



Using Models of Behaviour Change

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Disha Collab 23, Delhi, India, 2023



www.ucl.ac.uk/behaviour-change/
[@UCLBehaveChange](https://twitter.com/UCLBehaveChange)

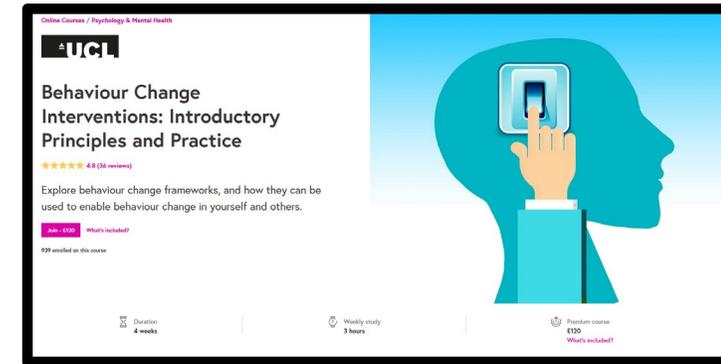


Who are we?

- Researchers, consultants, trainers & practitioners in behaviour change
- A cross-disciplinary community of academic experts at UCL & beyond
- Global network of > 4,000 contacts

Activities include

- International Schools; online short course
- Annual Conference
- MSc in Behaviour Change
- Hubs for exchanging skills, ideas, resources
 - Environment & Behaviour
 - Digi-hub



<https://www.futurelearn.com/courses/behaviour-change-interventions>



This talk

1. Why are models useful?
2. Which models?
3. A simple yet comprehensive model: COM-B
4. Using this model in designing interventions in their contexts

World Health Organization



Tedros, WHO Director-General January 2022

*I want to make **behavioural insights** an essential part of how we promote and ensure better health for all.*

*As the global public health leader, WHO cannot achieve its ambitious goal of transforming global health and the health of more than 7 billion people **without a clear understanding of people's health-related behaviours***



What is Behavioural Science?

- The scientific study of behaviour
 - what enables it
 - what prevents it
 - how best to elicit and maintain it.
- It involves
 - collecting and analysing data
 - synthesising evidence
 - building **models and theories** to predict behaviour
 - developing & evaluating interventions to influence it.

Why models?

Psychological models and their distractors **nature reviews** psychology

Iris van Rooij ^{1,2}

The lack of models in psychology hinders scientific progress. To start addressing this problem, we need a clear understanding of what models are and what they are not.

1. Modelling is one of the most important activities in science.
2. Without models, scientists can easily fool themselves into thinking that they have understood and explained phenomena when they have not
3. Models are needed to develop **explanations** in terms of principles and mechanisms beyond the surface of observables.
4. Just as microscopes and telescopes help scientists to see better, models help scientists to **think better**.

Models and theories

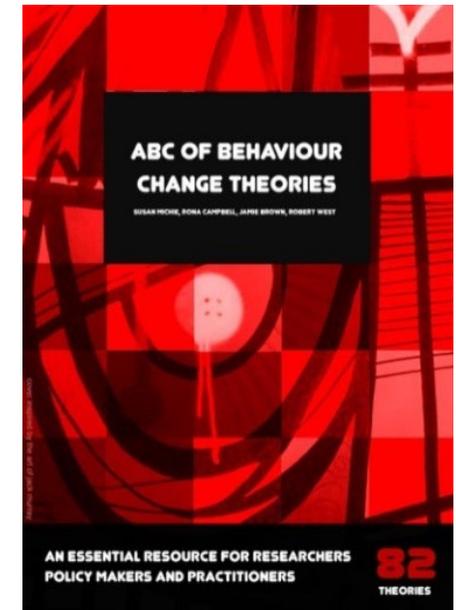
- **Models** are representations of the world – they describe
- **Theories** *explain* as well as describe the world
- **Behavioural** models and theories represent ...
 - behaviours and how they relate to their material and social context...

Multidisciplinary definition of theory

Multidisciplinary
consensus
definition, 2014

“A set of concepts and/or statements which specify how **phenomena relate** to each other.

Theory provides an **organising description** of a system that accounts for what is known, and **explains and predicts** phenomena.”



The usefulness of theory/ models



“He who loves practice without theory is like the sailor who boards ship without a rudder and compass and never knows where he may cast”

Leonardo Da Vinci, 1452-1519



“There is nothing more practical than a good theory”

Kurt Lewin, 1951

Relevance for interventions to change behaviour?

- How things **relate** to each other
 - ‘things’ - behaviours, thoughts, emotions, environmental and social variables
- In relation to interventions
 - How they **“work”** i.e. achieve their effects
 - mechanisms of action
 - ‘mediators’
 - Why they **vary**
 - across population, setting, type of behavioural target
 - ‘moderators’ or ‘modifying variables’

Grand vs mid-level vs small theories

- Grand
 - high level of abstraction, makes generalisations that apply across multiple divergent contexts
 - E.g. Theory of Evolution
- Mid-level
 - provide specific rules that can be applied to predict or control particular situations
 - E.g. Theory of Planned Behaviour
- Small
 - Working models, informal theories
 - E.g. study or programme theories

Using models and theory help in ...

1. Building knowledge about behaviour change

1. Summarises current state of knowledge
2. Structures thinking and guides research
3. Provides a framework to facilitate
 - accumulation of evidence
 - communication across research groups

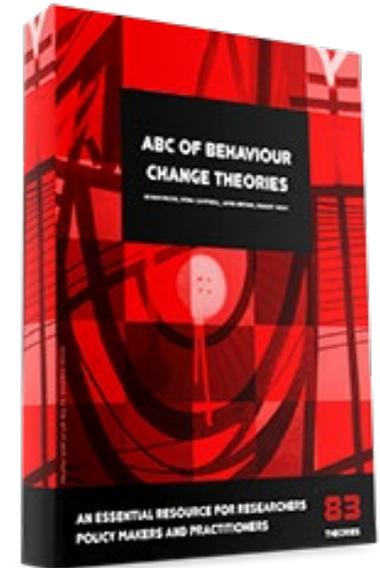
2. Developing effective interventions to enable behaviour change

1. Helps identify
 1. barriers of, and facilitators to, change
 2. mechanisms of action
 3. conditions/context necessary for their success
2. Facilitates learning from those efforts

Which models and theories?

There is a plethora of existing theories/models of behaviour

- A systematic review identified **83 theories**
- Most are only **partial** and many **overlap**
- Constructs and relationships are rarely clearly specified
- Different words may be used to describe the same things or the same words may describe different things



Michie et al (2014)
ABC of behaviour change theories.



Review

Theories of behaviour and behaviour change across the social and behavioural sciences: a scoping review

Rachel Davis, Rona Campbell , Zoe Hildon, Lorna Hobbs & Susan Michie 

Pages 323-344 | Received 29 Jan 2014, Accepted 02 Jul 2014, Accepted author version posted online: 10 Jul 2014, Published online: 08 Aug 2014

 Download citation

 <https://doi.org/10.1080/17437199.2014.941722>



Database of 76 theories represented by ontologies

A searchable database at:

<https://theory-database.appspot.com/>

Search by:

1. Name of theory/model
2. Name of construct
3. Type of relationship between constructs

Papers reporting the work

West et al (2019) *Nature Human Behaviour*

Hale et al (2020) *Wellcome Open Research*

Search

To search for a theory by name, enter a search string:

To search for a construct within a theory, enter a search string:

