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Behaviour change: principles of intervention development

Tuesday 9th May 2017 (10.00-13.30)

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Three key questions

- Why take a theory-driven approach to programme design?
  - Problems when programmes are not theory-driven
  - Benefits when programmes are theory-driven
- Why use systematic approaches to programme development?
- Where can I find out more?

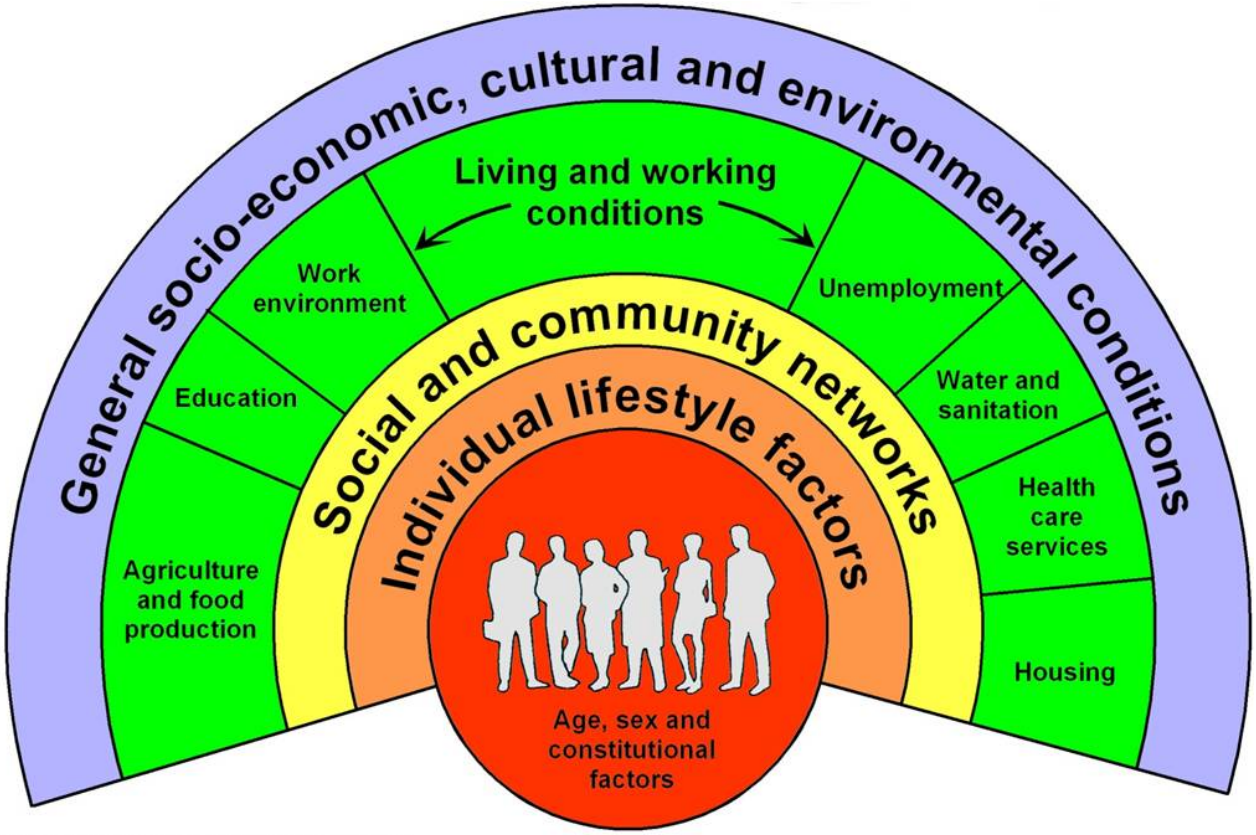
Behaviour change

Whose behaviour?

- **General population / healthy populations**
  - **Aim:** promote primary prevention
  - **Example:** Community-based exercise classes vs. home-based exercise to increase physical activity in > 65s
- **Patients**
  - **Aim:** promote secondary prevention
  - **Example:** Supported self-management improves quality of life and self-belief after stroke
- **Healthcare professionals**
  - **Aim:** promote evidence-based practice
  - **Example:** Audit and feedback: effects on professional practice and health care outcomes

