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**Patient Engagement Lab**

# WhatsApp Behavioural Change Techniques (BCT) Implementation:

## Prototypes & Testing Guide


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# 1. OVERVIEW

.....The WhatsApp BCT Prototype & Testing Guide was completed as part of the Patient Engagement Lab[1]'s work on developing a platform for generating experimental evidence in order to efficiently optimise mHealth interventions.[2,3,4,5] The Patient Engagement Lab works on embedding experimental design and more rigorous testing processes into mhealth programmes delivered at scale. Rapid experimentation relies on rapid innovation and a systematic approach to testing and comparing alternative approaches.

The Behavioural Change Technique (BCT) Taxonomy[6] provides a vital resource for systematically defining, categorising and testing innovations in behaviour change strategy. The BCTs are 93 distinct strategies that are clearly defined and categorised. BCTs enable consistent definition and distinction for component parts in complex behaviour change interventions. The Patient Engagement Lab sought to test and compare the effects of alternative BCTs on mediating outcomes in large-scale mhealth programmes. Relevant mediating outcomes include sharing text messages with others, reading WhatsApp messages, responding to two-way message prompts and self-reported engagement in desired health behaviours (such as clinic attendance and adherence to contraceptive or other treatment regimens).

Implementing BCTs on SMS or internet protocol messaging programmes can, however, be a complex and time consuming task. Expertise in digital content design and in the specific communication channel is required. Expertise and user input are also required to ensure that the content and BCT implementations are appropriate to the specific programme context and population.

The WhatsApp BCT Prototype & Testing Guide was developed to support more rapid integration and testing of BCTs on a national mHealth platform in South Africa. The prototypes were developed by an experienced South African digital content designer and a South African isiXhosa-speaking service user from the Patient Engagement Lab. They assessed the feasibility of implementing each BCT using WhatsAPP API integration. Where BCTs were found to be feasible, scripts were developed showing how they could be implemented and then revised with service user input.

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[1] https://medium.com/patient-engagement-lab

[2] Copley, Charles; Grant, Eli, 2019, "mHealth messaging datasets", https://doi.org/10.7910/DVN/SUXFDT, Harvard Dataverse, V1

[3] Grant E and Copley C. Rapid experimentation at scale [version 1]. Gates Open Res 2019, 3:1662 (slides) DOI: 10.21955/gatesopenres.1116561.1

[4] Grant E and Copley C. Rapid feedback cycles for optimised and adaptable mobile messaging [version 1]. Gates Open Res 2019, 3:1663 (slides), DOI: 10.21955/gatesopenres.1116562.1

[5] See Copley et al. blog giving a summary of the work here: https://medium.com/patient-engagement-lab/a-technical-platform-to-support-rapid-feedback-services-eedfc592daf8

[6] Michie S, Richardson M, Johnston M, Abraham C, Francis J, Hardeman W, Eccles MP, Cane J, Wood CE, The Behavior Change Technique Taxonomy (v1) of 93 Hierarchically Clustered Techniques: Building an International Consensus for the Reporting of Behavior Change Interventions, Annals of Behavioral Medicine, 46:1, 2013, 81–95, DOI: 10.1007/s12160-013-9486-6

The BCT prototypes focus on two key focus areas in mhealth work in low- and middle-income countries: reproductive health / family planning messaging and HIV testing. They are designed to be implemented using WhatsApp API integration specifically in South Africa; most features are, however, generalisable to other Internet Protocol messaging applications or platforms (such as Facebook Messenger, Signal or Telegram). Indeed, implementation via WhatsApp may now be the most challenging because WhatsApp since changed their Terms and Conditions.

Alongside the BCT prototypes, the Patient Engagement Lab linked BCTs to terminology used in different fields (e.g. 'nudges' tested in behavioural economics trials); and systematically coded BCTs against mediating outcomes that are observable on WhatsApp messaging platforms. These three datasets are used together to support more efficient testing and optimisation of our messaging platforms. We hope they can be of use to others who are similarly seeking to develop and iteratively improve their mhealth platforms.

## 2. DESCRIPTION OF DATASETS

**……**

The WhatsApp BCT Prototype & Testing Guide includes four spreadsheets:

**BCT Prototypes**. A description and message scripts for implementing each BCT, intended for WhatsApp implementation on an established platform in South Africa

**BCT Categories x Outcome.** A summary of observable behavioural outcome data that can be readily collected on WhatsApp messaging platforms and how these outcomes related to tests or implementations across BCT categories.