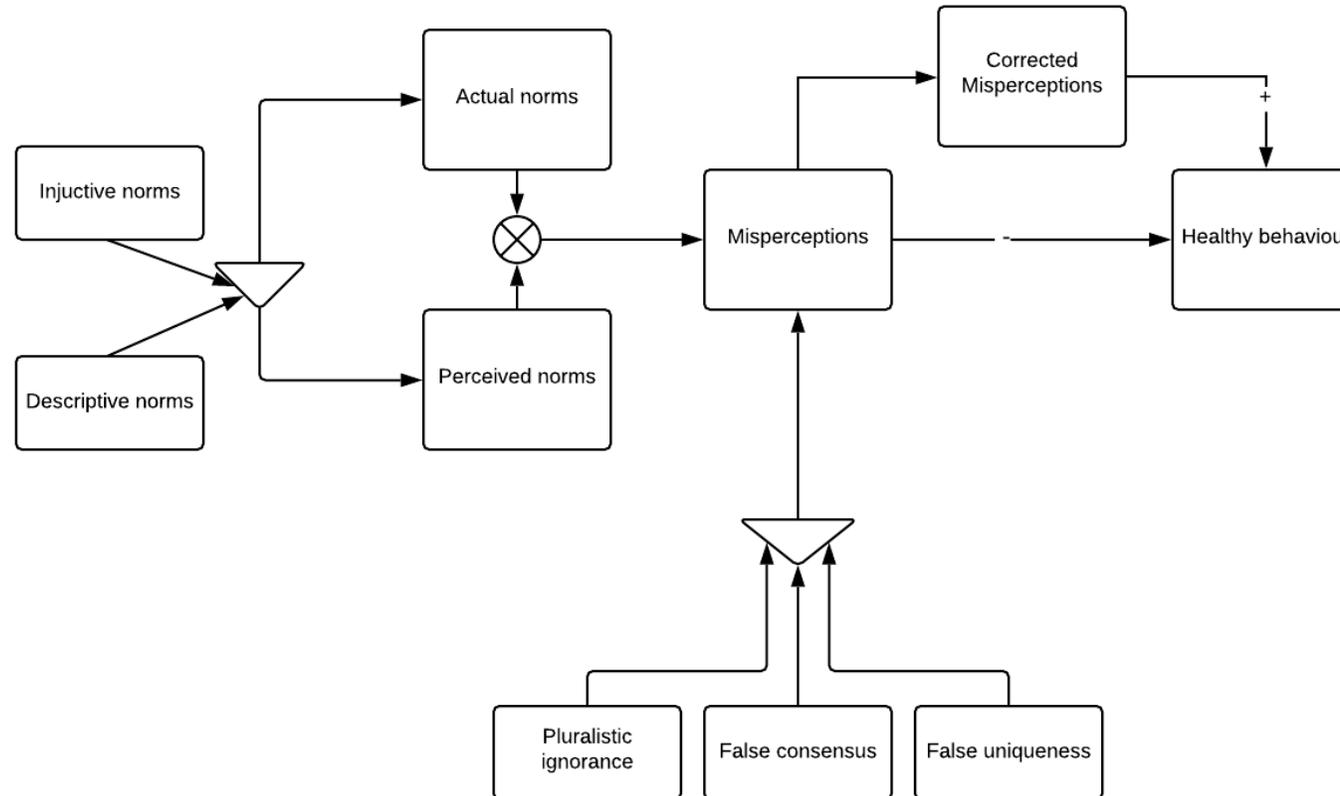
To search for a triple by relation type, enter a search string:

Browse theories

To view the content of a theory, you can select a theory from the list:

- 1: Action Theory Model of Consumption
- 2: Affective Events Theory
- 3: AIDS Risk Reduction Model
- 4: Behavioural Ecological Model of AIDS Prevention
- 5: CEOS Theory
- 6: Change Theory
- 8: COM-B
- 9: Consumption as social practices
- 10: Containment Theory
- 11: Control Theory
- 12: Differential Association Theory
- 13: Diffusion of Innovations
- 14: Ecological Model for Preventing Type 2 Diabetes

Example: Social Norms Theory



Understand the behaviour in context

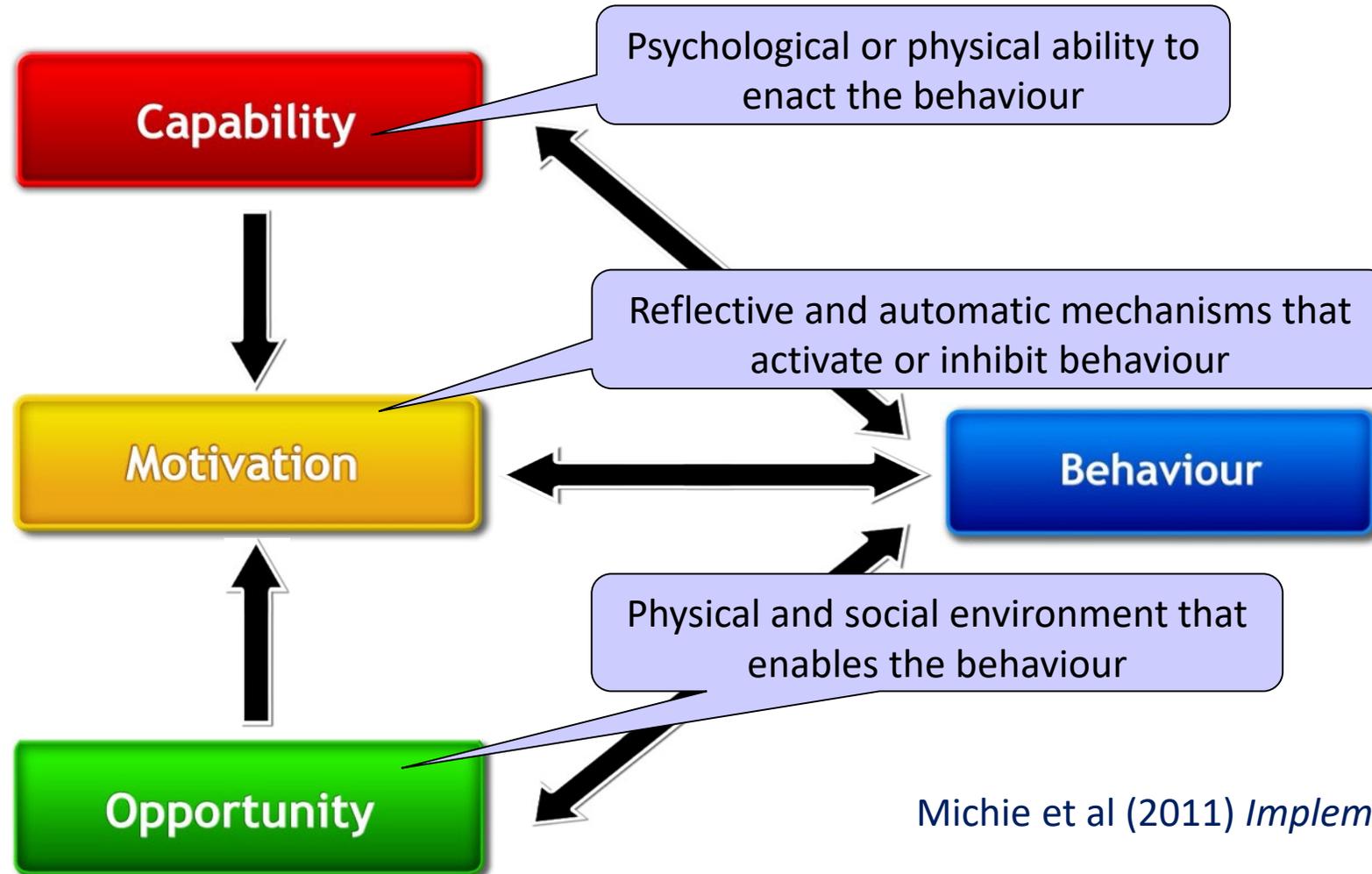
- **Why** are behaviours as they are?
- **What needs to change** for the desired behaviour/s to occur?



- Answering this is helped by a **model** of behaviour ...

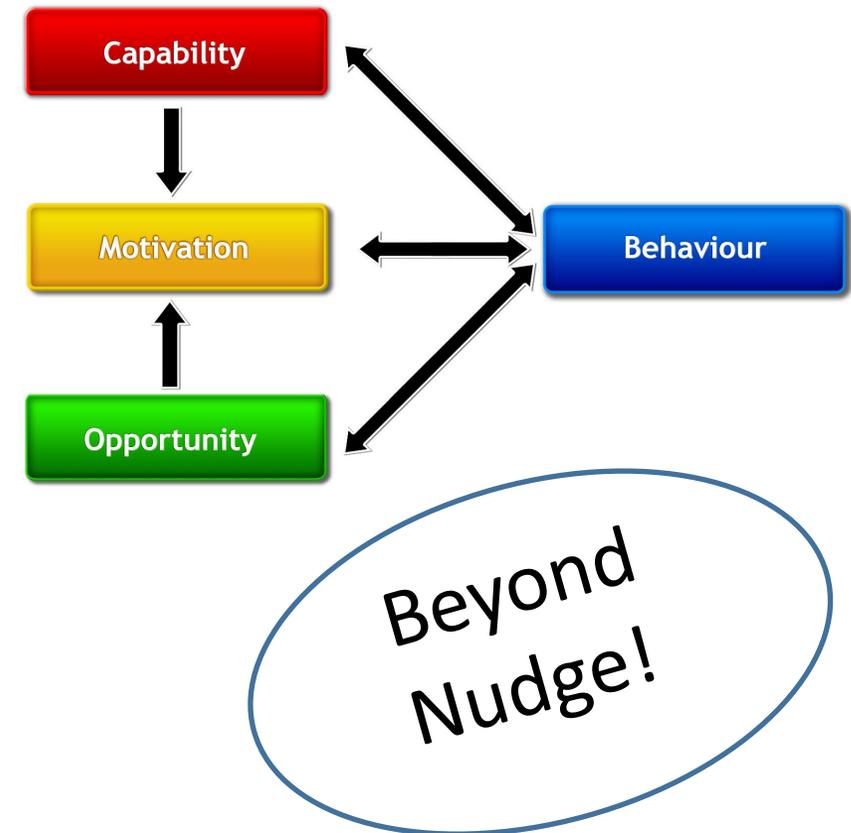
The COM-B model: Behaviour occurs as an interaction between three necessary conditions

