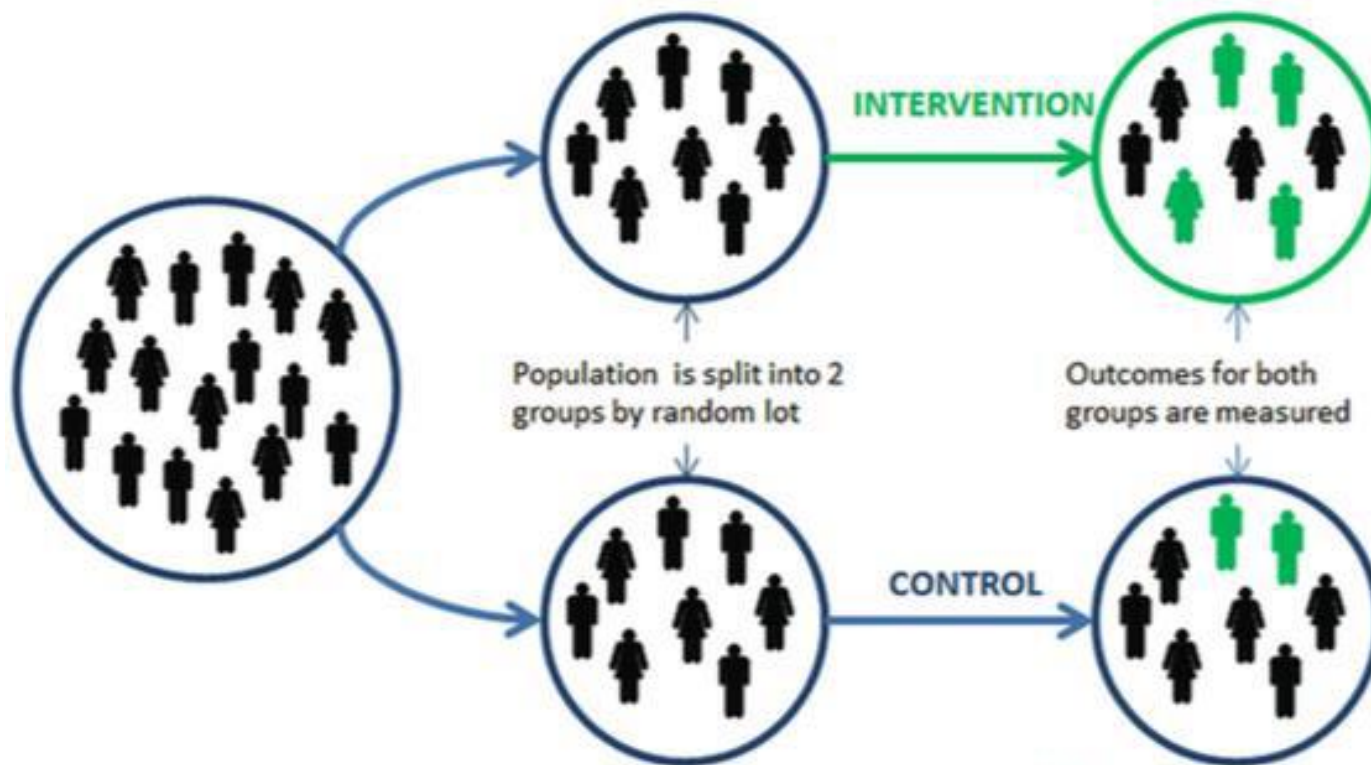


**October
2011**

The Behavioural
Insights Team
publish 'Test, Learn,
Adapt',



**June
2012**



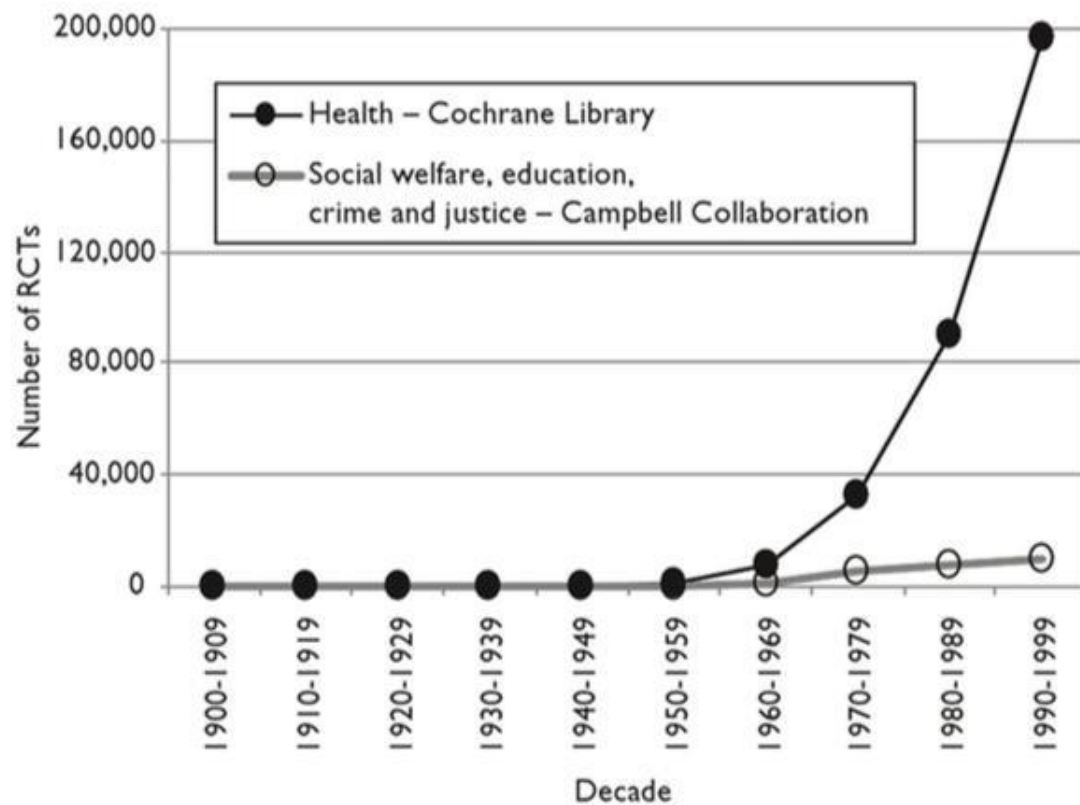


Figure 2. 20th century RCTs in health and in social welfare, education, crime and justice⁴



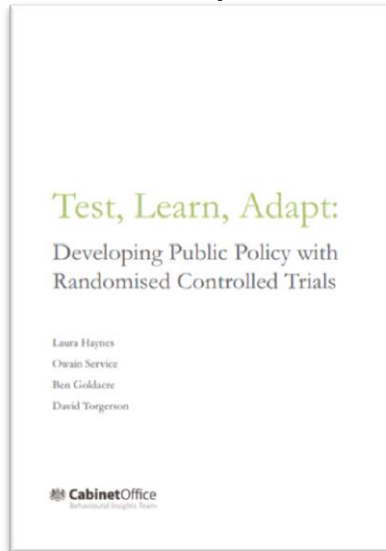
Scared Straight Program *Petrosino et al. (2002)*



Central role of robust evaluation to demonstrate effectiveness.

Behavioural outcomes
(not self-reported or behavioural mediators).

The Behavioural
Insights Team
publish 'Test, Learn,
Adapt',

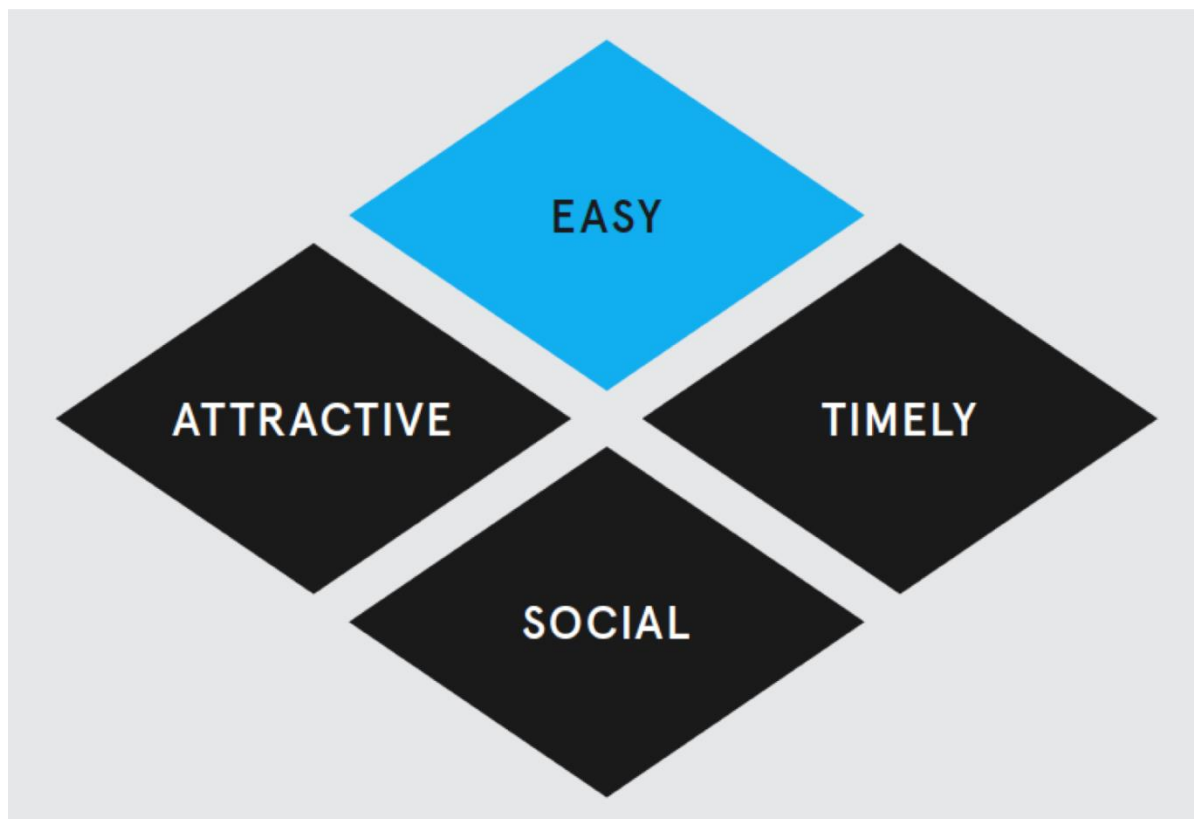


**June
2012**

The Behavioural Insights Team publish 'EAST'



Circa Winter 2013



The Behavioural Insights Team publish 'EAST'



Circa Winter 2013

The White House
Social and Behavioural
Science Team is
established.



**January
2014**



Behavioural
economics

Libertarian
paternalism

How
environments
shape and
constrain
human
behaviour

Low delivery
intensity

Scalable,
practical and
affordable

Dual process
models of
behaviour

Robust
evaluation

Behavioural
outcomes



Public Health
England

Protecting and improving the nation's health

PHE's Behavioural Insights Team

Brief Background



Public Health
England

PHE formed

Protecting and improving the nation's health

PHE Behavioural Insights Team formed to work with the Cabinet Office team and apply their approach to public health

**April
2013**

The Team



Tim Chadborn
Behavioural
Insights Lead
Researcher



Anna Sallis
Behavioural
Insights Advisor



Liz Castle
Behavioural
Insights Research
Analyst



Karen Tan
Behavioural
Insights Research
Analyst



Amanda Buntun
Behavioural
Insights Research
Analyst



Ildiko Tombor
Behavioural
Insights research
Analyst



Jet Sanders
ESRC Research
Fellow



Rebecca Howell-Jones
Public Health
Specialty
Registrar



Simon Hailstone
Public Health
Specialty
Registrar



Sarah Golding
ESRC Research
Fellow



Kiran Purewal
ESRC Research
Fellow



Laura Streeter
ESRC Research
Fellow

Our Remit



Analyse

- ✓ Behavioural Analysis
- ✓ Literature review
- ✓ Systematic review



Advise

- ✓ Policy
- ✓ Programme



Design

- ✓ Interventions
- ✓ Programmes



Trial

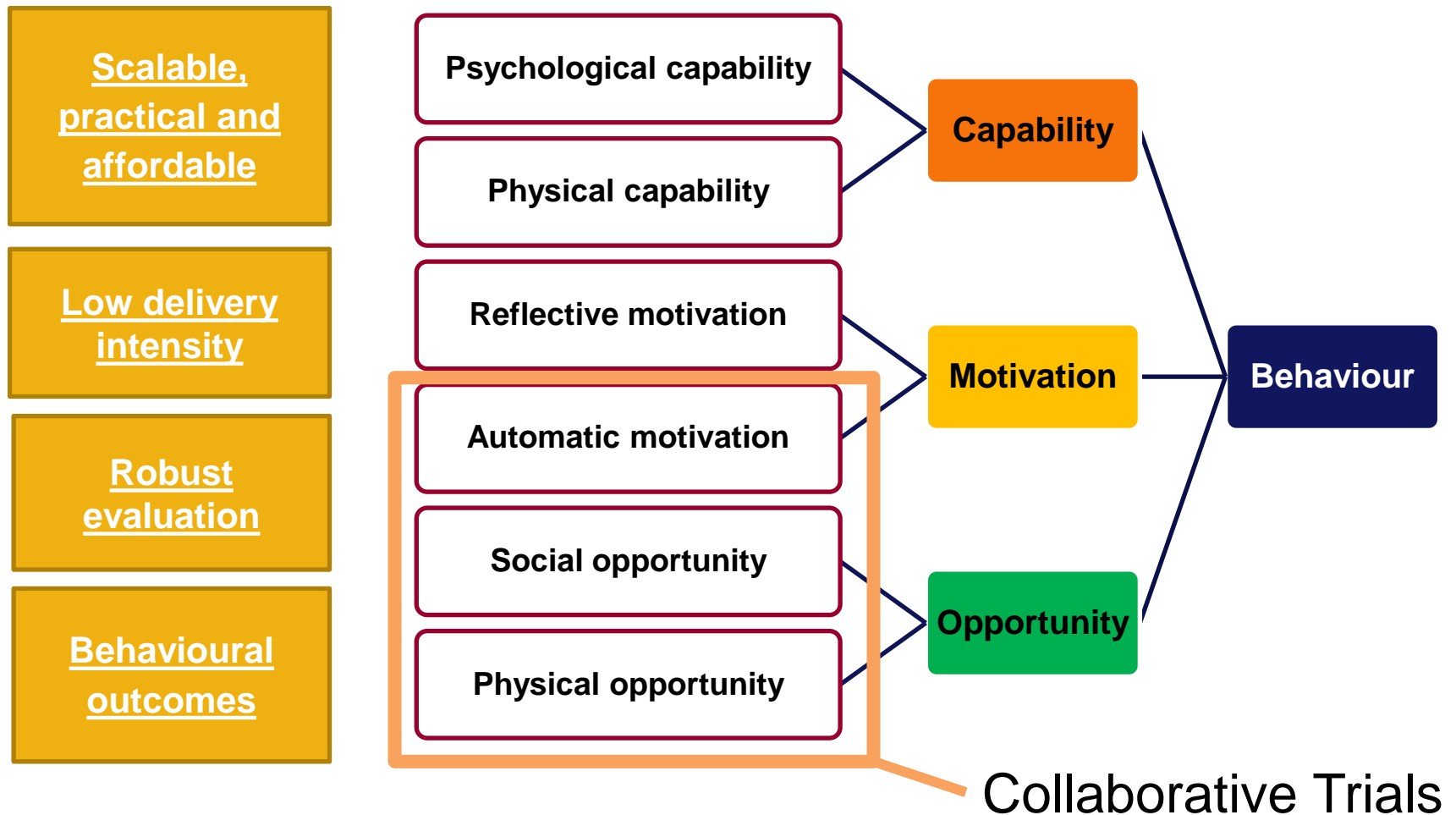
- ✓ RCTs
- ✓ Quasi-experimental studies
- ✓ Evaluation
- ✓ Qualitative research



