



Understanding and improving KT interventions: behaviour change techniques

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Contribution of behavioural science to KT

- Implementation depends on behaviour
 - Health professionals, managers, support staff, policy-makers, commissioners
- Increasing implementation depends on changing behaviour
 - Evidence doesn't implement itself
 - Guidelines don't implement themselves
- Need to understand why behaviour is as it is
 - And what needs to change to change behaviour
 - at individual, group, organisational levels

- **How can we most effectively intervene to improve implementation (KT)?**
 - Know what works
 - Good description
 - Understand what works
 - Good theory

We need good descriptions to ...

- **Report findings** so readers know what was done
 - to interpret evidence
- **Apply** evidence
 - to implement interventions found to be effective
- **Build** evidence
 - to replicate findings and synthesise evidence across trials

The current situation

- Interventions often “complex”
 - several, potentially interacting, techniques
- Poorly described
 - Interventions often described vaguely e.g. “behavioural counselling”
 - Equivalent of “big red round pill”
- Need to specify intervention components in sufficient detail to identify active ingredients
- We lack a shared language for describing the content of interventions



The same words may be used with different meanings

e.g. ***behavioural counselling***

Tate, et al. (*JAMA* 2003).
Effects of internet
behavioral counseling on
weight loss in adults at
risk of Type 2 diabetes

- Feedback (on diaries)
- Reinforcement
- Recommendations for change
- Answers to questions
- General support

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<ul style="list-style-type: none"> •Feedback (on diaries) •Reinforcement •Recommendations for change •Answers to questions •General support 	<ul style="list-style-type: none"> •Assessment of readiness to change •Attitude change •Goal setting •Specific behavioural advice 	

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Good practice for scientific reporting

- CONSORT guidelines for reporting complex interventions state:
 - ‘evaluators should report precise details of interventions as actually administered’
- Precise details include: (*Davidson et al., 2004*)
 - Characteristics
 - of those delivering the intervention
 - of the recipients
 - of the setting (e.g. Worksite)
 - Mode of delivery (e.g. Face-to-face)
 - Intensity (e.g. Contact time)
 - Duration (e.g. Number of sessions)
 - Adherence to protocols when delivering
 - **THE CONTENT OR ELEMENTS OF AN INTERVENTION**

What is the
‘content or
elements’ of
an
intervention?

We need a shared language for describing 'active ingredients' of interventions to ...

- **Replicate** effective interventions
- **Discard** ineffective interventions
- Check **fidelity** of intervention delivery
- Validly **synthesize** evidence about behaviour change interventions
- Propose **how** interventions work (causal mechanisms underlying behaviour change)

We need a shared language for describing 'active ingredients' of interventions

- **Replicate** effective interventions
- **Discard** ineffective interventions
- Check **fidelity**
- **Validate**
 - Method must be accessible and supported across
 - disciplines and countries
 - behaviors and contexts
- **Understand** how interventions work (causal mechanisms underlying behaviour change)

Original Reliable BCT Taxonomy

1. General information
2. Information on consequences
3. Information about approval
4. Prompt intention formation
5. Specific goal setting
6. Graded tasks
7. Barrier identification
8. Behavioral contract
9. Review goals
10. Provide instruction
11. Model/ demonstrate
12. Prompt practice
13. Prompt monitoring
14. Provide feedback
15. General encouragement
16. Contingent rewards
17. Teach to use cues
18. Follow up prompts
19. Social comparison
20. Social support/ change
21. Role model
22. Prompt self talk
23. Relapse prevention
24. Stress management
25. Motivational interviewing
26. Time management

Original Reliable BCT Taxonomy

1. General information
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9. Review goals
10. Provide instruction
11. Model/ demonstrate
12. Prompt practice
13. Prompt monitoring
14. Provide feedback

Involves detailed planning of what the person will do including, at least, a very specific definition of the behaviour e.g., frequency (such as how many times a day/week), intensity (e.g., speed) or duration (e.g., for how long for). In addition, at least one of the following contexts i.e., where, when, how or with whom must be specified. This could include identification of sub-goals or preparatory behaviours and/or specific contexts in which the behaviour will be performed.