The COM-B model: Behaviour occurs as an interaction between three necessary conditions

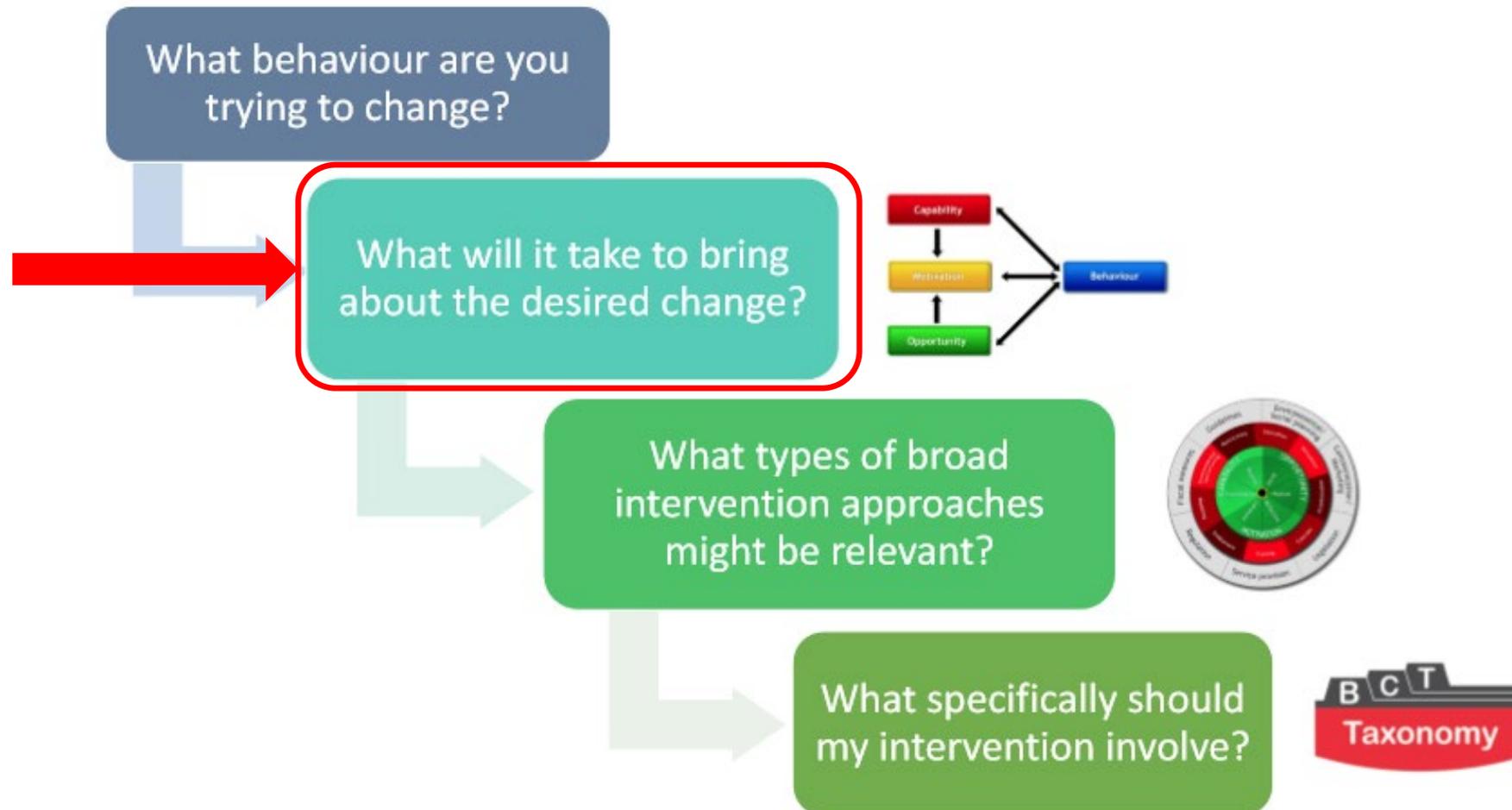


To understand behaviour ...

- For each behaviour, what needs to change?
- **Capability?**
 - Do they have the knowledge and/or skills?
- **Opportunity?**
 - Do they have the time & equipment?
- **Motivation?**
 - Do they think it is important?
 - Do they feel engaged and valued in the process?
 - Do they need to change entrenched habits?



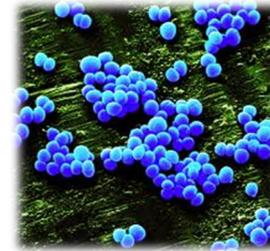
Steps for enabling behaviour change



Case Study 1: applying COM-B to solving a problem ...

Hand Hygiene in hospitals

- High levels of hospital-acquired infections – globally
- Hospital nurses not disinfecting their hands appropriately



Behaviours don't occur in isolation

- ... facilitate and compete with each other
 - within and between individuals
 - influenced by their social and material world
- Understanding the **system** of behaviours and the **influences** on them is the starting point for identifying where best to intervene and how





Opportunity

Alcohol hand rub beside every bed



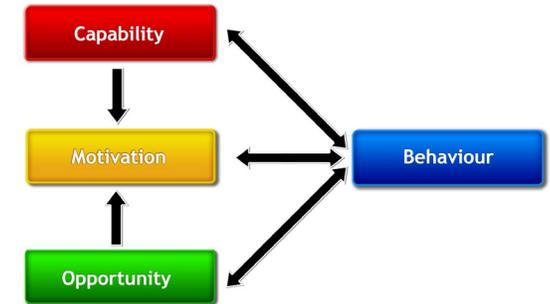
Motivation

Persuasive posters
Encouraging patients to ask



Capability

No intervention



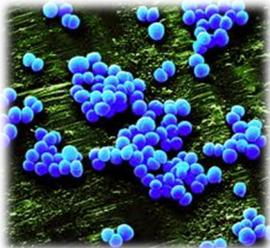
Capability

- Nurses have the **capability** to clean their hands but not to
 - pay attention to this behaviour over other competing behaviours
 - develop
 - routines for noticing when they don't clean their hands and
 - plans for acting in future
- Train staff to set goals, observe their behaviour, develop action plans on the basis of feedback
- Developed by behavioural scientists, based on behavioural theory

Evaluation: findings from 60 wards in 16 hospitals



Use of soap and alcohol hand rub tripled from 21.8 to 59.8 ml per patient bed day¹



Rates of MRSA bacteraemia and C difficile infection decreased¹



Giving 1-1 feedback led to staff being 13-18% more likely to clean their hands²

Case Study 2: adapting COM-B to immunisation ...