Models of health

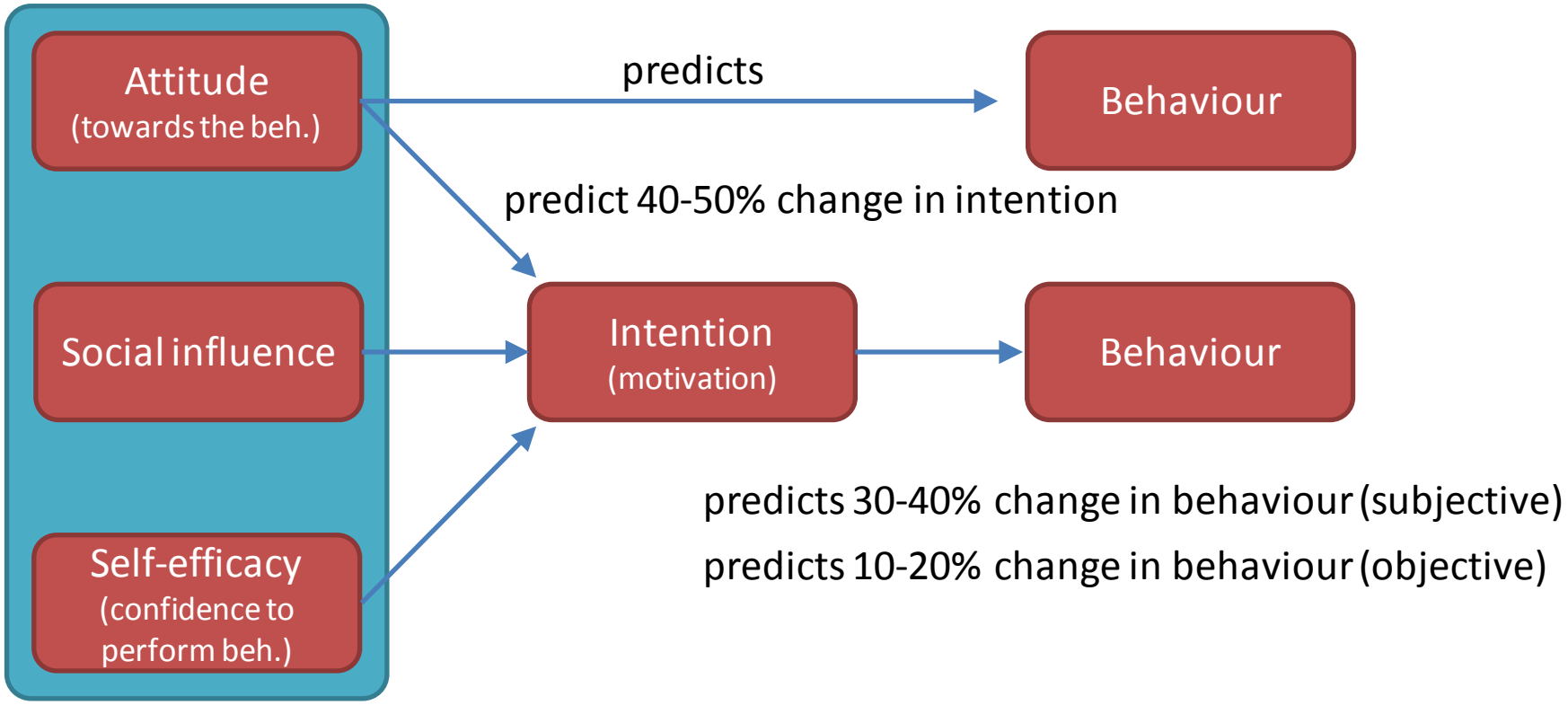
The Policy Rainbow



Source: Dahlgren and Whitehead, 1991

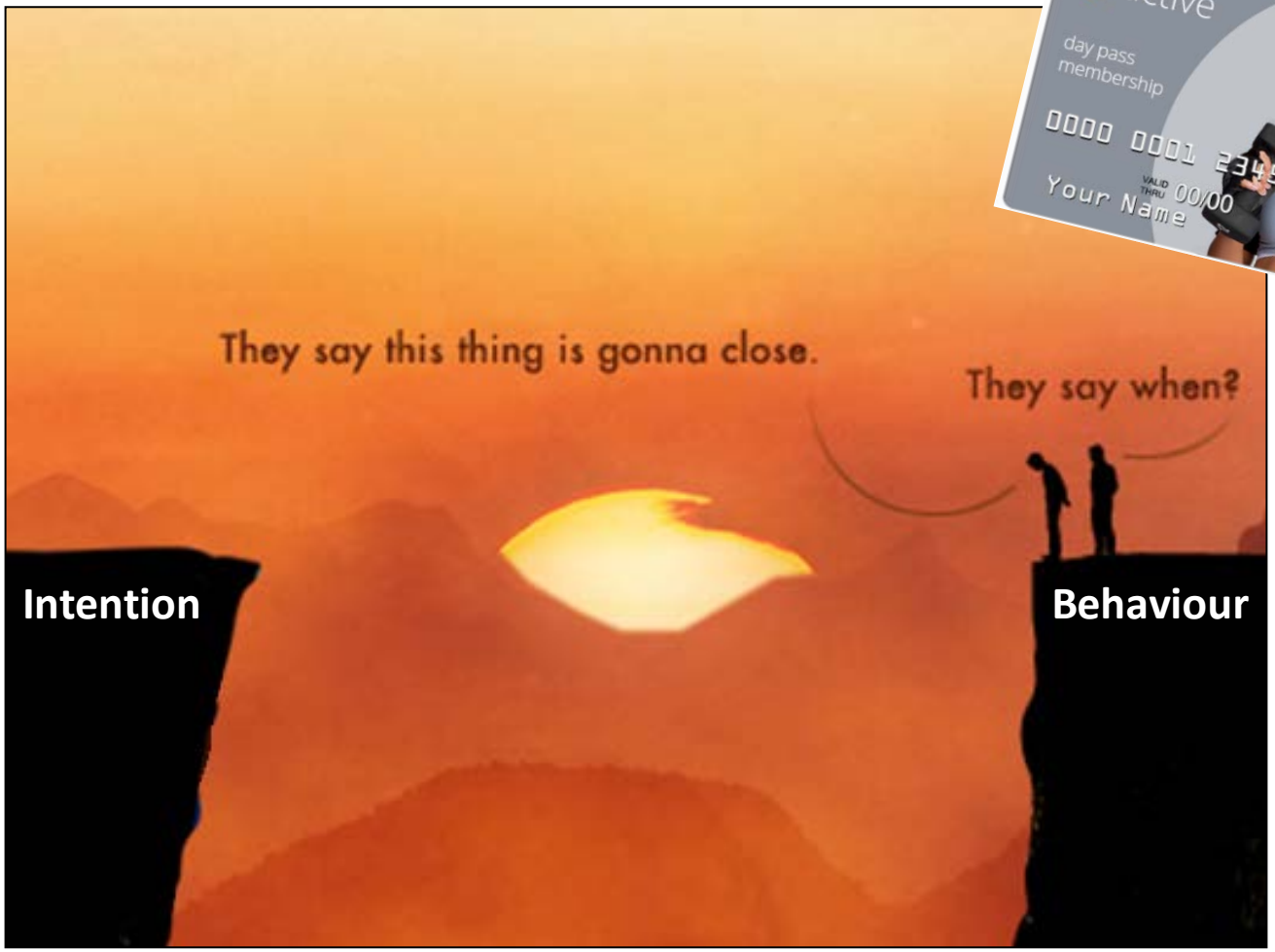
Understanding behaviour

Models of behaviour



Understanding behaviour

Intention-behaviour gap



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Actors & abstainers