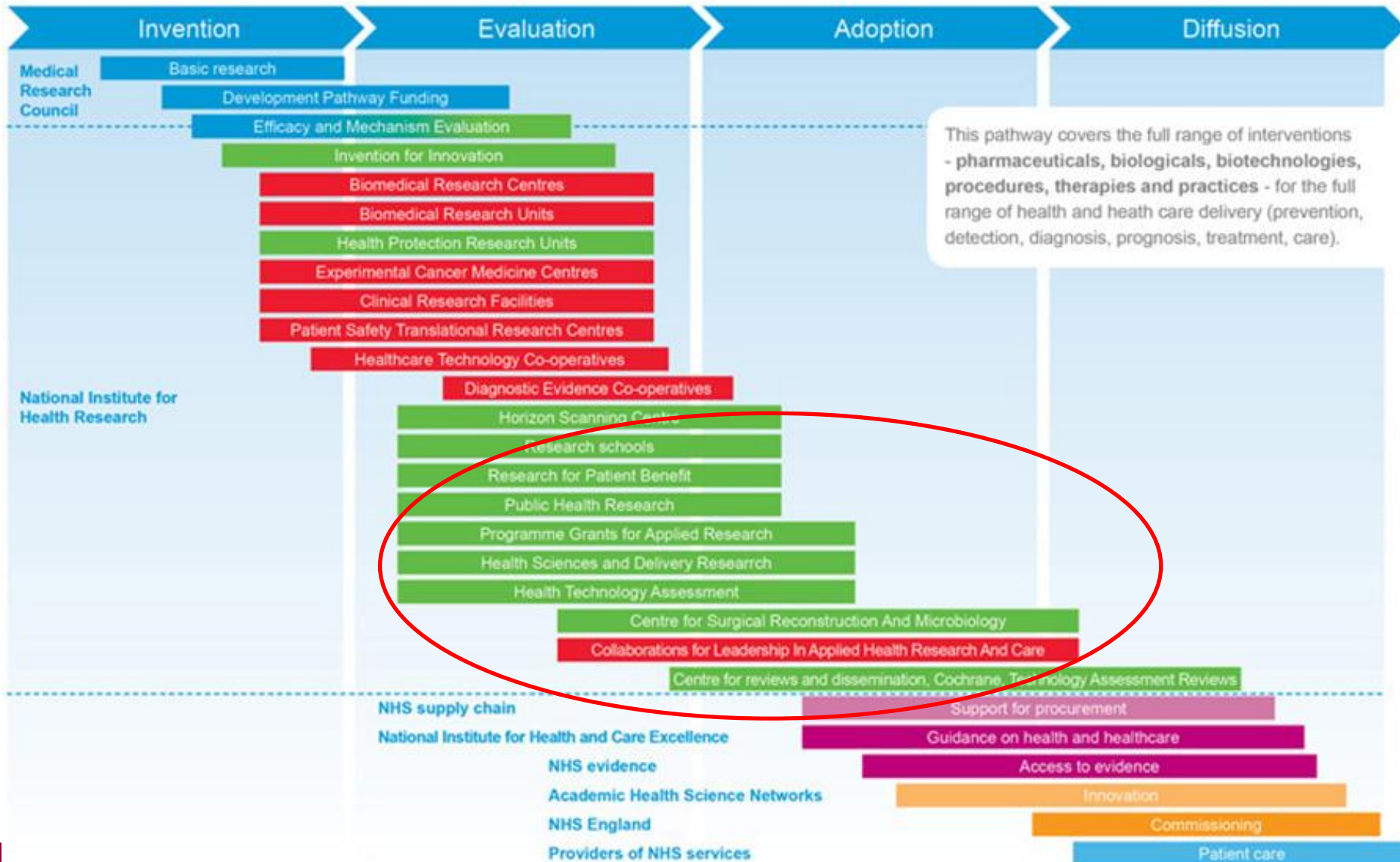
Train

- ✓ Masterclasses
- ✓ Workshops
- ✓ Seminars

Pragmatic and with policy impact

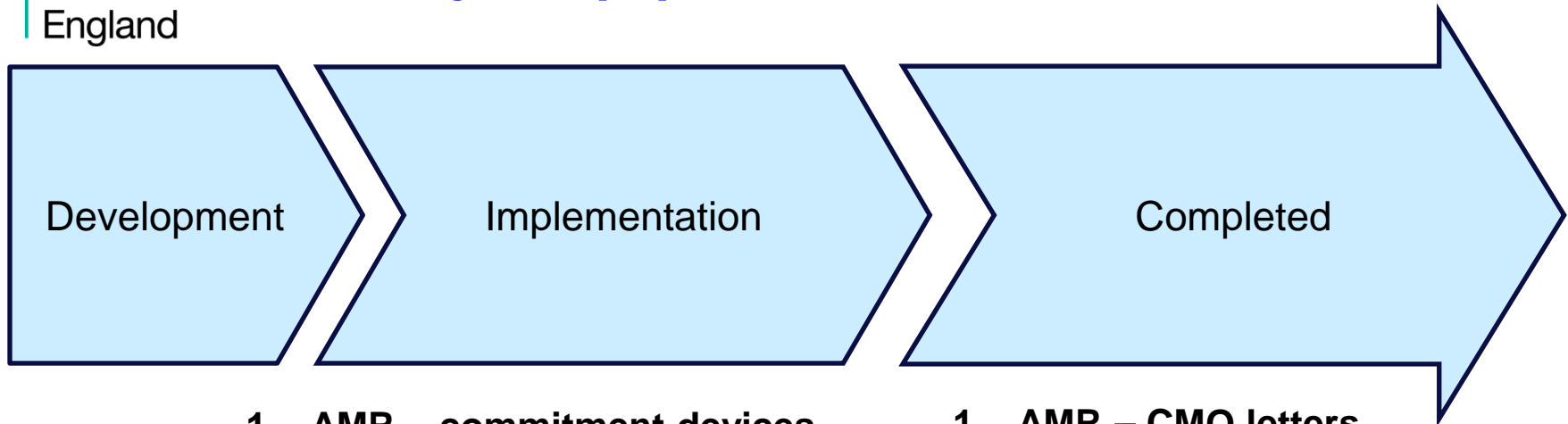


Evaluation in the Innovation Pathway





Project pipeline (effectiveness trials)



1. **AMR – commitment devices**
2. **School packed lunches**
3. **Hospital food environments x 3**
4. **Diabetes Prevention Programme uptake**
5. **Health Checks - tailored invitations**
6. **HIV home sampling kits**
7. **Childhood flu vaccination**

1. **AMR – CMO letters**
2. **Health Checks – letters**
3. **Health Checks – SMS**
4. **Health Checks – IT prompts**
5. **Health Checks – GP videos**
6. **NCMP feedback letters**
7. **Alcohol website**
8. **Stoptober website**
9. **At-risk flu vaccination - SMS**
10. **Cervical cancer screening**



Translation into policy and practice

1. Implementation
2. National templates
3. Webinars
4. Conference presentations
5. Workshops
6. Masterclasses
7. Publications

A large, dark blue oval shape positioned on the right side of the slide, containing white text.

Policy and
delivery
environment

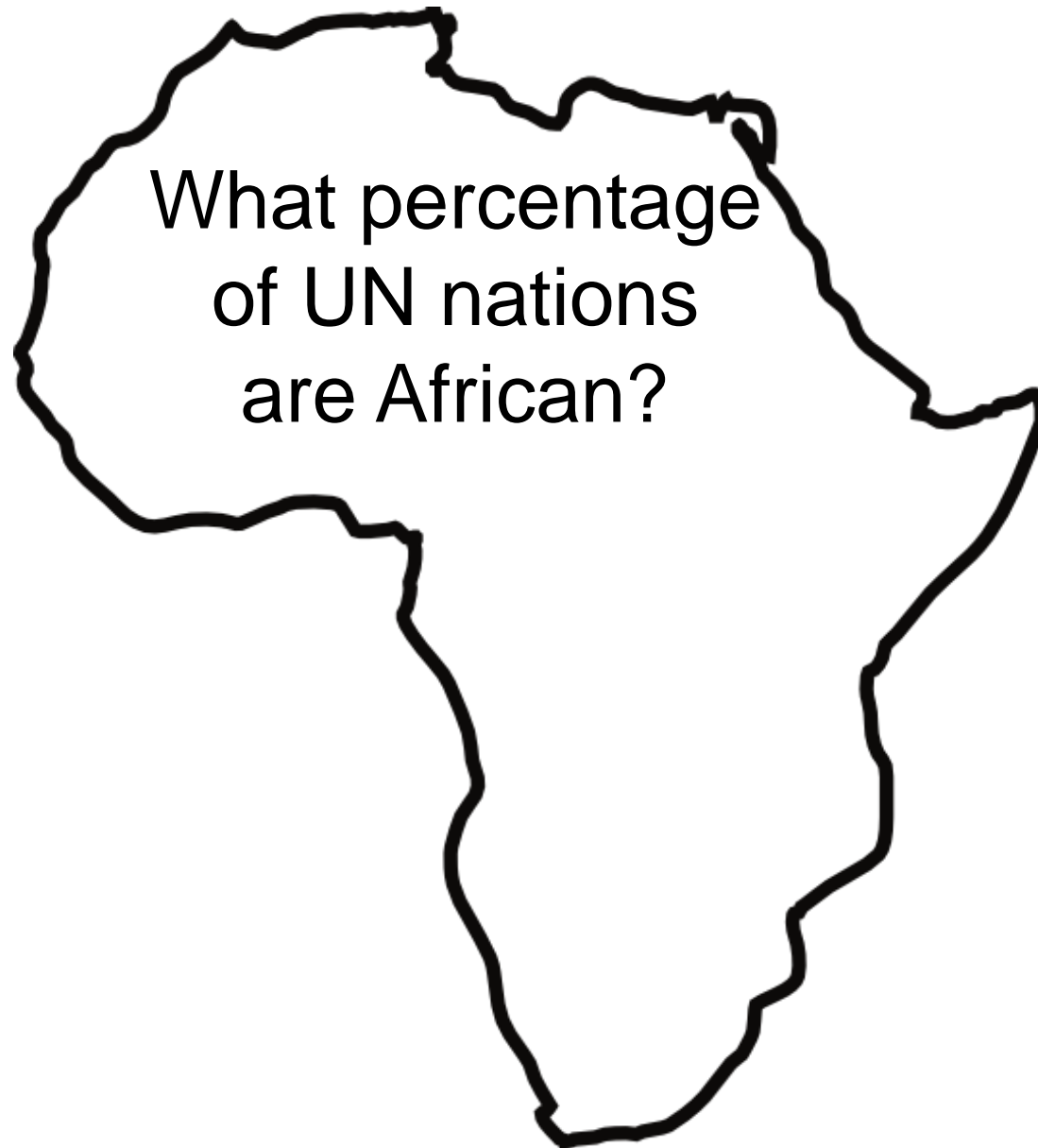


Public Health
England

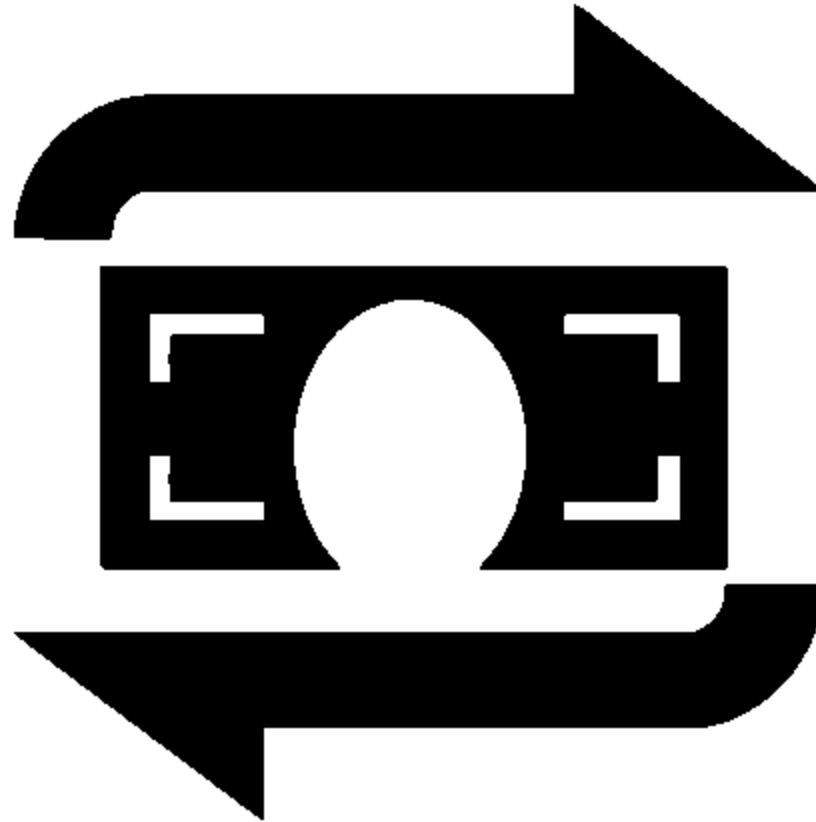
Protecting and improving the nation's health

Behavioural Economics

Task



Standard Economic Theory



Standard Economic Theory

In reality

- **Subject to biases**
- **Subject to irrationalities**
- **Use heuristics**
Shortcuts to make decisions
- **Context and time dependent**
inconsistent
- **Emotional**



“Homo-economicus”

- **Consistently rational**
not emotional
- **Self-interested**
not altruistic
- **Utility maximisers**
the greatest amount of value possible for the budget
- **Takes the optimal route to achieve goals**



Behavioural Economics

In reality

“Homo-economicus”



Bounded rationality

Arthur (1994)

Bounded willpower

Thorgeirsson & Kawachi (2013)

Bounded selfishness

Mullainathan and Thaler (2000)





Public Health
England

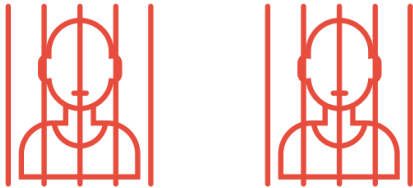
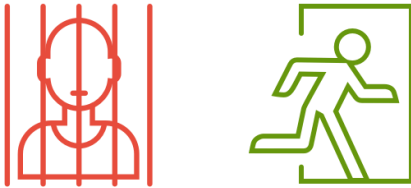

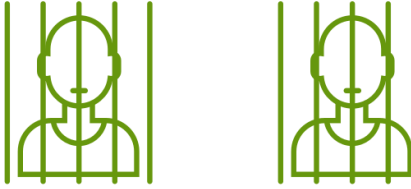
Bounded Rationality

“Beyond a certain level of complexity
human logical capacity ceases to cope”

Arthur (1994)

Prisoner 1

Prisoner 2

		Prisoner 1	
		Confess	Remain Silent
Prisoner 2	Confess	<p>P1 P2</p>  <p>2 Years 2 Years</p>	<p>P1 P2</p>  <p>10 Years Free!</p>
	Remain Silent	<p>P1 P2</p>  <p>Free! 10 Years</p>	<p>P1 P2</p>  <p>1 Year 1 Year</p>

Pruitt (1970)

Table 2

A prisoner's dilemma game. Payoffs of player 1, the row player, are shown in the upper left corner and payoffs of player 2, the column player, are shown in the lower right corner

	<i>A</i>	<i>B</i>
<i>A</i>	3 3	0 4
<i>B</i>	4 0	1 1

Table 3

The game of Table 2 in decomposed form

	For me	For him
<i>A</i>	0	3
<i>B</i>	1	0

Pruitt (1970)



THE MARSHM

Bounded Willpower

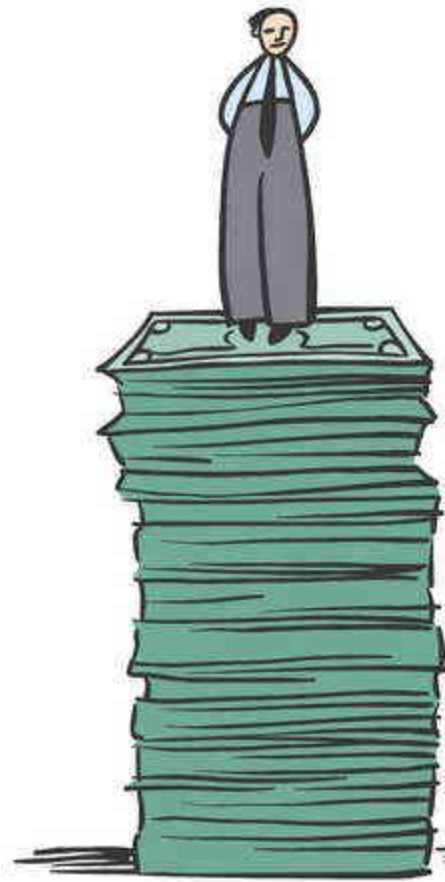
“People do not always make choices that are in their best long-term interest, due to a lack of self-control”

Thorgeirsson & Kawachi (2013)



Banks, Blundell & Tanner (1998)





Ultimatum game

Bounded Selfishness

“humans are often willing to sacrifice their own interests to help others.”

Mullainathan & Thaler, (2000)



Ultimatum game



**79% give money
41 % volunteer**

Charities Aid Foundation (2014)





Public Health
England

Heuristics

*Mental shortcuts or rules of thumb
to aid in problem solving*

Heuristics



Heuristics

1. Anchoring

A form of priming where the initial exposure to a value serves as a reference point and influences subsequent judgement.



Smith (1999)

Heuristics

1. Anchoring

What percentage
of UN nations
are African?

*tial exposure to a value serves
ces subsequent judgement.*

**The actual answer is 28.5% - anchoring affected
your answers.**

Is the % of African countries above or below 65%?

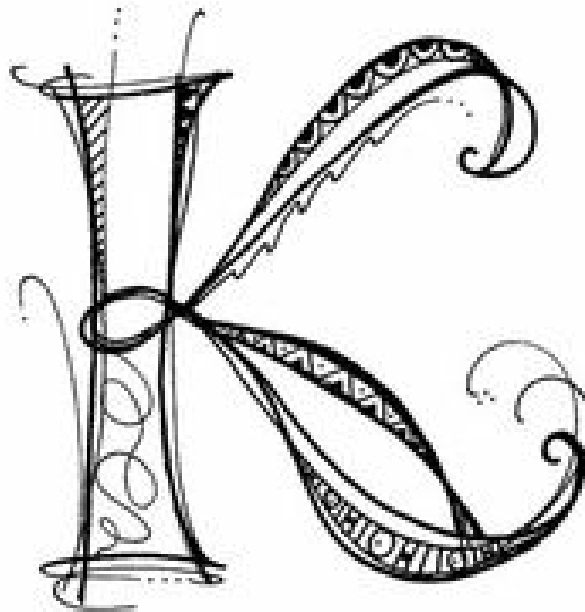
43% (response in studies)

Is the % of African countries above or below 15%?

