Behaviour change: NUIG making a difference

- Pre-Masters: Ruth Curtis
- The Academic team
  - Education as behaviour change
    - Masters programme: included placements
    - PhD students
- The Masters students
  - Work in Health Boards
  - Publications
  - Conferences
  - Grants
  - Academic posts
  - Research leadership
  - Interdisciplinary collaborations
How does Health Psychology make a difference?

- **Description** e.g.
  - Illness representations

- **Measurement** e.g.
  - Health outcomes, quality of life

- **Prediction** e.g.
  - Of mortality from personality

- **Explanation**
  - Theories

- **Intervention**
  - Behaviour change techniques

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### Changes in Health Psychology

<table>
<thead>
<tr>
<th>1990s</th>
<th>now</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus on non-behavioural outcomes</td>
<td>Focus on behavioural outcomes</td>
</tr>
<tr>
<td>- Emotions</td>
<td>- Health behaviours</td>
</tr>
<tr>
<td>- Quality of life</td>
<td>- Adherence etc</td>
</tr>
<tr>
<td>- Intentions etc</td>
<td></td>
</tr>
<tr>
<td>Science from social and clinical psychology</td>
<td>Science of behaviour change</td>
</tr>
<tr>
<td>Main theories</td>
<td>- Main theories</td>
</tr>
<tr>
<td>- Stress &amp; Coping (Lazarus &amp; Folkman)</td>
<td>- Add non-deliberative</td>
</tr>
<tr>
<td>- Illness representations (Leventhal)</td>
<td></td>
</tr>
<tr>
<td>- Theory of Planned Behaviour</td>
<td></td>
</tr>
</tbody>
</table>
Behaviours and health

- **Behaviours of ‘general living’**
  - smoking
  - alcohol use
  - poor diet
  - physical activity
  

- **Patient behaviours**
  - delay in seeking help
  - poor adherence to treatment & screening
  - not following health advice

- **Health care professional behaviours**
  - making referrals
  - giving advice
  - prescribing drugs
  - keeping hands clean
Prediction: Intention- Behaviour Gap

- Intentions predict:
  - 28% variance in behaviour
  - 422 studies, n>82,000
- Non-intenders unlikely to act
- Gap is due to intenders not acting

Do people eat as they intend?

• NUIG makes a difference
• How health psychology makes a difference
  - Theory
  - Intervention
  - Methods
Do people eat as they intend?

### Stage Theories


#### Pre-intentional
- **PAPM**
  - Unaware of the issue
  - Unengaged by the issue
  - Deciding not to act
- **TTM**
  - Precontemplation: Not thinking about change within next 6 months
  - Contemplation: Thinking about change in next 6 months, but not next 30 days
- **HAPA**
  - Motivational
  - Volitional/preactional
- **MAP**
  - Deliberative Mindset
  - Implemental Mindset

#### Intentional
- **PAPM**
  - Decided not to act
- **TTM**
  - Precontemplation: Not thinking about change in next 6 months
  - Contemplation: Thinking about change in next 6 months, but not next 30 days
  - Preparation: Intending to change in next 30 days
- **HAPA**
  - Volitional/actional
- **MAP**
  - Deliberative Mindset
  - Implemental Mindset

#### Action
- **PAPM**
  - Decided to act
- **TTM**
  - Precontemplation: Not thinking about change in next 6 months
  - Contemplation: Thinking about change in next 6 months, but not next 30 days
  - Preparation: Intending to change in next 30 days
- **HAPA**
  - Volitional/actional
- **MAP**
  - Deliberative Mindset
  - Implemental Mindset

**Note.** PAPM = Precaution Adoption Process Model; TTM = Transtheoretical Model of Behavior Change; HAPA = Health Action Process Approach; MAP = Model of Action Phases
Sequential Models *e.g.* Health Action Process Approach

Sequential Process Model

Predicting prescribing antihypertensive medication in diabetes management

Presseau, et al.. (2013 in submission). Reflective and automatic processes in healthcare professional behaviour: a dual process model tested across multiple behaviours
The importance of non-deliberative processes in behaviour change

www.thefuntheory.com/piano-staircase

- Piano stairs
- People choose stairs over escalator
Dual Process: deliberative/associative

