

eHealth – what does psychology have to do with it?

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HEALTH BEHAVIOUR CHANGE
RESEARCH GROUP





Uninvited Guests

•<https://vimeo.com/128873380>

01:03



Overview

- What is behaviour and why is it so important?
- The behaviour change wheel
- The person-based approach
- eHealth work at NUIG

So what does psychology have to do with it?

- eHealth solutions need to be centred on the person!
- Psychology can play a role in the development of eHealth solutions in two ways
 1. Providing an framework for understanding behaviour change
 2. Providing a framework for person-based design



What is behaviour?

Anything a person **does** in response to internal or external events.

Behaviours are **physical events** that occur in the body and are controlled by the brain (Hobbs, Campbell, Hildon, & Michie, 2011)

What is health behaviour?

- **“Behaviour performed by the individual, regardless of his/her perceived health status, with the purpose of protecting, promoting or maintaining health.”**



What is Behaviour?

- 1) Walking in the park
- 2) Having the confidence to ride a bike
- 3) Taking a statin tablet
- 4) Losing weight
- 5) Intending to eat 3 pieces of fruit a day
- 6) Washing your hands
- 7) Reducing cholesterol

Combined Impact of Health Behaviours and Mortality in Men and Women: The EPIC-Norfolk Prospective Population Study

Kay-Tee Khaw^{1*}, Nicholas Wareham²,

¹ Department of Public Health and Primary Care, Ins
Research Council, Epidemiology Unit, Cambridge, Uni

Conclusions

- 4 health behaviours predict a 4-fold difference in total mortality
- estimated impact equivalent to 14 yrs in chronological age

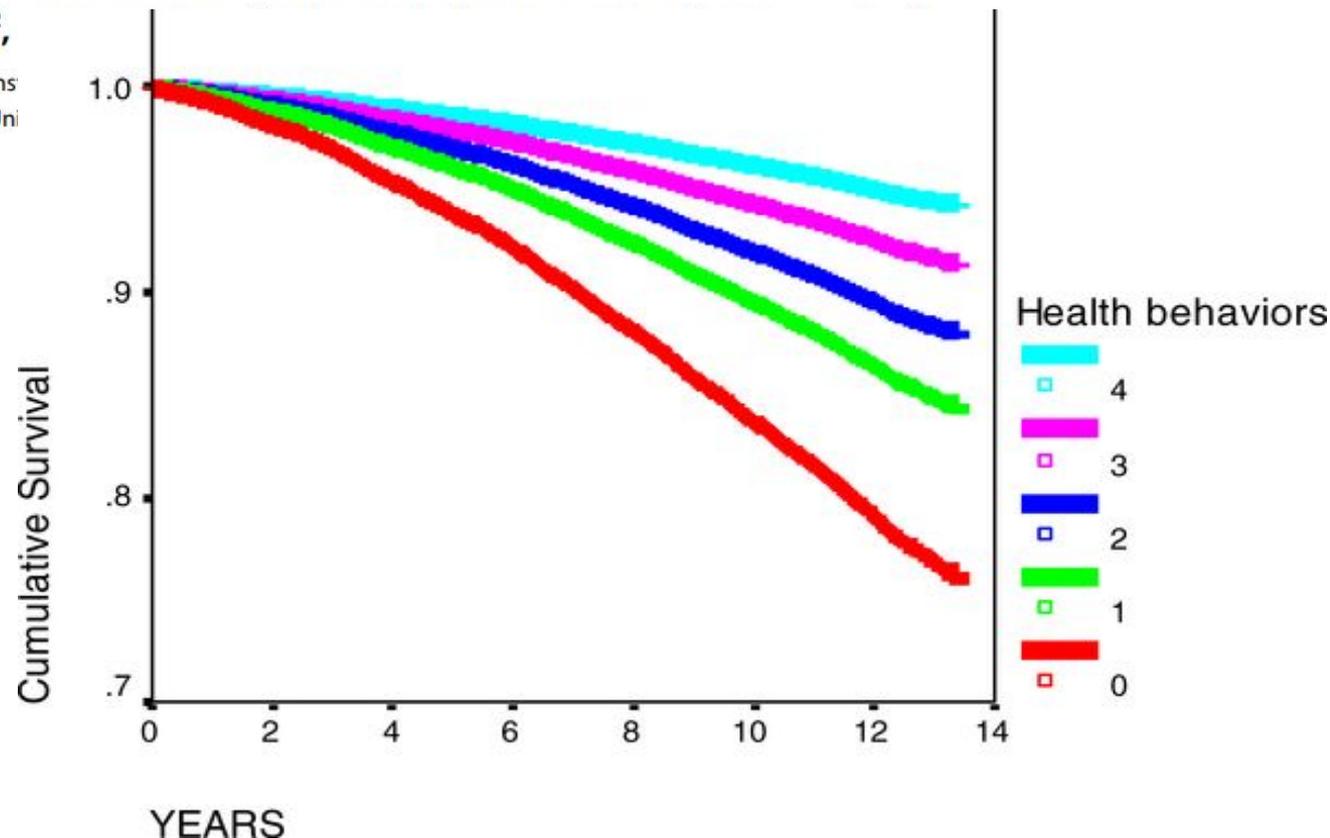


Figure 1. Survival Function According to Number of Health Behaviours in Men and Women Aged 45–79 Years without Known Cardiovascular Disease or Cancer, Adjusted for Age, Sex, Body Mass Index and Social Class, EPIC-Norfolk 1993–2006



How do we
change
behaviour?



Changing behaviour isn't rocket science – it's harder!

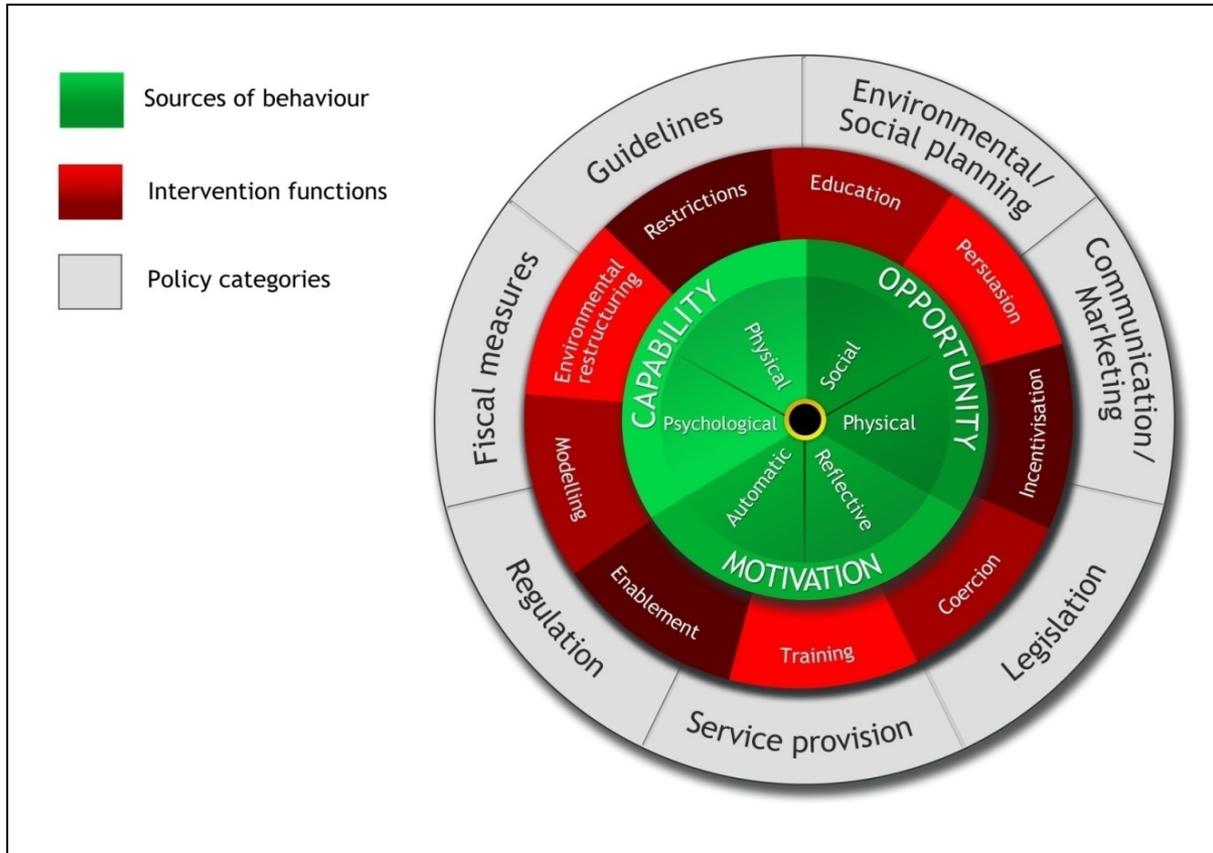
A Problem

Many interventions to change health behaviour designed according to the ISLAGIATT principle

It Seemed Like A Good Idea At The Time

- No understanding of mechanisms of change
- If effective, unclear why it worked, can't replicate...
- If ineffective, not sure why

The Behaviour Change Wheel



Research Highly accessed Open Access

The behaviour change wheel: A new method for characterising and designing behaviour change interventions

Susan Michie^{1*}, Maartje M van Stralen² and Robert West³

* Corresponding author: Susan Michie s.michie@ucl.ac.uk ▶ Author Affiliations

For all author emails, please [log on](#).