21% (response in studies)

Heuristics

1. Anchoring *A form of priming where the initial exposure to a value serves as a reference point and influences subsequent judgement.*
2. Availability *Tendency to base likelihood on examples that come to mind*



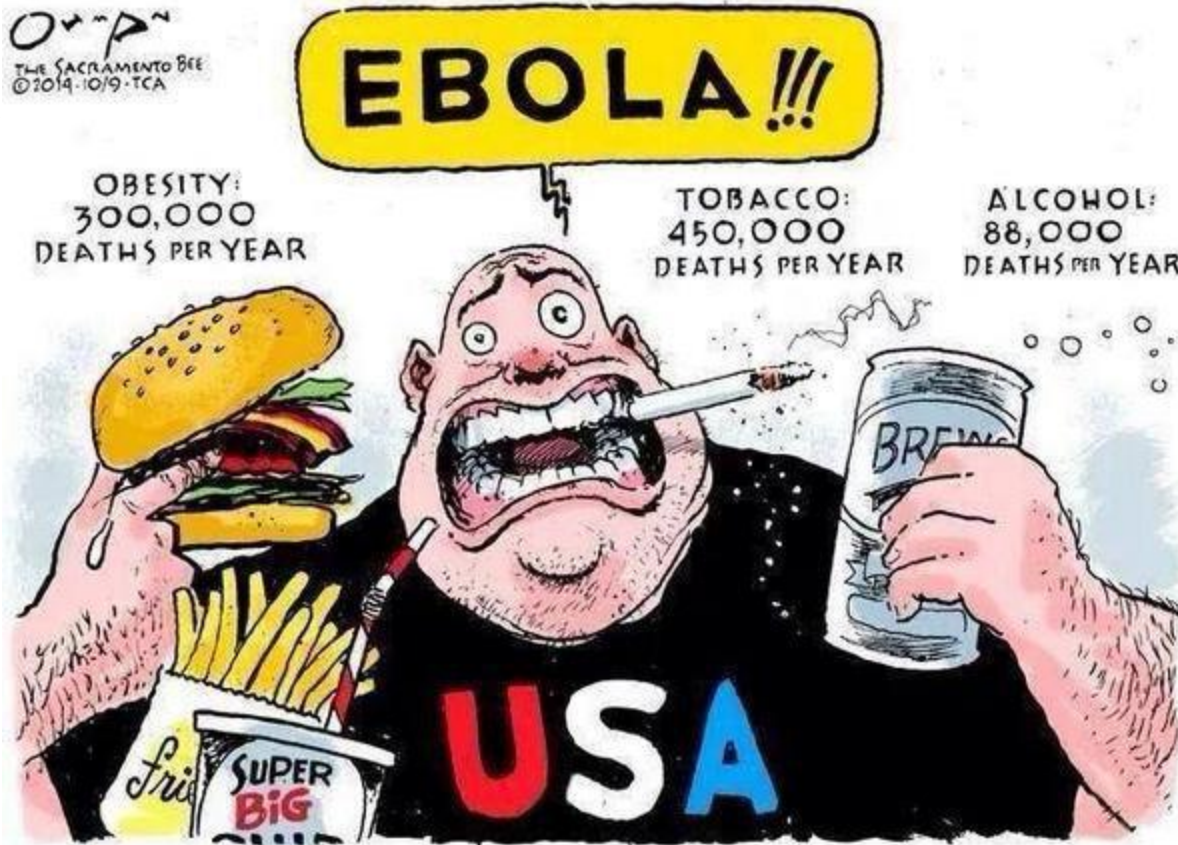
Tversky & Kahneman (1973)

Heuristics

1. Anchoring *A form of priming where the initial exposure to a value serves as a reference point and influences subsequent judgement.*

2. Availa

come to mind



Heuristics

1. Anchoring *A form of priming where the initial exposure to a value serves as a reference point and influences subsequent judgement.*
2. Availability *Tendency to base likelihood on examples that come to mind*
3. Representativeness *Tendency to equate uncertain situations to prototype*

"Susan is a withdrawn and organised individual. She keeps her lawn tidy and maintains a stable but distant relationship with all her neighbours. In her workplace, she has a need for order and has a passion for detail"



Tversky & Kahneman (1972)

Heuristics

1. Anchoring *A form of priming where the initial exposure to a value serves as a reference point and influences subsequent judgement.*
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Tversky & Kahneman (1972)



Public Health
England

Cognitive Biases

Systematic thinking errors that affect decisions and judgement



Biases

1. Attribution *tendency to over-emphasize internal explanations for behaviours*



Piff et al. (2011)

Biases

1. Attribution *tendency to over-emphasize internal explanations for behaviours*
2. Confirmation *favouring information that confirms previously existing beliefs*



N = 48



Lord, Ross & Lepper (1979)

Biases

1. Attribution *tendency to over-emphasize internal explanations for behaviours*
2. Confirmation *favouring information that confirms previously existing beliefs*

“Kroner and Phillips (1977) compared murder rates for the year before and the year after adoption of capital punishment in 14 states. In 11 of the 14 states, murder rates were lower after adoption of the death penalty. This research supports the deterrent effect of the death penalty.”

“Palmer and Grandall (1977) compared murder rates in 10 pairs of neighbouring states with different capital punishment laws. In 8 of the 10 pairs, murder rates were higher in the state with capital punishment. This research opposes the deterrent effect of the death penalty.”

Stop death
penalty!

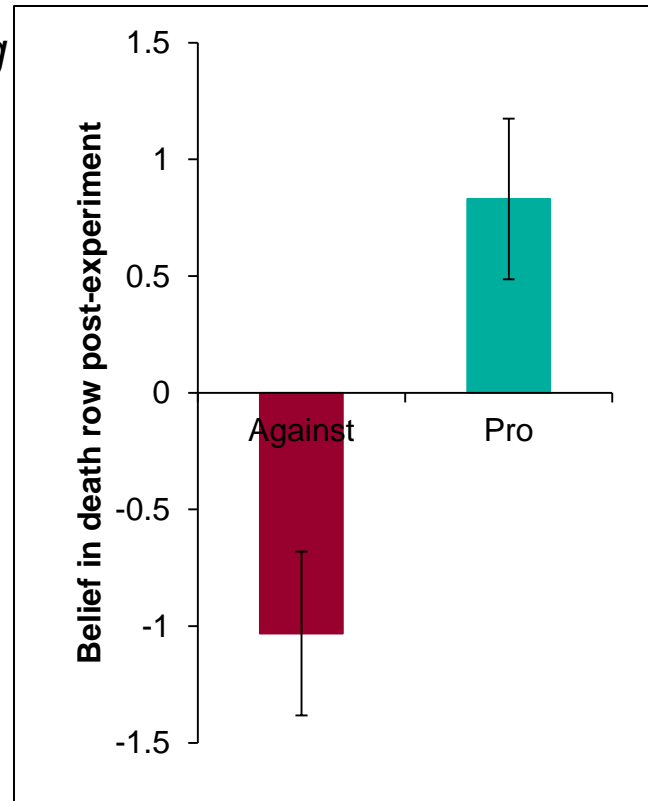
Go death
penalty!

N = 48

Lord, Ross & Lepper (1979)

Biases

1. Attribution *tendency to over-emphasize internal explanations for behaviours*
2. Confirmation *favouring previously existing beliefs*



N = 48

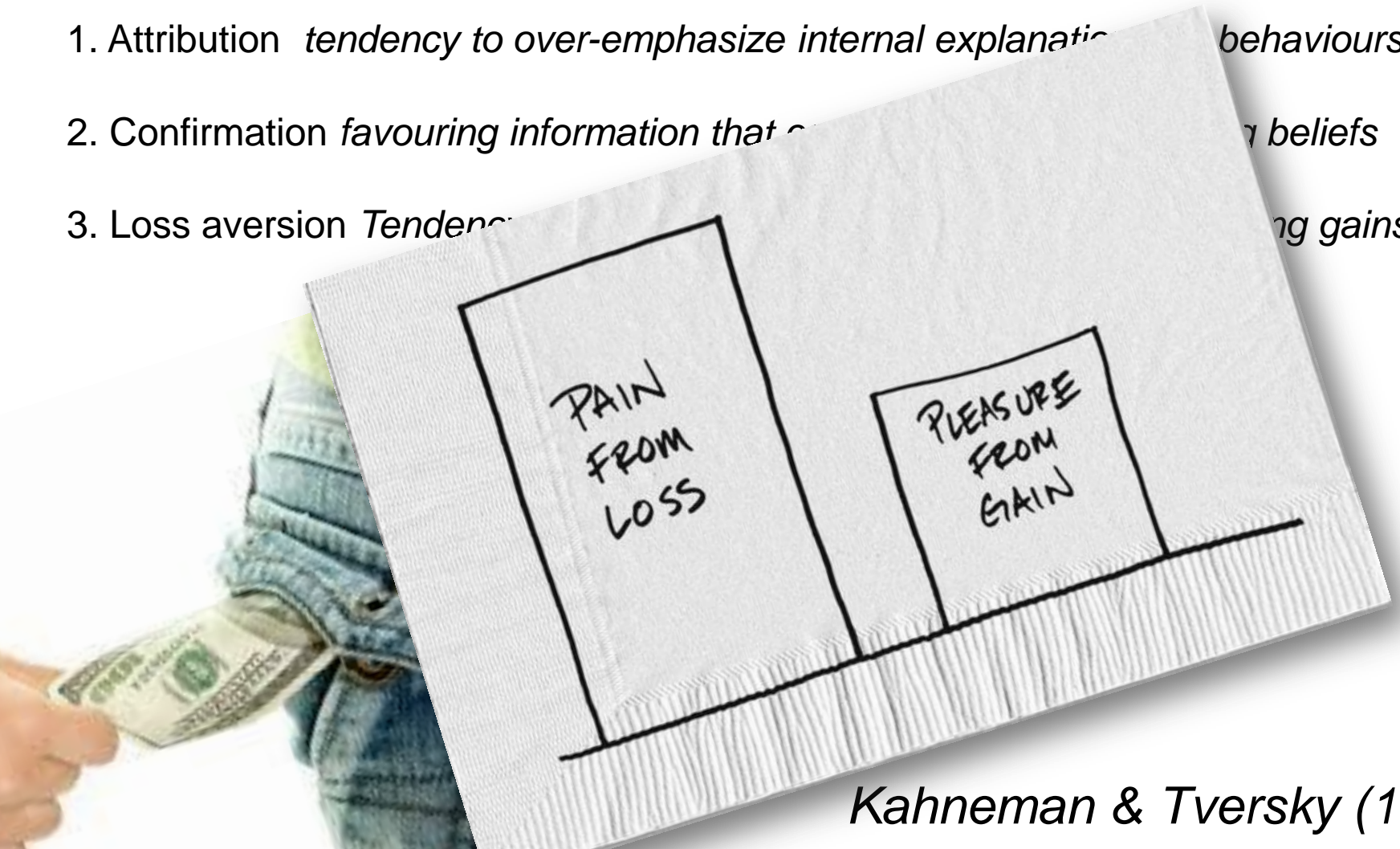
Lord, Ross & Lepper (1979)

Biases

1. Attribution *tendency to over-emphasize internal explanations for behaviours*
2. Confirmation *favouring information that confirms previously existing beliefs*
3. Loss aversion *Tendency to strongly prefer avoiding losses to acquiring gains*

Biases

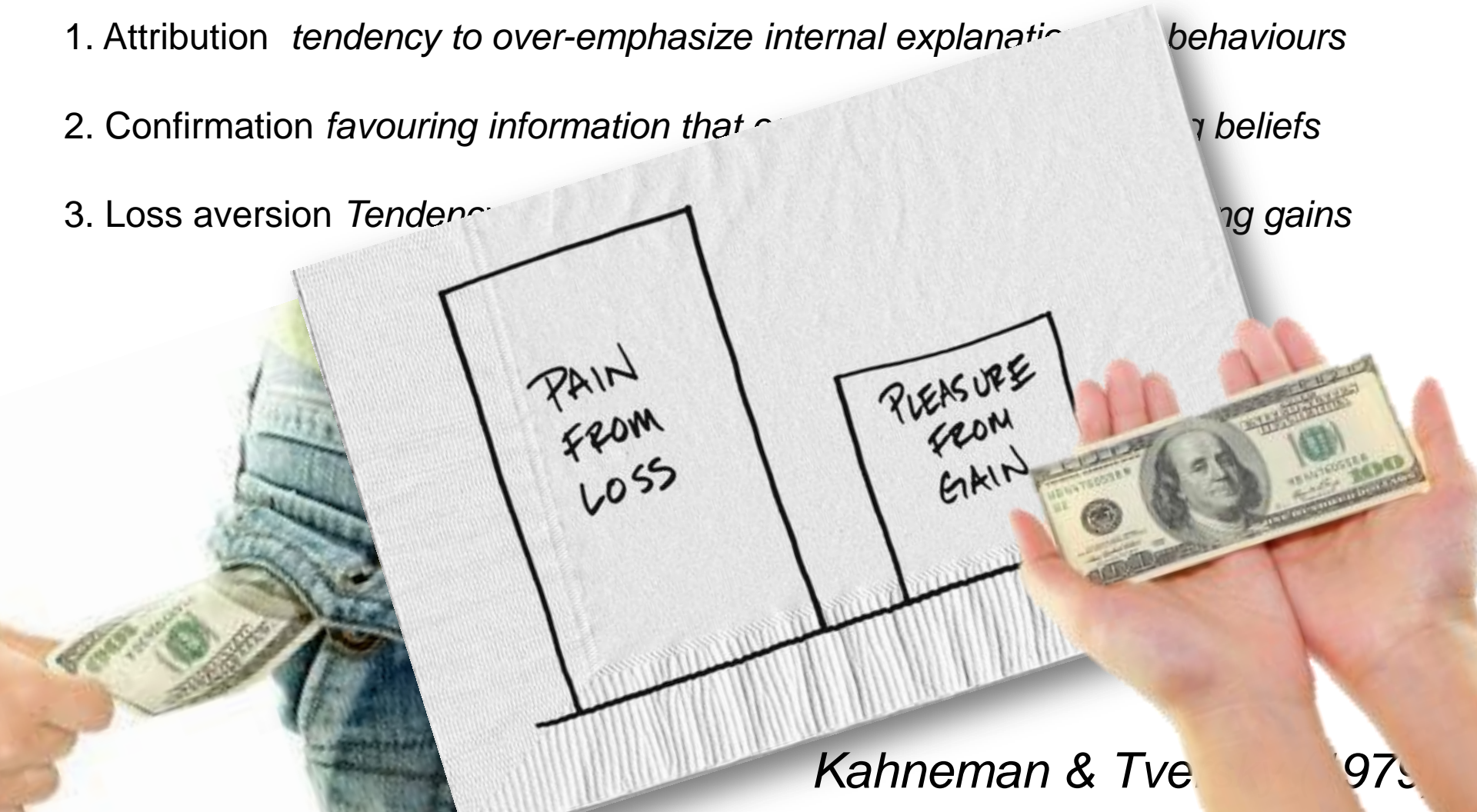
1. Attribution *tendency to over-emphasize internal explanations for behaviours*
2. Confirmation *favouring information that confirms existing beliefs*
3. Loss aversion *Tendency to value losses more than gains*



Kahneman & Tversky (1979)

Biases

1. Attribution *tendency to over-emphasize internal explanations for behaviours*
2. Confirmation *favouring information that confirms existing beliefs*
3. Loss aversion *Tendency to overvalue losses over gains*



Kahneman & Tversky (1979)

ECONOMETRICA

VOLUME 47

MARCH, 1979

NUMBER 2

PROSPECT THEORY: AN ANALYSIS OF DECISION UNDER RISK

BY DANIEL KAHNEMAN AND AMOS TVERSKY¹

Kahneman & Tversky (1979)

Gain \$9499

OR

95% chance to win \$10,000

Underweight chance of winning

Fear of disappointment

Lose \$9499

OR

95% chance to lose \$10,000

Underweight chance of losing

Hope to avoid loss

Kahneman & Tversky (1979)

Gain \$9499

OR

95% chance to win \$10,000

Underweight chance of winning

Fear of disappointment

Lose \$9499

OR

95% chance to lose \$10,000

Underweight chance of losing

Hope to avoid loss

Risk averse

Kahneman & Tversky (1979)

Gain \$9499

OR

95% chance to win \$10,000

Underweight chance of winning
Fear of disappointment

Risk averse

Lose \$9499

OR

95% chance to lose \$10,000

Underweight chance of losing
Hope to avoid loss

Risk seeking

Kahneman & Tversky (1979)

Gain \$9499

OR

95% chance to win \$10,000

Underweight chance of winning
Fear of disappointment

Lose \$9499

OR

95% chance to lose \$10,000

Overweight chance of losing
Hope to avoid loss

Gain \$501

OR

5% chance to win \$10,000

Overweight chance of winning
Hope of a large gain

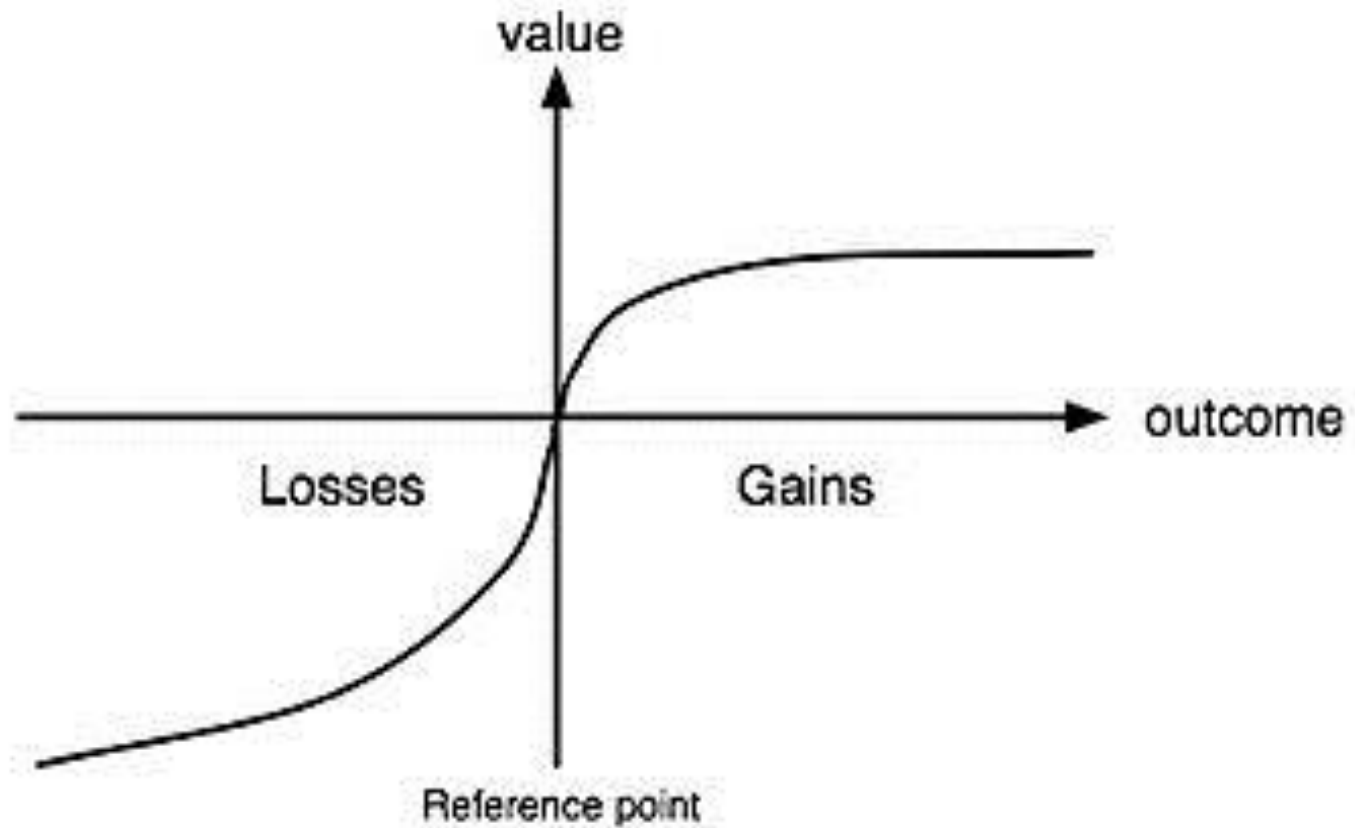
Lose \$501

OR

5% chance to lose \$10,000

Overweight chance of losing
Hope to avoid loss

Kahneman & Tversky (1979)



Kahneman & Tversky (1979)

Heuristics

1. Anchoring *A form of priming where the initial exposure to a value serves as a reference point and influences subsequent judgement.*
2. Availability *Tendency to base likelihood on examples that come to mind*
3. Representativeness *Tendency to equate uncertain situations to prototype*

