Designing Interventions using the Behaviour Change Wheel

@GillianSGould

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Acknowledgement of Country
What will today’s session cover?

• What is the Behaviour Change Wheel
• Selecting a behaviour to change
• Using the COM-B model to understand the target behaviour in context
• Intervention design: Using the BCW
• Specifying Intervention content: Using the Behaviour Change Technique Taxonomy
What is the Behaviour Change Wheel?

A parsimonious model synthesizing 19 behaviour change theories

Hub is the COM-B

Michie et al 2011. The Behaviour Change Wheel a new method for characterising and designing behaviour change interventions. *Implementation Science*
1. How should we think about behaviour?

- Interventions contain behavioural components
- How do we get people to change their behaviour?
- Pet theories and methods can be wrong!

*There is a science of behaviour change but it is not always applied.......*
1. How should we think about behaviour?

Many Interventions are designed according to the **ISLAGIATT** principle of intervention design...

- Behavioural Problem
- Understanding the behaviour(s) we are trying to change
- Intervention

Martin Eccles, Emeritus Professor of Clinical Effectiveness, Newcastle University
Is this a behaviour?

1) Walking to the shops
2) Having the confidence to ride a bike
3) Taking a tablet
4) Losing weight
5) Speaking softly
6) Intending to exercise every day
7) Reducing cholesterol
Which are determinants and which are outcomes?

Having the confidence to ride a bike

Losing weight

Intending to exercise everyday

Reducing cholesterol
Causal model of behaviour as applied to health
Which Behaviour to target?

- Consider
  - likely impact if undertaken
  - likelihood behaviour will be implemented
  - ease, cost
  - preference, acceptability
  - spill over to other behaviours & people

- Every behaviour within a network of behaviours
- Each person is a network of other people
Specify the target Behaviour

Pooled % of HPs Smoking Cessation Care in Pregnancy

Specify the target Behaviour

- Specify who needs to do what, where do they need to do it, when, how often and for how long?

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>What</th>
<th>Who</th>
<th>Where/When?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assist pregnant smokers to quit</td>
<td>• NRT</td>
<td>• All Health Providers seeing</td>
<td>At Aboriginal Medical Services</td>
</tr>
<tr>
<td></td>
<td>• Counselling</td>
<td>pregnant women</td>
<td></td>
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<td></td>
<td>• Resources</td>
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</table>

- Being more specific about which behaviour(s) we are trying to change allows us to be more focussed when it comes to understanding these behaviours....
2. Behavioural Analysis and Diagnosis:
Using the COM-B model to understand the target behaviour in context.
Understand the behaviour in context

• To change behaviour we need to understand it
• Why are behaviours as they are?
• What needs to change for the desired behaviour/s to occur?
COM-B: A simple model to understand behaviour...

- **Capability**: Psychological or physical ability to enact the behaviour
- **Motivation**: Reflective and automatic mechanisms that activate or inhibit behaviour
- **Opportunity**: Physical and social environment that enables the behaviour
Using COM-B to understand a behaviour – a review

Exploring the barriers and enablers to smoking cessation in pregnant Aboriginal and Torres Strait Islander women with the behaviour change wheel

Gillian Sandra Gould
School of Public Health, Tropical Medicine and Rehabilitation Science, James Cook University, Australia
School of Health and Human Sciences, Southern Cross University, Australia

Capability
Psychological – lack of knowledge, stressors
Physical – nicotine dependence, increased nicotine metabolism

Opportunity
Physical – smoking in the home, lack of services, NRT not subsidised
Social – social norms of smoking, lack of social support for quitting

Motivation
Automatic – smoking triggers, cravings, change in role
Reflective – guilt about smoking, being a good role model
COM-B in **interviews** to evaluate feasibility/acceptability of a training intervention

**Capability**

“I have a much better understanding of the benefits of NRT and I’m much more likely to promote the use of it…”

“...it's built in the capacity of the service to actually be able to [help women quit]…”

**Opportunity**

“We even had people come – coming in and asking for [NRT].”