Disinclined

(i.e. reported that they would not perform behaviour)

Actors (i.e. did perform behaviour)	Abstainers (i.e. did not perform behaviour)
0%	100%
10%	90%
~5%	~95%

Inclined

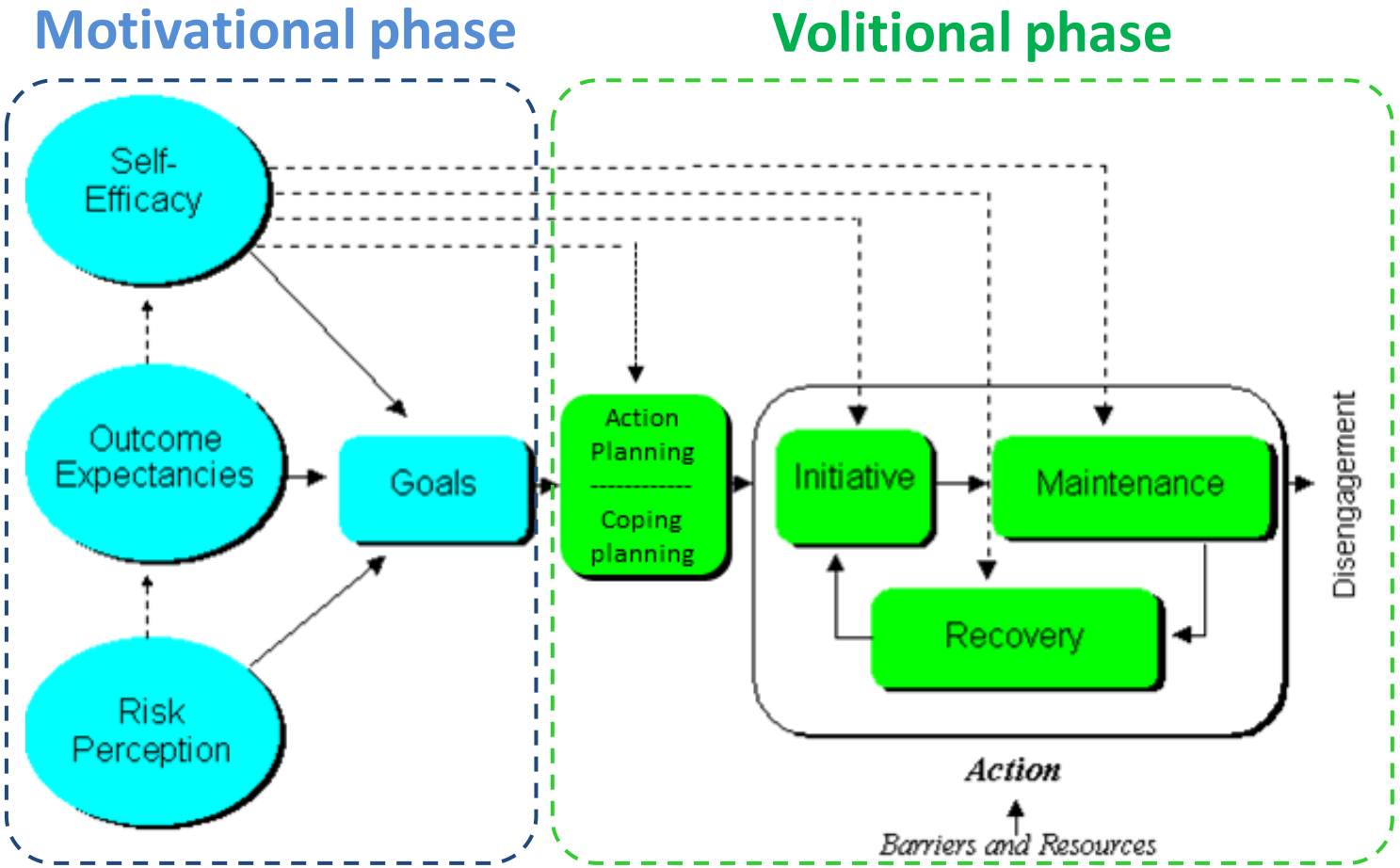
(i.e. reported that they would perform behaviour)

