Selecting the Behaviour Change Wheel framework

Commit ID: b2b401e

2023-07-21

In my introductory chapter I presented how I view reporting guidelines to be part of a complex behaviour change intervention. But that isn’t how I have always viewed them. In fact, when I began my PhD I had never heard of the term. I thought of reporting guidelines as similar sets of recommendations that authors should adhere to. I didn’t think about how guidance was communicated, whether through publications, example & elaboration documents, or checklists, and the differences between those resources. I didn’t think about the websites authors used to find those resources. I didn’t think about *how* or *when* authors used guidance.

But after reading accounts of authors struggling with the guidance content, access, formats, workflows, confidence, and the behaviour of others, I began to think beyond the guidance text, and more about the system. I began to recognize the complexity that came from the number of different stakeholders involved, differences between guidelines, the skills and prior knowledge an author must have to act on the guidance, and the broad variation in *how*, *when*, and *why* guidelines are used.

Having identified so many influences that may be limiting the success of the current system, I started looking for a framework that could help me work out how this system could be changed to address the barriers I identified. I considered the MRC guidance for developing and evaluating complex interventions[1] but its guiding principles were too broad. I also considered Person Based Approach (PBA)[2]. The MRC guidance and person based approach both emphasise the importance of understanding context, evidencing needs, and iterative evaluation and refinement. Both recommend involving stakeholders and the intervention recipients. I have adhered to these principles in my thesis: in chapters 3 I collect evidence for needs and context, in chapters 8, 9, and 11 I explain how I involved stakeholders and users, and in chapters 11 and 12 I explain how I refined the intervention in response to author feedback and possible next steps for iterative development.

However, both the MRC and PBA guidance require intervention designers to theorize how the intervention is working. To do this, designers need to select a theoretical framework. First I considered the Theoretical Domains Framework (TDF, [3]; [4]). The TDF was developed to help implementation researchers identify what influences the behaviour of health professionals and patients. It was made by synthesising 33 theories of behaviour and behaviour change into 14 domains that cover the cognitive, affective, social, and environmental influences on behaviour. The TDF and its accompanying guide [5] are useful, but they require considerable understanding of psychological constructs that might not be familiar to non-behavioural experts, and although the TDF helps understand what influences behaviour, there is little guidance on how to then go about *changing* that behaviour.

The Behaviour Change Wheel [6] addresses these limitations. It is designed for “policy makers, intervention designers, researchers and practitioners…from a wide range of disciplines with varying levels of expertise”. At its core is the COM-B model of behaviour; a simpler and more intuitive model which can be mapped to the TDF. The BCW then goes beyond the TDF by helping intervention designers select options for changing behaviour.

When making COM-B, Michie et al began with motivation, defined as: “brain processes that energize and direct behaviour” [7]. Their next step was “to consider the minimum number of additional factors needed to account for whether change in the behavioural target would occur, given sufficient motivation” [6]. They used a US consensus meeting of behavioural theorists [8] and a centuries-old principle of criminal law: that to prove guilt one must show means or capability, opportunity, and motive. Michie et al. argued that the “common conclusion from these two separate strands of thought lends confidence to this model of behaviour”[6], and they added further confidence by mapping COM-B to the TDF. When describing COM-B, Michie et al. explain how the components capability, opportunity, and motivation interact with each other to generate behaviour which, in turn, may influence these components. (See [Figure 1](#fig-com-b))

|  |
| --- |
| Figure 1: The COM-B system for understanding behaviour, reproduced with permission from [6] |

The outer rings of the BCW (the intervention functions and policy categories) were made by synthesizing 19 existing frameworks to identify. In doing so, they systematically created a framework which is comprehensive (in that it covers all intervention options), conceptually coherent (categories are all of the same type), and linked to an overarching model of behaviour. This was one of their core objectives, as they had identified that previous frameworks often lacked a model of behaviour, were not comprehensive, and lacked coherence. For example, they criticise MINDSPACE [9] (which was popular amongst UK policy makers at the time) for not including all intervention types and for conflating psychological constructs with mechanisms of action and modes or delivery.

The COM-B model at the center of the BCW holds that behaviour arises from a system that involves three components: Capability, Opportunity, and Motivation. These are defined in [Table 1](#tbl-com-b) but, briefly; capability includes having the required knowledge; opportunity includes the necessary resources such as time, materials, or reminders; and motivation means having the required intentions, beliefs, wants and needs to perform the behaviour. Changing behaviour requires altering one or more of these components.

An intervention may have multiple functions. For example, a television advert about drink driving may educate its audience with information about alcohol limits and persuade using emotive imagery. In this example, education is being used as an intervention function to target psychological capability (teaching people how much they can safely drink before driving) and persuasion is being used to target motivation (targeting people’s emotions to make them less likely to want to engage in drink driving). The functions you choose depend on the behavioural drivers you are trying to target. The different types of intervention function are defined in [Table 2](#tbl-intervention-functions).

Having decided what functions your intervention needs, the guide helps you decide how to implement them with policy categories including communication/marketing, guidelines, regulation, and service provision. Policy categories are defined in [Table 3](#tbl-policy-categories).

Recognizing that intervention designers come from various disciplines and places of work, Michie et al. published a book to help designers apply the BCW. This book contains suggested steps, exercises, and worksheets. In the next chapter, I describe how I guided members of the UK EQUATOR Centre through this process.