19. Social comparison
20. Social support/ change
21. Role model
22. Prompt self talk
23. Relapse prevention

The person is asked to keep a record of specified behaviour/s. This could e.g. take the form of a diary or completing a questionnaire about their behaviour.

“Taxonomies” of BCTs

- Physical activity/healthy eating/mixed : **26** BCTs
Abraham & Michie , 2008
- Physical activity & healthy eating: **40** BCTs
Michie et al, Psychology & Health, 2011
- Smoking cessation: **53** BCTs
Michie et al, Annals behavioural Medicine, 2010
- Reducing excessive alcohol use: **42** BCTs
Michie et al, Addiction, 2012
- Condom use: **47** BCTs
Abraham et al, 2012
- General behaviour change: **137** BCTs
Michie et al, Applied Psychology: An International Review, 2008
- Competence framework: **89** BCTs
Dixon & Johnston, 2011

STUDY PROTOCOL

Open Access

Strengthening evaluation and implementation by specifying components of behaviour change interventions: a study protocol

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Website: www.ucl.ac.uk/health-psychology/BCTtaxonomy/index.php

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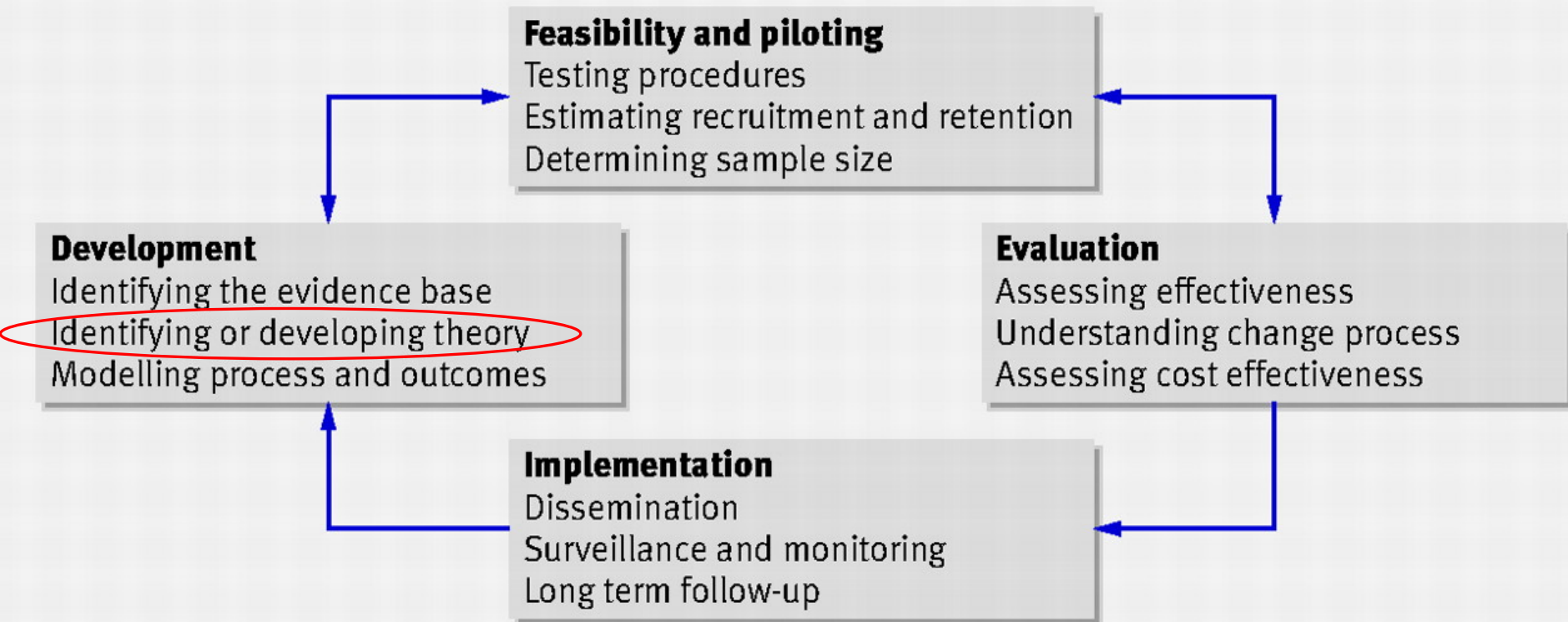
BCT Taxonomy v1