Actors (i.e. did perform behaviour)	Abstainers (i.e. did not perform behaviour)
61%	39%
43%	57%
~50%	~50%

Gallois *et al*, 1992; Condom use

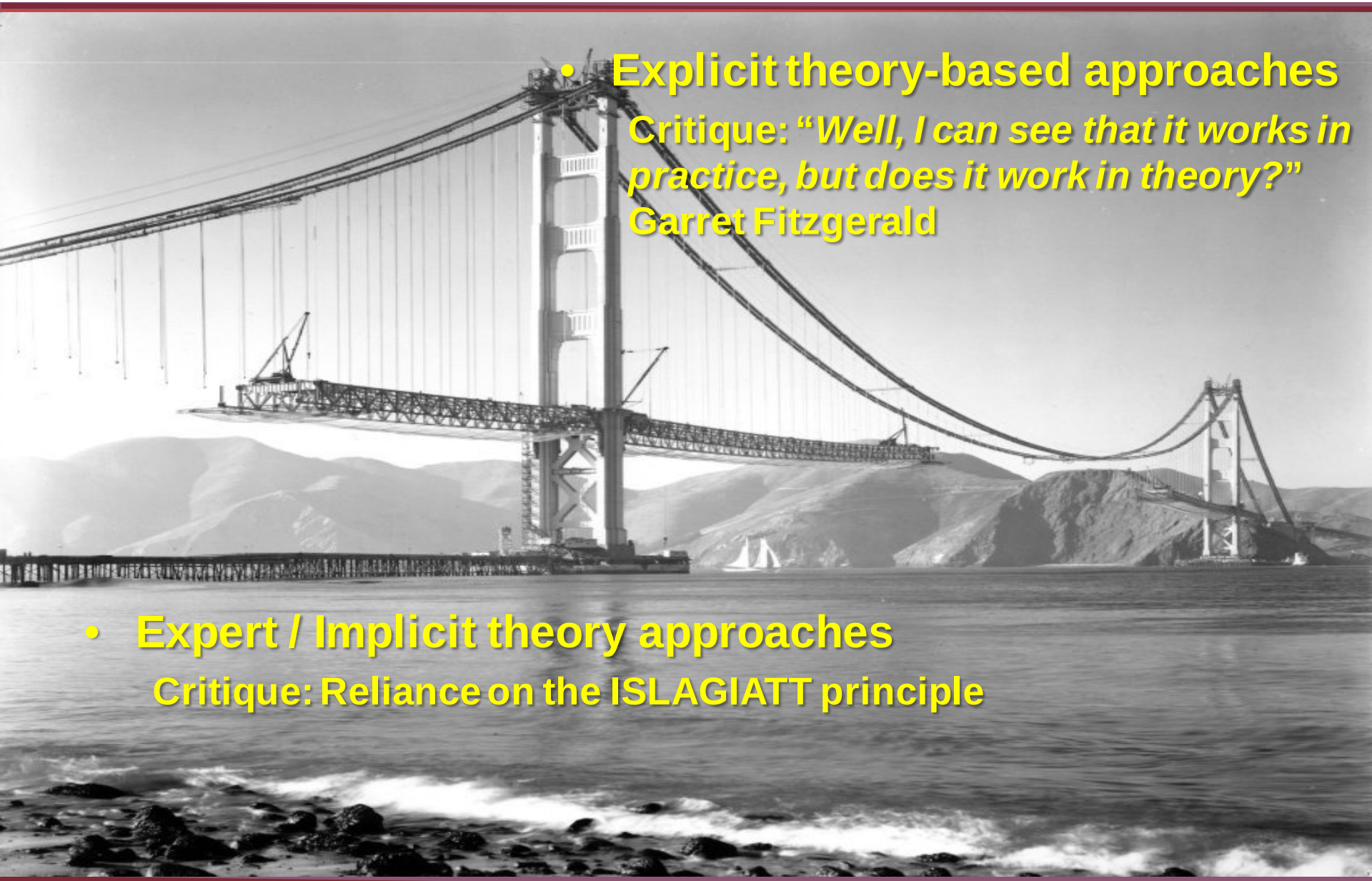
Stanton *et al*, 1996; Condom use

Beyond intention: make behaviour stick



Health Action Process Approach (Schwarzer et al, 1992, 2008)

Bridging the Gap(s)



- **Explicit theory-based approaches**
  - **Critique: "*Well, I can see that it works in practice, but does it work in theory?*" Garret Fitzgerald**
- **Expert / Implicit theory approaches**
  - **Critique: Reliance on the ISLAGIATT principle**

Warning: implicit models of behaviour!

What can go wrong in intervention development?

- ISLAGIATT principle
- Lack of theoretical understanding
- Don't know why successful interventions 'worked' or why unsuccessful interventions didn't 'work'

It Seemed Like A Good Idea At The Time

Warning: implicit models of behaviour!

Intervention label		Implicit process
Distribution of educational materials	➢	Correction of knowledge deficits
Educational meetings	➢	Correction of knowledge deficits & social persuasion
Local consensus processes	➢	Correction of knowledge deficits & social persuasion
Educational outreach visits	➢	Correction of knowledge deficits & social persuasion
Local opinion leaders	➢	Correction of knowledge deficits & social persuasion
Patient mediated interventions	➢	Social persuasion
Audit and feedback	➢	Correction of knowledge deficits & feedback
Reminders	➢	Correction of forgetting
Marketing	➢	Barrier identifications & action planning
Mass media	➢	Correction of knowledge deficits & social persuasion

Francis & Johnston (2011)

Warning: implicit models of behaviour!

Effectiveness and efficiency of guideline dissemination and implementation strategies

Effectiveness and efficiency of guideline dissemination and implementation strategies

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Executive summary

Health Technology Assessment 2004; Vol. 8: No. 6

Health Technology Assessment
NHS R&D HTA Programme

235 RCTs reporting 309 comparisons

- Reminders
- Dissemination of educational materials
- Audit & feedback documents
- Multifaceted interventions

"no basis on which to design a new intervention as very few trials used any theoretical foundation and it was therefore impossible to construct an integrating framework for the design and development of effective interventions."

Grimshaw et al (2000)

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Intervention frameworks

- **Injury control framework** Geller et al. (1990)
- **Intervention framework for retail pharmacies** Goel et al. (1996)
- **Intervention mapping** Bartholomew et al. (1998-2016)
- **STD/ HIV framework** Cohen and Scribner (2000)
- **Environmental policy framework** Vlek (2000)
- **Intervention implementation taxonomy** (Walter et al, 2003)
- **Population Services International (PSI) framework** (2004)
- **Legal framework** Perdue et al. (2005)
- **Epicure taxonomy** West (2006)
- **People and places framework** Maibach et al. (2007)
- **Public health: ethical issues** Nuffield Council of Bioethics (2007)
- **Implementation taxonomy** Leeman et al. (2007)
- **Culture capital framework** Knott et al. (2008)
- **DEFRA's 4E model** DEFRA (2008)
- **Framework on public policy in physical activity** Dunton et al. (2010)
- **MINDSPACE** Institute for Government and Cabinet Office (2010)
- **Taxonomy of behaviour change techniques** Abraham et al. (2010)
- **EPOC taxonomy of interventions** EPOC (2010)
- **Behaviour Change Wheel** Michie et al. (2011/2014)
- **EAST** Behavioural Insights Team (2011)