Biases

1. Attribution *tendency to over-emphasize internal explanations for behaviours*
2. Confirmation *favouring information that confirms previously existing beliefs*
3. Loss aversion *Tendency to strongly prefer avoiding losses to acquiring gains*

<ul style="list-style-type: none"> them simultaneously Empathy gap: either oneself or Endowment effect: object than the Exaggerated: be less extreme Experimenter: certify, and pull experiment, and data that appear Focusing effect: event; causes Forward Bias: only against the Framing effect: on how that info Frequency illusion: recently come to frequency (see Gambler's fallacy: events, when in of the Law of large numbers, heads." Hard-easy effect: judgments is to Hindsight bias: past events as Hostile media effect: one's own story Hyperbolic discounting: more immediate closer to the present Illusion of control: external events 	<ul style="list-style-type: none"> Pessimism: depress Placebo effect: which Average: which Planning: arguments Priming: items in Pro-innovation bias: address Pseudoscience: outcome Reactance: need to Recent: stimuli (see also Recency effect: that or Regret: conserve Restriction: of tempo Select Semmelweis effect [46] Social: potent Status: aversi Stereotype: having 	<ul style="list-style-type: none"> Aversive Stereotype: having Subaltern: than t Subject: it to b Unit: effects Well: travel Zero-sum: a larg 	<ul style="list-style-type: none"> False correlation: others agree Fundamental attribution error: personaliti Halo effect: one area Illusion of attractiveness: surpass th Illusion of control: also over Illusory correlation: undesirab Ingroup bias: perceive t Just-world hypothesis: and there Moral luck: on the ou Outgroup bias: relatively Projection: selves) sh Self-serving bias: failures. I System justification: social, ec Trait ascription: also statu Trait asc: variable in 	<ul style="list-style-type: none"> Cryptomnesia Egocentrism: exam g False memory: bigger i Hindsight bias: those e Positivity bias: it-all-al Reminiscence: compar Rosy retrospection: actual Self-serving bias: respons Suggestion: mistake Telescoping: remote Von Restorff effect: be mor 	<ul style="list-style-type: none"> Repression Affective: calcul Introspection Adaptation: costs of Misinformation 	<ul style="list-style-type: none"> Humor effect: that humorous items are more Illusion-of-truth effect: that people are more likely to believe those they have previously heard (even if they have heard them), regardless of the actual validity Leveling and Sharpening: memory distortion of recollection over time, often concurrent with sharpening of certain details that take on exaggerated significance of the experience lost through leveling. Both leveling and repeated recollection or re-telling of a memory Levels-of-processing effect: that different levels of memory have different levels of effectiveness List-length effect: a smaller percentage of items are recalled as the length of the list increases, the absolute number as well. Misinformation effect: misinformation affects Misattribution: when information is retained but is forgotten. One of Schacter's (1999) Seven Sins of Memory: into Source Confusion, Cryptomnesia and False Memory Modality effect: that memory recall is higher for items were received via speech than when they were written Mood congruent memory bias: the improvement in one's current mood. Next-in-line effect: that a person in a group is more likely to remember others who spoke immediately before or after they spoke Osborn effect: that being intoxicated with alcohol is more likely to retrieve motor patterns from the Basal Ganglia Part-list cueing effect: being shown some items is more likely to remember the other items Peak-end effect: that people seem to perceive an experience as the average of how it was at its peak (e.g. pleasant vacation) Persistence: the unwanted recurrence of memories Picture superiority effect: that concepts are more easily remembered
--	---	---	--	--	---	--

List of

- 1. [Choice blindness](#)
- 2. [Change blindness](#)
- 3. [Childhood amnesia](#)
- 4. [Consistent effects](#)
- 5. [Context effects](#)
- 6. [Cross-race bias](#)
- 7. [Cryptomnesia](#)
- 8. [Egocentrism](#)
- 9. [Fading bias](#)
- 10. [Generalization](#)

Common

- [Boundaries](#)
- [Attribution](#)
- [Attribution](#)
- [Salience](#)
- [Cognitive](#)
- [Impression](#)
- [Self](#)
- [Heuristics](#)



Public Health
England

Protecting and improving the nation's health

Applying these concepts to Public Health

If you want to encourage a behaviour, make it

EASY

ATTRACTIVE

TIMELY

SOCIAL

Easy



Defaults



Friction Costs



Simplification



Goal Setting



Chunking



Ordering Effects



Substitution



Checklists



Substitution

It is easier for us to substitute a similar behaviour than to eliminate an entrenched one.





Antimicrobial Resistance



Guide to treat your infection

Patient's name

No antibiotic prescription given ☐

Back-up antibiotic prescription given today ☐ but it should only be collected after days if needed from: surgery reception ☐ GP ☐ pharmacy ☐

Why did you not get antibiotics today?

- Colds and most coughs, sinusitis, otitis media, sore throats, ear and other infections often get better without antibiotics, as your body can usually fight these infections on its own.
- The table below shows you how long these illnesses normally last, what you can do to ease your symptoms and when you should go back to your GP or contact NHS services.

Please tick	Illness	Usual length of illness	What you can do to ease the symptoms	When should you (or your child) go back to your GP practice or contact NHS 111, NHS 24, or NHS Direct Wales (dial 0845 4647)?
<input type="checkbox"/>	Middle ear infection	4 days	• Have plenty of rest.	• The first eight of these are potentially signs of serious illness and should be assessed urgently. • Telephone for advice if you are uncertain about the urgency.
<input type="checkbox"/>	Sore throat	7 days	• Drink enough fluids to avoid feeling thirsty.	1. If you develop a severe headache and are vomiting.
<input type="checkbox"/>	Common cold	10 days	• Ask your local pharmacist to recommend medicines to help your pain or other symptoms (or both).	2. If your skin is very cold or has a strange colour, or you develop an unusual rash.
<input type="checkbox"/>	Sinusitis	18 days	• Fever is a sign the body is fighting the infection and usually gets better by itself in most cases.	3. If you feel confused or have slurred speech or are very drowsy.
<input type="checkbox"/>	Cough or bronchitis	21 days	You can use paracetamol (or ibuprofen) if you or your child is uncomfortable as a result of a fever.	4. If you have difficulty breathing. Signs that suggest breathing problems can include: o breathing quickly o turning blue around the lips and the skin below the mouth o skin between or above the ribs getting sucked or pulled in with every breath.
<input type="checkbox"/>	Other infection	• Other things you can do suggested by GP or nurse.	5. If you develop chest pain. 6. If you have difficulty swallowing or are drooling. 7. If you cough up blood. 8. If you are feeling a lot worse. Less serious signs that can usually wait until the next available GP appointment: 9. If you are not improving by the time given in the 'Usual length of illness' column. 10. Children with middle ear infection: if fluid coming out of their ears or new hearing problems. 11. Other

Why you should only take antibiotics when they are needed

- Bacteria can adapt and find ways to survive the effects of an antibiotic. They become 'antibiotic resistant' so that the antibiotic no longer works.
- The more we use antibiotics, the greater the chance that bacteria will become resistant to them so that they no longer work. If we all try to reduce their usage, antibiotics will be more likely to work when we really need them.
- Antibiotic-resistant bacteria don't just infect you, they can spread to other people in close contact with you.
- Some antibiotics can cause reactions such as: rashes, thrush, stomach pains, diarrhoea, or being sick if you drink alcohol and reactions to sunlight:

Always return any unused antibiotics to a pharmacy for destruction.

Guide to treat your infection

Patient's name

No antibiotic prescription given ☐

Back-up antibiotic prescription given today ☐ but it should only be collected after ☐ days if needed from: surgery reception ☐ GP ☐ pharmacy ☐

Why don't you get antibiotics today?

- Colds and most long-term infections, otitis media, sore throats, ear and other infections often get better without antibiotics, as your body can usually fight these infections on its own.
- The table below shows you how long these illnesses last and when you should go back to your GP or contact NHS services.

Please tick	Illness	Usual length of illness	What you can do to ease the symptoms	When should you (or your child) go back to your GP practice or contact NHS 111, NHS 24, or NHS Direct Wales (dial 0845 4647)?
	Middle ear infection	4 days	<ul style="list-style-type: none"> • Have plenty of rest. 	<ul style="list-style-type: none"> • The first eight of these are potentially signs of serious illness and should be assessed urgently. • Telephone for advice if you are uncertain about the urgency. <ol style="list-style-type: none"> 1. If you develop a severe headache and are vomiting. 2. If your skin is very cold or has a strange colour, or you develop an unusual rash. 3. If you feel confused or have slurred speech or are very drowsy. 4. If you have difficulty breathing. Signs that suggest breathing problems can include: <ul style="list-style-type: none"> o breathing quickly o turning blue around the lips and the skin below the mouth o skin between or above the ribs getting sucked or pulled in with every breath. 5. If you develop chest pain. 6. If you have difficulty swallowing or are drooling. 7. If you cough up blood. 8. If you are feeling a lot worse. <p>Less serious signs that can usually wait until the next available GP appointment:</p> <ol style="list-style-type: none"> 9. If you are not improving by the time given in the 'Usual length of illness' column. 10. Children with middle ear infection: if fluid coming out of their ears or new hearing problems. 11. Other
	Sore throat	7 days	<ul style="list-style-type: none"> • Drink enough fluids to avoid feeling thirsty. 	
	Common cold	10 days	<ul style="list-style-type: none"> • Ask your local pharmacist to recommend medicines to help your pain or other symptoms (or both). 	
	Sinusitis	18 days	<ul style="list-style-type: none"> • Fever is a sign the body is fighting the infection and usually gets better by itself in most cases. 	
	Cough or bronchitis	21 days	<ul style="list-style-type: none"> • You can use paracetamol (or ibuprofen) if you or your child is uncomfortable as a result of a fever. 	
	Other infection		<ul style="list-style-type: none"> • Other things you can do suggested by GP or nurse. 	

Why you should only take antibiotics when they are needed

- Bacteria can adapt and find ways to survive the effects of an antibiotic. They become 'antibiotic resistant' so that the antibiotic no longer works.
- The more we use antibiotics, the greater the chance that bacteria will become resistant to them so that they no longer work. If we all try to reduce their usage, antibiotics will be more likely to work when we really need them.
- Antibiotic-resistant bacteria don't just infect you, they can spread to other people in close contact with you.
- Some antibiotics can cause reactions such as: rashes, thrush, stomach pains, diarrhoea, or being sick if you drink alcohol and reactions to sunlight.

Always return any unused antibiotics to a pharmacy for destruction.



ATTRACTIVE

Attractive



Salience



Loss Aversion



Lotteries



Mental Accounting



Personalise



Scarcity



Framing Effect



Endowment Effect



Public Health
England



Salience

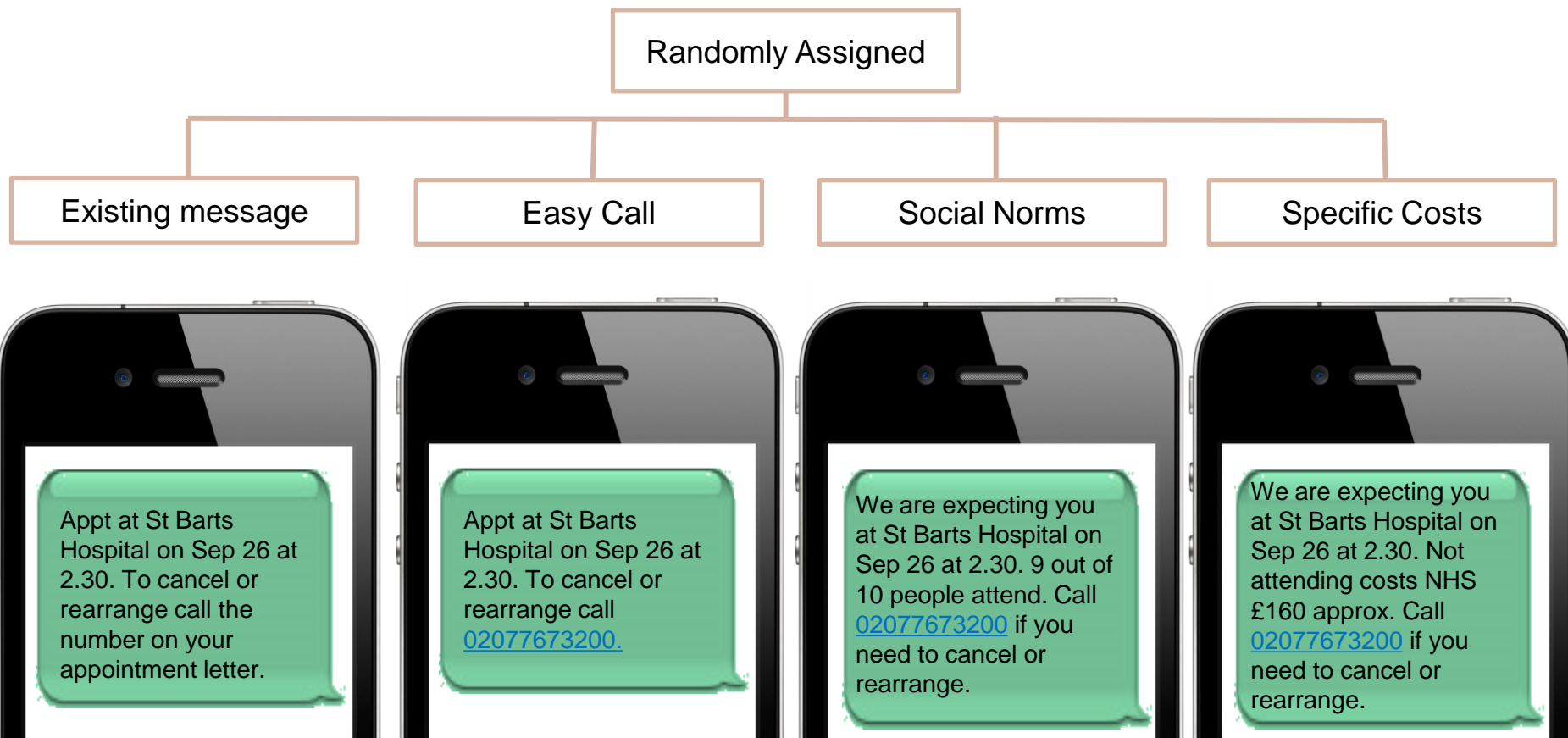
Our attention is drawn to what is novel and seems relevant to us.



Missed Appointments



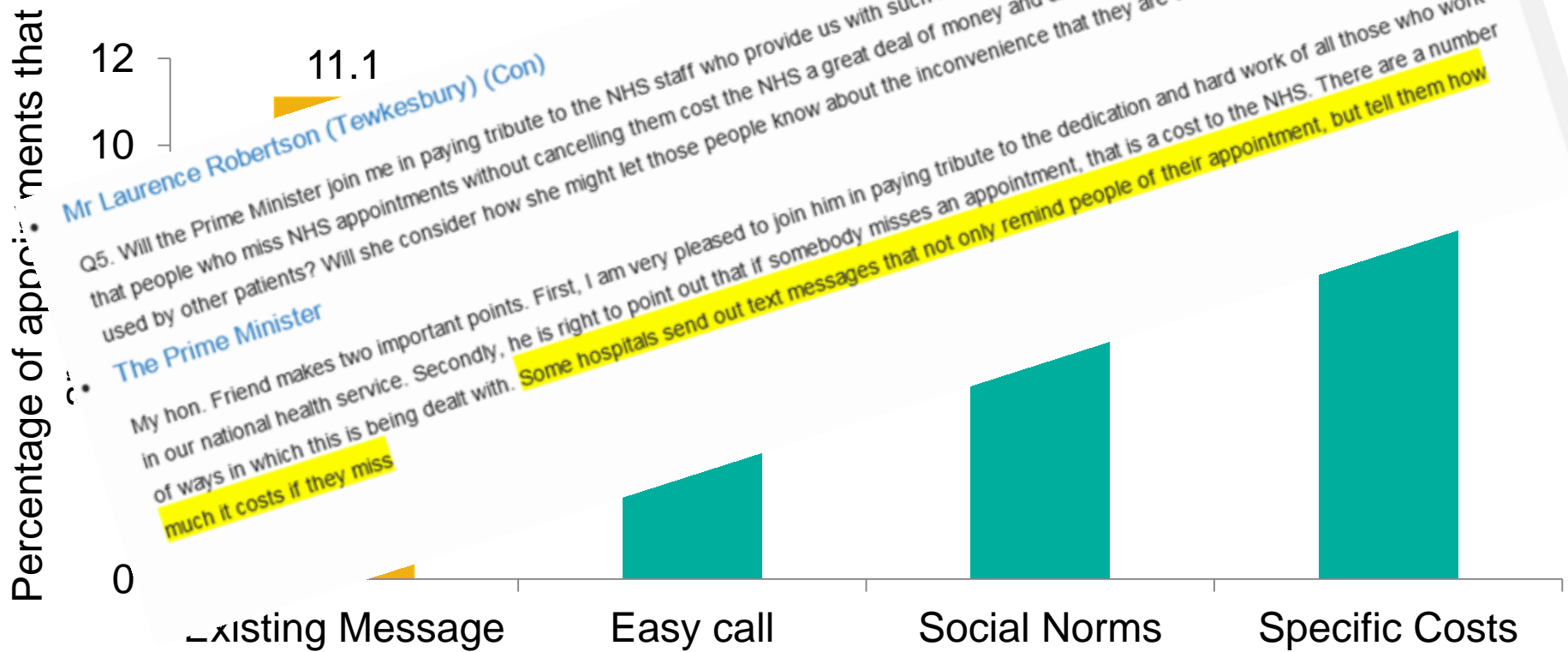
SMS Messages



Behavioural Insights in Public Health England. (Hallsworth, M., Berry, D., Sanders, M., Sallis, A., King, D., Vlaev, I. and Darzi, A., 2015. Stating Appointment Costs in SMS Reminders Reduces Missed Hospital Appointments: Findings from Two Randomised Controlled Trials. *PloS one*, 10(9), p.e0137306)

Results

Effect of messages on missed appointments





SOCIAL

Social



Descriptive Norm



Reciprocity



Network Nudge



Relative Ranking



Commitment Contracts



Messenger Effects



People Helping People



Feedback



Relative Rank

We are influenced by how our performance compares to others.




Antimicrobial Resistance



AMR: Letter

“The great majority (80%) of practices in INSERT NHS AREA prescribe fewer antibiotics per head than yours.”