Implementation Science 2011, 6:42 doi:10.1186/1748-5908-6-42
Published: 23 April 2011

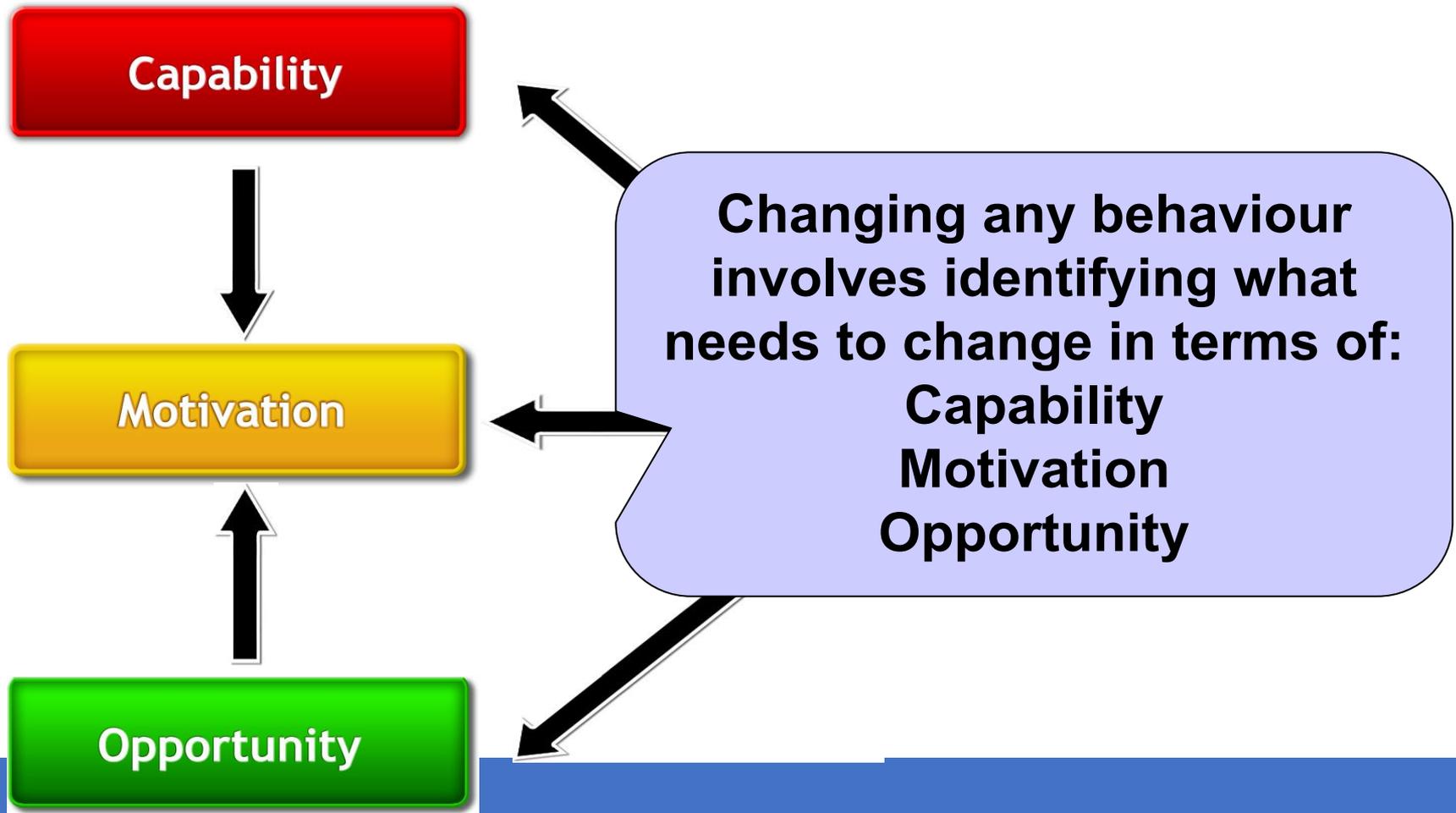
Abstract

Background

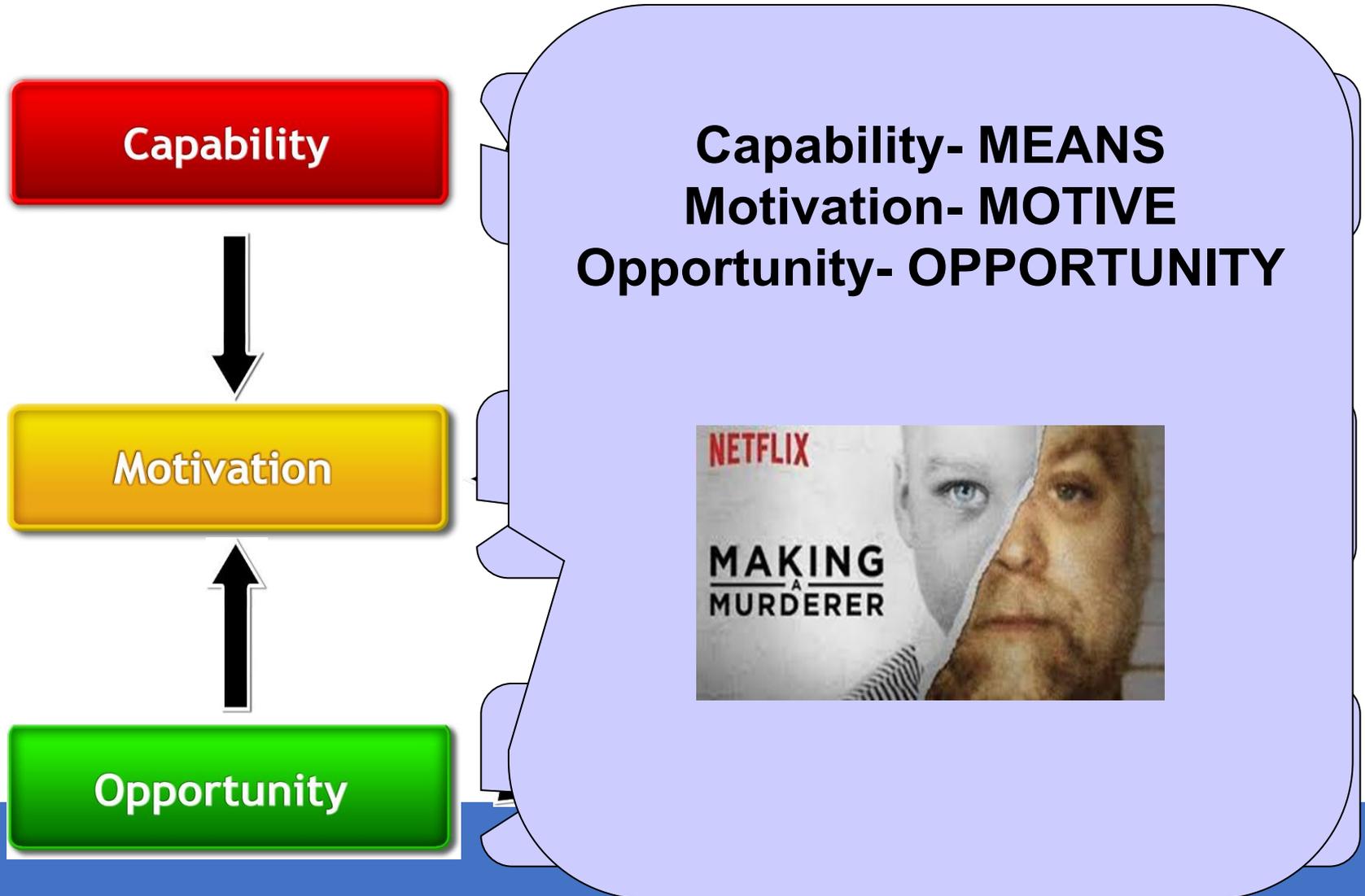
Improving the design and implementation of evidence-based practice depends on successful behaviour change interventions. This requires an appropriate method for characterising interventions and linking them to an analysis of the targeted behaviour. There exists a plethora of frameworks of behaviour change interventions, but it is not clear how well they serve this purpose. This paper evaluates these frameworks, and develops and evaluates a new framework aimed at overcoming their limitations.