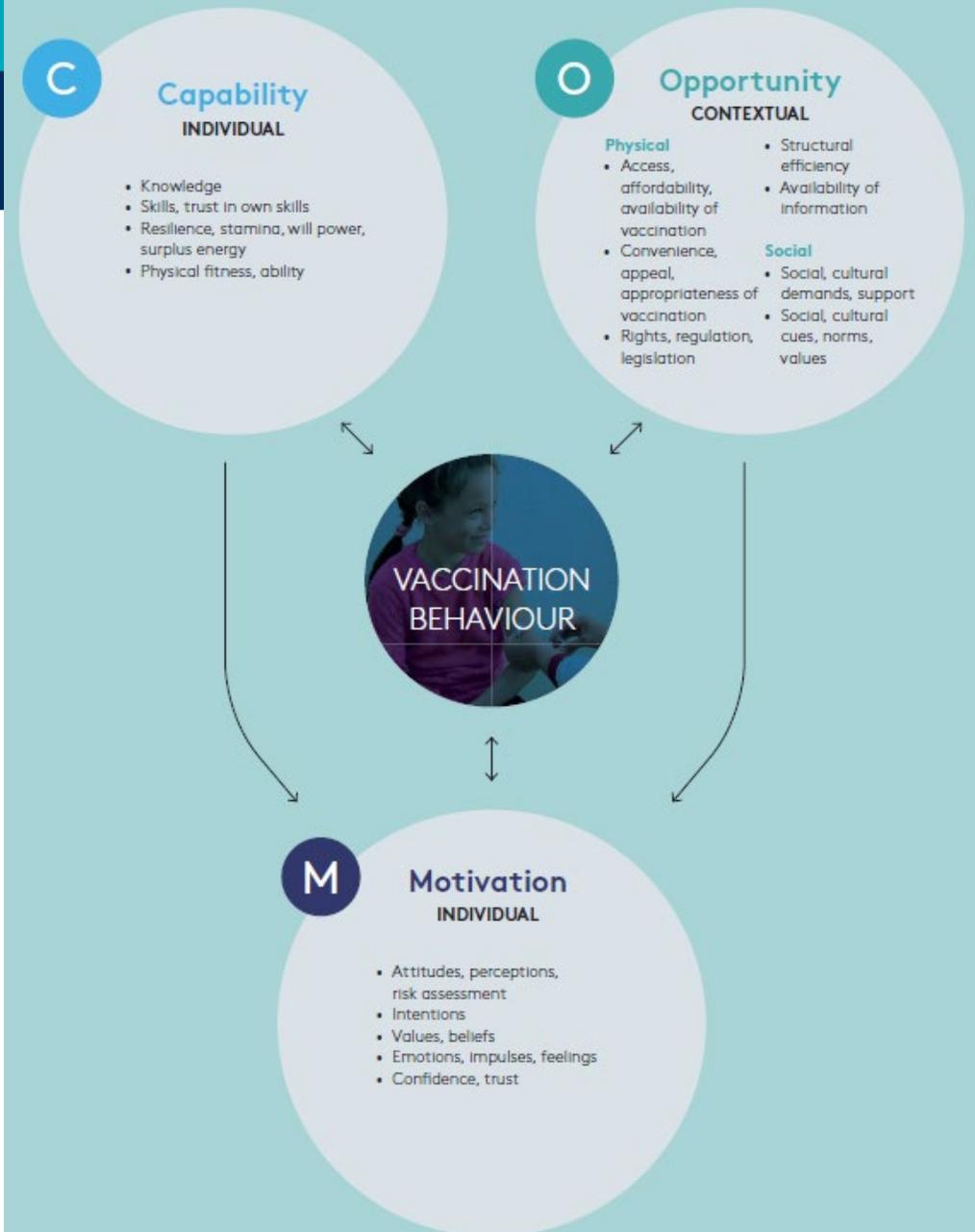
Adapting ...

The COM-B model was originally developed for any behaviour in any setting and is adapted in this document for vaccination behaviours.

Adapt models to context

However, some adaptation to the model was necessary, based on the results of testing in countries. The two subcategories for motivation (automatic and reflective) and the two subcategories for capability (psychological and physical) are closely interlinked for vaccination. Distinguishing between them in the analysis and in the design of interventions in experience is not critical, so it was decided not to divide capability and motivation into subcategories.

Fig. 6. The COM-B Model adapted to vaccination

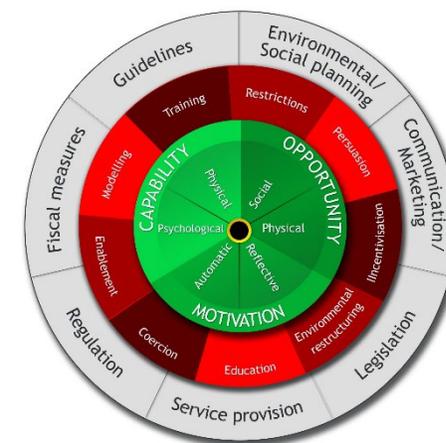
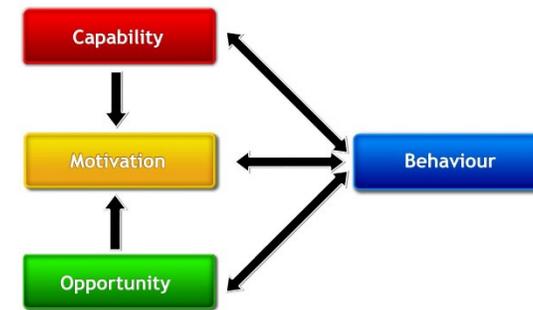


Enabling behaviour change is helped by ...

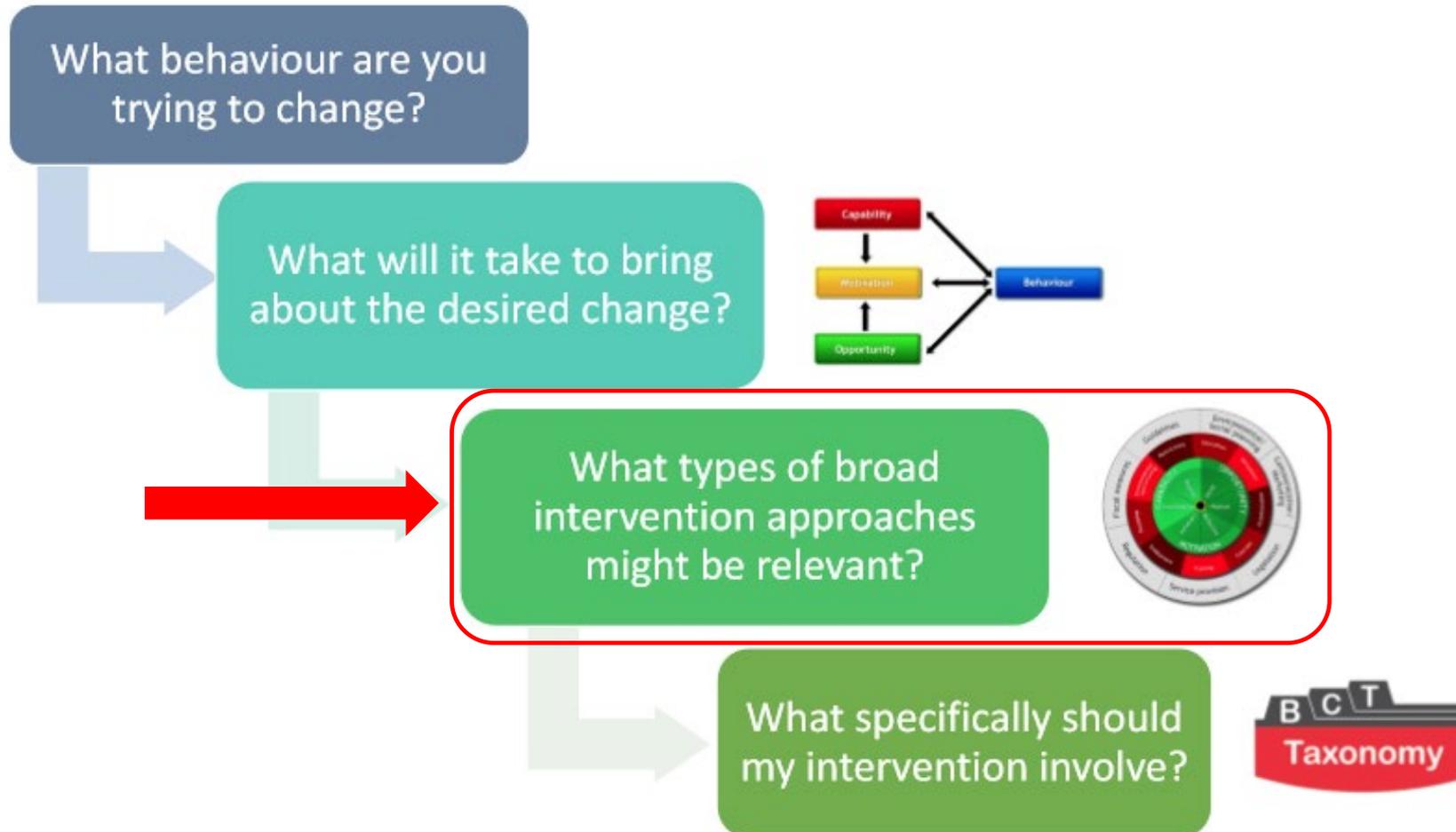
A **model of behaviour** for understanding behaviour in its context