Table 1: COM-B model components and examples, reproduced with permission from the Behaviour Change Wheel guide [10]

| **COM-B model component:** Definition | **Example** |
| --- | --- |
| **Physical capability:** Physical skill, strength, or stamina | Having the skill to take a blood sample |
| **Psychological capability:** Knowledge or psychological skills, strength, or stamina to engage in the necessary mental processes | Understanding the impact of carbon dioxide on the environment |
| **Physical opportunity:** Opportunity offered by the environment involving time, resources, locations, cues, physical ‘affordance’ | Being able to go running because one owns appropriate shoes |
| **Social opportunity:** Opportunity afforded by interpersonal influences, social cues and cultural norms that influence the way that we think about things, e.g., the words and concepts that make up our language | Being able to smoke in the house of someone who smokes but not in the middle of a board meeting |
| **Reflective motivation:** Reflective processes involving plans (self-conscious intentions) and evaluations (beliefs about what is good and bad) | Intending to stop smoking |
| **Automatic motivation:** Automatic process involving emotional reactions, desires (wants and needs), impulses, inhibitions, drive states and reflex responses | Feeling anticipated pleasure at the prospect of eating a piece of chocolate cake |

Table 2: Intervention function definitions and examples, reproduced with permission from the Behaviour Change Wheel guide [10]

| **Intervention Function** | **Definition** | **Example of intervention function** |
| --- | --- | --- |
| **Education** | Increasing knowledge or understanding | Providing information to promote healthy eating |
| **Persuasion** | Using information to induce positive or negative feelings or stimulate action | Using imagery to motivate increases in physical activity |
| **Incentivisation** | Creating an expectation of reward | Using prize draws to induce attempts to stop smoking |
| **Coercion** | Creating an expectation of punishment or cost | Raising the financial cost to reduce excessive alcohol consumption |
| **Training** | Imparting skills | Advanced driver training to increase safe driving |
| **Restriction** | Using rules to reduce the opportunity to engage in the target behaviour (or to increase the target behaviour by reducing the opportunity to engage in competing behaviours) | Prohibiting sales of solvents to people under 18 to reduce use for intoxication |
| **Environmental restructuring** | Changing the physical or social context | Providing on-screen prompts for GPs to ask about smoking behaviour |
| **Modelling** | Providing an example for people to aspire to or imitate | Using TV drama scenes involving safe-sex practices to increase condom use |
| **Enablement** | Increasing means/reducing barriers to increase capability (beyond education and training) or opportunity (beyond environmental restructuring) | Behavioural support for smoking cessation, medication for cognitive deficits, surgery to reduce obesity, prosthesis to promote physical activity |

Table 3: Policy categories, reproduced with permission from the Behaviour Change Wheel guide [10]

| **Policy Category** | **Definition** | **Example** |
| --- | --- | --- |
| **Communication/marketing** | Using print, electronic, telephonic or broadcast media | Conducting mass media campaigns |
| **Guidelines** | Creating documents that recommend or mandate practice. This includes changes to service provision | Producing and disseminating treatment protocols. |
| **Fiscal measures** | Using the tax system to reduce or increase the financial cost | Increasing duty or increasing anti-smuggling activities |
| **Legislation** | Making or changing laws | Prohibiting sale or use |
| **Environmental/social planning** | Designing and/or controlling the physical or social environment | Establishing support services in workplaces, communities etc. |

1. Skivington K, Matthews L, Simpson SA, et al (2021) [A new framework for developing and evaluating complex interventions: Update of Medical Research Council guidance](https://doi.org/10.1136/bmj.n2061). BMJ n2061

2. Yardley L, Morrison L, Bradbury K, Muller I (2015) [The Person-Based Approach to Intervention Development: Application to Digital Health-Related Behavior Change Interventions](https://doi.org/10.2196/jmir.4055). Journal of Medical Internet Research 17:e4055

3. Cane J, O’Connor D, Michie S (2012) [Validation of the theoretical domains framework for use in behaviour change and implementation research](https://doi.org/10.1186/1748-5908-7-37). Implementation Science 7:37

4. Michie S, Johnston M, Abraham C, Lawton R, Parker D, Walker A (2005) [Making psychological theory useful for implementing evidence based practice: A consensus approach](https://doi.org/10.1136/qshc.2004.011155). BMJ Quality & Safety 14:26–33

5. Atkins L, Francis J, Islam R, et al (2017) [A guide to using the Theoretical Domains Framework of behaviour change to investigate implementation problems](https://doi.org/10.1186/s13012-017-0605-9). Implementation Science 12:77

6. Michie S, van Stralen MM, West R (2011) [The behaviour change wheel: A new method for characterising and designing behaviour change interventions](https://doi.org/10.1186/1748-5908-6-42). Implementation Science 6:42

7. Mook DG Motivation : The organization of action. (No Title)

8. Fishbein M, Triandis HC, Kanfer FH, Becker M, Middlestadt SE, Eichler A, et al (2001) Factors influencing behavior and behavior change. Handbook of health psychology 3:3–17

9. Dolan P, Hallsworth M, Halpern D, King D, Vlaev I (2010) MINDSPACE: Influencing behaviour for public policy.

10. Michie S, Atkins L, West R (2014) The Behaviour Change Wheel: A Guide to Designing Interventions. Silverback Publishing, London