Systematic Review:
19 frameworks
Combined into the BCW

The Capability Opportunity Motivation – Behaviour (COM-B) Model



The COM-B Model



COM-B Component

Capability – Physical

Capability – Psychological

Opportunity – Physical

Opportunity – Social

Motivation – Automatic

Motivation - Reflective



Change the physical or social context

Provide an example for people to aspire to or emulate



Increase means or reduce barriers to increase capability (beyond education or training) or opportunity (beyond environmental restructuring)



Use rules to reduce the opportunity to engage in the behaviour



Increase knowledge or understanding

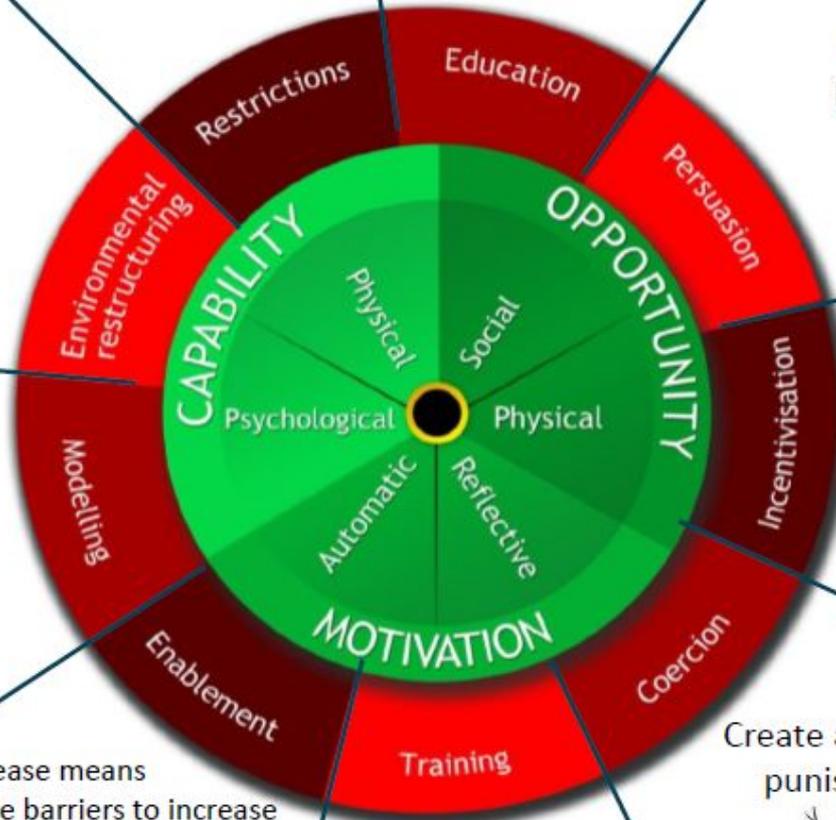


Use communication to induce positive or negative feelings to stimulate action

Create an expectation of reward

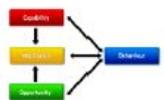


Create an expectation of punishment or cost



Impart skills

Selecting intervention functions



	Intervention functions								
	Education	Persuasion	Incentivisation	Coercion	Training	Restriction	Environmental restructuring	Modelling	Enablement
Physical capability									
Psychological capability									
Physical opportunity									
Social opportunity									
Automatic motivation									
Reflective motivation									

Creating documents that recommend or mandate practice. This includes all changes to service provision

Designing and/or controlling the physical or social environment



Using print, electronic, telephonic or broadcast media

Making or changing laws



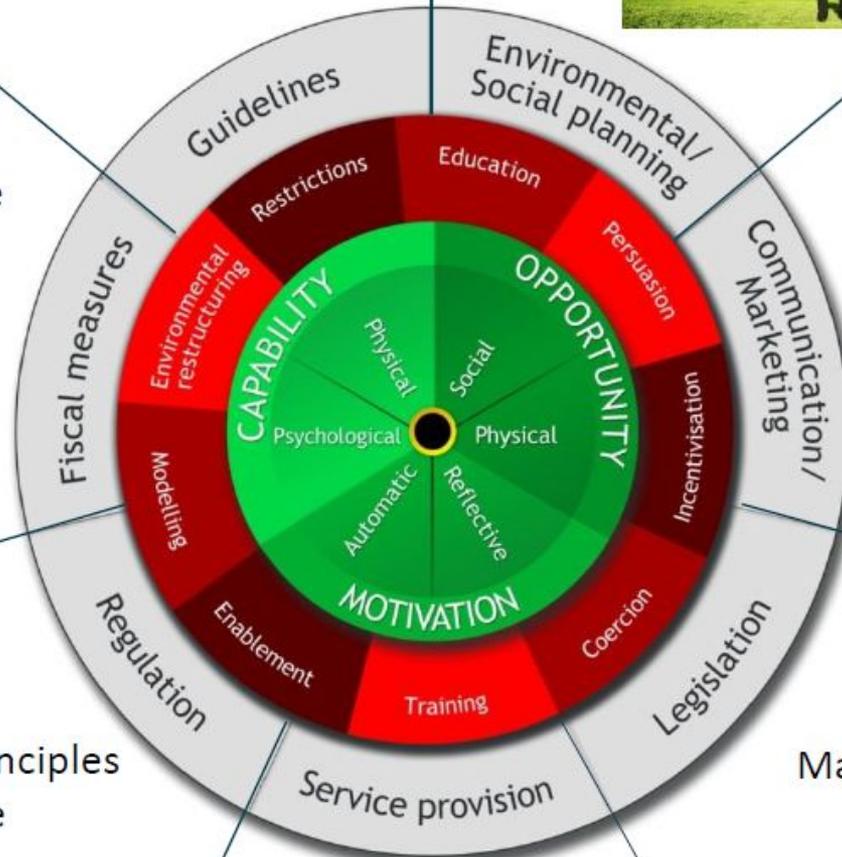
Delivering a service



Establishing rules or principles of behaviour or practice



Using the tax system to reduce or increase the financial cost



What's next?

So we've identified what needs to change in the COM-B model

We've identified the appropriate intervention function

How does this translate into practice?

ann. behav. med. (2013) 46:81–95
DOI 10.1007/s12160-013-9486-6

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 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

Published online: 20 March 2013
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Behaviour Change Techniques

Behaviour Change Technique (BCT)

“An observable, replicable, and irreducible component of an intervention designed to alter or redirect causal processes that regulate behaviour”

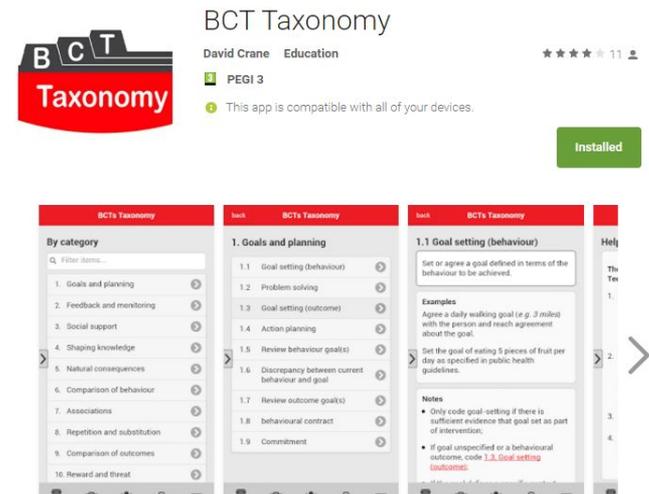
**☐ Active ingredients of
behaviour change interventions
(Abraham & Michie, 2008)**

Electronic Supplementary Materials Table 3. BCT Taxonomy (v1): 93 hierarchically-clustered techniques