linked to

A **framework** for designing interventions and policies to change behaviour



Steps for enabling behaviour change



**Frameworks simplify
complexity**

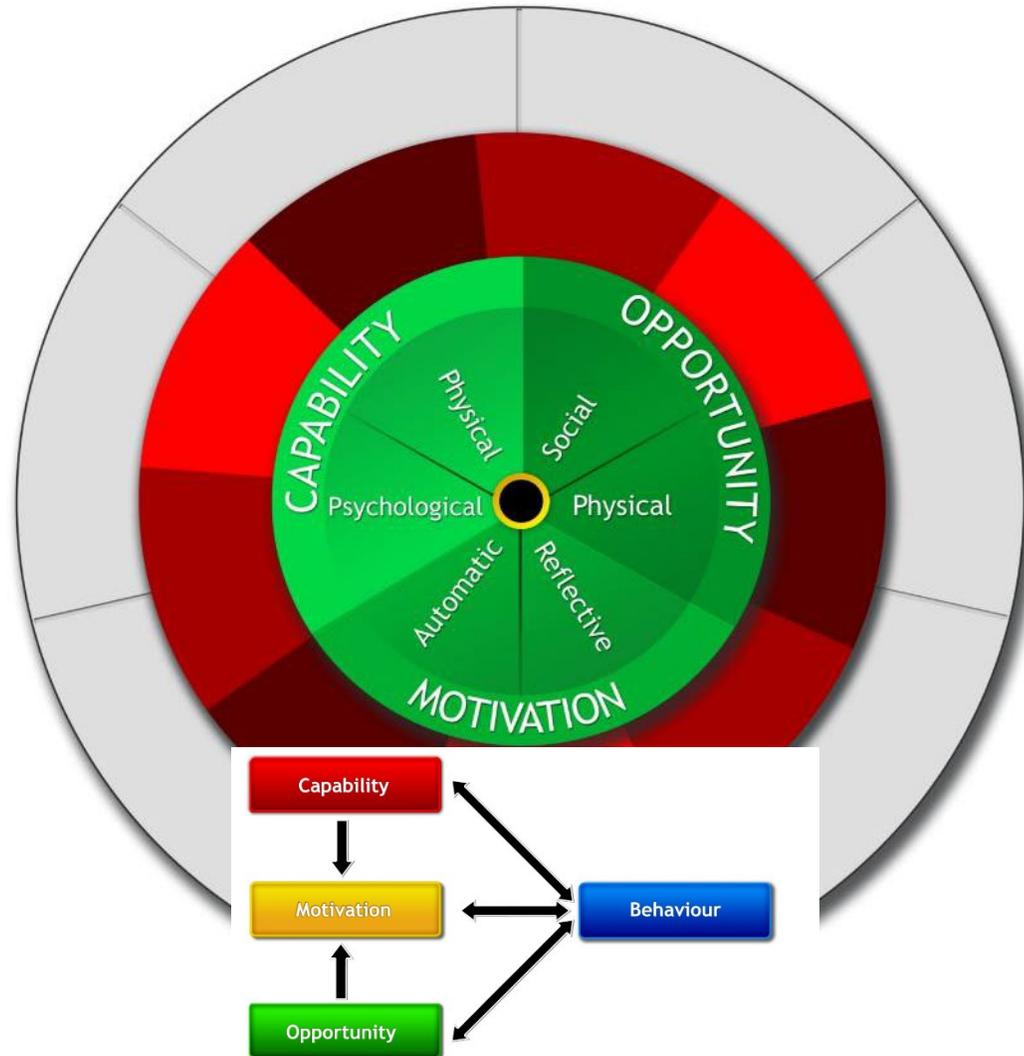
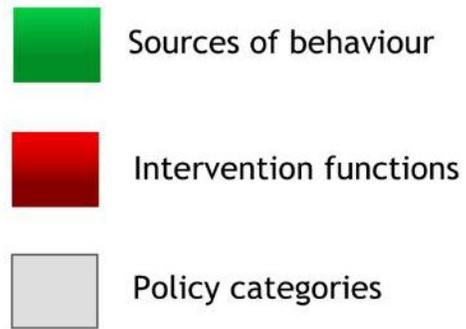
Frameworks of behaviour change

- Systematic literature review identified 19 frameworks of behaviour change **interventions** and **policies**
 - related to health, environment, culture change, social marketing etc.
 - none met criteria of comprehensive, coherent, linked to model of behavior
- So Synthesised the 19 frameworks
- ‘The Behaviour Change Wheel’

Michie et al (2011) The Behaviour Change Wheel: a new method for characterising and designing behaviour change interventions, *Implementation Science*.