 **Department of Health**

From the Chief Medical Officer,
Professor Dame Sally C Davies FRS
FMedSci

Richmond House
79 Whitehall
London
SW1A 2NS

T: +44 (0)20 7210 4850
F: +44 (0)20 7210 5407
E: sally.davies@dh.gov.uk
W: www.gov.uk

[GP_Name]
[Address 1]
[Address 2], [Address 3]
[Address 4], [Address 5]
29th September 2014

NOTE TO PRACTICE MANAGERS: PLEASE FORWARD IMMEDIATELY TO GP ADDRESSED

Dear Dr [GP_Surname]
Antibiotic usage in your practice

Antimicrobial resistance is a serious and growing threat to our health. Reducing unnecessary prescriptions in primary care may help prevent a public health catastrophe.

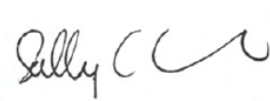
The great majority (80%) of practices in [NHS Area Team] prescribe fewer antibiotics per head than yours.*

Many practices are already taking action to reduce antibiotic prescriptions while safeguarding patients' health. Please join them by taking three simple actions:

1. Give patients advice on self-care instead – you can use the leaflet enclosed or search online for the "TARGET antibiotics toolkit".
2. Consider offering a back-up (delayed) prescription instead – this could be post-dated or collected by the patient a few days later if still necessary.
3. Talk to other prescribers in your practice to ensure they are also acting – data on prescribing is recorded at practice level.

I know that prescribers are aware of this problem and that prescribing is not a simple issue. But there are small changes we can all make that will have a big effect on everyone's health. Please join us in reducing antibiotic use.

Yours,



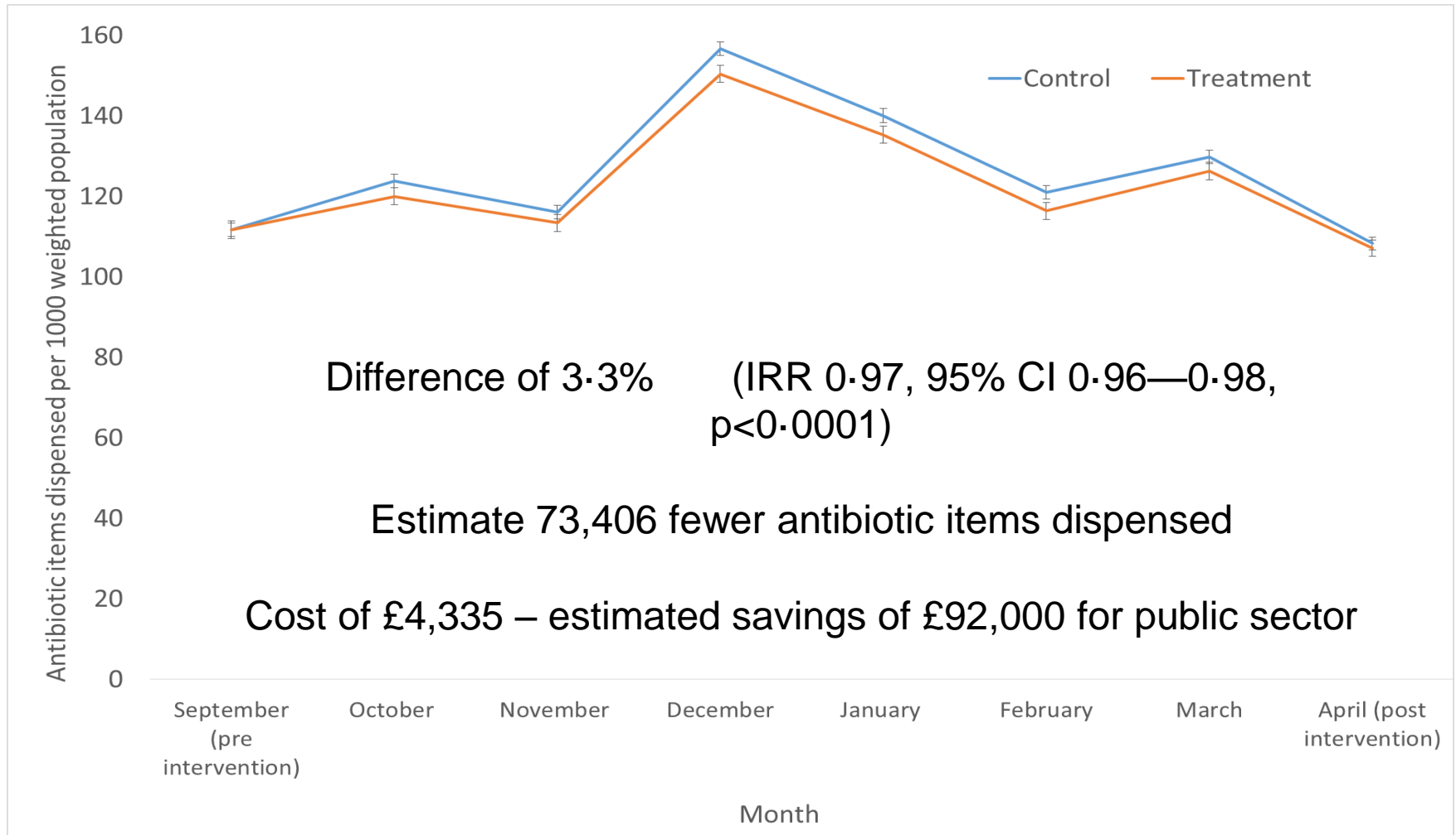
PROFESSOR DAME SALLY C DAVIES
CHIEF MEDICAL OFFICER

* Your practice's prescribing data are available online. Data were taken from <http://www.hscip.gov.uk/gpprescribingdata> and adjusted to take into account patient load and demographics. The 80% figure excludes outliers judged to be created by measurement error and does not include out-of-hours services. For more information on the consequences of antimicrobial resistance, see the UK 5 Year Antimicrobial Resistance Strategy.

v.18 19.09.14

AMR: Results

Rate of antibiotics dispensed per 1,000 weighted population for study period, with 95% CI





TIMELY

Timely



Present Bias



Implementation Intention



Foot-in-the-Door Technique



Prompts



Head Start



Deadlines



Anchoring



Priming



Implementation Intentions

We are more likely to do something when we specify how when and where we will do it.

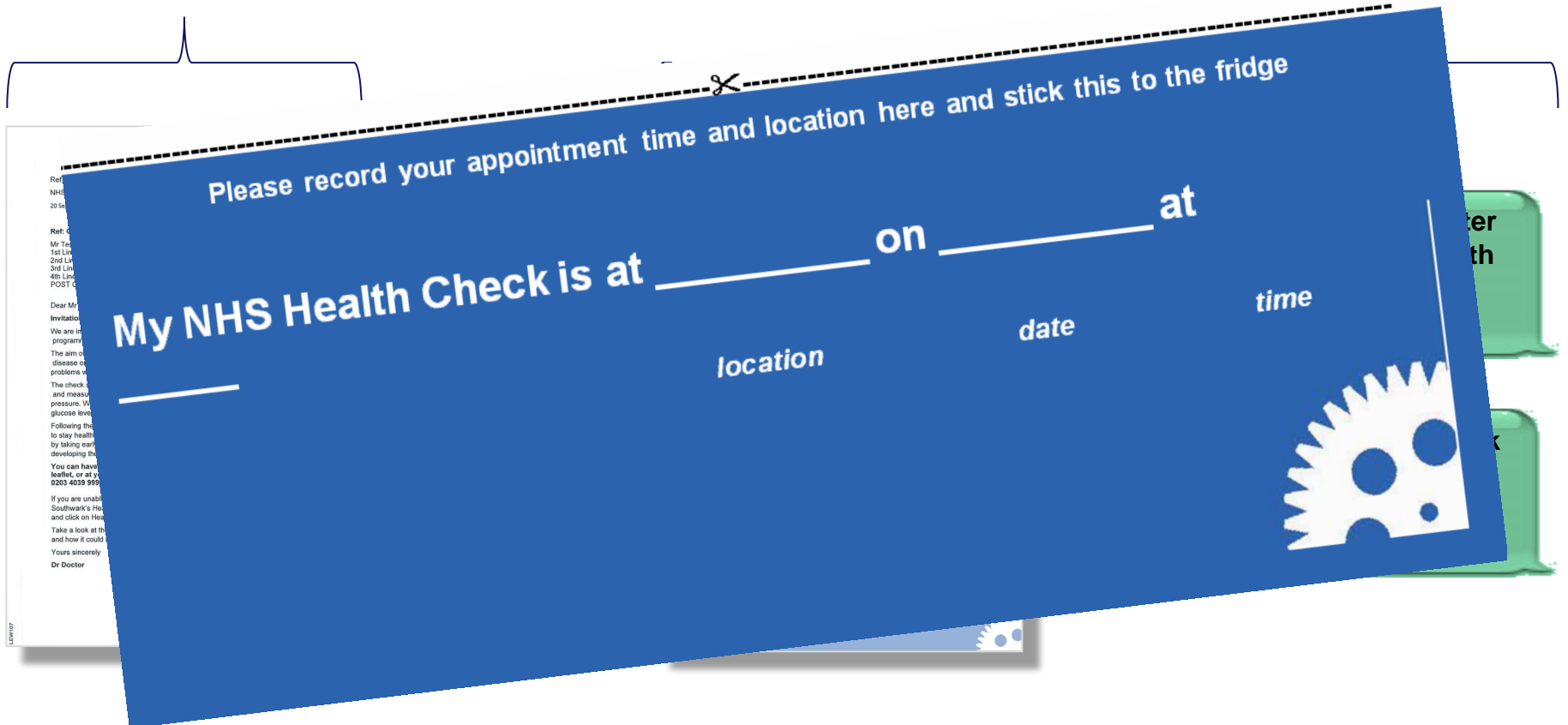


NHS HEALTH CHECK

NHS Health Check

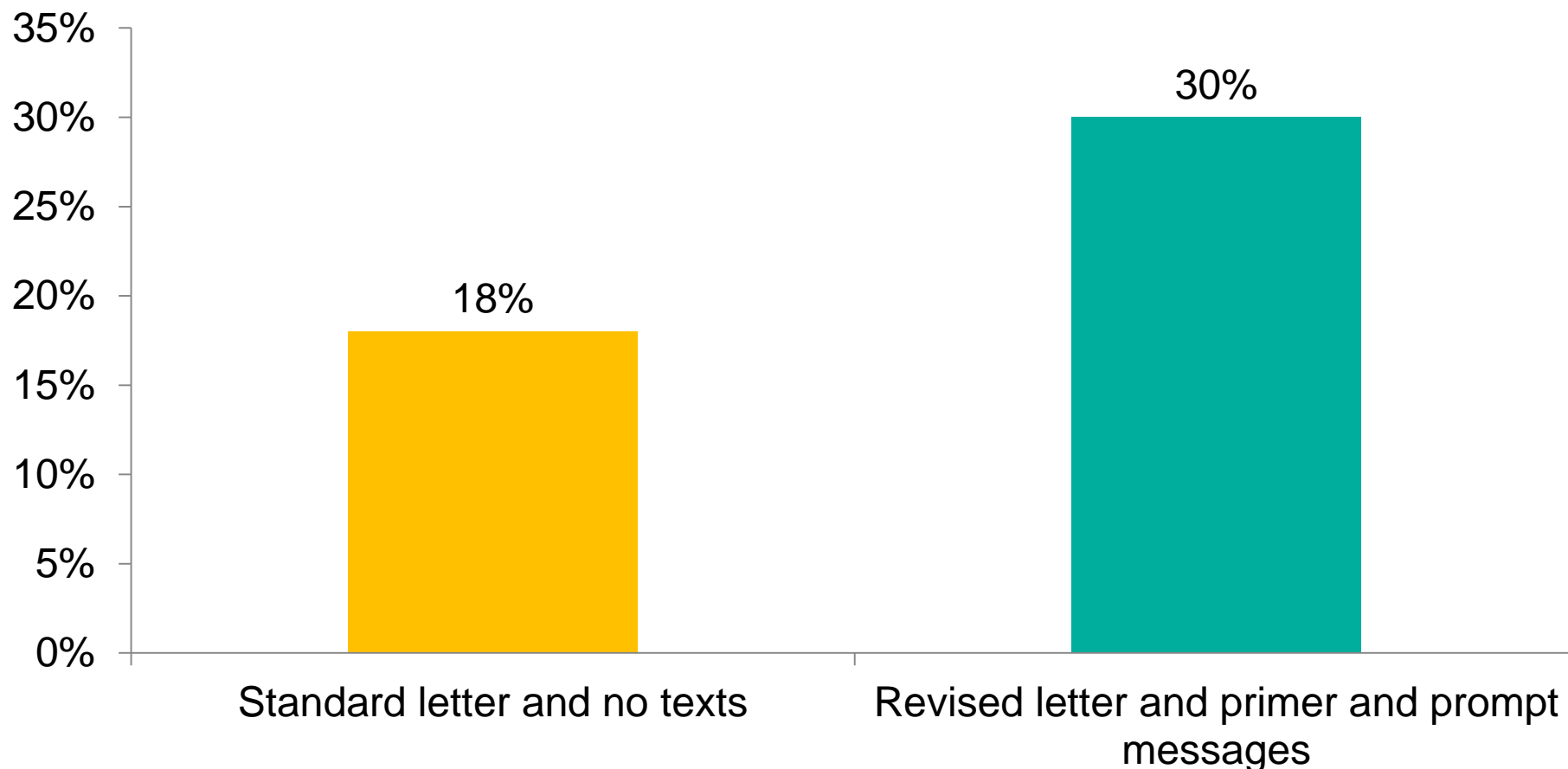
Control

Treatment

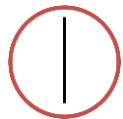


NHS Health Check: Results

Percentage uptake of NHS Health Checks



Missed Appointment



Simplification



Description of norms



Salience

AMR

Simplification



Messenger



Relative incentives

NHS Health Check



Simplification



Scarcity



Salience



Messenger



Priming



Prompts



Implementation intentions



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Task: Identify the Behavioural Insights applied

NCMP: Letter

01 September 2015

Dear Parent / Carer of «FirstName» «LastName»,

We recently sent you a letter about measuring «FirstName»'s height and weight in school as part of the National Child Measurement Programme. The measurements have now been done.

Seeing if your child's weight is within the healthy range for their age, sex and height can help you make informed choices about their lifestyle.

«FirstName»'s results	
Height (cm)	«Height»
Weight (kg)	«Weight»
Date of measurement	«DateOfMeasurement»

These results suggest that your child is very overweight for their age, sex and height.

Being very overweight can lead to health problems for your child, such as high blood pressure, early signs of type 2 diabetes and low self-confidence. But you and your child can make simple changes to be more active and eat more healthily. As a first step, if you are interested, please call us on XXX to find out how you can benefit from free local support described in the enclosed leaflet. You can also:

- Take a look at the tips on the next page
- Go online for practical advice at: www.nhs.uk/change4life and www.nhs.uk/ncmp4

You can find out how «FirstName»'s result was calculated, and check how «FirstName» is growing over time, by going to www.nhs.uk/bmi.

This information has not been shared with «FirstName», other children or school staff. Locally, this information is held by your local NHS and is treated confidentially.

Thank you for reading this letter - we hope this information is useful to you. If you need any help or advice, please call us on the helpline number XXX to speak to a member of the NCMP team.

Yours sincerely,

01 September 2015

Dear Parent / Carer of «FirstName» «LastName»

We recently wrote to you about measuring «FirstName»'s height and weight as part of the National Child Measurement Programme. Here are «FirstName»'s measurements.

«FirstName» «LastName»		
Height (cm) «Height»	Weight (kg) «Weight»	Weight status: Very overweight
«FirstName» is in the minority of local children who are overweight or very overweight. 2 out of 3 children in year 6 in «Location» have a healthier weight than «FirstName»		

It is important to recognise when our children are overweight because being overweight can lead to health problems like high blood pressure and early signs of Type 2 diabetes. Being overweight can also lead to low self-esteem and poor confidence.

PLEASE LOOK AT THE IMAGES OVER THE PAGE

These images show the body shapes of boys aged 10-11 in each of the weight categories used by doctors to identify children at risk of health problems. They were developed by scanning hundreds of children. They are a general guide to what each of the weight categories look like.

«FirstName» has been reserved a place at the lifestyle and weight management service.

This is a free and fun after school club to help families achieve and maintain a healthy weight. It is an 8 week programme run by NHS Dietitians and physical activity leaders. We also have limited one to one appointments. Please see the enclosed leaflet and contact us to take up this offer by post, phone or email.

Post: Return the enclosed registration form in the FREEPOST envelope enclosed.
Phone: XXX
Email: XXX

If you would prefer to make changes at home please go to www.nhs.uk/change4life for tips on healthy eating and physical activity or see enclosed leaflet.

If you wish to discuss these results please contact the NCMP Team on XXX

Yours sincerely

NCMP: Map Me Images

Below is the **Map Me tool** which relates to children of the same gender and age as your child. We have provided both a front and side view for each image. The small differences between the weight categories are surprising but real. The images help us to see the small changes which can happen over time and lead to children being overweight.



Underweight

Healthy weight

Healthy weight

Healthy weight

Overweight

Very overweight

Very overweight

NCMP: Answers

Easy

Defaults (Pre-populated form)

Friction costs (Pre-paid envelope)



Attractive

Salience (The use of body image scans)

Personalise



Social

Descriptive Norm / Relative ranking

("<<Firstname>> is in the minority of local children who are very overweight...")

Feedback (Feedback on weight categories)

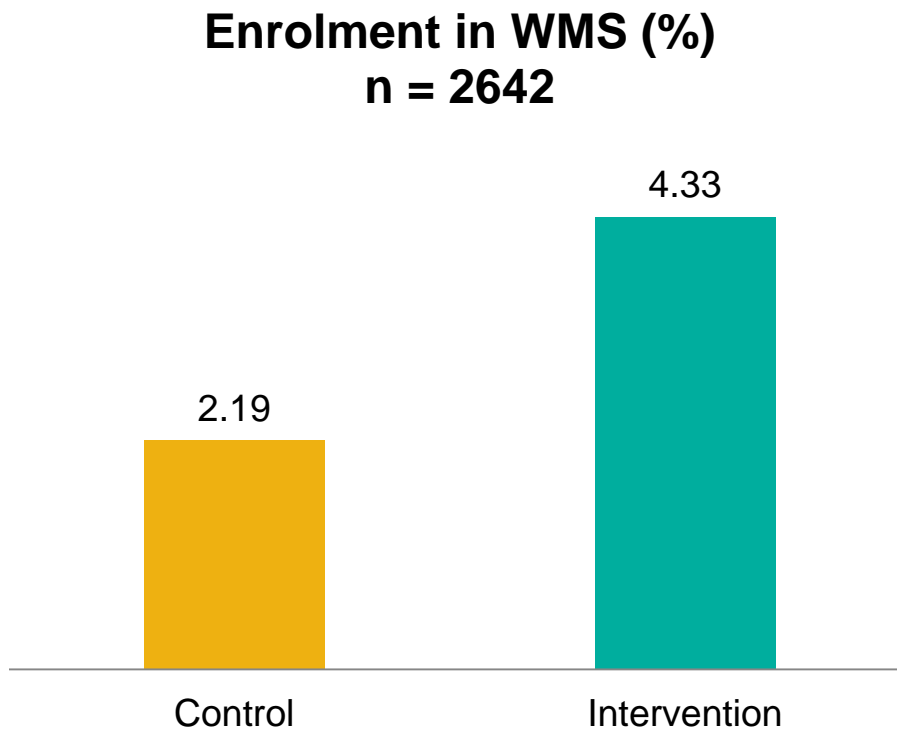


Timely

Anchoring (The images attempt to anchor individuals to a new norm.)