- 54 international experts in behaviour change in consensus and reliability exercises
- 93 BCTs
 - Better labels and definitions; 16 groupings
 - Submitted, under review, available for use
- Future work
 - Reliability assessment
 - 48 coders being trained to specify published intervention descriptions in terms of BCTs
 - Comparison of writing intervention descriptions with, and without, BCT Taxonomy v1

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MRC Guidance for developing and evaluating complex interventions

Craig et al, 2009 *BMJ*



Why theory?

- Some evidence that theory-based interventions more **effective**
- Provides a **framework** to facilitate
 - accumulation of evidence
 - communication across research groups
- Identifies **mechanisms** of action
 - evidence that can be used to improve interventions

An example of applying theory to evidence synthesis

Specifying content in terms of component behaviour change techniques (BCTs)

- allows **theoretically based categorisation** & analysis

Example: Cochrane review of Audit & Feedback

Without explicit theory

Audit and feedback: effects on professional practice and health care outcomes (Review)

2006


Jamtvedt G, Young JM, Kristoffersen DT, O'Brien MA, Oxman AD

With theory

Audit and feedback: effects on professional practice and healthcare outcomes (Review)

2012

Ivers N, Jamtvedt G, Flottorp S, Young JM, Odgaard-Jensen J, French SD, O'Brien MA, Johansen M, Grimshaw J, Oxman AD



2006 Cochrane review *Jamtvedt et al*

- “Any summary of clinical performance of health care over a specified period of time” 118 trials
- A&F is typically effective
 - Effects vary
 - 16% decrease to 70% increase in compliance
 - What explains variability?
- Types of A & F
 - “intensive”, “moderate” or “non-intensive”
 - What do these terms mean?

- **Intensive A&F**
 - (individual recipients) AND ((verbal format) OR (a supervisor or senior colleague as the source)) AND (moderate or prolonged feedback)
- **Non-intensive**
 - ((group feedback) NOT (from a supervisor or senior colleague)) OR ((individual feedback) AND (written format) AND (containing information about costs or numbers of tests without personal incentives))
- **Moderate**
 - (any other combination of characteristics than described in Intensive or Non-intensive group)

A theory-based approach

1. Conceptual analysis of intervention
 - Identify component techniques
 - Identifying underlying theoretical framework
2. Generate theory-based hypotheses about effectiveness