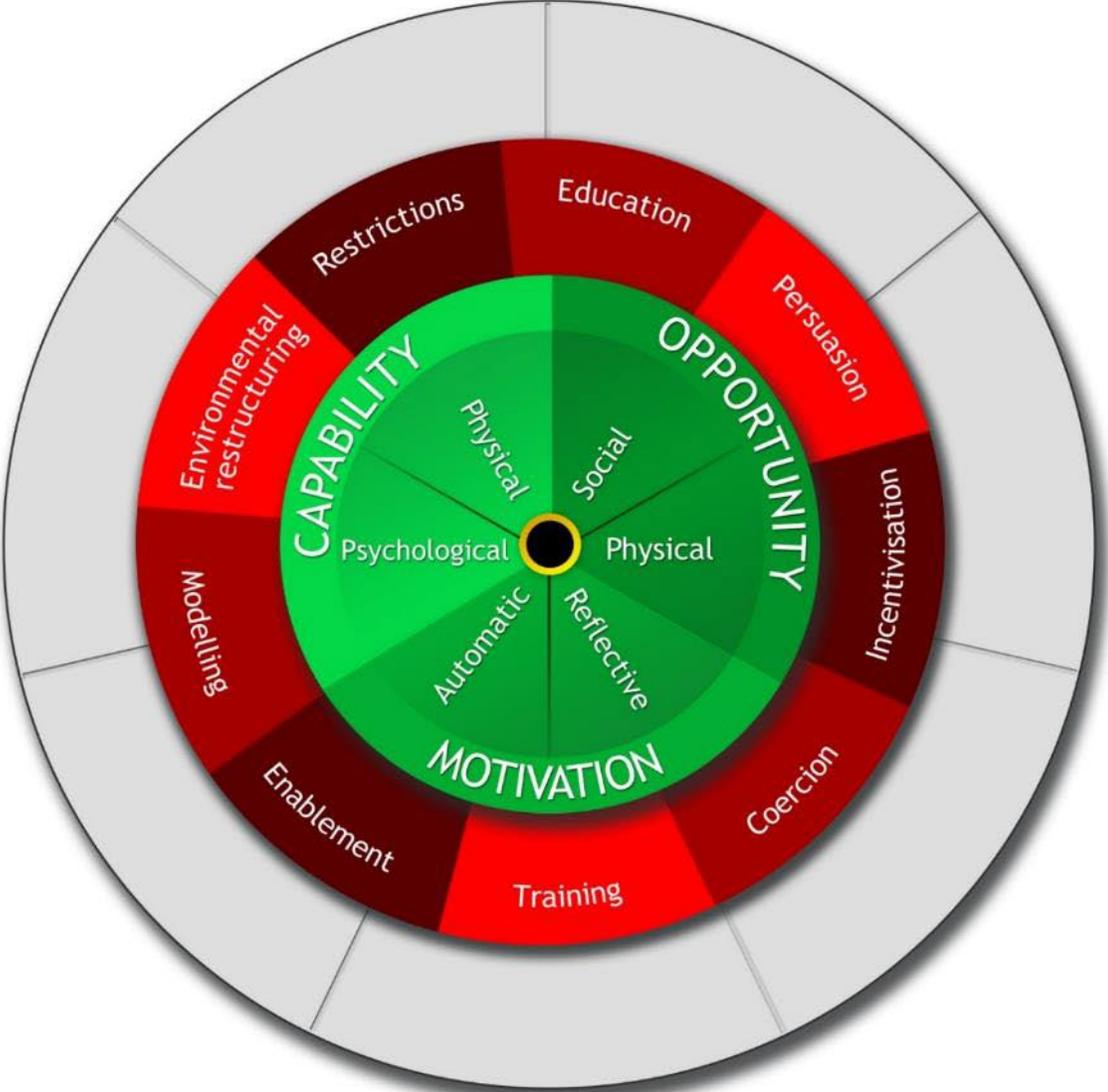


Behaviour at the hub COM-B

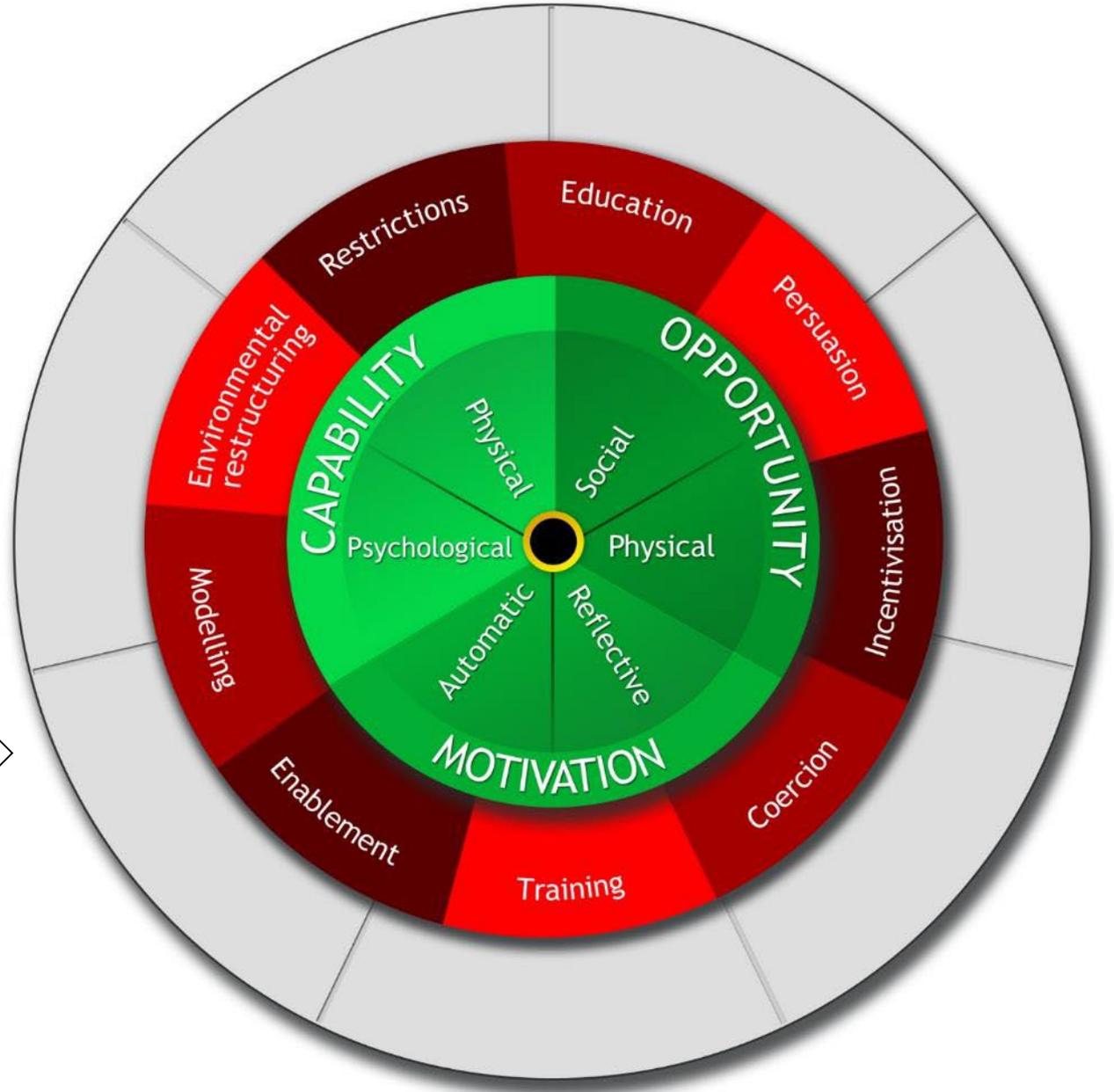
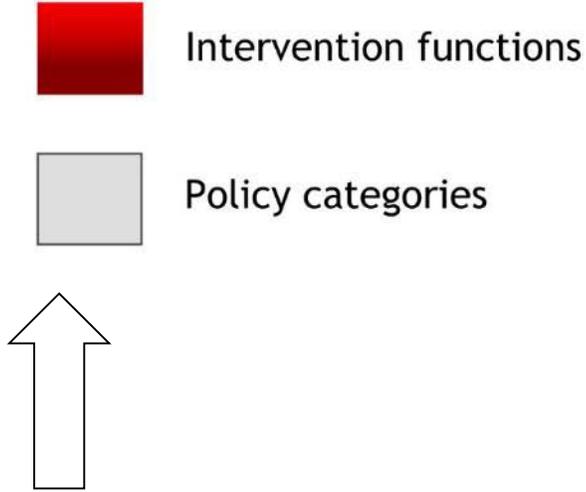


Nine intervention types

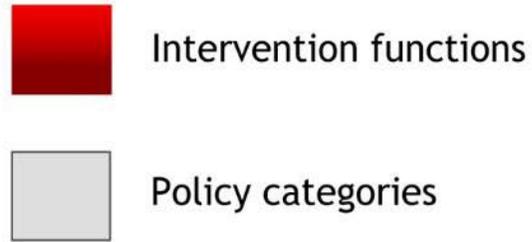
-  Sources of behaviour
-  Intervention functions
-  Policy categories