NCMP: Results



Adj. OR

- 2.26**

95%CI

- [1.46, 3.52]

p-value

- 0.000

Parents receiving the intervention letter were twice as likely to enroll (attend or on waiting list) in weight management services. Results are statistically significant at a 1% level.



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Break!



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How we utilise psychological frameworks

Question...

Why do people behave the way they do?

Question...


What theories and frameworks would you use to understand behaviour (to inform intervention design)?

Consider APEASE criteria

Keep in mind translation into policy / practice

A woman with blonde hair and blue eyes is looking upwards. Above her head, several black question marks of various sizes and styles (some solid, some with a hatched pattern) are floating in the air, suggesting a state of confusion or a series of questions.

Typical questions from policy teams

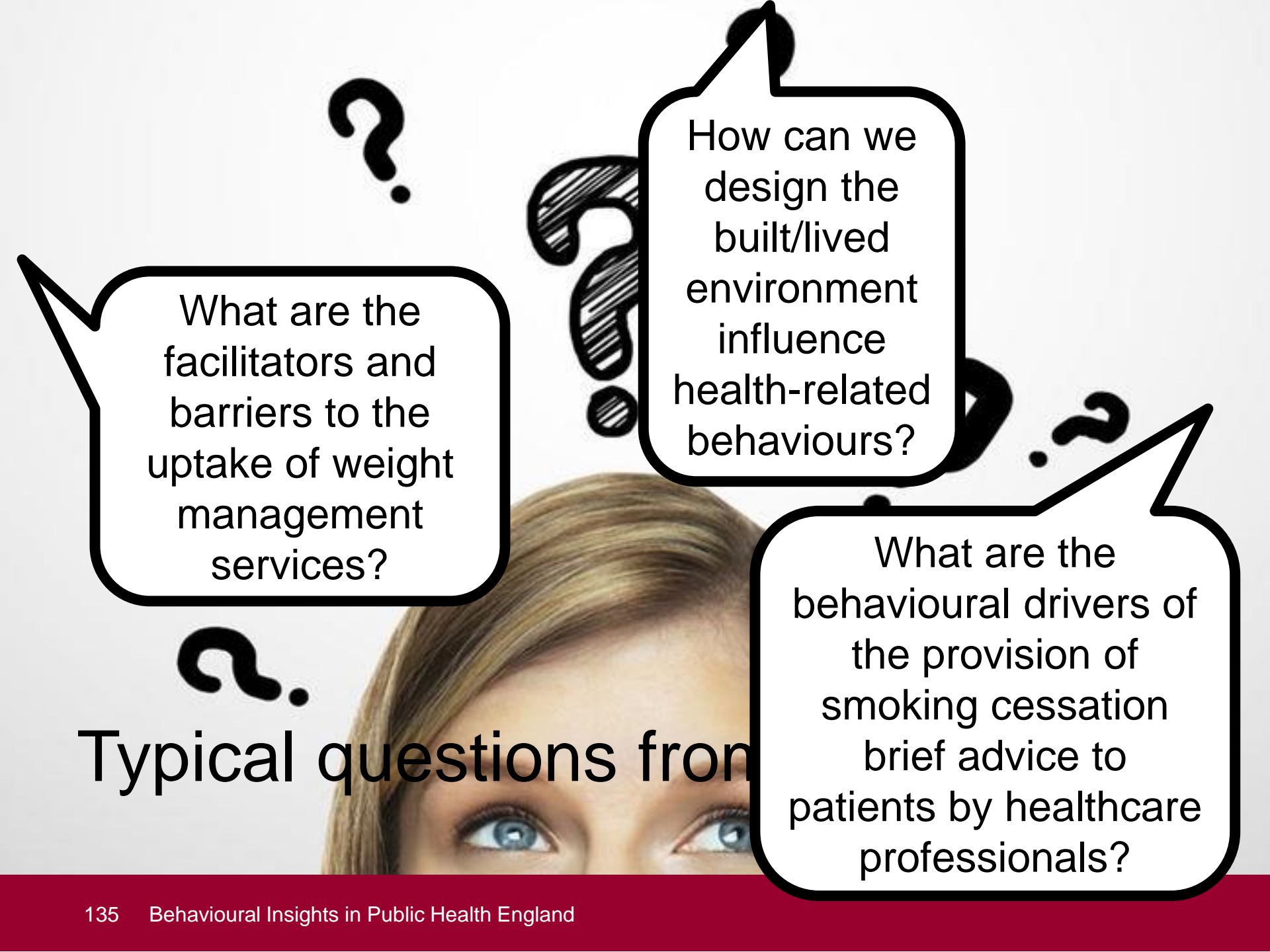


How can we improve the uptake of weight management services?

How should we design Healthy New Towns?

How can we increase the provision of brief advice for smoking cessation?

Typical questions from



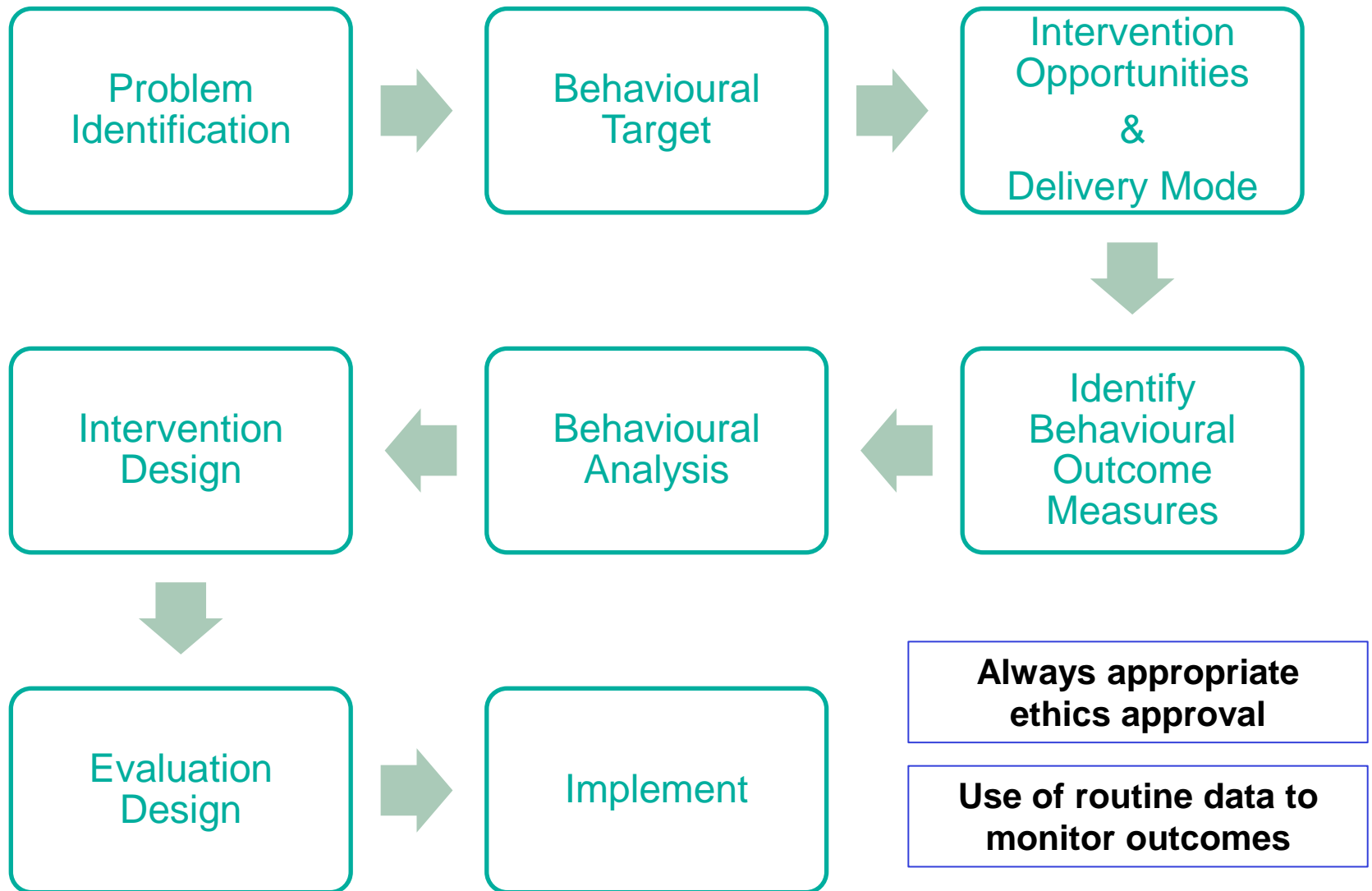
What are the facilitators and barriers to the uptake of weight management services?

How can we design the built/lived environment influence health-related behaviours?

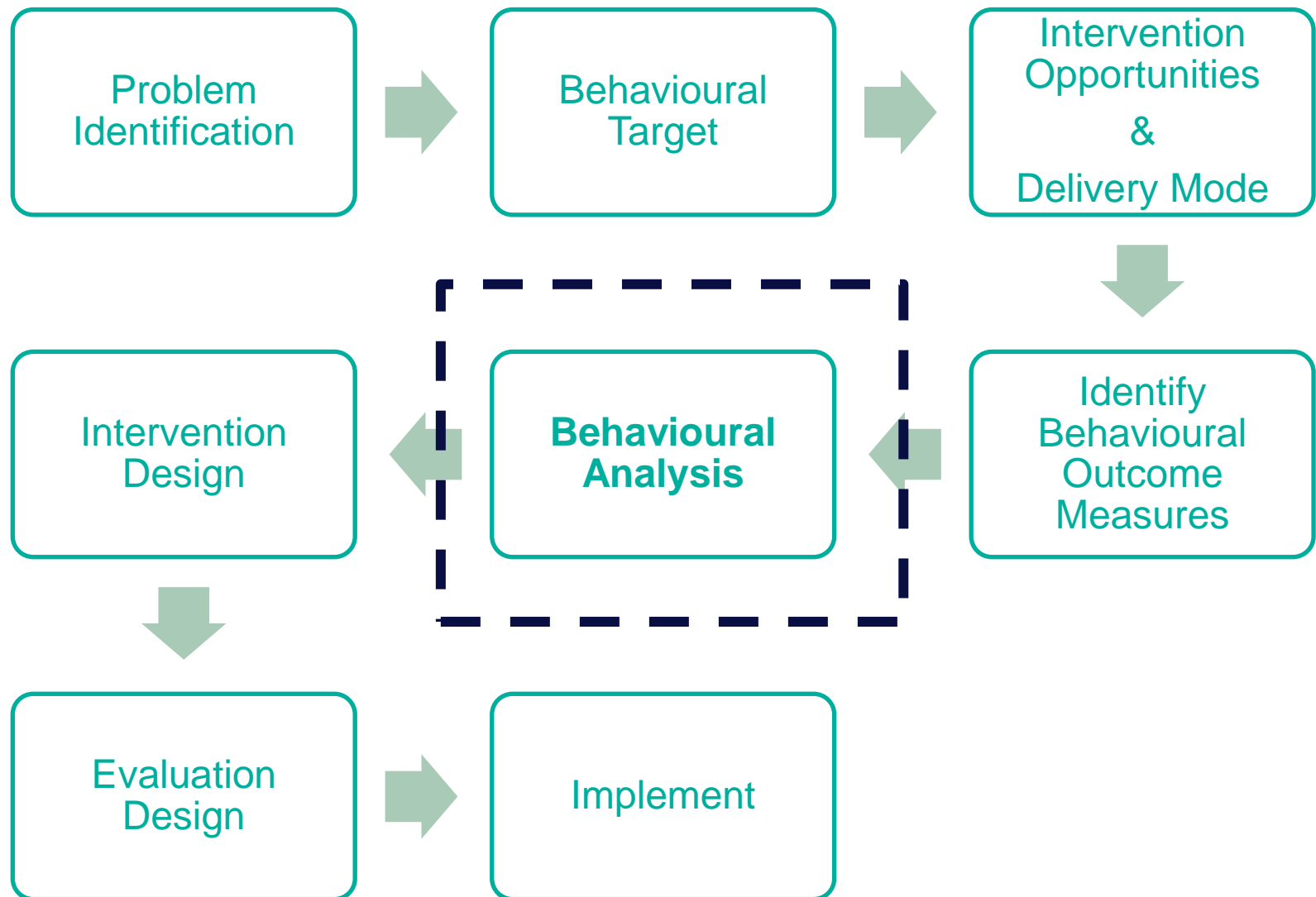
What are the behavioural drivers of the provision of smoking cessation brief advice to patients by healthcare professionals?

Typical questions from

Designing a behavioural intervention



Designing a behavioural intervention



In groups, chose one of the following questions and discuss how you would approach it.

What framework(s)
would you use?

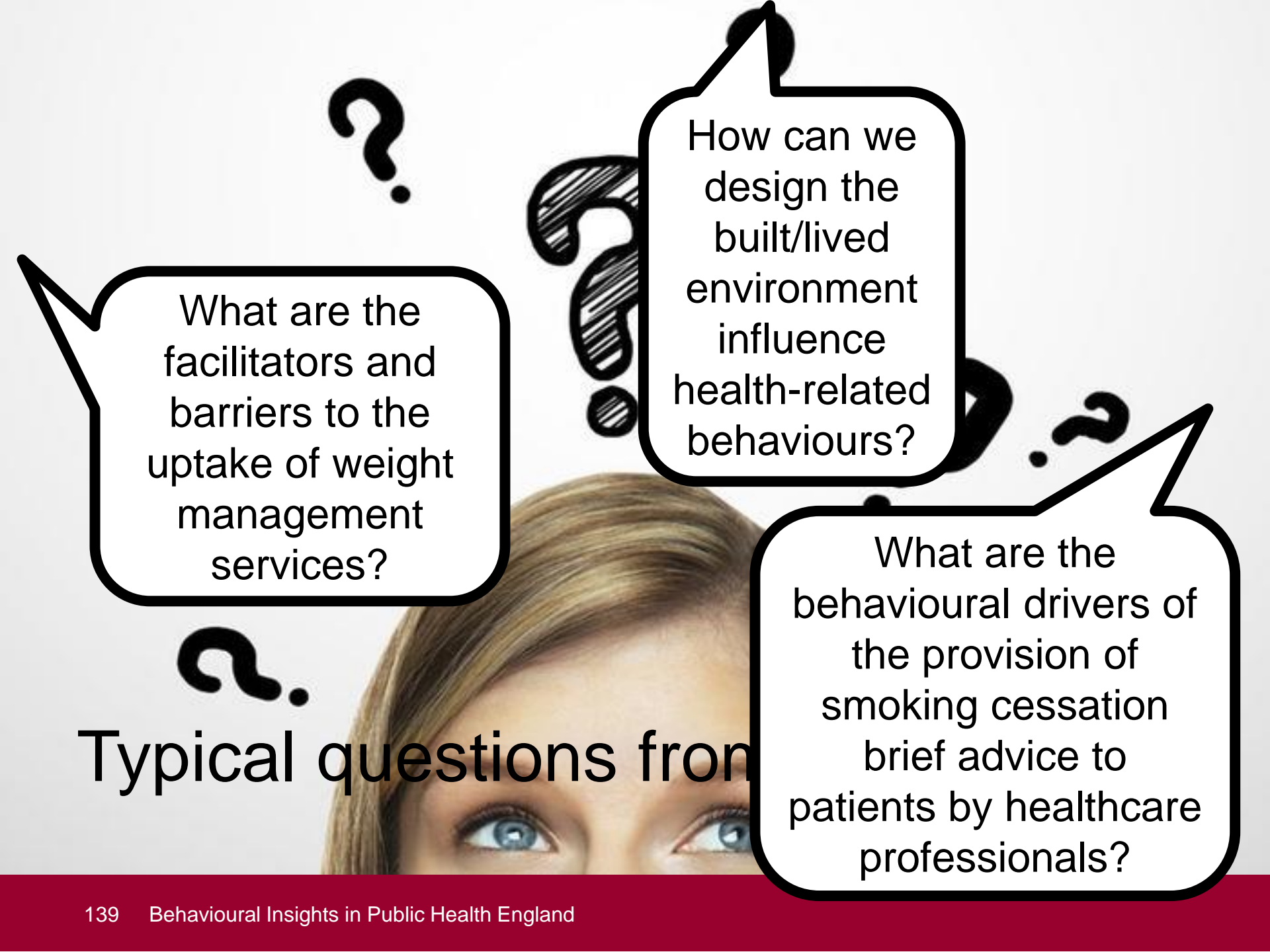
How would you
capture the
evidence?

Simplicity?

Large
scale?

No idea is
unwelcome
...be creative

Think about
translation



What are the facilitators and barriers to the uptake of weight management services?

How can we design the built/lived environment influence health-related behaviours?

What are the behavioural drivers of the provision of smoking cessation brief advice to patients by healthcare professionals?