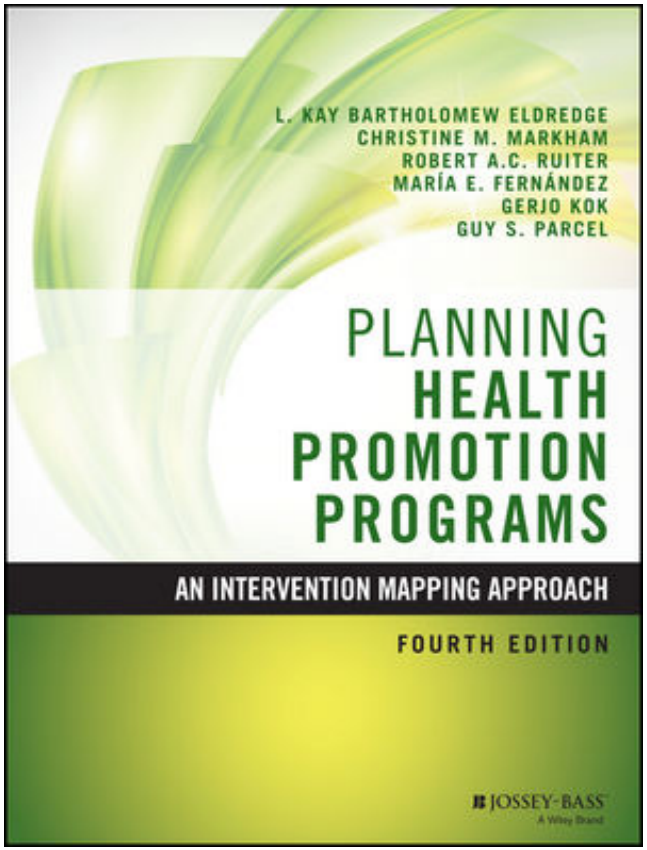
Intervention Mapping

Background

- Bartholomew LK, Parcel GS, Kok G. Intervention Mapping: A Process for Developing Theory- and Evidence-Based Health Education Programs. Health Education & Behavior, 1998, 25 (5): 545-563

- Bartholomew LK, Markham CM, Ruiter RAC et al, 2016. Planning health promotion programs: An Intervention Mapping approach, 4th edition. Hoboken, NJ: Wiley.ISBN-13: 978-1119035497