Page	Grouping and BCTs	Page	Grouping and BCTs	Page	Grouping and BCTs
1	1. Goals and planning	8	6. Comparison of behaviour	16	12. Antecedents
	1.1. Goal setting (behavior) 1.2. Problem solving 1.3. Goal setting (outcome) 1.4. Action planning 1.5. Review behavior goal(s) 1.6. Discrepancy between current behavior and goal 1.7. Review outcome goal(s) 1.8. Behavioral contract 1.9. Commitment		6.1. Demonstration of the behavior 6.2. Social comparison 6.3. Information about others' approval		12.1. Restructuring the physical environment 12.2. Restructuring the social environment 12.3. Avoidance/reducing exposure to cues for the behavior 12.4. Distraction 12.5. Adding objects to the environment 12.6. Body changes
3	2. Feedback and monitoring	9	7. Associations	17	13. Identity
	2.1. Monitoring of behavior by others without feedback 2.2. Feedback on behaviour 2.3. Self-monitoring of behaviour 2.4. Self-monitoring of outcome(s) of behaviour 2.5. Monitoring of outcome(s) of behavior without feedback 2.6. Biofeedback 2.7. Feedback on outcome(s) of behavior		7.1. Prompts/cues 7.2. Cue signalling reward 7.3. Reduce prompts/cues 7.4. Remove access to the reward 7.5. Remove aversive stimulus 7.6. Satiation 7.7. Exposure 7.8. Associative learning		13.1. Identification of self as role model 13.2. Framing/reframing 13.3. Incompatible beliefs 13.4. Valued self-identify 13.5. Identity associated with changed behavior
5	3. Social support	10	8. Repetition and substitution	18	14. Scheduled consequences
	3.1. Social support (unspecified) 3.2. Social support (practical) 3.3. Social support (emotional)		8.1. Behavioral practice/rehearsal 8.2. Behavior substitution 8.3. Habit formation 8.4. Habit reversal 8.5. Overcorrection 8.6. Generalisation of target behavior 8.7. Graded tasks		14.1. Behavior cost 14.2. Punishment 14.3. Remove reward 14.4. Reward approximation 14.5. Rewarding completion 14.6. Situation-specific reward 14.7. Reward incompatible behavior 14.8. Reward alternative behavior 14.9. Reduce reward frequency 14.10. Remove punishment
6	4. Shaping knowledge	11	9. Comparison of outcomes	19	15. Self-belief
	4.1. Instruction on how to perform the behavior 4.2. Information about Antecedents 4.3. Re-attribution 4.4. Behavioral experiments		9.1. Credible source 9.2. Pros and cons 9.3. Comparative imagining of future outcomes		15.1. Verbal persuasion about capability 15.2. Mental rehearsal of successful performance 15.3. Focus on past success 15.4. Self-talk
7	5. Natural consequences	12	10. Reward and threat	19	16. Covert learning
	5.1. Information about health		10.1. Material incentive (behavior) 10.2. Material reward (behavior) 10.3. Non-specific reward 10.4. Social reward 10.5. Social incentive 10.6. Non-specific incentive 10.7. Self-incentive		16.1. Imaginary punishment

2.2	<i>Feedback on behavior</i>	<p>Monitor and provide informative or evaluative feedback on performance of the behavior (e.g. form, frequency, duration, intensity) <i>Note: if Biofeedback, code only 2.6, Biofeedback and <u>not</u> 2.2, Feedback on behavior; if feedback is on outcome(s) of behavior, code 2.7, Feedback on outcome(s) of behavior; if there is no clear evidence that feedback was given, code 2.1, Monitoring of behavior by others without feedback; if feedback on behaviour is evaluative e.g. praise, also code 10.4, Social reward</i></p>	<p>Inform the person of how many steps they walked each day (as recorded on a pedometer) or how many calories they ate each day (based on a food consumption questionnaire).</p>
2.3	<i>Self-monitoring of behavior</i>	<p>Establish a method for the person to monitor and record their behavior(s) as part of a behavior change strategy <i>Note: if monitoring is part of a data collection procedure rather than a strategy aimed at changing behavior, do not code; if monitoring of outcome of behavior, code 2.4, Self-monitoring of outcome(s) of behavior; if monitoring is by someone else (without feedback), code 2.1, Monitoring of behavior by others without feedback</i></p>	<p>Ask the person to record daily, in a diary, whether they have brushed their teeth for at least two minutes before going to bed</p> <p>Give patient a pedometer and a form for recording daily total number of steps</p>
2.4	<i>Self-monitoring of outcome(s) of behavior</i>	<p>Establish a method for the person to monitor and record the outcome(s) of their behavior as part of a behavior change strategy <i>Note: if monitoring is part of a data collection procedure rather than a strategy aimed at changing behavior, do not code ; if monitoring behavior, code 2.3, Self-monitoring of behavior; if monitoring is by someone else (without feedback), code 2.5, Monitoring outcome(s) of behavior by others without feedback</i></p>	<p>Ask the person to weigh themselves at the end of each day, over a two week period, and record their daily weight on a graph to increase exercise behaviors</p>

[Back to index page](#)



BCT Taxonomy
 David Crane Education
 PEGI 3
 This app is compatible with all of your devices.
 Installed

The app interface shows a list of categories on the left, including: 1. Goals and planning, 2. Feedback and monitoring, 3. Social support, 4. Shaping knowledge, 5. Natural consequences, 6. Comparison of behaviour, 7. Associations, 8. Repetition and substitution, 9. Comparison of outcomes, 10. Reward and threat.

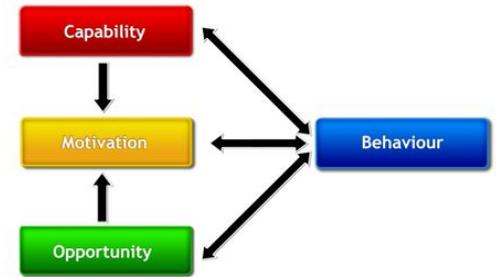
The main view shows '1. Goals and planning' with sub-items: 1.1 Goal setting (behaviour), 1.2 Problem solving, 1.3 Goal setting (outcome), 1.4 Action planning, 1.5 Review behaviour goals, 1.6 Discrepancy between current behaviour and goal, 1.7 Review outcome goals, 1.8 behavioural contract, 1.9 Commitment.

The detailed view for '1.1 Goal setting (behaviour)' includes instructions: 'Set or agree a goal defined in terms of the behaviour to be achieved.' It provides an example: 'Agree a daily walking goal (e.g. 3 miles) with the person and reach agreement about the goal.' It also includes notes: 'Only code goal setting if there is sufficient evidence that goal set as part of intervention.' and 'If goal unspecified or a behavioural outcome, code 1.3, Goal setting (outcome)'.

This app is an easy-to-navigate and fully searchable version of the Behaviour Change Technique Taxonomy v1 (BCTTV1) published by Michie et al. (2013). Comprising 93 behaviour change techniques (BCTs) with labels, definitions and examples, organised into 16 groupings to increase speed of use, the taxonomy is a valuable tool for anyone involved in designing, reporting or evaluating interventions to change behaviour.

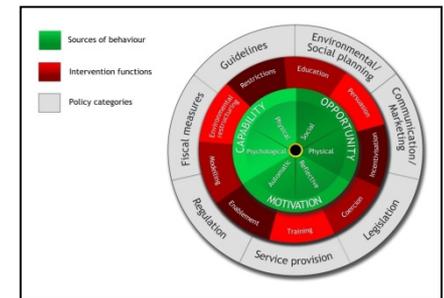
Linking it all together: COM-B, intervention functions and BCTs