Typical questions from

The Health Belief Model *Becker, M. H., Drachman, R. H., & Kirscht, J. P. (1974). A new approach to explaining sick-role behavior in low-income populations. American Journal of Public Health, 64(3), 205-216.*

Social Learning Theory, Social Cognitive Theory *Bandura, Albert. Social learning theory. (1977).*

Theory of Reasoned Action/Theory of Planned Behaviour *Ajzen, I. (1985). From intentions to actions: A theory of planned behavior (pp. 11-39). Springer Berlin Heidelberg.*

Stages of Change Model/Transtheoretical Model *Prochaska, J. O., & DiClemente, C. C. (1982). Transtheoretical therapy: Toward a more integrative model of change. Psychotherapy: theory, research & practice, 19(3), 276.*

COM-B *Michie, S., Atkins, L., & West, R. (2014). The behaviour change wheel: a guide to designing interventions. Needed: physician leaders, 26.*

PRIME Theory *Henningfield, J. E., Santora, P. B., & Bickel, W. K. (2007). Addiction treatment: Science and policy for the twenty-first century. JHU Press.*

Understanding Behavioural Insights in the Context of the Theoretical Domains Framework

Initial observations of Behavioural Insights

Initial results of a selection of commonly known and applied behavioural insights indicate that some;

- explain behaviour (loss aversion) and some are behaviour change techniques (framing), and some are both (priming)
- are in the BCT-T V1 (e.g. framing) however, some are not (e.g. Changing the reference point).
- overlap heavily (e.g. Status quo bias and inertia)
- can be matched to Behaviour Change Techniques (e.g. anchoring and changing the reference point; loss aversion and message framing).
- BCTs (e.g. defaults) can work through/address a range of behavioural insights (e.g. Inertia, demonstrating a social norm, status quo bias).

Sallis, A., Castle, E. & Bunten, A. Understanding behavioural insights in the context of the Theoretical Domains Framework. Poster presented at Division of Health Psychology Conference 2014

Understanding Behavioural Insights in the Context of the Theoretical Domains Framework

Mapping insights to the Theoretical Domains Framework (TDF)

The TDF is intended to be a comprehensive multi-disciplinary list of influences on behaviour. Initial observations of behavioural insights indicate;

- Some insights fit within the TDF for example loss aversion and long tailed perception of risk may fit under 'outcome expectancies'.
- Some insights do not fit well in the TDF for example those relating to 'ownership' (e.g. endowment effect, entitlement belief) and the moral aspects of emotions (e.g. moral hazard, reciprocity).
- It is unclear where other behavioural insights fit (e.g. Hyperbolic discounting) and some fit into more than one domain.
- No insights mapped to the TDF 'skills' and few to 'behavioural regulation' domains.
- Many insights mapped to 'environmental context and resources' and 'memory, attention and decision-making'.

Sallis, A., Castle, E. & Bunten, A. Understanding behavioural insights in the context of the Theoretical Domains Framework. Poster presented at Division of Health Psychology Conference 2014

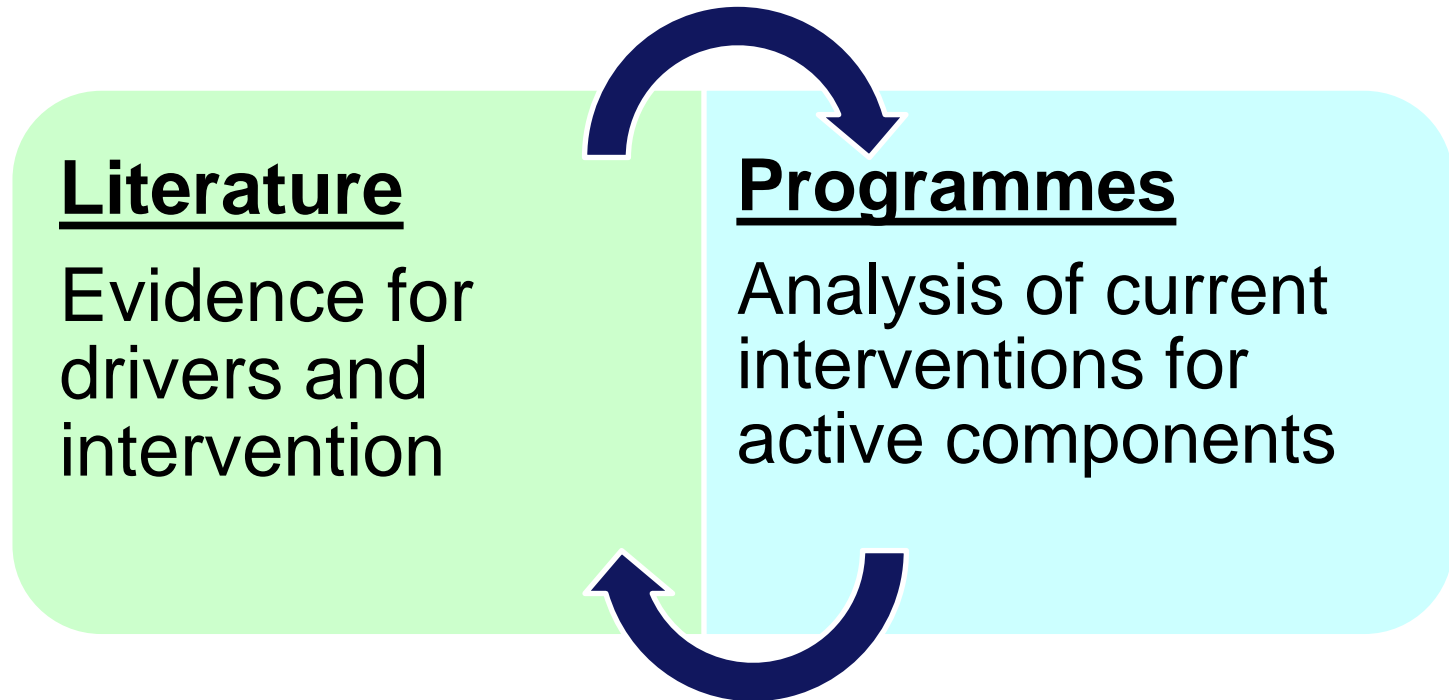


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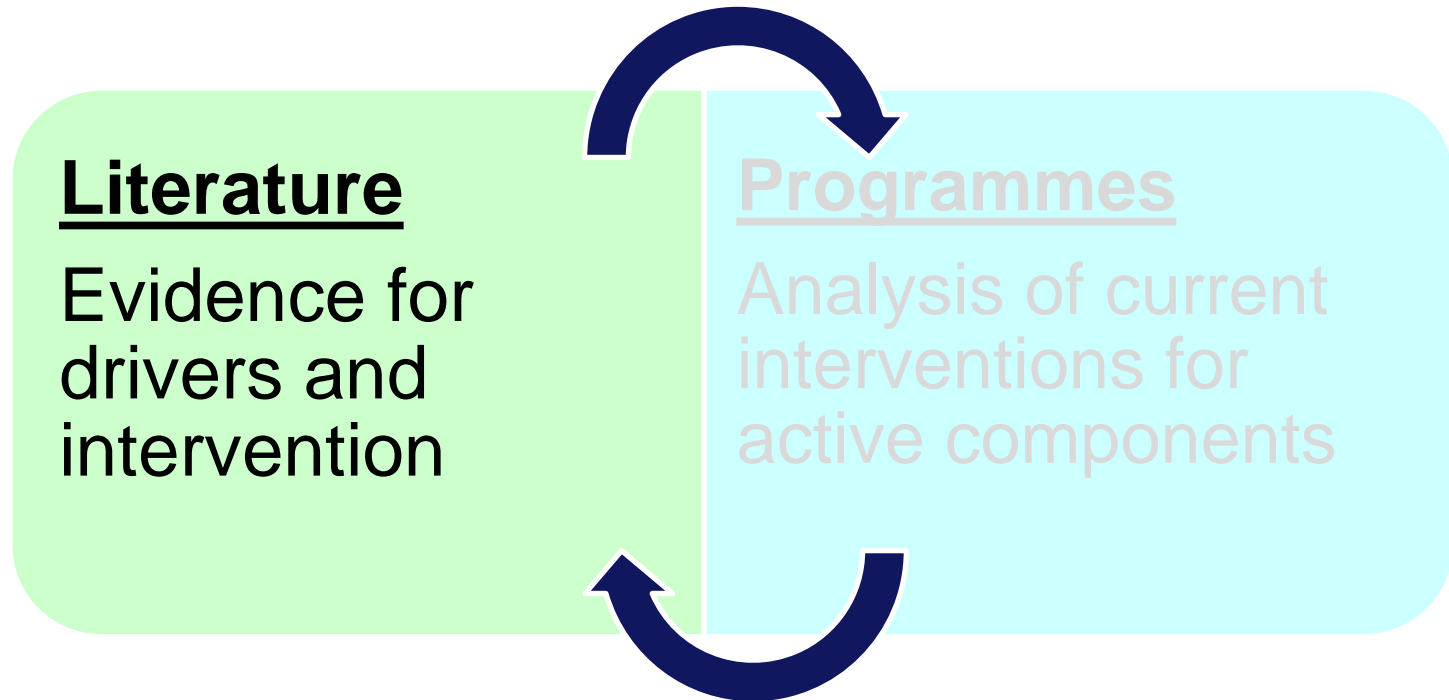
Antimicrobial Stewardship: behavioural analyses

Strategic behavioural analysis



Identification of gaps and opportunities

Strategic behavioural analysis



Identification of gaps and opportunities

Behavioural analysis of the literature - research questions

1. What does the evidence tell us about appropriate antimicrobial use/prescribing and antimicrobial resistance?
2. What are the behaviours that should be targeted to reduce the use of antibiotics for self-limiting infections?
3. Is there evidence of effective interventions targeting these behaviours?
4. What are there evidence gaps?

Google “antibiotic behaviour” – No.1

BMJ Editorial



Literature review

What do we know
(or think) might
contribute to AMR?

What do we know
(or think) might
improve stewardship?

Structured search using Ovid Medline® to 18 Nov 2013.

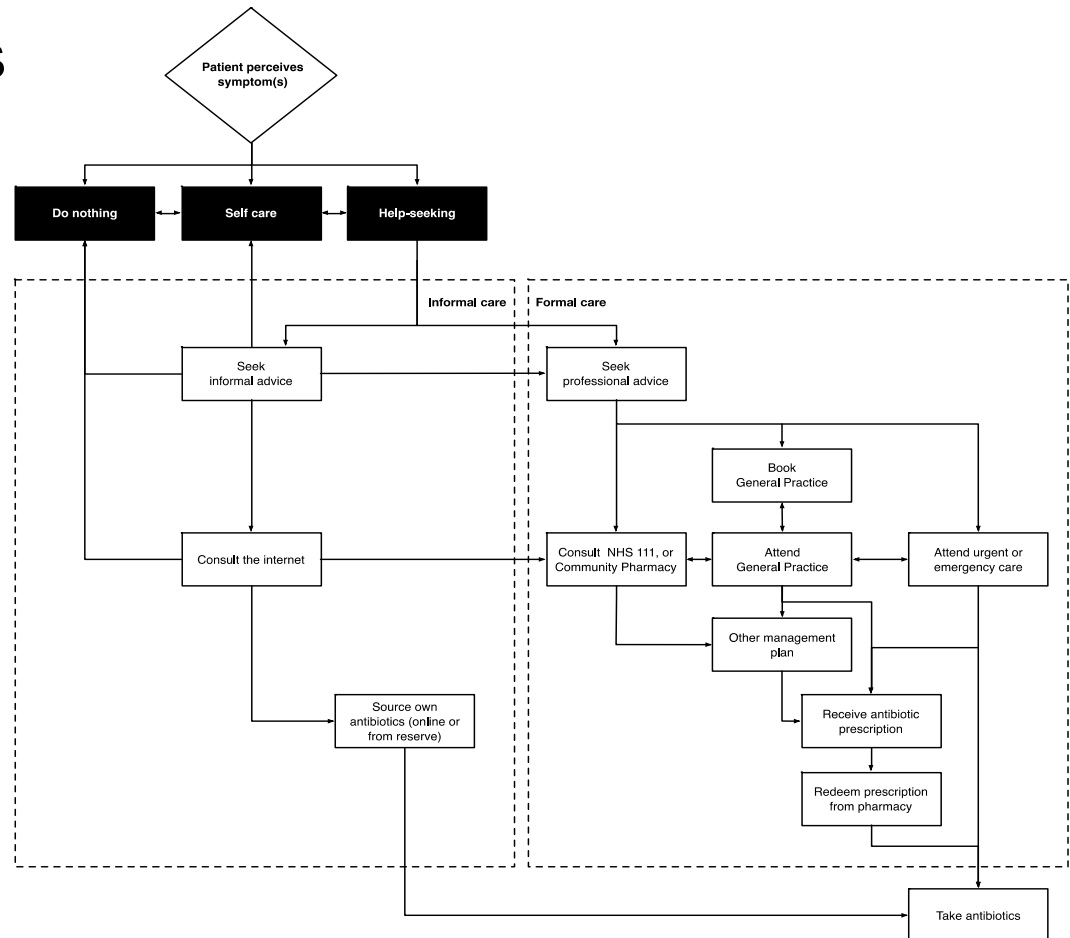
Also added to the corpus via snow-balling and on the advice of experts.

629 down to **197.**

529 down to **54.**



Behavioural pathways developed for primary care, secondary care and the public





Key behaviours to reduce inappropriate antibiotic use – example of public

Four core behaviours to reduce patient use of antibiotics for self-limiting infections have been identified:

1

Patient undertakes self-care and/or obtains pharmacy advice for colds, runny nose, flu

2

Patient undertakes self-care and/or obtains pharmacy advice for other self-limiting infections

3

Patient does not request antibiotics at GP appointment

4

Patient acts upon GP advice where antibiotics are not prescribed (delayed prescription or self-care)

**Medication adherence, taking antibiotics course as prescribed were not included in this behavioural analysis*



COM-B: a model to understand behaviour

Behaviour occurs as an interaction between:

- **Capability**
- **Opportunity**
- **Motivation**



Michie et al. (2011)



Behavioural analysis: capability / public

	COM-B evidence	Proposed theoretical drivers
Physical Capability <i>Physical skills</i>	<ul style="list-style-type: none">• None specific to AMR	<ul style="list-style-type: none">• None
Psychological Capability <i>Knowledge, Cognitive and interpersonal skills, Memory, attention and decision processes, Behavioural regulation</i>	<ul style="list-style-type: none">• Public understanding is mixed• Baseline awareness lacking• Confusion over bacteria & viruses & resistance.• Patient doesn't realise antibiotics won't improve symptoms for viral and self-resolving bacterial infections.• Lack of knowledge antibiotics are needed for life threatening infections.	<ul style="list-style-type: none">• Patient needs to know about/be able to use right help at the right time – pharmacy first, antibiotics as a last resort.• Patient needs to understand most infections are self-limiting and the body can fight off without abx• Patient can recognise 'red flags' and monitor own symptoms• Patient has plan to self-care• Patient monitors own consumption of antibiotics• The need to use antibiotics sparingly should be salient (e.g. abx are required for major infections)



Patient behaviour

Key Issues:

- The consequences of AMR are unclear to the public
- Do not realise that antibiotics will not improve their symptoms for viral or self-resolving infections
- Societal benefits but few immediate personal benefits - lack of incentive to discontinue existing behaviour

Solutions:

- Make consequences of AMR more immediate, visible, salient and personally relevant (highlight drugs that are/becoming ineffective or link to MRSA as an example)
- Demonstrate a social norm for low antibiotic use
- Increase credibility of pharmacy advice
- Reduce the appeal of antibiotics – increase friction costs / state side effects
- Make it easier to self-care



Behaviour in primary care

Key Issues:

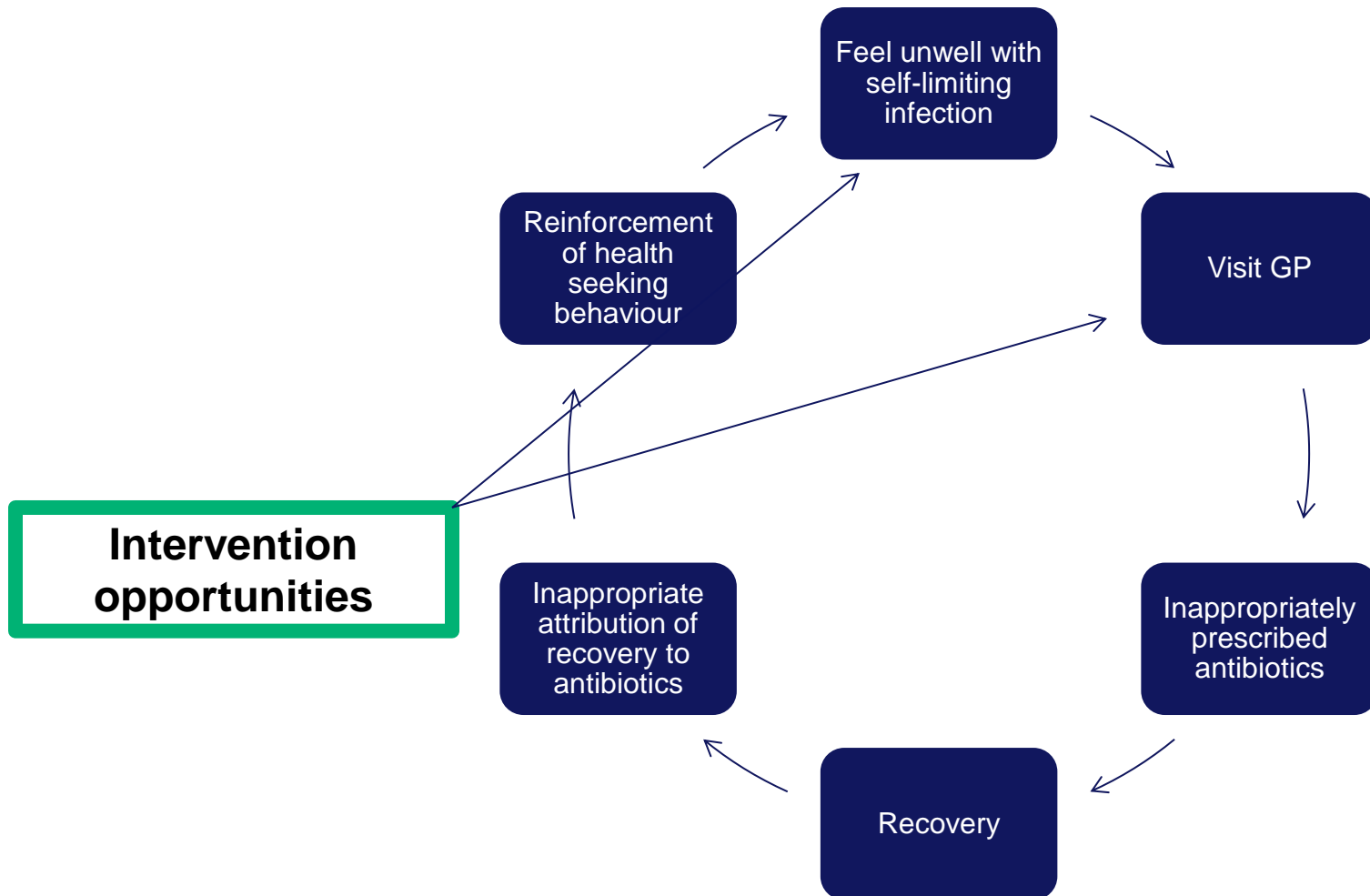
- 4/5 of prescribing and great variation not explained by case mix
- Many primary care prescribers admit that even some of their own prescribing will not be clinically beneficial
- Norms, fear of consequences of not prescribing, perceived patient dissatisfaction
- Varying evidence of: education and training; guideline implementation and real-time decision-support; audit and feedback; back-up prescribing
- Media more effective at disseminating information about antibiotics, yet medical professionals are more effective at actually changing behaviours