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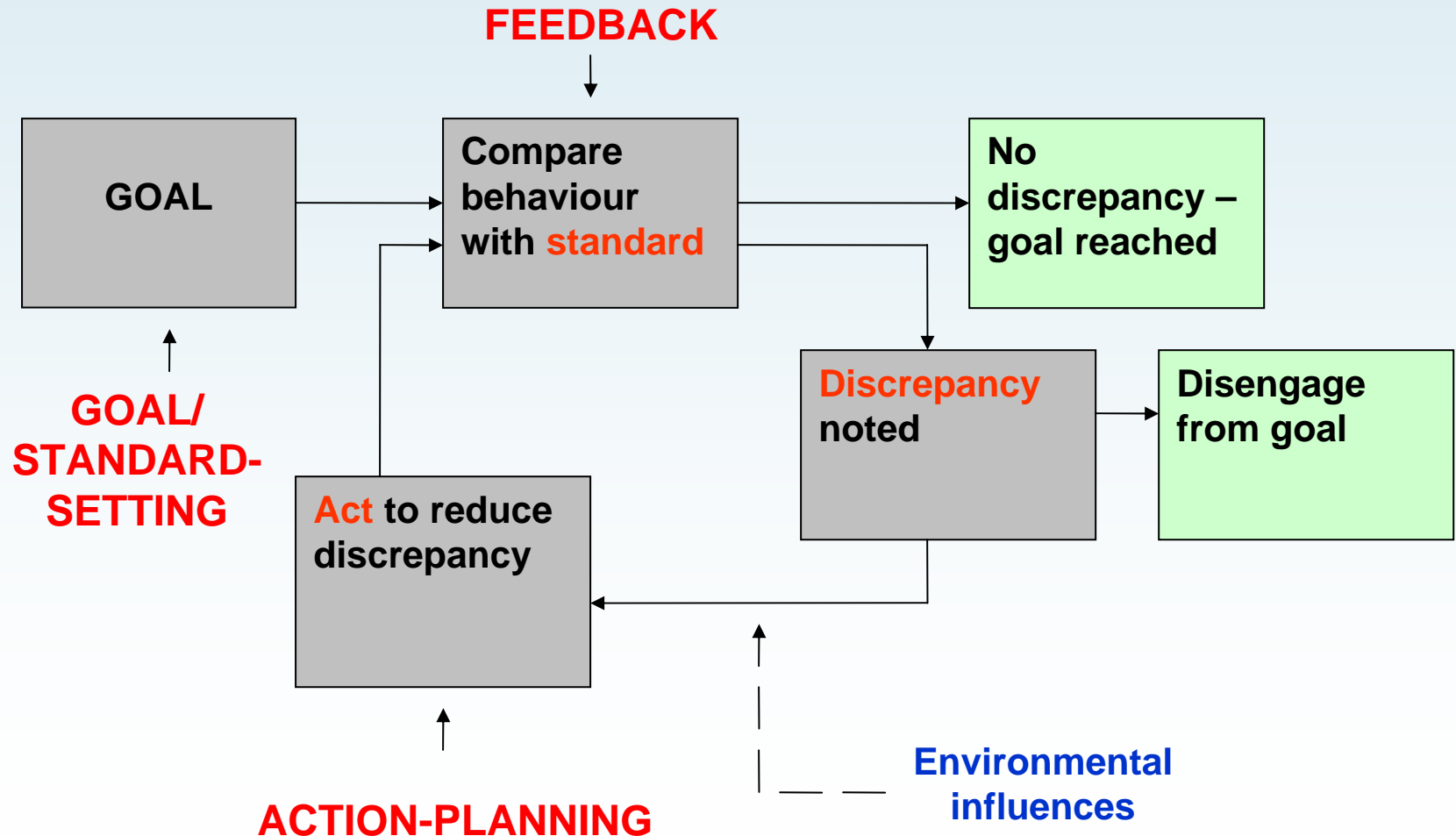
Using theory to synthesise evidence from behaviour change interventions: The example of audit and feedback

Benjamin Gardner^{a,*}, Craig Whittington^a, John McAteer^a, Martin P. Eccles^b, Susan Michie^a