**BCT x Nudges.** A summary of how different nudges tested in the behavioural economics literature relate to different behavioural change techniques.

**Coding.** Data validation lists for the accompanying spreadsheets.

### Example of a BCT Prototype

BCT Category: Social Support
Behaviour Change Technique: Social support (unspecified)

SMS Push
"Ask a Friend" push message to nominate a support partner for a behaviour change journey, for a nursing stress mental health mobi-based survey tool. Or recruitment push message to join an in-person facility-based group or WhatsApp group.

WhatsApp Push

Recruitment push message for opt-in to social support via WA group via push WA surveys testing "How stressed are you?" or "Find out your Happiness rating"

WhatsApp Series
Regular WA message support series with related WhatsApp group targeted at a specific behaviour for a closed group e.g. learning / professional development interest groups (group progress through Bettercare Learning modules / crash courses on specific - clinical - topics.)
Psychosocial support groups: cognitive behavioural therapy-based individualised and group activities, feedback and discussion sessions for at risk nurses, identified via push WA surveys testing "How stressed are you?" or "Find out your Happiness rating"

WhatsApp Image
Add image to recruitment push message for opt-in to social support via WA group via push WA surveys testing "How stressed are you?" or "Find out your Happiness rating"

## BCT Prototypes

| Variable | Description of Variable |
|---|---|
| Code | ID number for each BCT |
| BCT Group | The category within which each BCT is categorised (there are a total of 16)[7] |
| BCT | The name or label assigned to each BCT |
| Definition | The definition of each BCT[7] |
| Example | An example illustrating how each BCT might be implemented in practice[7] |
| Prototype | Script and meta-data for the prototype's implementation on WhatsApp |
| Description | A description of the prototype and how it would be implemented, including rationale |
| Target Behaviour | The broad category of health behaviour(s) the prototype was designed to address (either HIV Testing, Sharing messages about HIV testing, or Family Planning) |

[7] From: Michie S, Richardson M, Johnston M, Abraham C, Francis J, Hardeman W, Eccles MP, Cane J, Wood CE, The Behavior Change Technique Taxonomy (v1) of 93 Hierarchically Clustered Techniques: Building an International Consensus for the Reporting of Behavior Change Interventions, Annals of Behavioral Medicine, 46:1, 2013, 81–95, DOI: 10.1007/s12160-013-9486-6 and Michie S, Atkins L, West R. (2014) The Behaviour Change Wheel: A Guide to Designing Interventions. London: Silverback Publishing. www.behaviourchangewheel.com

## BCT Categories x Outcomes

| Variable | Description of Variable |
|---|---|
| BCT Grouping | One of the 16 BCT categories[7] |
| Most applicable BCTs | Which of the BCTs in the category are most relevant to the outcomes that can be observed on a WhatsApp messaging platform |
| Outcome: Knowledge (Quiz/ Question) | The first outcome is 'Knowledge', where quizzes or single questions sent via WhatsApp can be used to measure users' knowledge of a topic |
| Outcome: Interaction Uptake | The second outcome is 'Interaction Uptake' or response rate, which refers to the rate at which service users respond to or engage with interactive features (two-way messaging) |
| Outcome: Service Uptake | The third outcome is 'Service Uptake' or 'sign up rate' which refers to the rate at which service users uptake any service they are invited to join or use (via WhatsApp). For example, an offer to sign up to a new message set on a new topic. |
| Outcome: Service Share | The fourth outcome is service sharing, where users share specific messages or enrol others onto the platform (or onto another recommended platform). |
| Outcome: Other observable behaviour | The final outcome is any other form of observable behaviour, particularly any data on health behaviours that can be obtained from administrative data rather than via users. For example, when a women re-registers onto a maternal messaging platform 14 months after her last due date, her birth spacing is observed on the platform. |

## BCT x Nudges

Much of the experimental work on behaviour change strategies in mhealth has been conducted by behavioural economists who refer to ‘nudges’ rather than BCTS. To facilitate integration of findings with existing literature, we mapped economic terminology to relevant BCTs.

| Variable | Description of Variable |
|---|---|
| Nudge | Label used for different types of ‘nudges’ tested in the experimental literature |
| Example | An example of the nudge to clarify how the label is applied in practice |
| BCT(s) | A list of the BCTs that include that nudge strategy |