Solutions:

- Address GPs concern about the consequences of not prescribing
- Improve GPs belief in the consequences of overprescribing
- Enhance GPs perceived capability regarding the impact of their personal behaviour on antibiotic resistance

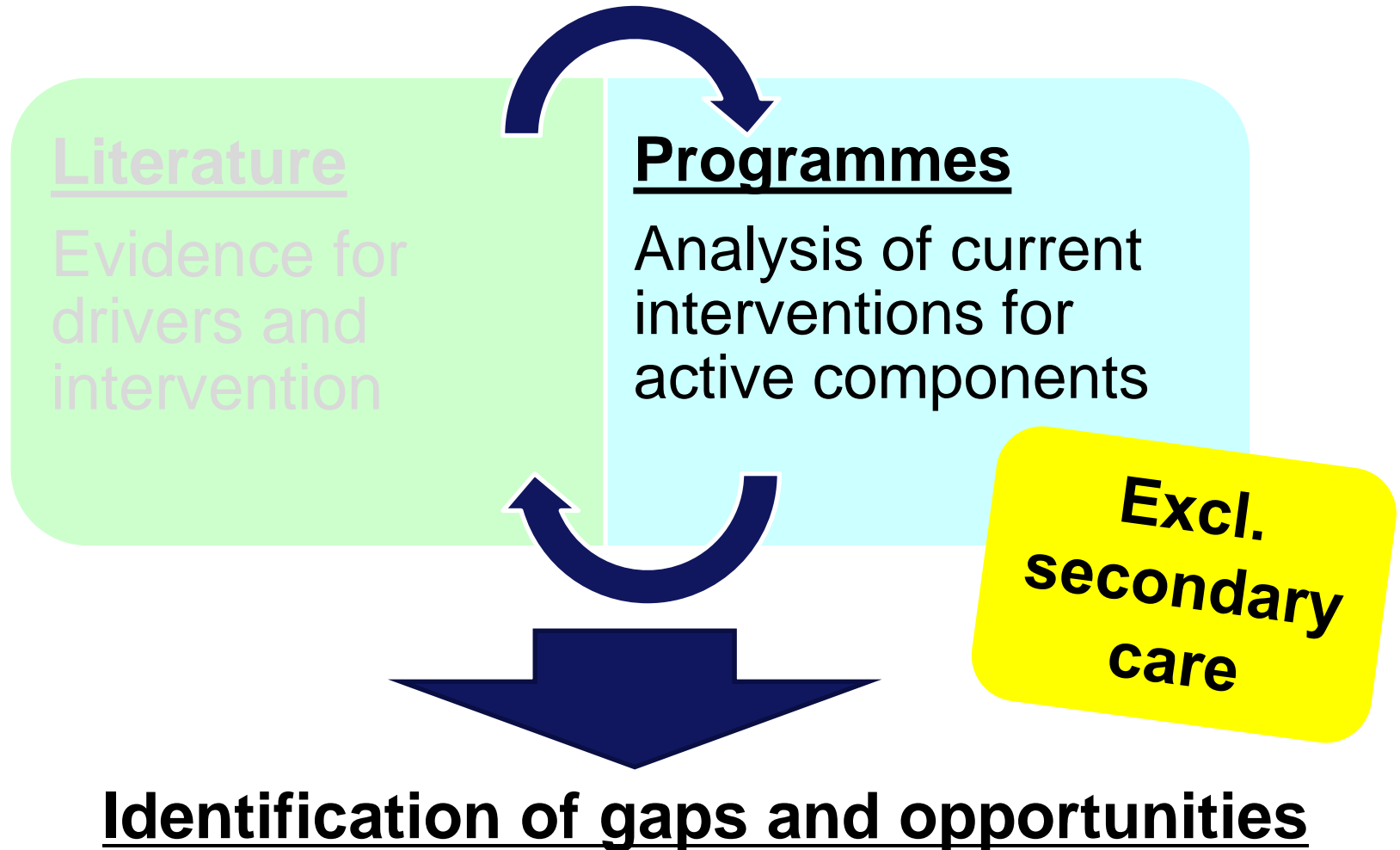


Reinforcement: the cycle of inappropriate prescribing





Strategic behavioural analysis





Behavioural analysis of national programmes - research questions

1. What are the current national antimicrobial stewardship programmes aimed at key target behaviours that influence inappropriate antibiotic prescribing
2. How do we expect those programmes to be effecting behaviour change?
 1. target population
 2. agent of change
 3. behavioural target
 4. mechanism of change
 5. intervention function
 6. policy category



Methods:

1. Refine key target behaviours:
 - informed by past research and in agreement with PHE microbiologists, pharmacists and behavioural scientists
2. Identify national antimicrobial stewardship programmes
 - develop inclusion/exclusion criteria
 - Search by
 - Consulting key stakeholders. ESPAUR, ARHAI, PAGB, PHE, NHSE, NHSI, DH, Pharmacy Voice, PCAG, etc
 - Consulting key AMR strategy documents and guidance
 - Google search of 'AMR/AMS programmes'

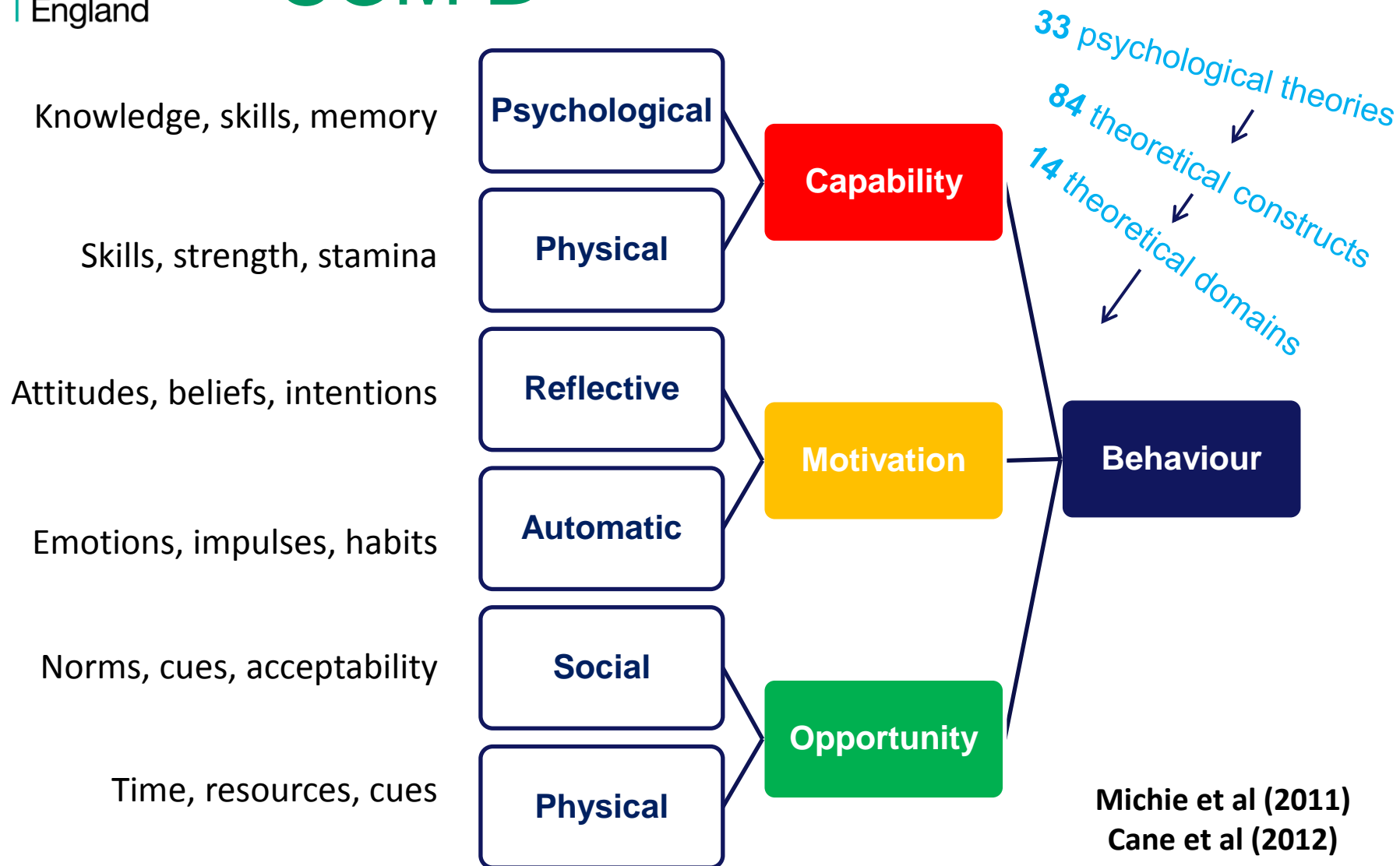


Methods:

3. For each programme, code the target population, agent of change, behavioural target (two authors independently)
4. Map programmes to the Behaviour Change Wheel interventions functions and policy categories and categorise mediators of change using COM-B and the Theoretical Domains Framework domains (two authors independently)



COM-B





Behaviour Change Wheel



-  Sources of behaviour
-  Intervention functions
-  Policy categories

Michie et al (2011)



Public Health
England

Behaviours of patients / public

- 1. Patient undertakes self-care and/or obtains pharmacy advice for RTIs (colds, runny nose and flu) and other self-limiting conditions , prior to, or instead of, making a GP appointment**
- 2. Patient follows pharmacist's advice for care of self-limiting conditions, including making a GP appointment if advised.**
- 3. Patient does not request antibiotics at GP appointments for self-limiting conditions.**
- 4. Patient acts upon healthcare professionals advice if self-care mandated**
- 5. Patient uses back-up prescriptions as directed by GP**
- 6. Patient takes antibiotics as directed**
- 7. Patients do not take antibiotics that are not prescribed for the current condition**
- 8. Patients do not keep antibiotics for future use or give to another person**
- 9. Patient disposes of unwanted antibiotics by returning them to a pharmacy.**



Behaviours of primary care prescribers

- 10. Primary care prescribers do not issue antibiotic prescriptions for self-limiting RTIs and, where clinically appropriate, other self-limiting infections.**
- 11. Where an antibiotic is indicated, primary care prescribers prescribe the most appropriate drug for the correct duration.**
- 12. Primary care prescribers issue self-care advice with or without the use of dedicated self-care resources**
- 13. Primary care prescribers issue back-up-prescriptions where appropriate.**
- 14. Primary care prescribers explain prescribing decision to patient**
- 15. GP documents self-care advice provided and/or back-up prescribing**



Behaviours of pharmacists

16. Provides self-care advice for self-limiting infections

17. When handing out a prescription that includes antibiotics, inform the patients of dose and duration and to take their antibiotics exactly as prescribed

18. Check that antibiotic prescriptions comply with local guidance and query with the prescribing doctor for those that do not.

16. Provides self-care advice for self-limiting infections

17. When handing out a prescription that includes antibiotics, inform the patients of dose and duration and to take their antibiotics exactly as prescribed

18. Check that antibiotic prescriptions comply with local guidance and query with the prescribing doctor for those that do not.



Public Health
England

Behaviours of organisations e.g. CCG, NHS E, LA

- 19. Provide or prompt use of educational and training resources about AMR/AMS**
- 20. Commission or develop services, programmes or campaigns to support AMS/tackle AMR**
- 21. Commission or develop services, programmes or campaigns to support self-care**
- 22. Monitor antibiotic use/prescribing**
- 23. Monitor antimicrobial resistance**
- 24. Promotes current national and local guidelines on antimicrobial prescribing among all prescribers, providing updates if the guidelines change.**

21 policies / programmes identified

	Intervention
1	Antibiotic Guardian pledge scheme and England based activities linked to EAAD
2	Antimicrobial prescribing and stewardship competencies
3	Ask Your Pharmacist
4	The Health and Social Care Act 2008. Code of Practice to include AMR.
5	eBug
6	English surveillance programme for antimicrobial utilisation and resistance
7	Mandatory MRSA Bacteraemia and Clostridium Difficile Surveillance scheme
8	NICE Guidance - 'Antimicrobial stewardship (NG15)
9	NICE Quality Standard
10	NHS Quality Premiums for CCGs
11	Patient Safety Alert
12	TARGET Antibiotics toolkit for GPs
13	TARGET 'Treating Your Infection' patient information leaflet including back up prescribing
14	Treat yourself better with pharmacist advice campaign.
15	Stay Well this winter
16	Indicators on Public Health Profiles (PHE Fingertips)
17	Chief Medical Officer letter to high prescribers
18	AMR Indicators in NHSE's CCG Improvement and Assessment Framework
19	PrescQipp website for resources on antimicrobial stewardship
20	UK Five Year Antimicrobial Resistance Strategy 2013 to 2018 (aspects related to AMS)
21	NHS Choices web pages on antibiotics for public education

Which of the key behaviours do the programmes target?

	Intervention number																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Behaviours (Patient/public)																					
1. Patient undertakes self-care and/or obtains pharmacy advice for RTIs (colds, runny nose and flu) and other self-limiting conditions , prior to, or instead of, making a GP appointment	X		X		X									X	X					X	6
2. Patient follows pharmacist's advice for care of self-limiting conditions, including making a GP appointment if advised.	X		X											X							3
3. Patient does not request antibiotics at GP appointments for self-limiting conditions.			X		X																2
4. Patient acts upon healthcare professionals advice if self-care mandated			X										X	X							3
5. Patient uses back-up prescriptions as directed by GP													X								1
6. Patient takes antibiotics as directed	X				X										X					X	4
7. Patients do not take antibiotics that are not prescribed for the current condition					X															X	2
8. Patients do not keep antibiotics for future use or give to another person	X				X								X							X	4
9. Patient disposes of unwanted antibiotics by returning them to a pharmacy.	X												X							X	3
Behaviours (Primary care prescribers)																					
10. Primary care prescribers do not issue antibiotic prescriptions for self-limiting RTIs and, where clinically appropriate, other self-limiting infections.	X	X		X				X	X			X	X				X				8
11. Where an antibiotic is indicated, primary care prescribers prescribe the most appropriate drug for the correct duration.		X						X				X									3
12. Primary care prescribers issue self-care advice with or without the use of dedicated self-care resources	X							X	X			X	X				X				6
13. Primary care prescribers issue back-up-prescriptions where appropriate.	X	X		X				X	X			X	X				X				8
14. Primary care prescribers explain prescribing decision to patient	X							X	X			X	X								5
15. GP documents self-care advice provided and/or back-up prescribing								X				X									2
Behaviours (Pharmacists)																					
16. Provides self-care advice for self-limiting infections	X		X										X								3
17. When handing out a prescription that includes antibiotics, inform the patients of dose and duration and to take their antibiotics exactly as prescribed	X																				1
18. Check that antibiotic prescriptions comply with local guidance and query with the prescribing doctor for those that do not.	X																				1
Behaviours (Organisational e.g. CCG, NHS E, LA)																					
19. Provide or prompt use of educational and training resources about AMR/AMS	X			X		X		X								X		X	X	X	8
20. Commission or develop services, programmes or campaigns to support AMS/tackle AMR	X			X		X		X		X	X					X		X	X	X	10
21. Commission or develop services, programmes or campaigns to support self-care																			X		1
22. Monitor antibiotic use/prescribing		X		X		X		X	X							X		X		X	8
23. Monitor antimicrobial resistance						X	X	X								X				X	5
24. Promotes current national and local guidelines on antimicrobial prescribing among all prescribers, providing updates if the guidelines change.	X	X		X		X		X	X							X			X	X	9
	15	5	5	6	5	5	1	11	6	1	1	6	9	3	2	5	3	3	4	5	5

How do the programmes work? Mechanisms of action – COM-B

[illegible]

How do the programmes work? Mechanisms of action - TDF

TDF domain	Frequency
Knowledge	24
Intentions	21
Beliefs about consequences	18
Behavioural regulation	14
Environmental context and resources	14
Professional, social role and identity	14
Memory, attention and decision processes	11
Goals	10
Social influences	9
Reinforcement	8
Emotion	5
Beliefs about capabilities	4
Skills	3
Optimism	3

How do the programmes work?

Delivery mechanisms – Behaviour Change Wheel

Intervention Functions	Frequency
Education	20
Persuasion	16
Environmental restructuring	12
Enablement	9
Coercion	4
Training	3
Restriction	3
Incentivisation	2
Modelling	1



How do the programmes work?

Delivery mechanisms – Behaviour Change Wheel

Policy Categories	Frequency
Communication and marketing	17
Environmental/Social planning	12
Guidelines	11
Regulation	6
Service Provision	3
Fiscal measures	1
Legislation	0





Public Health
England

Protecting and improving the nation's health

Wrap Up

Local government interest



**40,829
downloads**

System strengthening proposals

1. Consensus strategy
2. Mainstreaming in public health system
3. Conversation event

Collaboration and income generation

ESRC – AMR Behaviour Change – up to £2m

1. Behavioural science and data science to design low-cost, scalable interventions that target prescribers to reduce antibiotic prescribing
 - Ivo Vlaev (Warwick); Tim Chadborn (PHE); Ara Darzi (Imperial); Susan Michie (UCL); Alison Holmes (Imperial); Tom Marshall (Birmingham); David Halpern (BIT)
2. Sustainable evaluations of interventions that target the public to reduce AMR (natural experimental designs / new methods)
 - Paul Flowers (Glasgow Caledonian); Alison Holmes (Imperial); Susan Hopkins (Imperial/PHE); Jacqui Reilly (Glasgow/HPS); Chris Robertson (Strathclyde/HPS); Tim Chadborn (PHE); Ivo Vlaev (Warwick); Darren Langdridge (Open)

MRC PHIND – up to £150k. Characteristics that promote the uptake and effective use of health behaviour apps

- Felix Naughton (UEA); Tim Chadborn (PHE); Jamie Brown (UCL); Ann Blandford (UCL); John Powell (Oxford); Felix Greaves (PHE); Karen Tan (PHE)

Collaboration and income generation

