Describing the ‘how’ of behaviour change interventions: A taxonomy of modes of delivery

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Background: Describing the ‘what’

• Recent methodological advances (e.g. Behaviour Change Technique Taxonomy v1; BCTTv1\(^1\)) have led to:
  – Improved reporting of behaviour change interventions
  – Greater understanding of associations between BCTs and intervention outcomes

\(^1\) Michie et al., 2013; 2015
Background: Describing the ‘how’

• Associations between BCTs and intervention effects may be confounded by the ways in which BCTs are delivered
  – Template for Intervention Description and Replication (TIDieR) specifies need to accurately describe mode of delivery of interventions (Item 6) ¹

¹Hoffman, 2014
Reporting Mode of Delivery: How have we been doing?

• Some progress in this area
  – e.g. Coding scheme for mode of delivery of internet-based interventions\(^1\)

• However, has received relatively little focus in behavioural intervention research\(^2\)
  – Prevents faithful implementation & accurate replication
  – We need a **methodological resource** to systematically report mode of delivery information

\(^1\) Webb, et al., 2010 \(^2\) Dombrowski, 2016
Aim:

To develop a reliable and agreed classification system with which to describe the modes of delivery of behaviour change interventions
Methods: Overview

1. **Data extraction:** 100 intervention reports coded
2. **Feedback:** Selected experts, covering 4 behavioural domains, contacted for feedback
3. **Open peer-review:** Invite to wider international research community to submit feedback
Step 1: Data Extraction

- Mode of delivery information extracted from a set of published intervention papers, selected randomly from an existing data-set\(^1\)
- Preliminary hierarchical framework & coding guidelines drafted
- Data extracted from 100 behaviour change intervention reports by 2 coders independently
  - Good inter-rater agreement (Kappa ≥ .68)

\(^1\)Michie, et al., 2016
Step 2: Feedback from Experts

- 13 experts (identified from our scientific network) contacted by email over 2 rounds
- Feedback received from 9 experts with expertise in 4 behavioural domains
  - Alcohol (n = 1), Smoking (n = 2), Diet (n = 3), Physical Activity (n = 3)
Step 3: Open Peer-Review

- Draft Mode of Delivery Taxonomy published online
- International research community invited to submit feedback
- Feedback received from 25
  - Something missing (n = 15)
  - Structure and/or coherence (n = 11)
  - Changes to terminology (n = 8)
  - General suggestions for improvement (n = 11)
Results:
Hierarchical Mode of Delivery Taxonomy (v1)

• 4-level hierarchical taxonomy with 4 top-level categories:

1. **Human**: Delivery through human interaction in which the participant sees and/or hears a person in real-time

2. **Hard copy**: Delivery through physical / hard-copy material (e.g. paper, acetate, objects); given or sent to the participant); can include diagrams, pictures and/or text.

3. **Digital**: Delivery through a form of digital technology, including computer, smartphone, tablet, television, wearable & environmental devices

4. **Somatic**: Delivery through a device designed to act on the body
**Example of hierarchical structure**

<table>
<thead>
<tr>
<th>Top-level</th>
<th>Sub-Level 1</th>
<th>Sub-Level 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>02. Hard Copy</td>
<td>01. Information</td>
<td>01. Letter</td>
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<td>02. Poster</td>
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<td>03. Leaflet/brochure/booklet</td>
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<td>04. Labelling</td>
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<td>05. Public Notice</td>
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<td>06. Book/Manual</td>
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<td>07. Newspaper/Magazine</td>
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<td>08. Worksheets</td>
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<tr>
<td></td>
<td>02. Microphysical</td>
<td>[Link to Choice Architecture typology work; Hollands et al., 2013]</td>
</tr>
</tbody>
</table>
## Examples of hierarchical structure

<table>
<thead>
<tr>
<th>Top-level</th>
<th>Sub-Level 1</th>
<th>Sub-Level 2</th>
<th>Sub-Level 3</th>
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</thead>
<tbody>
<tr>
<td>03. Digital</td>
<td>02. Wearable</td>
<td>01. Clothing</td>
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<td></td>
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<td>02. Accessory</td>
<td>Virtual Reality</td>
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<th>Sub-Level 2</th>
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<tbody>
<tr>
<td>04. Somatic</td>
<td>01. Patch</td>
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<td>02. Pill</td>
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<td>03. Inhaler</td>
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<td>04. IV/Injection</td>
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<td>05. Liquid</td>
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<td>06. Subcutaneous</td>
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<td>07. Chewable</td>
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<td>08. Light exposure</td>
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<td>09. ‘Hands on’</td>
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Results:
Cross-Cutting Attributes

- A separate classification system was developed to capture cross-cutting attributes (applicable to many levels of the hierarchy).
- 8 cross-cutting attributes identified:
  - Grouping, Interaction, Tailoring, Synchronicity, Gaming, Mobility, Format, Push vs Pull.
Summary & Conclusions

• Developed a taxonomic method for describing mode of delivery, drawing on literature & experts
  – Open-peer review hugely valuable & constructive
  – Further work will be needed to examine usefulness of taxonomy across different datasets

• Adds to the methodological resources available to researchers, has potential to aid understanding of intervention effects.

Thank you to everyone who took the time to send feedback!
Next Steps

• Currently applying the taxonomy to a new set of 100 interventions
  – Hope to publish final draft early 2017

• Work will contribute to ‘ontology’ of behaviour change interventions, specifying relationships between BCTs, MoAs, modes of delivery, populations, settings and types of behaviour
  – see www.humanbehaviourchange.org
Thank you!

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