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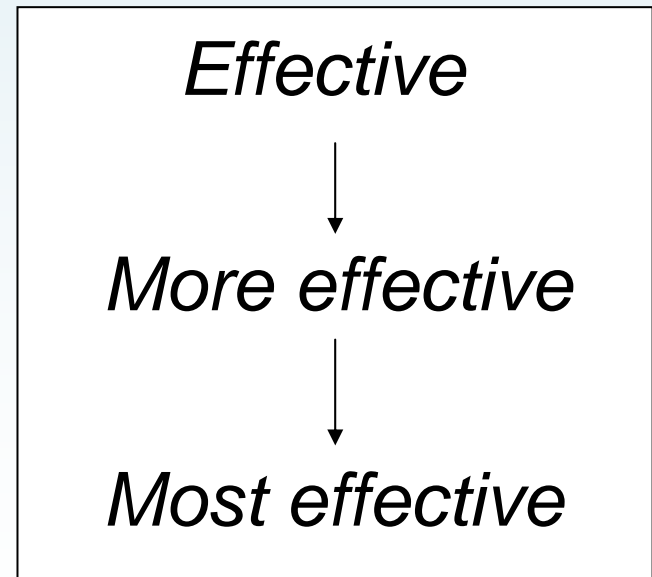
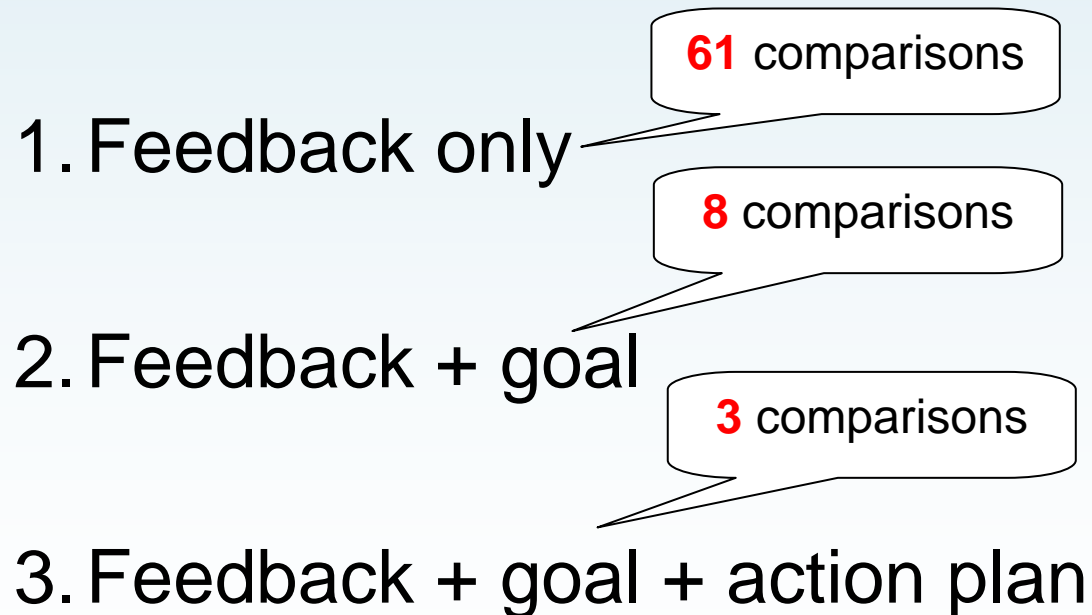
^bNewcastle University, UK

Self-regulation (control) Theory: *Carver & Scheier, 82*



Theory-based hypotheses

- Feedback more effective when goal/target is set
- Most effective where goal/target and action plan