Dual Process Model
Predicting prescribing antihypertensive medication in diabetes management

Intention
Action
Planning
Prescribing behaviour
Coping
Planning
Automaticity

Theory as a basis for Intervention

- **Intervention depends on theory**
  - To predict or explain the behaviour
  - At least some rationale as a basis
  - Implicit or explicit

- **Intervention development**
  - Identify what behaviour needs to change
  - Theory explaining the behaviour
  - Evidence of predictors or causes
  - Intervene to change predictors or causes

- **Theory is tested in interventions**
Interventions

THEORY-BASED INTERVENTIONS
LEARNING FROM LEARNING THEORY
BEHAVIOUR CHANGE TECHNIQUES
REPORTING OF INTERVENTIONS
Using behavioural science in managing Type 2 Diabetes: IDEA Trial

**Six Behaviours**

1. **Advising**
   - nutrition
   - physical activity
   - diabetes education

2. **Prescribing**
   - glucose lowering
   - anti-hypertensive

3. **Foot examination**

**Intervention**

- Workshops with each primary care team
- Led by clinician and health psychologist
- Action and coping planning

Learning from learning theory

- **Early work**
  - Thorndike, Watson, Skinner, Hull etc.
    - aim to ‘predict and control’
    - Theory: Law of Exercise, Law of Effect
    - Behaviour Change Techniques
      - positive and negative reinforcement
      - extinction
      - schedules of reinforcement

- **1960’s and 70’s**
  - Behaviour change as a therapeutic procedure
    - phobias

- **1980’s**
  - changing emotions rather than behaviour - cognitive added to behavioural methods - CBT
  - Health Psychology
    - Theoretical models of stress and coping
    - Interventions to change emotions
Changing Behaviour
Learning Theory

• Consequences
  – Reinforcement
  – Reward/punishment

• Antecedents
  – predict reinforcement

A → B → C

Change behaviour by changing A or C

http://www.bfskinner.org/Operant.asp
Intervention to increase Dentists Evidence-Based Practice (sealants):

Theory:
learning theory vs atheoretical ‘education’

Intervention:
Contingent financial reinforcement

RESULTS:
Learning increased rate of Evidence-based practice (fissure sealants)
Education had no effect

Intervention to increase adherence to medication in stroke

- **Theory:** Forgetting; illness and medication beliefs
- **Intervention**
  - Implementation intentions (if... then ....) to reduce forgetting
  - Elicit and clarify beliefs about illness and medication

### Graphs

- **Self-report adherence**
  - Before: Intervention (red), Control (yellow)
  - After: Intervention (red), Control (yellow)
  - p = 0.027

- **Doses on schedule (electronic measure)**
  - Month 1: Intervention (red), Control (gray)
  - Month 2: Intervention (red), Control (gray)
  - Month 3: Intervention (red), Control (gray)
  - p = 0.048

### References

Intervention to reduce delay in consulting with symptoms of lung disease

- **Theory**
  - HAPA
  - Delay (Anderson)
  - Social

- **Intervention**
  - Persuasive message
  - Action planning
  - Coping planning

- **Results**
  - Intention to consult in fewer days
    - Dry cough, shortness of breath, coughing phlegm, losing weight: only losing weight significant (p=0.014 and 0.041)

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Intervention to increase successful MRI scans

- **Unsuccessful behaviour**
  - incomplete or movement artefact
  - Predicted by self-efficacy

- **Theory**
  - Social Cognitive Theory

- **Intervention**
  - Pre-MRI DVD
  - Procedural information
  - Modelling the behaviour
  - Relaxation skills

- **Results**
  - increased rate of successful scan completions
  - Mediated by self-efficacy

Intervention to reduce purchasing of high calorie snacks

- **Theory**
  - Dual processing
    - Environmental prompts
    - Reducing cognitive demand
- **Intervention**
  - At point of purchase

Allan, J., Johnston, M., Campbell, NC (2015) Snack purchasing is healthier when the cognitive demands of choice are reduced: a randomised controlled trial. Health Psychology
Methods for Interventions

BEHAVIOUR CHANGE TECHNIQUES
INTERVENTIONREPORTING
Behaviour Change Techniques

The BCT Taxonomy Team
Website: www.ucl.ac.uk/health-psychology/BCTtaxonomy/index.php