- http://interventionmapping.com
- https://tinyurl.com/z4px9g7

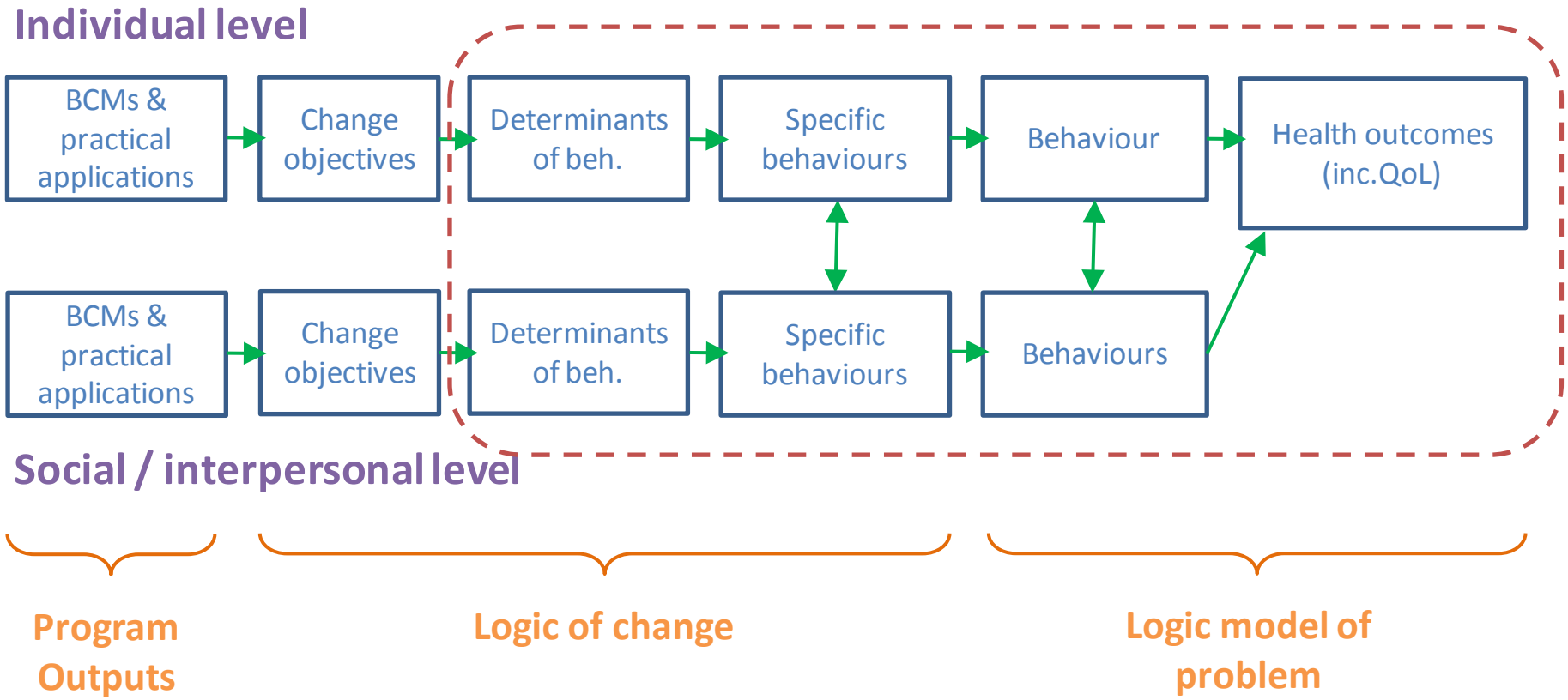


Intervention Mapping

Step 1	**Logic model of problem** Is there a problem?	**1.** Establish a planning group **2.** Conduct needs assessment & create initial LMoP **3.** Conduct capacity assessment **4.** State program goals
Step 2	**Logic model of change** What causes the problem? What needs to change?	**1.** State outcomes for behaviour and environmental change **2.** State performance objectives **3.** Select determinants **4.** Construct matrices of change objectives **5.** Create LMoC
Step 3	**Program design** How is change accomplished? How could the intervention be delivered?	**1.** Generate intervention ideas (i.e. themes, components, scope, sequence) **2.** Select theoretically and empirically supported change methods **3.** Select or design practical applications
Step 4	**Program production** How should the intervention be delivered?	**1.** Refine structure and organisation **2.** Prepare plans for program materials **3.** Draft messages materials, and protocols **4.** Pre-test, refine and produce material

Intervention Mapping

Logic Model



Bartholomew Eldredge et al. (2016)

Epilepsy Logic Model

Personal determinants

- Low levels of knowledge (declarative & procedural)
- Lack of skills for self-management
- Low self-efficacy
- Low outcome expectancies for treatments
- Low outcome expectancies for SM
- Low outcome expectancies for lifestyle change
- Unstable attributions
- Lack of acceptance / denial of diagnosis
- Fear of stigma
- Perceived barriers
- Perceived norms / peer influence
- Negative affect (depression, anxiety)
- Low patient acceptability of treatment
- Low patient acceptability of care

Poor self-management behaviour

Monitoring

Limited subjective prodromal symptom monitoring
Limited monitoring of personal seizure triggers
Limited monitoring of behaviours for safety
Limited monitoring of SM behaviours

Implement Solutions

Treatment management

- Lack of attendance at HC appointments
- Not maintaining chronic anti-epilepsy medication as prescribed
- Low planned compliance

Seizure Management