Example: Cochrane review of Audit & Feedback

Without explicit theory



With theory

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Findings

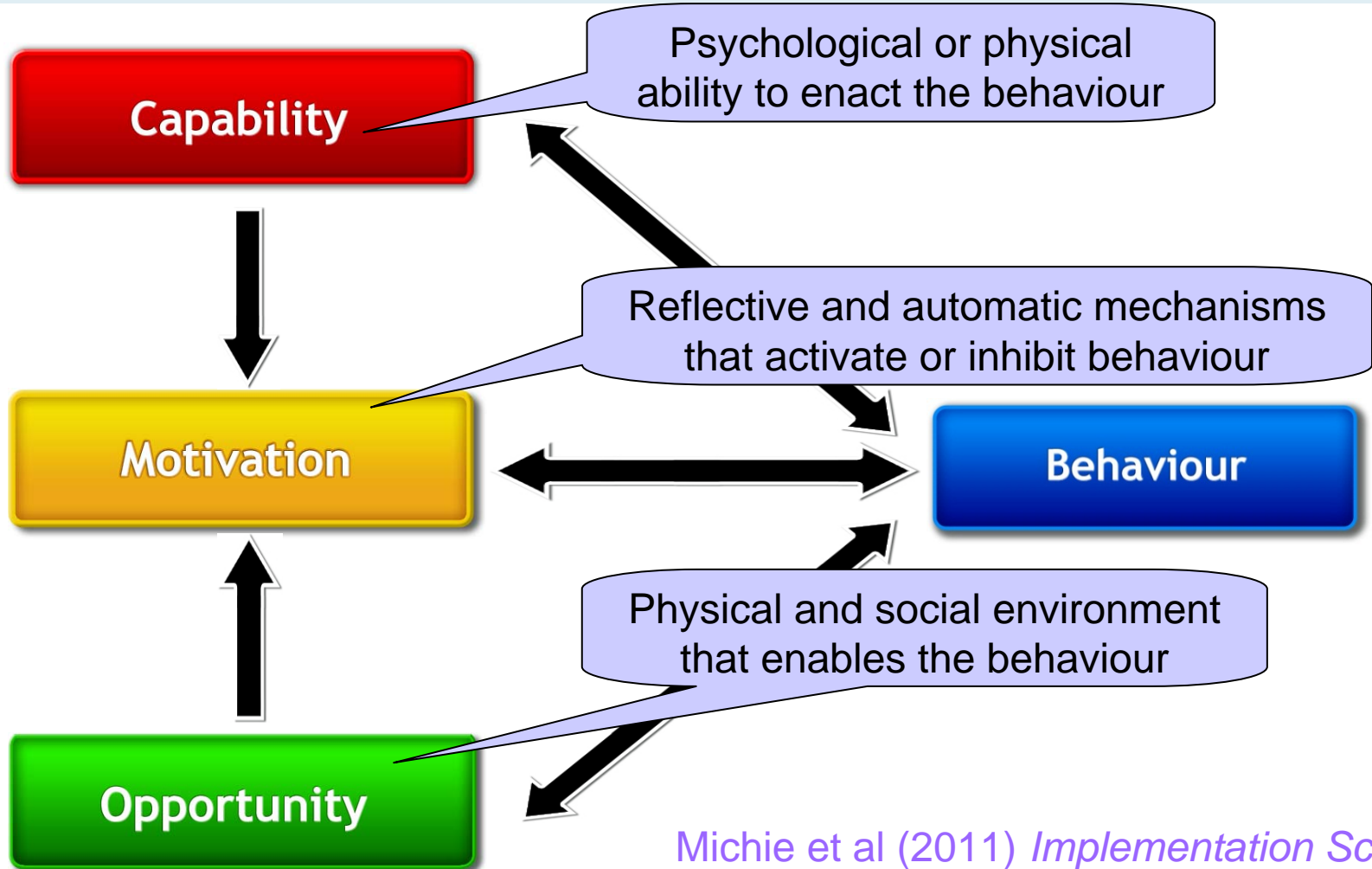
Ivers et al

- 140 trials, effects small to moderate and variable
 - overall increase 4.3% in compliance (IQR 0.5% to 16%)
- Moderator analysis guided by theoretical predictions
- A&F is more effective when combined with
 - **Explicit targets and an action plan**
- Call for “better reporting” and “explicit use of theory” to develop hypotheses