“giving me an opportunity to connect with the pregnant women through that role was really good”

**Motivation**

“I think it was great that a couple of women gave up smoking. That was fabulous.”

“I have shifted to, ‘How do you feel about trying NRT now?’ “
3. Using the BCW for Intervention design
A gritty gruelling hypothetical

It’s the year 2030 and University Researchers discovered 2 years ago that eating oats is bad for you – but a few remote communities haven’t heard about it!!!!
Tailoring our approach

Community A
- Traditional community
- ‘Cultural use’ of porridge
- Oats several times a day
- Denial ..“It’s a government conspiracy”

Community B
- Taking the news seriously
- Motivated to change diet
- Local shop refuses to stock other breakfast food
Behavioural analysis - applying COM-B

Community A
• Capability?
• Opportunity?
• Motivation?

Community B
• Capability?
• Opportunity?
• Motivation?
Intervening: Consider the full range of options

Need a framework that is:
- Comprehensive
  • So don’t miss options that might be effective
- Coherent
  • So can have a systematic method for intervention design
- Linked to a model of behaviour
  • So that draw on behavioural science
Intervention Functions

**Restrictions:** Using rules to reduce the opportunity to engage in the target behaviour

**Education:** Increasing knowledge or understanding

**Environmental restructuring:** Changing the physical or social context

**Modelling:** Providing an example for people to aspire to or imitate

**Enablement:** Increasing means/reducing barriers to increase capability (beyond education and training) or opportunity (beyond environmental restructuring)

**Training:** Imparting skills

**Coercion:** Creating an expectation of punishment or cost

**Incentivisation:** Creating an expectation of reward

**Persuasion:** Using communication to induce positive or negative feelings or stimulate action
BCW to **develop** an implementation intervention

Designing an implementation intervention with the Behaviour Change Wheel for health provider smoking cessation care for Australian Indigenous pregnant women

Gillian S. Gould¹*, Yael Bar-Zeev¹, Michelle Bovill¹, Lou Atkins², Maree Gruppetta¹, Marilyn J Clarke³ and Billie Bonevski¹

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**Stage 1:**
Understanding Behaviour

- **Step 1:** Define the problem
- **Step 2:** Select target behaviour
- **Step 3:** Specify target behaviour
- **Step 4:** What needs to change?

**Stage 2:**
Identify intervention options

- **Step 1:** Intervention functions
- **Step 2:** Policy categories

**Stage 3:**
Identify content and implementation options

- **Step 1:** Behaviour Change Techniques
- **Step 2:** Mode of Delivery

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**ICAN QUIT**
In Pregnancy

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**THE UNIVERSITY OF NEWCASTLE**
**AUSTRALIA**
From Behaviour to Intervention

HP Prescribing NRT
Possible interventions – training, education, modelling, environmental restructuring, enablement, persuasion, coercion, incentivisation, restrictions
From Behaviour to Intervention

HP Prescribing NRT
Possible interventions – training, education, modelling, environmental restructuring, enablement, persuasion, coercion, incentivision, restrictions
Quality of Life

Intervention to Policy
Decisions made by authorities concerning interventions

HP Prescribing NRT

- Guideline
- Service provision
- Communication/marketing
- Regulation
The APEASE criteria

<table>
<thead>
<tr>
<th>The APEASE criteria</th>
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<tbody>
<tr>
<td>Affordability</td>
<td>Can it be delivered within an acceptable budget?</td>
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<tr>
<td>Practicability</td>
<td>Can it be delivered as designed and to scale</td>
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<tr>
<td>Effectiveness/cost?</td>
<td>How well does it work and is it worth the cost?</td>
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<tr>
<td>Acceptability</td>
<td>Is it judged appropriate to relevant stakeholders (policy makers, practitioners, the public) and engaging for potential users.</td>
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<td>Side-effects/safety</td>
<td>Does it have unwanted side-effects or unintended consequences?</td>
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<td>Equity</td>
<td>Will it reduce or increase disparities in health/wellbeing/standard of living?</td>
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In research using the BCW to......