STUDY PROTOCOL

Strengthening evaluation and implementation by specifying component interventions: a study pro

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 Michie1*, Charles Abraham2, Martin P Eccles3, Jill I
# Problem: same words used for different interventions
e.g. “behavioural counselling” in two interventions

<table>
<thead>
<tr>
<th>Title of journal article</th>
<th>Description of “behavioural counselling”</th>
</tr>
</thead>
<tbody>
<tr>
<td>The impact of <em>behavioral counselling</em> on stage of change fat intake, physical activity, and cigarette smoking in adults at increased risk of coronary heart disease</td>
<td>“educating patients about the benefits of lifestyle change, encouraging them, and <em>suggesting what changes</em> could be made” (Steptoe et al. AJPH 2001)</td>
</tr>
<tr>
<td>Effects of internet <em>behavioral counselling</em> on weight loss in adults at risk for Type 2 diabetes</td>
<td>“<em>feedback on self-monitoring record, reinforcement, recommendations for change, answers to questions, and general support</em>” (Tate et al. JAMA 2003)</td>
</tr>
</tbody>
</table>
# The Behavior Change Technique Taxonomy of 93 Hierarchically Clustered Techniques: An International Consensus for the Reporting of Behavior Change Interventions

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

Published online: 20 March 2013
© The Society of Behavioral Medicine 2013

<table>
<thead>
<tr>
<th>1. <strong>Goals and planning</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1. Goal setting (behavior)</td>
</tr>
<tr>
<td>1.2. Problem solving</td>
</tr>
<tr>
<td>1.3. Goal setting (outcome)</td>
</tr>
<tr>
<td>1.4. Action planning</td>
</tr>
<tr>
<td>1.5. Review behavior goal(s)</td>
</tr>
<tr>
<td>1.6. Discrepancy between current behavior and goal</td>
</tr>
<tr>
<td>1.7. Review outcome goal(s)</td>
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<tr>
<td>1.8. Behavioral contract</td>
</tr>
<tr>
<td>1.9. Commitment</td>
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</table>

<table>
<thead>
<tr>
<th>2. <strong>Feedback and monitoring</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1. Monitoring of behavior by others without feedback</td>
</tr>
<tr>
<td>2.2. Feedback on behaviour</td>
</tr>
<tr>
<td>2.3. Self-monitoring of behaviour</td>
</tr>
<tr>
<td>2.4. Self-monitoring of outcome(s) of behaviour</td>
</tr>
<tr>
<td>2.5. Monitoring of outcome(s) of behavior without feedback</td>
</tr>
<tr>
<td>2.6. Biofeedback</td>
</tr>
<tr>
<td>2.7. Feedback on outcome(s)</td>
</tr>
</tbody>
</table>
Problem: How do BCTS link to theory?

Linking Behaviour Change Techniques to Theoretical domains

<table>
<thead>
<tr>
<th>Technique for behaviour change</th>
<th>Techniques judged to be effective in changing each construct domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal/target specified: behaviour or outcome</td>
<td>1</td>
</tr>
<tr>
<td>Monitoring</td>
<td></td>
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<tr>
<td>Self-monitoring</td>
<td></td>
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<tr>
<td>Contract</td>
<td></td>
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<tr>
<td>Rewards; incentives (inc. self-evaluation)</td>
<td></td>
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<tr>
<td>Graded task, starting with easy tasks</td>
<td></td>
</tr>
<tr>
<td>Increasing skills: problem-solving, decision-making, goal-setting</td>
<td></td>
</tr>
<tr>
<td>Stress management</td>
<td></td>
</tr>
<tr>
<td>Coping skills</td>
<td></td>
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<tr>
<td>Rehearsal of relevant skills</td>
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<tr>
<td>Role-play</td>
<td></td>
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<tr>
<td>Planning, implementation</td>
<td></td>
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<tr>
<td>Prompts, triggers, cues</td>
<td></td>
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<tr>
<td>Environmental changes (e.g. objects to facilitate behaviour)</td>
<td></td>
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<tr>
<td>Social processes of encouragement, pressure, support</td>
<td></td>
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<tr>
<td>Persuasive communication</td>
<td></td>
</tr>
<tr>
<td>Information regarding behaviour, outcome</td>
<td></td>
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<tr>
<td>Personalised message</td>
<td></td>
</tr>
<tr>
<td>Modelling/demonstration of behaviour by others</td>
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</tbody>
</table>