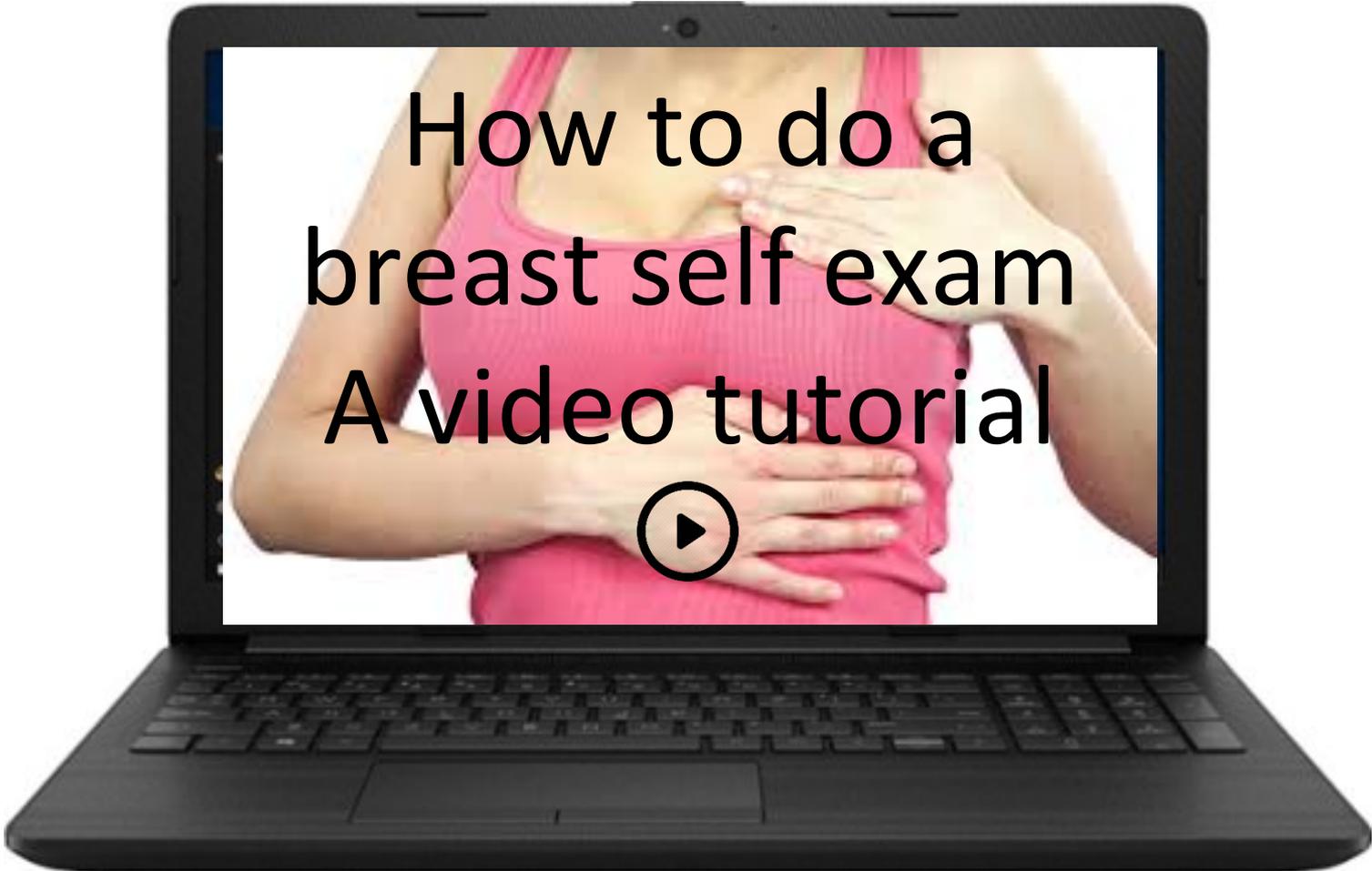
COM-B Component	Capability - Physical
Intervention Function	
Individual BCTs	



Linking it all together: COM-B, intervention functions and BCTs

COM-B Component	Capability - Physical
Intervention Function	Training
Individual BCTs	





How to do a
breast self exam
A video tutorial





Using the behaviour change wheel effectively

- Select which part of the COM-B model to intervene on based on research and theory
 - E.g. research shows that a lot of women don't know how to correctly self-exam therefore we select "physical capability"

Some behaviours will only require one part of the COM-B model, but some most complex behaviours require more than one part

The Person Based Approach

JOURNAL OF MEDICAL INTERNET RESEARCH

Yardley et al

Viewpoint

The Person-Based Approach to Intervention Development: Application to Digital Health-Related Behavior Change Interventions

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Faculty of Social and Human Sciences

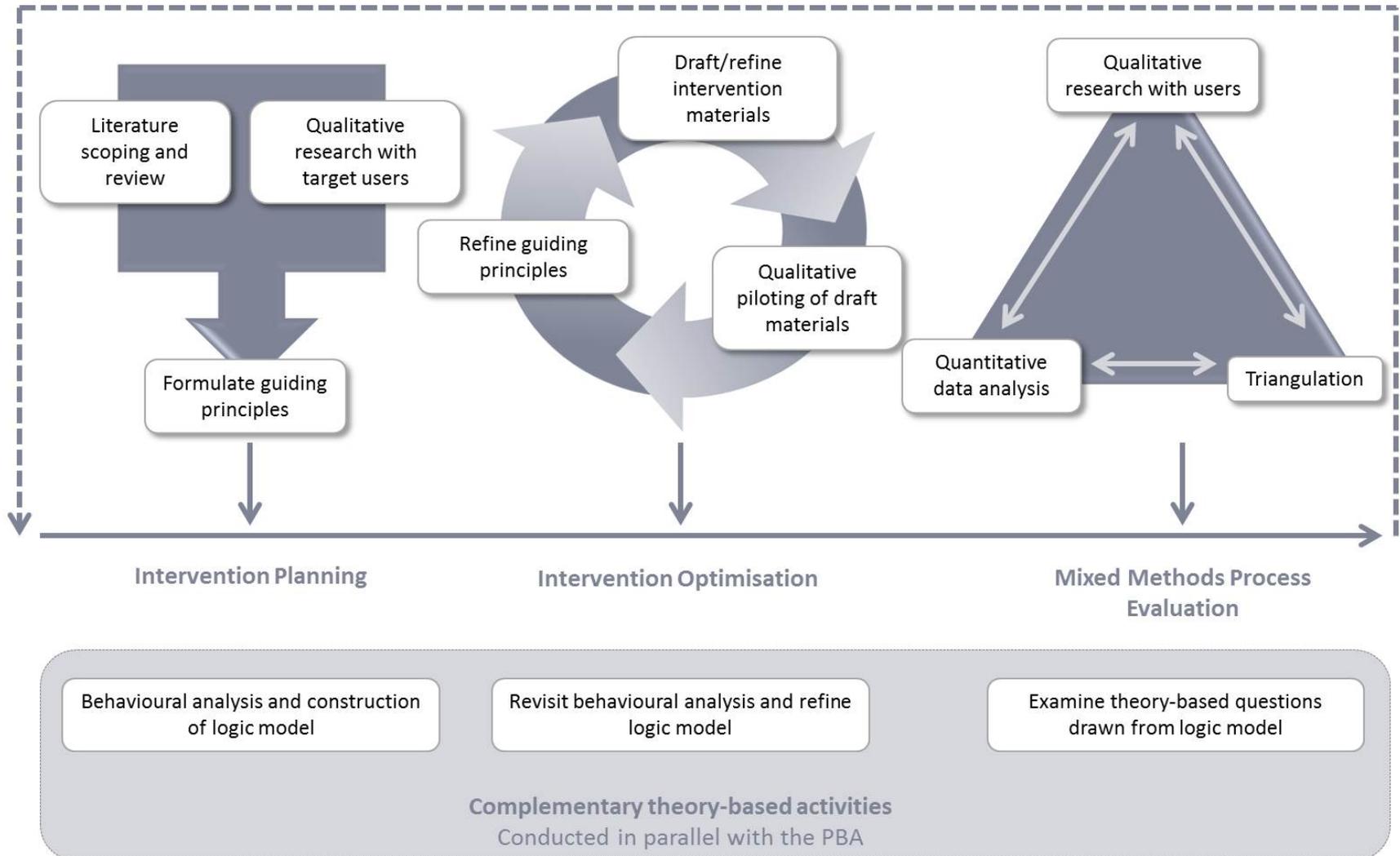
University of Southampton

Department of Psychology

2. Adherence

3. Outcomes

The Person Based Approach



Qualitative research allows the developer to

Avoid or modify intervention characteristics that are disliked, impractical or intrusive

Leading to comprehensible, acceptable & feasible content

Easy to use, motivating, enjoyable, convincing

eHealth work at the School of Psychology, NUIG



Medication adherence in hypertension: are digital interventions a possible solution?



Reducing the Patient Interval for Breast Cancer: a theory, evidence and person based approach to digital interventions



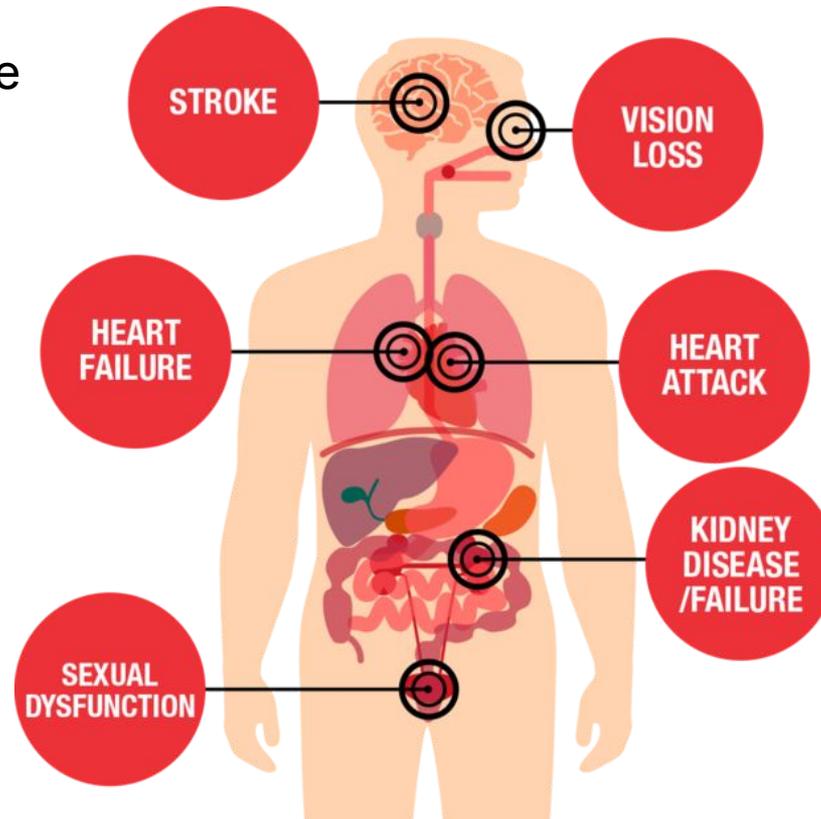
Moving On: The impact of a self-management intervention using mobile technology on health and wellbeing outcomes in cancer survivors

Medication adherence in hypertension: are digital interventions a possible solution?