- Not calling HC profession in acute situation
- Not communication with family or HCP
- Not using first aid activities – recognising status epilepticus

Lifestyle Management

- Failure to manage lifestyle (sleep, stress, triggers, hydration, avoid overheating, controlling allergies, avoid hypoglycaemia, avoid flashing lights, disclosure to others, social support network, link to resources)

Evaluation

Limited evaluation of success of actions

Health outcomes & HRQoL

- Increased seizures (number & duration)
- Finding & maintaining employment
- Hospitalisation
- ER visits
- Injury
- Limits on driving
- Restrictions on sporting and recreational activities
- Compromised adaptive and psychosocial functioning
- Memory & concentration problems
- Death

Personal determinants

- HCP's lack of knowledge, skills and time re: communication with patient and family, SM training, lifestyle change. acceptance / denial of diagnosis
- Family's lack of knowledge and skills to provide social support for SM and reinforcement of SM
- Community's misguided beliefs about epilepsy, lack of knowledge and skills to assist with seizures, and lack of awareness of policies and guidelines (e.g. employment, driving, sports, housing)

Environmental Factors

Interpersonal

Limited communication with family by HCP
Low transfer of knowledge & skills to patient by HCP

Organisational

Limited time for SM training during clinic visits
Limited access to information and training at

Community

Limited access to medical care
Limited linkage to social networks & withdrawal from society

Taxonomy of behaviour change methods (BCMs)

Individual level

Table 1: **Basic Methods** at the Individual Level
Table 2: Methods to Increase **Knowledge**
Table 3: Methods to Change **Awareness** and **Risk Perception**
Table 4: Methods to Change **Habitual, Automatic** and **Impulsive Behaviours**
Table 5: Methods to Change **Attitudes, Beliefs**, and **Outcome Expectations**
Table 6: Methods to Change **Social Influence**
Table 7: Methods to Change **Skills, Capability**, and **Self-Efficacy** and to Overcome Barriers
Table 8: Methods to Reduce **Public Stigma**