Theories and Techniques of Behaviour Change

Designing and evaluating theory-based interventions: developing and testing a methodology for linking behaviour change techniques to theory

Study 1: Evidence Synthesis
Examining BCT-Theory links in published interventions

Study 2: Expert Consensus
Identifying and agreeing BCT-Theory links

Study 3: BCT Clustering
BCT clustering: Identifying implicit theories
(published interventions and expert consensus)

Study 4: Triangulation
Triangulation of consensus, evidence synthesis and BCT clustering methods

Funded by: The UK Medical Research Council, 2014-2017

Susan Michie¹, Marie Johnston², Alex Rothman³, Mike Kelly⁴, Marijn de Bruin²
Problem: Reporting of Interventions

- Reporting of non-pharmacological interventions
- 133 trials
- 39% adequate in primary source
- 59% adequate after contacting author

Reporting ‘active ingredients’ of behavior change interventions

Only in 56% of titles/abstracts of behavioral interventions

‘active ingredients’ = “components within an intervention that can be specifically linked to its effect on outcomes such that, if they were omitted, the intervention would be ineffective.”

McCleary, Duncan, Stewart & Francis (2013) Active ingredients are reported more often for pharmacologic than non-pharmacologic interventions: an illustrative review of reporting practices in titles and abstracts. Trials, 14 146.
Consensus: TIDieR Team

The TIDieR checklist
(for intervention and control groups) (1-7)

<table>
<thead>
<tr>
<th>Item number</th>
<th>Item</th>
<th>Where located **</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Primary paper (page or appendix number)</td>
</tr>
</tbody>
</table>

**BRIEF NAME**
1. Provide the name or a phrase that describes the intervention. 

**WHY**
2. Describe any rationale, theory, or goal of the elements essential to the intervention.

**WHAT**
3. Materials: Describe any physical or informational materials used in the intervention, including those provided to participants or used in intervention delivery or in training of intervention providers. Provide information on where the materials can be accessed (e.g. online appendix, URL).

**PROCEDURES**
4. Procedures: Describe each of the procedures, activities, and/or processes used in the intervention, including any enabling or support activities.

**WHO PROVIDED**
5. For each category of intervention provider (e.g. psychologist, nursing assistant), describe their expertise, background and any specific training given.

**HOW**
6. Describe the modes of delivery (e.g. face-to-face or by some other mechanism, such as internet or telephone) of the intervention and whether it was provided individually or in a group.

**WHERE**
7. Describe the type(s) of location(s) where the intervention occurred, including any necessary infrastructure or relevant features.
The TIDieR checklist
(for intervention and control groups) (8-12)

WHEN and HOW MUCH

8. Describe the number of times the intervention was delivered and over what period of time including
the number of sessions, their schedule, and their duration, intensity or dose.

TAILORING

9. If the intervention was planned to be personalised, titrated or adapted, then describe what, why,
when, and how.

MODIFICATIONS

10.* If the intervention was modified during the course of the study, describe the changes (what, why,
when, and how).

HOW WELL

11. Planned: If intervention adherence or fidelity was assessed, describe how and by whom, and if any
strategies were used to maintain or improve fidelity, describe them.

12.* Actual: If intervention adherence or fidelity was assessed, describe the extent to which the
intervention was delivered as planned.

BMJ 2014;348:doi10.1136/bmj,g1687
www.equator-network.org/reporting-guidelines/tidier/
Time ....

- **Theory**
  - Sequential/stage change models
  - Temporal self-regulation theory
  - Fast and slow (dual) processing
  - Before or after behaviour (operant)

- **Interventions targeting**
  - Delay in seeking treatment
  - Timing of medication adherence
  - Intervention at the time/place of behaviour

- **Methods**
  - Real-time measurement
  - BCTs
    - Schedules of contingent reinforcement
    - Action planning: where and when
    - Implementation intentions: if... then...
  - Changing behaviour of researchers
    - Reporting interventions
Behaviour Change: Making a difference

Thank you

NUI Galway

Marie Johnston
m.johnston@abdn.ac.uk