Finally, use of theory in intervention design

- Start with a theoretical understanding of the **target behaviour/s**

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

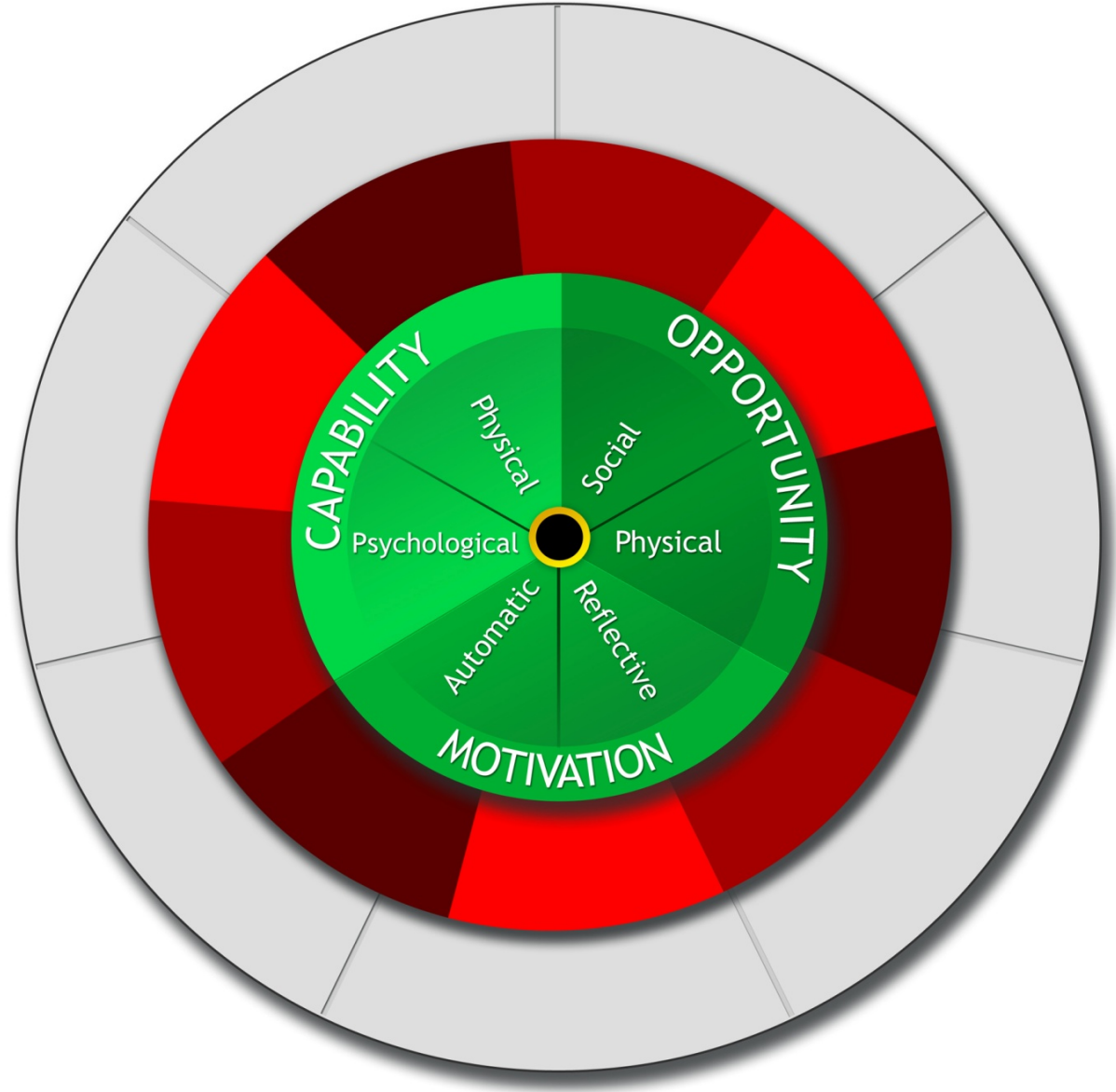


Consider the full range of interventions

- Systematic literature review identified 19 existing frameworks
- Synthesis into a new framework
 - Model of behaviour at the hub of a wheel
 - Synthesis of existing frameworks
 - 9 intervention functions
 - each include one or more behaviour change techniques
 - 7 policy categories
 - that could enable or support these interventions to occur