Eimear Morrissey, Jane Walsh & Gerry Molloy

Hypertension affects 40% of the adult global population

Adherence to anti-hypertensives is low (50% at 6 months from initial prescription)



Anti-hypertensive medications are an effective way to control blood pressure

Digital interventions may offer a possible solution

Medical Research Council's Guide to Intervention Development

Feasibility and Piloting

Testing procedures
Estimating recruitment and retention
Determining sample size

Development

Identifying the evidence base
Identifying or developing theory
Modelling process and outcomes

Evaluation

Assessing effectiveness
Understanding change processes
Assessing cost effectiveness

Implementation

Dissemination
Surveillance and monitoring
Long term follow up

Study 1: Systematic
Review and
Meta-Analysis



Study 1: Systematic Review

- The objective of this review is to evaluate the effectiveness of adherence intervention for hypertension (using the homogeneous outcome of BP) and explore which specific barriers and facilitators the interventions may have been targeting and how this tailored approach may be related to the effect size on BP and medication adherence.
- Conducted in accordance with the PRISMA statement
- Registered with PROSPERO
- Protocol published

UNIVERSITY *of York*
Centre for Reviews and Dissemination

PROSPERO International prospective register of systematic reviews

Identifying the determinants of medication adherence in hypertension: a systematic review and meta-analysis

Eimear Morrissey, Hannah Durand, Jane Walsh, Gery Molloy

Citation
Eimear Morrissey, Hannah Durand, Jane Walsh, Gery Molloy. Identifying the determinants of medication adherence in

Morrissey et al. *Systematic Reviews* (2016) 5:96
DOI 10.1186/s13643-016-0278-5

Systematic Reviews

PROTOCOL Open Access

Effectiveness and content analysis of interventions to enhance medication adherence in hypertension: a systematic review and meta-analysis protocol

Eimear C. Morrissey^{1*}, Hannah Durand¹, Robby Nieuwlaet², Tamara Navarro², R. Brian Haynes², Jane C. Walsh¹ and Gerard J. Molloy¹



Effectiveness and content analysis of interventions to enhance medication adherence and blood pressure control in hypertension: A systematic review and meta-analysis

Eimear C. Morrissey^{a*} , Hannah Durand^a, Robby Nieuwlaat^b, Tamara Navarro^b, R. Brian Haynes^b, Jane C. Walsh^a and Gerard J. Molloy^a

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(Received 1 September 2016; accepted 1 December 2016)

Objective: The objective of this systematic review is to evaluate the effectiveness of medication adherence interventions on blood pressure control in hypertensive patients. In addition, we aim to explore what barriers and facilitators in the interventions may have been targeted and how these might be related to the effect size on blood pressure (BP).

Design: This review is a hypertension-specific update to the previous Cochrane Review by Nieuwlaat et al. (2014) on interventions to enhance medication adherence. A systematic literature search was carried out and two authors independently screened titles and abstracts for their eligibility for inclusion and independently extracted data from the selected studies and assessed the methodological quality using the Cochrane Collaboration Risk of Bias Tool. A meta-analysis was conducted and additionally, theoretical factors in interventions were identified using the Theoretical Domains Framework.

Results: The meta-analysis found a modest main effect of adherence interventions on SBP (MD -2.71 mm Hg, 95% CI -4.17 to -1.26) and DBP (MD -1.25 mm Hg, 95% CI -1.72 to $-.79$). However, there was substantial significant heterogeneity across both outcomes. A narrative review on adherence outcomes was conducted. In terms of the theoretical analysis, the relationship between the total number of times the domains were coded within an intervention and change of SBP ($r = -.234, p = .335$) and DBP was not significant ($r = -.080, p = .732$). Similarly, the relationship between the total number of times *different* domains were coded within an intervention and change of SBP ($r = .080, p = .746$) and DBP was not significant ($r = -.188, p = .415$).

Discussion: This review and meta-analysis of interventions documented significant but modest post-intervention improvements in BP outcomes among hypertensive patients. However, this is a tentative finding as substantial heterogeneity and potential biases were present. One of the greatest challenges of this review was assessing risk of bias, extracting sufficient data to calculate effect size and coding interventions with the amount of information provided in papers. It is imperative that future adherence research comprehensively reports methodology.

Medical Research Council's Guide to Intervention Development

Feasibility and Piloting

Testing procedures
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Development

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Identifying or developing theory
Modelling process and outcomes

Evaluation

Assessing effectiveness
Understanding change processes
Assessing cost effectiveness

Study 2: Content
Analysis of Apps

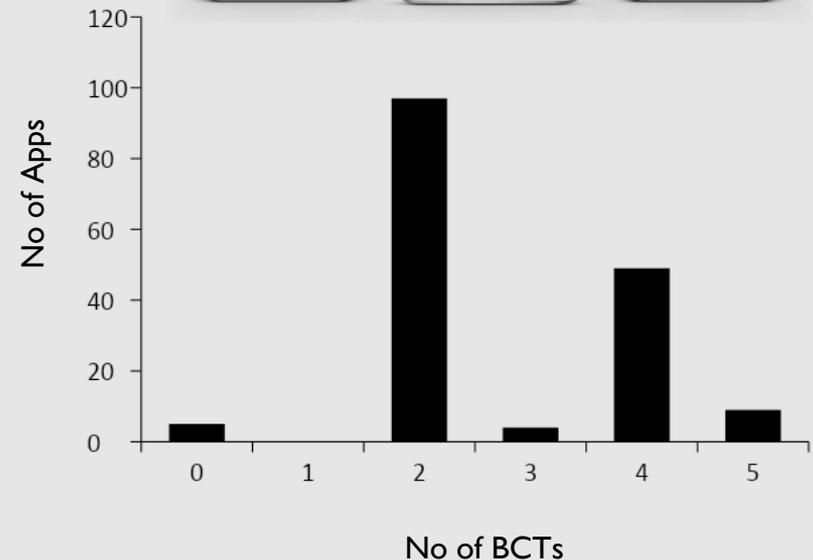
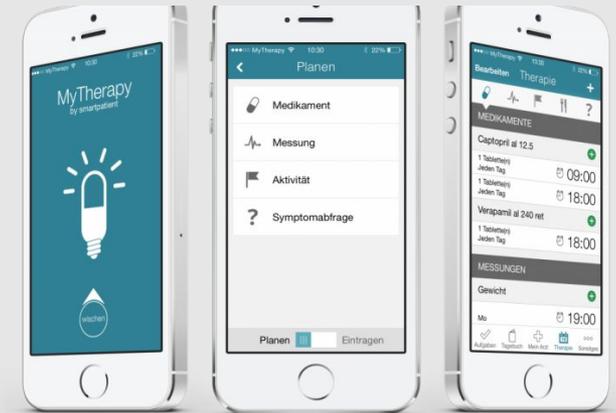
Study 1: Systematic
Review and
Meta-Analysis

Implementation

Dissemination
Surveillance and monitoring
Long term follow up

Study 2: Content Analysis of Apps

- A total of 166 apps were coded (120 free, 46 paid)
- Two authors conducted coding independently ($\kappa = 0.46$)
- A total of 12 BCTs were present across apps.
- The number of BCTs ranged between zero and seven (mean = 2.77, median = 2).