Environmental level

Table 9: **Basic Methods** for Change of Environmental Conditions.
Table 10: Methods to Change **Social Norms**
Table 11: Methods to Change **Social Support** and **Social Networks**
Table 12: Methods to Change **Organizations**
Table 13: Methods to Change **Communities**
Table 14: Methods to Change **Policy**

https://osf.io/bpxwq/

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Intervention Mapping

Basic methods
1. Participation
2. Belief selection
3. Persuasive communication
4. Active learning
5. Tailoring
6. Individualisation
7. Modelling
8. Feedback
9. Reinforcement
10. Punishment
11. Motivational interviewing
12. Facilitation
13. Nudging

Knowledge
1. Chunking
2. Advance organizers
3. Using imagery
4. Discussion
5. Elaboration
6. Providing cues

Awareness & risk perception
1. Consciousness raising
2. Personalise risk
3. Scenario-based risk information
4. Framing
5. Self-re-evaluation
6. Dramatic relief
7. Environmental re-evaluation
8. Fear arousal
9. Self-affirmation

Habitual, Automatic & impulsive behaviour
1. Deconditioning
2. Counterconditioning
3. Implementation intentions
4. Cue altering
5. Stimulus control
6. Planning coping responses
7. Early commitment
8. Public commitment
9. Training executive function

Attitude, beliefs & outcome expectancies
1. Classical conditioning
2. Self-re-evaluation
3. Environmental re-evaluation
4. Shifting perspective
5. Arguments
6. Direct experience
7. Elaboration
8. Anticipated regret
9. Repeated exposure
10. Cultural similarity

Public stigma
1. Stereotype inconsistent information
2. Interpersonal contact
3. Empathy training
4. Co-operative learning
5. Conscious regulation of impulsive stereotyping and prejudice
6. Reducing inequalities , race, gender & sexuality

Skills, capabilities, self-efficacy & overcoming barriers
1. Guided practice
2. Enactive mastery
3. Verbal persuasion
4. Improving physical & emotional states
5. Reattribution training
6. Self-monitoring of behaviour
7. Provide contingent rewards
8. Cue altering
9. Public commitment
10. Goal setting
11. Set graded tasks
12. Planning coping responses

Social influence
1. Information about others' approval
2. Resistance to social pressure
3. Shifting focus
4. Mobilizing social support
5. Providing opportunities for social comparison

IM Step 3, task 2

Example

Behavioural outcome = Increase physical activity in over-50s

Performance objectives	Determinants		
	Awareness	**Attitude**	**Self-efficacy**
1. Older adults monitor their recreational physical activity level	Older adults describe the purpose of monitoring and reporting their own recreational physical activity		Older adults express confidence about being able to monitor and report their own recreational physical activity
2. Older adults indicate reasons to be physically active as recreation	Older adults list the personally relevant benefits of being sufficiently physically active	Older adults express a positive attitude about being sufficiently physically active	
3. Older adults identify solutions to take away the barriers to being physically active for recreation	Older adults describe the situations and barriers that prevent them from being sufficiently physically active		Older adults express confidence about being able to take away and to cope with their barriers

van Stralen et al; IM case study 1 / 2008

IM Step 3, task 2

Example

Personal determinant	Theoretical change method (related theory)	Parameters for use	Practical applications
Awareness	Consciousness raising (TTM, ICM)	quickly followed by increase in problem-	sical activity , physical activity recommendation, and current
Attitude	Tailored feedback and argumentation (TTM, ICM)	the behavior in time, and be specific	ck and arguments about pros and cons.
Self-efficacy	Social modelling (SCT)	skills, reinforcement of model.	es about difficult situations and how to cope.
Action planning	Action planning (HAPA; ICM;SRT)	than action planning only.	tion plan.
Coping planning	Planning coping responses (HAPA, SRT)		ping plan.

Table: Methods to change awareness & perception

Table: Basic methods for individual change

Table: Methods to change attitudes, beliefs and outcome expectations

Table: Basic methods for individual change

Table: Methods to change skills, self-efficacy & overcome barriers

Table: Methods to change skills, self-efficacy & overcome barriers

What have we learned?

- Implicit theories are not helpful for programme design
  - Range of intervention targets (determinants) and behaviours change mechanisms are limited
  - Reasons for success or failure remain unclear
- Systematic frameworks for programmes development promote lead to better understanding of problem(s) and potential solution(s)
  - better understand of the drivers and barriers of behaviour (Logic model of the problem)
  - Justification of choice of BCMs
- Intervention Mapping (and other approaches) offer a detailed framework for programme development (inc. examples & resources)
  - Collaborations between frontline organisations and behavioural scientists (and other stakeholders) is required