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

The Behaviour Change Wheel



Interventions



Sources of behaviour



Intervention functions

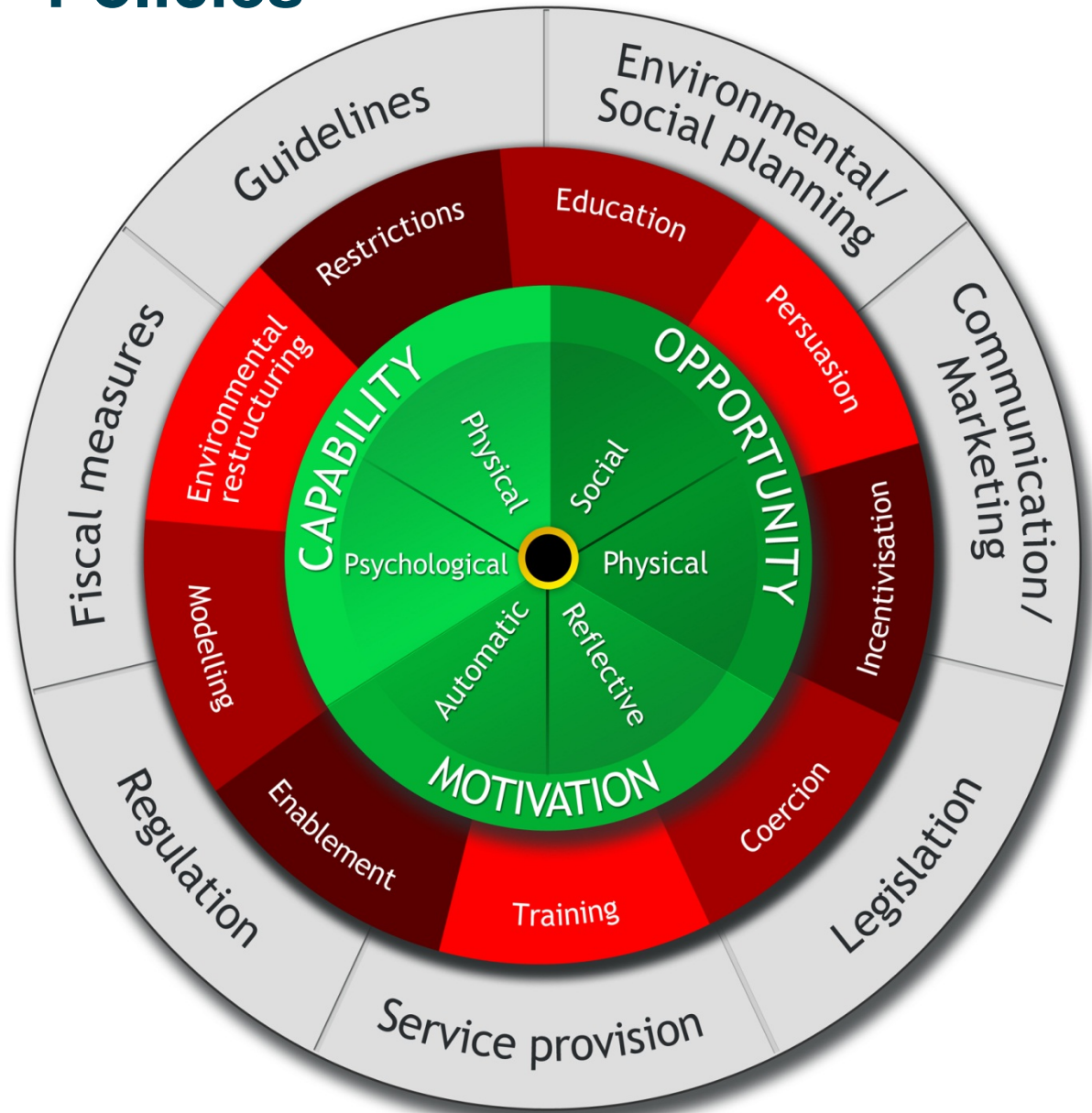
Interventions:
activities
designed to
change
behaviours



Policies



Policies:
decisions made by authorities concerning interventions



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

For more information

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