Study 1: Content Analysis of Apps

BCT	Definition	Most commonly utilized as	n	Percentage
1.4 Action planning	Prompt detailed planning of performance of the behavior (must include at least one of context, frequency, duration and intensity). Context may be environmental or internal.	Setting a reminder to take medication at a specific time every day.	159	96%
7.1 Prompt/cues	Introduce or define environmental or social stimulus with the purpose of prompting or cueing the behavior. The prompt or cue would normally occur at the time or place of performance	A reminder alarm ringing to prompt the user to take medication.	159	96%
2.3 Self-monitoring	Establish a method for the person to monitor and record their behavior(s) as part of a behavior change strategy	A dialog box which allows users to record whether they took or skipped their medication.	64	39%
2.2 Feedback on behavior	Monitor and provide informative or evaluative feedback on performance of the behavior	A log or graph which displays the user's adherence levels.	61	36%
2.1 Monitoring of behavior by others without feedback	Observe or record behavior with the person's knowledge as part of a behavior change strategy	An adherence log being sent to the user's physician at periodic intervals.	5	3%
3.1 Social support (unspecified)	Advise on, arrange or provide social support or noncontingent praise or reward for performance of the behavior.	A function to alert another person (e.g. family, care giver) when a medication dose is skipped.	4	2%

Behavior Change Techniques in Apps for Medication Adherence

A Content Analysis

Eimear C. Morrissey, MSc, Teresa K. Corbett, MSc, Jane C. Walsh, PhD, Gerard J. Molloy, PhD

Introduction: There are a vast number of smartphone applications (apps) aimed at promoting medication adherence on the market; however, the theory and evidence base in terms of applying established health behavior change techniques underpinning these apps remains unclear. This study aimed to code these apps using the Behavior Change Technique Taxonomy (v1) for the presence or absence of established behavior change techniques.

Methods: The sample of apps was identified through systematic searches in both the Google Play Store and Apple App Store in February 2015. All apps that fell into the search categories were downloaded for analysis. The downloaded apps were screened with exclusion criteria, and suitable apps were reviewed and coded for behavior change techniques in March 2015. Two researchers performed coding independently.

Results: In total, 166 medication adherence apps were identified and coded. The number of behavior change techniques contained in an app ranged from zero to seven (mean=2.77). A total of 12 of a possible 96 behavior change techniques were found to be present across apps. The most commonly included behavior change techniques were “action planning” and “prompt/cues,” which were included in 96% of apps, followed by “self-monitoring” (37%) and “feedback on behavior” (36%).

Conclusions: The current extent to which established behavior change techniques are used in medication adherence apps is limited. The development of medication adherence apps may not have benefited from advances in the theory and practice of health behavior change.

(Am J Prev Med 2016;1(1):111-111) © 2016 American Journal of Preventive Medicine

Introduction

Poor adherence to medication leads to many negative health outcomes and causes approximately 33%–69% of medication-related hospitalizations.^{1,2} A recent Cochrane review³ found that only a minority of interventions for enhancing medication

An increasingly common way of analyzing the content of mobile device or “mHealth” apps is to code them using a behavior change technique (BCT) taxonomy⁵ or evidence-based lists of specific behavior change techniques or approaches to behavioral intervention.^{6–8} BCTs are defined as the observable, replicable components of

Medical Research Council's Guide to Intervention Development



Study 3: GP Qualitative Study

OBJECTIVE



(1) explore general practitioners (GPs) experience of managing hypertension and adherence to anti-hypertensive medication



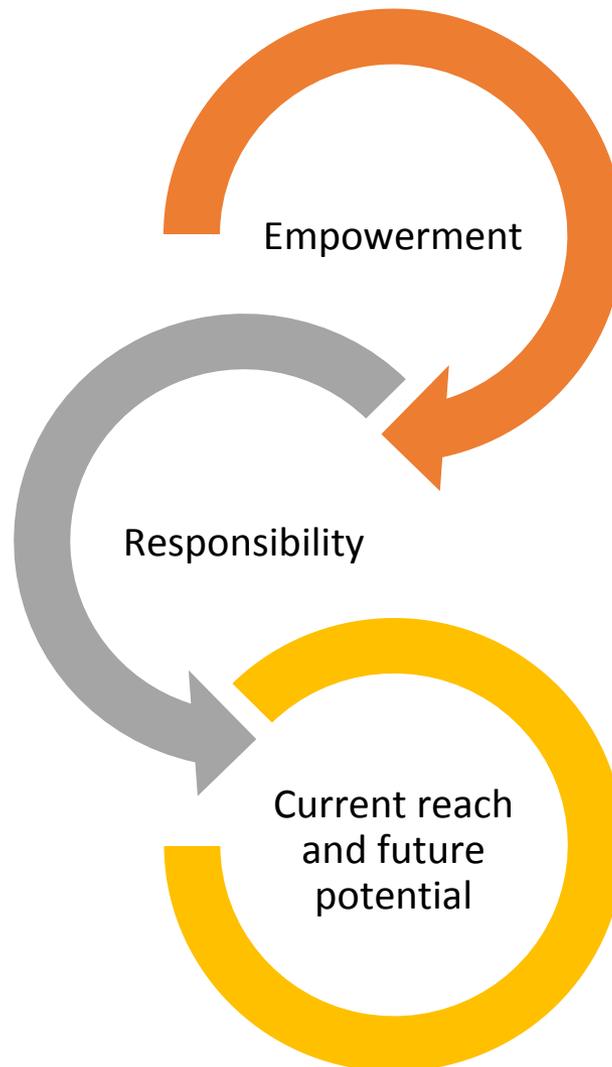
(2) elicit GPs attitudes towards the use of technology to support medication adherence behaviour change.



STUDY 3: GP QUALITATIVE STUDY

RESULTS

"I think we're going to be slow to adopt them as GPs but that's a complete fear around increased workload. You can't be crying poor all the time but you can't comprehend anything that's going to add to your workload that isn't necessarily going to have clear outcomes, clear improvement outcomes"

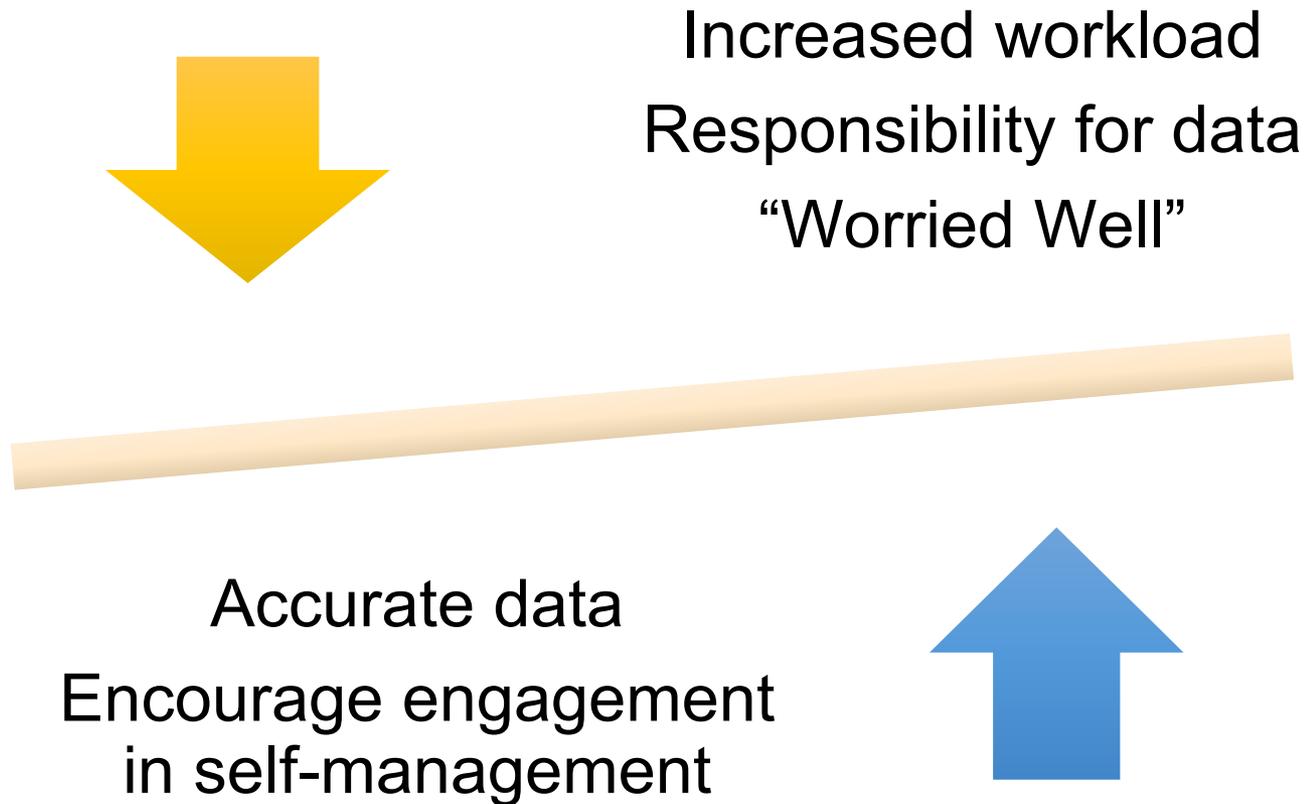


"Any time I sit down with a hypertensive patient, I'm conscious of the fact that whenever I take their BP as a spot reading in the office, it's often hopelessly inaccurate. So anything we can do to make better clinical decisions around that I think we should welcome."