Add policies to
maintain change
long-term

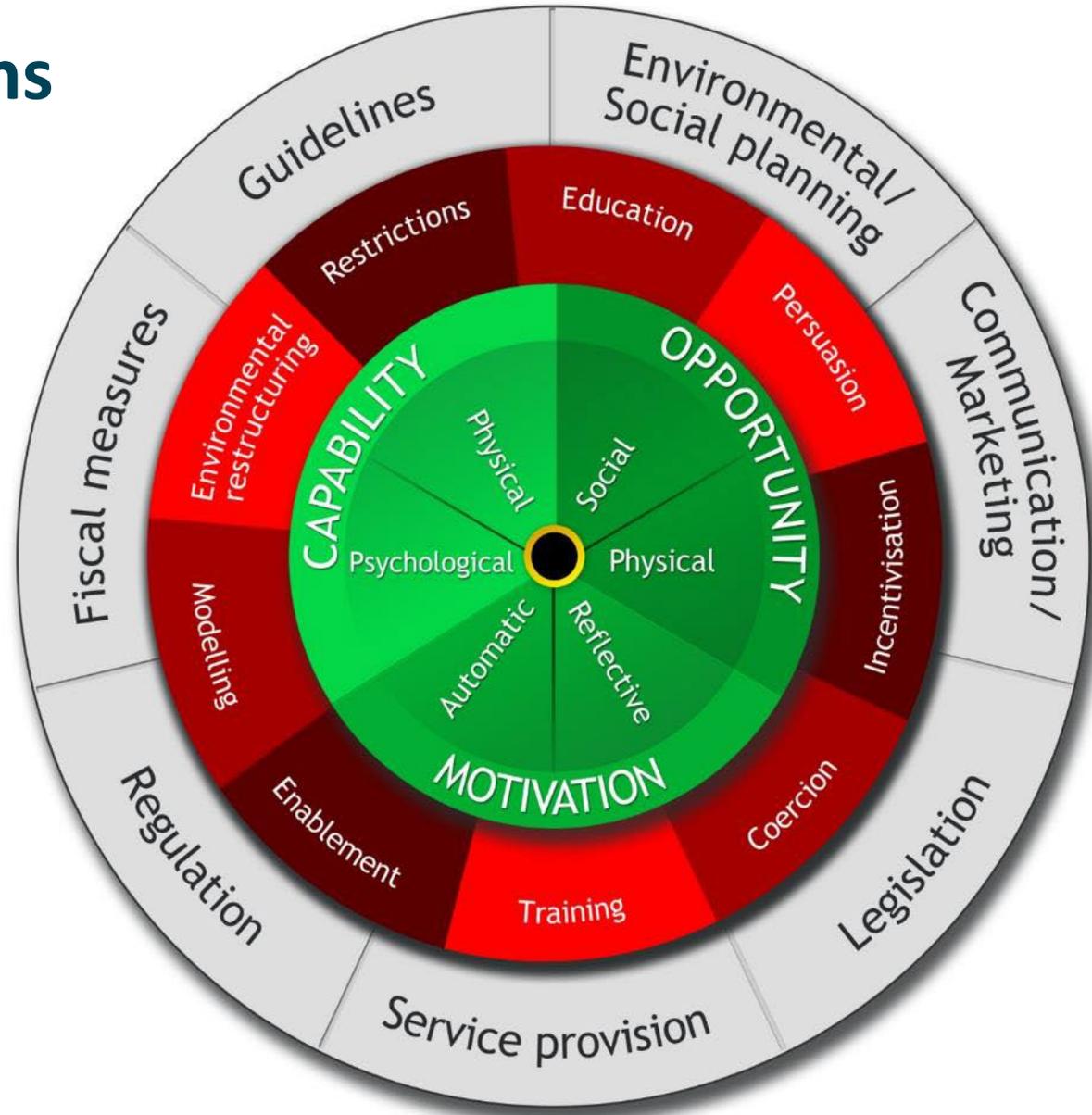


Seven policies options

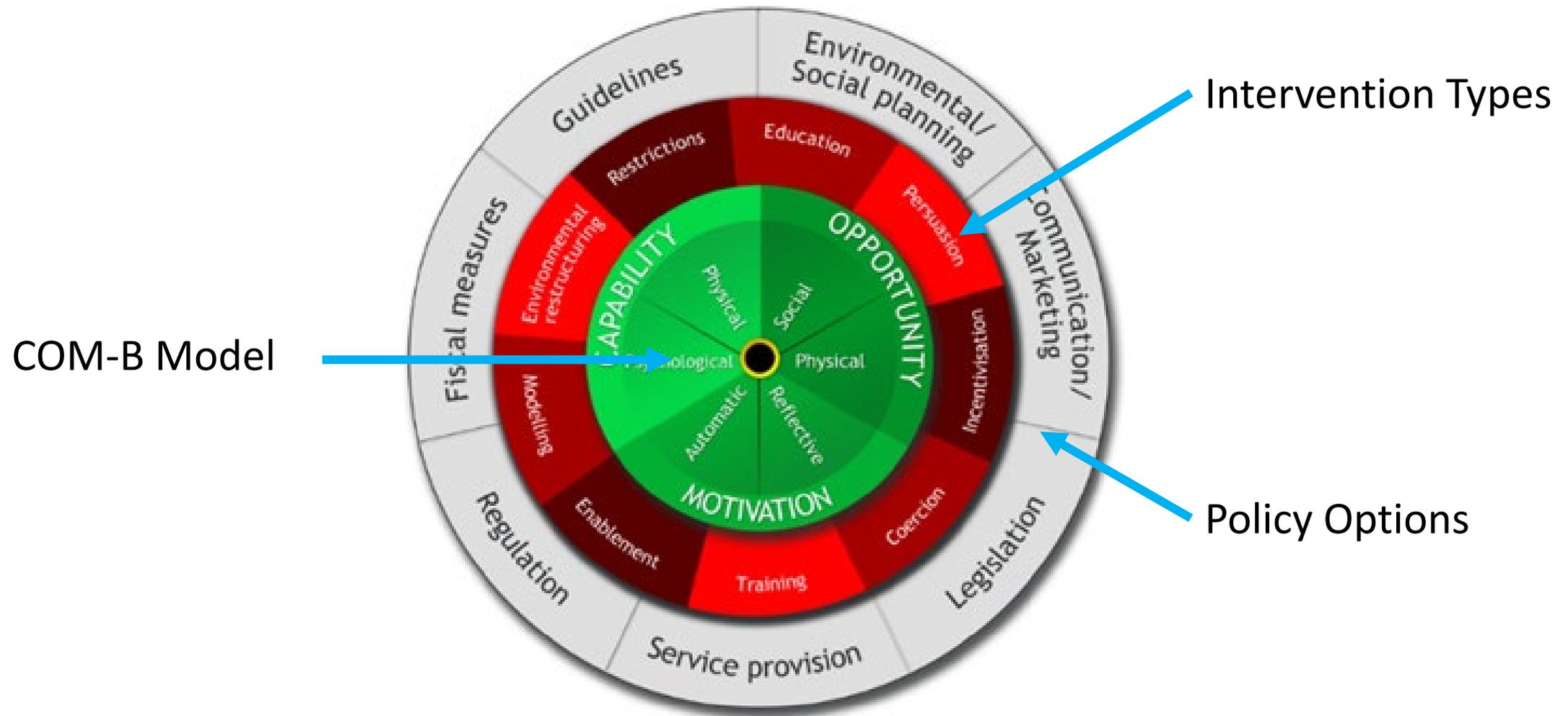


Policies:

- generated by authorities
- maintain change **long-term**



The Behaviour Change Wheel



Questions to ask to understand and change behaviour

• For each behaviour, what needs to change?

• **Capability?**

- Do they have the knowledge and/or skills?

• **Opportunity?**

- Do they have the time & equipment?

• **Motivation?**

- Do they think it is important?
- Do they feel engaged and valued in the process?
- Do they need to change entrenched habits?



Types of Intervention likely to be effective

• **Capability**

- Education
- Training
- Guidelines

• **Opportunity**

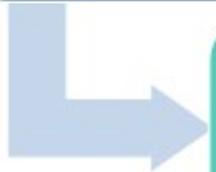
- Environmental restructuring
- Restrictions

• **Motivation**

- Persuasion
- Incentivisation
- Coercion (e.g. fines)

This talk

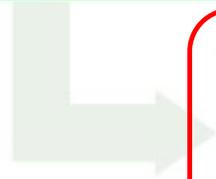
What behaviour are you trying to change?



What will it take to bring about the desired change?



What types of broad intervention approaches might be relevant?



What specifically should my intervention involve?



Behaviour change techniques (BCTs)



- Have the *potential* to be the ‘active ingredients’ of an intervention
- Aim to be the smallest components that on their own can bring about change
- Observable and replicable
- Can be used alone or in combination

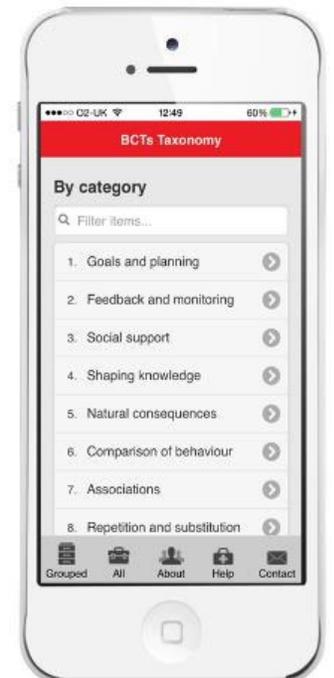
ann. behav. med. (2013) 46:81–95
DOI 10.1007/s12160-013-9486-6

ORIGINAL ARTICLE

The Behavior Change Technique Taxonomy (v1) of 93 Hierarchically Clustered Techniques: Building an International Consensus for the Reporting of Behavior Change Interventions

Susan Michie, DPhil, CPsychol · Michelle Richardson, PhD · Marie Jol CPsychol · Charles Abraham, DPhil, CPsychol · Jill Francis, PhD, CPs Wendy Hardeman, PhD · Martin P. Eccles, MD · James Cane, PhD · Caroline E. Wood, PhD

Published online: 20 March 2013
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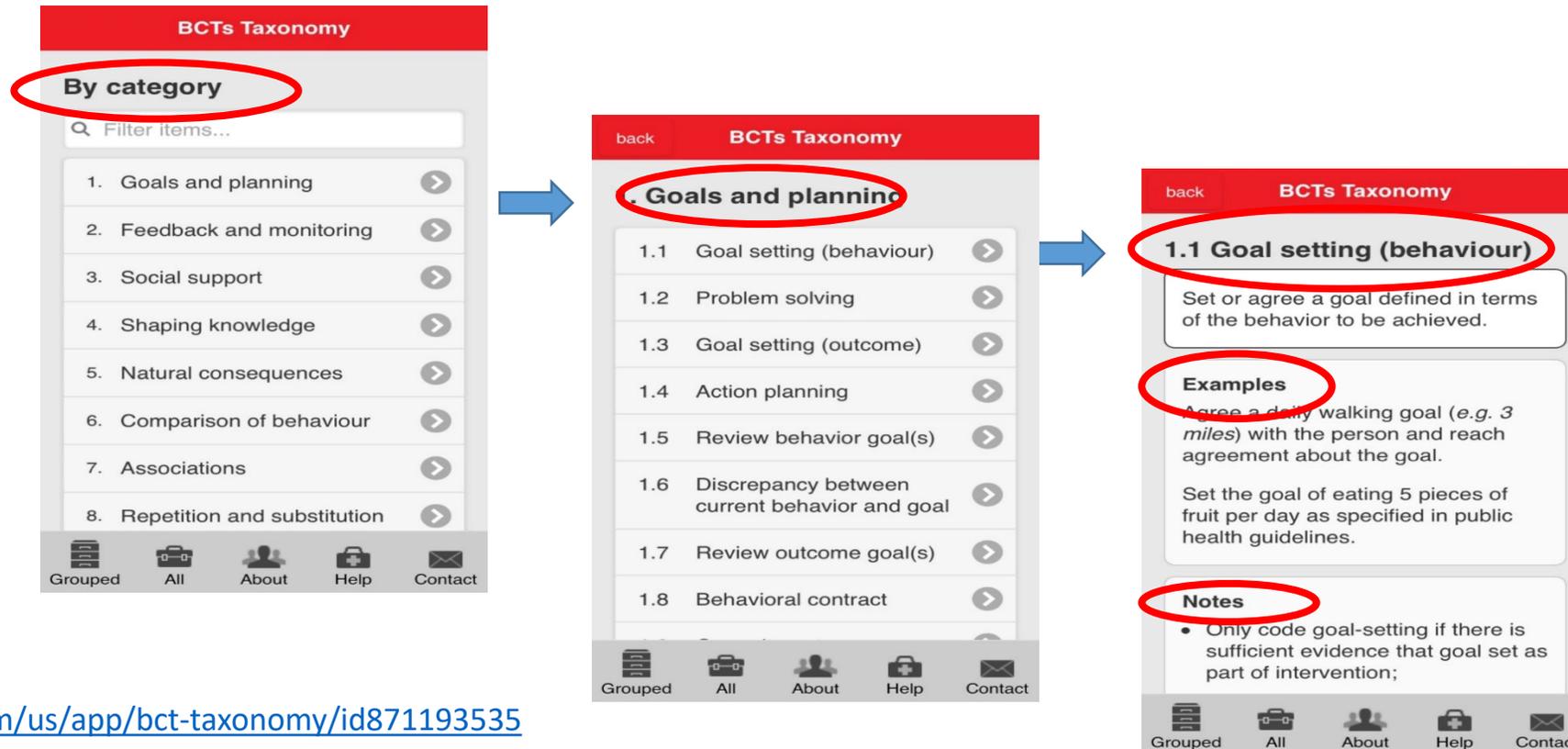
BCT Taxonomy v1: 93 items in 16 groupings