1. **Design** interventions and policies
   - COM-B links to intervention functions link to techniques

2. “Retrofit”- **identify** what is in current interventions and policies

3. Provide a framework for **evaluation**
   - How are interventions working?

4. **Structure** **systematic reviews** of evidence
Section 4. Specifying Intervention content: Using the Behaviour Change Technique Taxonomy (v1)
Defining Characteristics of Behaviour change techniques (BCTs)

“Active ingredients” within the intervention designed to change behaviour

They are
- irreducible components of an intervention
- observable/measurable
- replicable

Can be used alone or in combination with other BCTs
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 Johnston, PhD, CPsychol · Charles Abraham, DPhil, CPsychol · Jill Francis, PhD, CPsychol · Wendy Hardeman, PhD · Martin P. Eccles, MD · James Cane, PhD · Caroline E. Wood, PhD

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Abstract

Background CONSORT guidelines call for precise reporting of behavior change interventions. We need rigorous methods of characterizing active content of interventions with precision and specificity.

Objectives The objective of this study is to develop an extensive, consensually agreed hierarchically structured taxonomy of techniques [behavior change techniques (BCTs)] used in behavior change interventions.

Methods In a Delphi-type exercise, 14 experts rated labels and definitions of 124 BCTs from six published classification systems. Another 18 experts grouped BCTs according to similarity of active ingredients in an open-sort task. Inter-rater agreement amongst six researchers coding 85 intervention descriptions by BCTs was assessed.

Results This resulted in 93 BCTs clustered into 16 groups. Of the 26 BCTs occurring at least five times, 23 had adjusted kappas of 0.60 or above.

Conclusions “BCT taxonomy v1,” an extensive taxonomy of 93 consensually agreed, distinct BCTs, offers a step change as a method for specifying interventions, but we anticipate further development and evaluation based on international, interdisciplinary consensus.
BCT Taxonomy App
10. Reward and Threat
10.2 Material Reward (behaviour)

Arrange for the delivery of money, vouchers or other valued objects if and only if there \textit{has been} effort and/or progress in performing the behaviour.
1. Look up BCT category – Feedback and Monitoring
2. Consider carbon monoxide breath testing of a smoker who’s trying to quit

2. Feedback and Monitoring
2.6 Biofeedback
Provide feedback about the body (e.g. physiological or biochemical state) using an external monitoring device as part of a behaviour change strategy

Any other categories that could be covered?
• Health Providers have the **physical capability** to prescribe NRT

• But not the psychological capability to
  - pay **attention** to this behaviour over other competing behaviours (other issues in pregnancy)
  - develop **routines** for noticing when the behaviour does not occur (missing cues)
  - develop **plans** for acting in the future (prioritising)
Selecting relevant Intervention functions

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<th>Education</th>
<th>Persuasion</th>
<th>Incentivisation</th>
<th>Coercion</th>
<th>Training</th>
<th>Restriction</th>
<th>Environmental restructuring</th>
<th>Modelling</th>
<th>Enablement</th>
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<td>Social opportunity</td>
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<td>Automatic motivation</td>
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<td>Reflective motivation</td>
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</table>
• **Capability**
  – Psych – low knowledge, skills - training, reminders, CPD points

• **Opportunity**
  – Physical - restructure environment – prompts, resources
  – Social - Role, Norms

• **Motivation**
  – Automatic – emotive msgs
  – Reflective - increase optimism, NNT

• **Capability**
  – Physical – dependence – NRT
  – Psych – low self-efficacy – build confidence

• **Opportunity**
  – Physical – provide resources/NRT
  – Social – modelling, smoke-free home

• **Motivation**
  – Automatic – new role, self-reward, coping
  – Reflective – persuasion, education, enablement
Your toolbox

1. Understand the behaviour. Behavioural analysis and diagnosis using COM-B

2. Systematically select appropriate intervention functions & policy categories to bring about change

3. Specify active ingredients in the intervention
Questions?

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Further Reading

• Gould GS. Exploring the barriers and enablers to smoking cessation in pregnant Aboriginal and Torres Strait Islander women with the behaviour change wheel. Australasian Epidemiologist. 2014;21(2):31-5.