Page	Grouping and BCTs	Page	Grouping and BCTs	Page	Grouping and BCTs
1	1. Goals and planning	8	6. Comparison of behaviour	16	12. Antecedents
	1.1. Goal setting (behavior)		6.1. Demonstration of the behavior		12.1. Restructuring the physical environment
	1.2. Problem solving		6.2. Social comparison		12.2. Restructuring the social environment
	1.3. Goal setting (outcome)		6.3. Information about others' approval		12.3. Avoidance/reducing exposure to cues for the behavior
	1.4. Action planning				12.4. Distraction
	1.5. Review behavior goal(s)				12.5. Adding objects to the
	1.6. Discrepancy between current behavior and goal	9	7. Associations		
	1.7. Review outcome goal(s)		7.1. Prompts/cues		

No.	Label	Definition	Examples
1. Goals and planning			
1.1	<i>Goal setting (behavior)</i>	Set or agree on a goal defined in terms of the behavior to be achieved <i>Note: only code goal-setting if there is sufficient evidence that goal set as part of intervention; if goal unspecified or a behavioral outcome, code 1.3, Goal setting (outcome); if the goal defines a specific context, frequency, duration or intensity for the behavior, <u>also</u> code 1.4, Action planning</i>	Agree on a daily walking goal (e.g. 3 miles) with the person and reach agreement about the goal Set the goal of eating 5 pieces of fruit per day as specified in public health guidelines

BCTTv1 App: illustrative screenshots



<https://apps.apple.com/us/app/bct-taxonomy/id871193535>

first screen shows 8 of 16 groupings;

second screen shows the BCTs for grouping 1 (Goals and Planning);

third screen shows the **definition, examples and notes** for BCT1.1 (goal setting (behaviour))

Selecting appropriate intervention types/BCTs for your setting: APEASE criteria

Affordability

PRACTICABILITY

Effectiveness/cost-effectiveness

ACCeptability

- public
- professional
- political

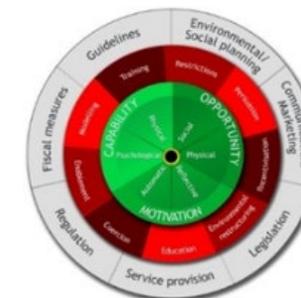
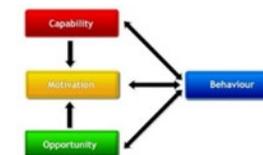
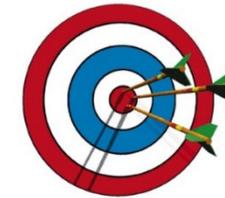
Side-effects/safety

Equity



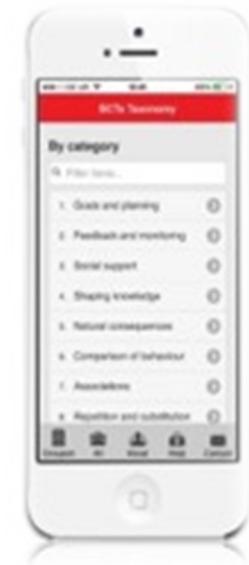
Summary: Key steps in intervention design...

1. Identify your target behaviour **precisely**
 - Who needs to do what, when, where, how
2. Recognise that behaviours are part of a **system**
 - of other behaviours within and between people
3. Understand the **behaviour in context**
 - A good behavioural diagnosis is more likely to lead to effective interventions
4. Use frameworks to guide the intervention
e.g. the **Behaviour Change Wheel**

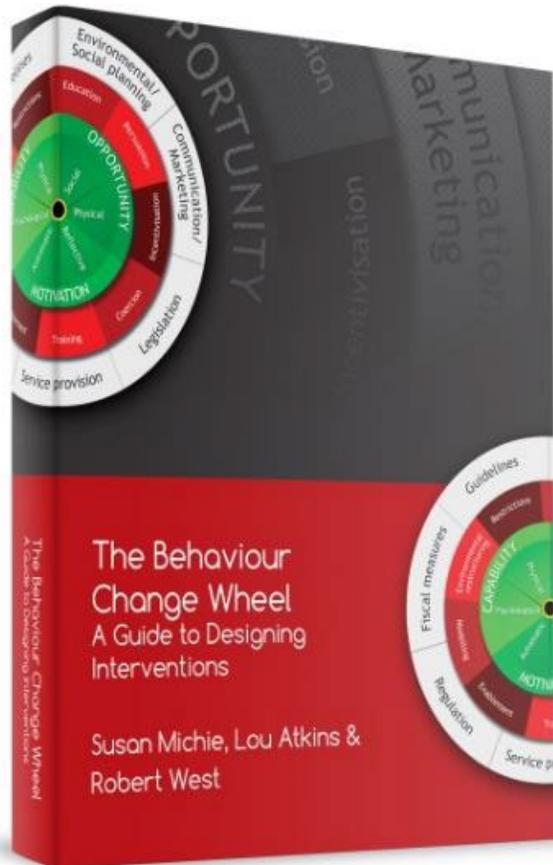


Key steps *continued*

5. Specific behaviour change **techniques**
 - Taxonomy of 93 behaviour change techniques
([Michie et al, 2013, 2015](#))
6. Select techniques for **local context** using APEASE criteria



Step by step guides ...



Achieving Behaviour Change: guides for local and national government and partners



<https://www.ucl.ac.uk/behaviour-change/resources/achieving-behaviour-change-guides-local-and-national-government-and-partners>

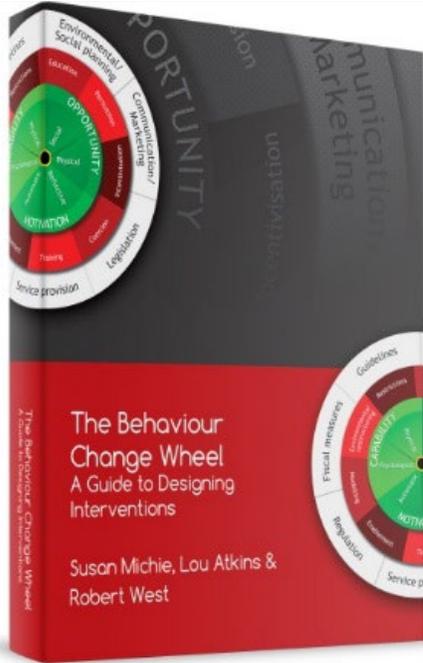


<https://silverbackpublishing.org/products/behaviour-change-wheel>

Resources



www.ucl.ac.uk/behaviour-change



Achieving Behaviour Change: guides for local and national government and partners

FREE!

<https://www.ucl.ac.uk/behaviour-change/resources/achieving-behaviour-change-guides-local-and-national-government-and-partners>

UCL
Behaviour Change Interventions: Introductory Principles and Practice

4.8 (24 reviews)

Explore behaviour change frameworks, and how they can be used to enable behaviour change in yourself and others.

Join now - starts in Sep

All proceeds go to further development

<https://www.futurelearn.com/courses/behaviour-change-interventions/1>

Questions and Discussion

Further details

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www.ucl.ac.uk/behaviour-change/
[@UCLBehaveChange](https://twitter.com/UCLBehaveChange)