"Because people who are already health aware and health anxious may not be the best candidates – you mightn't suggest it. But then there are some who would be very interested in having a shared care approach to their medical problems but are also not going to get too anxious, they'd definitely be great candidates"

STUDY 3: GP QUALITATIVE STUDY

RESULTS



New self-management technologies for the treatment of hypertension: general practitioners' perspectives

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Abstract

Background. Digital health interventions, such as those that can be delivered via smartphone applications (apps) or wireless blood pressure monitors, offer a new, scalable and potentially cost-effective way to improve hypertension self-management. In Ireland, as is common in the UK, the majority of hypertension management occurs in general practice. Therefore, it is crucial to investigate how general practitioners (GPs) feel about and engage with the growth of these new methods of self-management of blood pressure.

Aim. To explore GPs' perspectives of self-management technology to support medication adherence and blood pressure control in patients with hypertension.

Design and setting. This was a qualitative interview study based in the West of Ireland. Ten GPs who were purposively sampled participated in semi-structured interviews. Thematic analysis was carried out on the data.

Results. Three major themes were identified: current reach and future potential, empowerment and responsibility.

Conclusions. GPs could see the benefit of using these technologies, such as more accurate blood pressure data and potential to engage patients in self-management. Concerns relating to the increased workload associated with a potentially unmanageable quantity of information and an increase in healthcare use among the 'worried well' also emerged strongly from the data.

Keywords: Blood pressure monitors self care, hypertension, primary health care, qualitative research, technology.

Medical Research Council's Guide to Intervention Development

Study 4:
Qualitative study -
patients

Study 3: Qualitative
study - GPs

Feasibility and Piloting

Testing procedures
Estimating recruitment and retention
Determining sample size

Development

Identifying the evidence base
Identifying or developing theory
Modelling process and outcomes

Evaluation

Assessing effectiveness
Understanding change processes
Assessing cost effectiveness

Study 2: Content
Analysis of Apps

Study 1: Systematic
Review and
Meta-Analysis

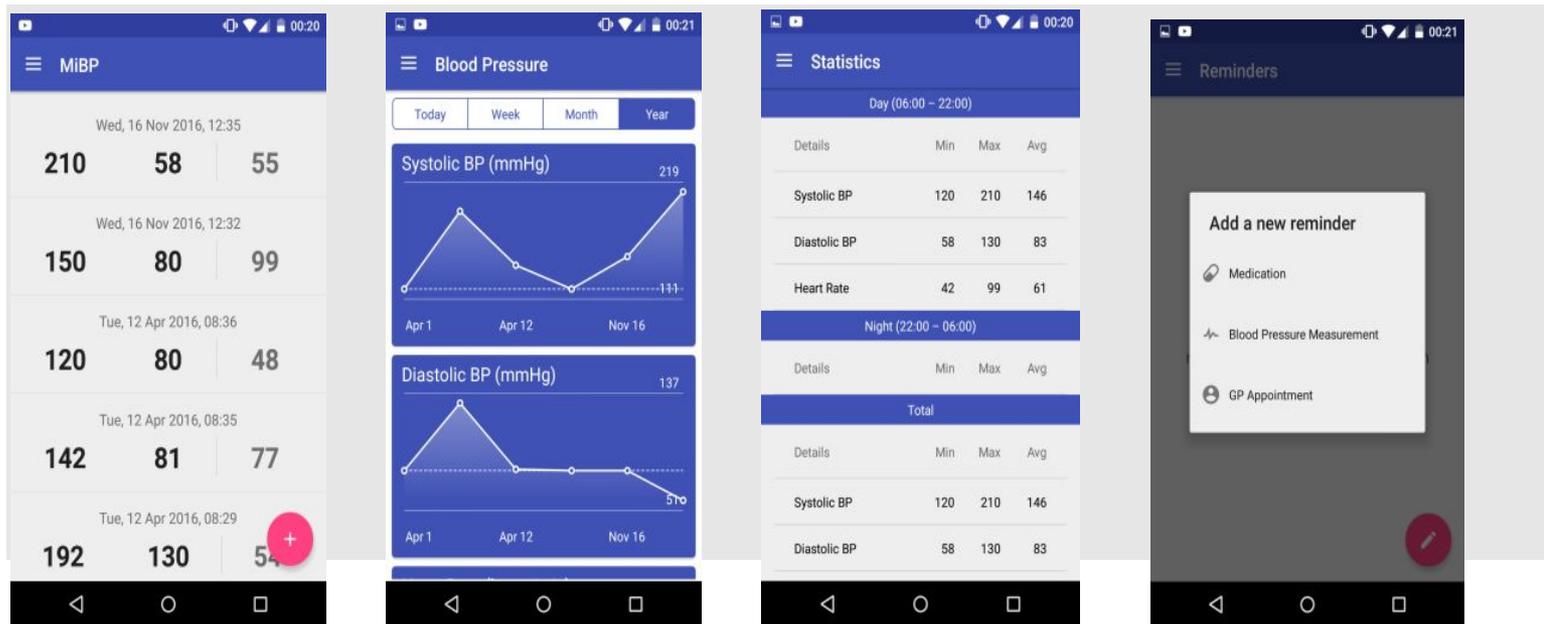
Implementation

Dissemination
Surveillance and monitoring
Long term follow up



Study 4: Patient Qualitative Study

The aim of this study was to explore patients' perspectives on smartphones apps to improve medication adherence in hypertension.



Study 4: Patient Qualitative Study Results

Rules of engagement

Yeah, I bought a machine straight away. I was testing myself three times a day and before I'd see the consultant. I'd check myself three times a day and then I'd give him an excel sheet with all my readings on it. I'm too young like .

I think it could make you a hypochondriac at times. That something could be wrong and you go running off to the doctor...

Development of digital competence

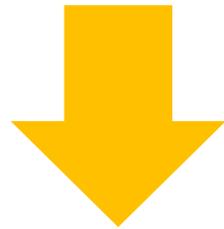
It's good but you'd need it to be explained. I think initially if you get one lesson. If it's explained to you and if you could get one follow up I think I would use it then.

Sustainability

I'd probably use the blood pressure monitoring part but there would have to be better stringent kind of regulations and I'd want to be made aware of them.



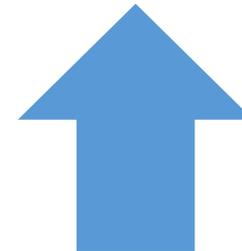
Study 4: Patient Qualitative Study



Sustainability
Health anxiety



Reminders
Empowerment





Smartphone apps for improving medication adherence in hypertension: patients' perspectives

This article was published in the following Dove Press journal:
Patient Preference and Adherence

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Purpose: Digital interventions, such as smartphone applications (apps), are becoming an increasingly common way to support medication adherence and self-management in chronic conditions. It is important to investigate how patients feel about and engage with these technologies. The aim of this study was to explore patients' perspectives on smartphone apps to improve medication adherence in hypertension.

Methods: This was a qualitative study based in the West of Ireland. Twenty-four patients with hypertension were purposively sampled and engaged in focus groups. Thematic analysis on the data was carried out.

Results: Participants ranged in age from 50 to 83 years (M=65 years) with an equal split between men and women. Three major themes were identified in relation to patients' perspectives on smartphone apps to improve medication adherence in hypertension: "development of digital competence," "rules of engagement," and "sustainability" of these technologies.

Conclusion: These data showed that patients can identify the benefits of a medication reminder and recognize that self-monitoring their blood pressure could be empowering in terms of their understanding of the condition and interactions with their general practitioners. However, the data also revealed that there are concerns about increasing health-related anxiety and doubts about the sustainability of this technology over time. This suggests that the current patient perspective of smartphone apps might be best characterized by "ambivalence."

Keywords: qualitative, high blood pressure, digital technology, self-management

Introduction

Hypertension is an important risk factor for cardiovascular and cerebrovascular events in both developed and developing countries.¹ It is estimated that hypertension currently affects one billion people worldwide,² and this number is expected to increase with population growth and aging. Therefore, this condition represents a global health challenge.³

Blood pressure (BP) control through pharmacological treatment has led to substantial benefits in the prevention of morbidity and mortality from cardiovascular disease.⁴ A Cochrane review⁵ conducted for the assessment of all the trials of BP-lowering therapy found that these treatments reduced death, strokes, and heart attack. However, despite the efficacy of antihypertensive agents, there is a significant problem of

Study 1: Identify the evidence base

Systematic review and meta-analysis of the effect of adherence interventions on BP control and exploration of the barriers and facilitators associated with anti-hypertensive adherence



Study 2: Characterise the technology base

Content analysis of commercially available smartphone apps for medication adherence



Study 3 & 4: Develop the evidence base

Semi-structured interviews conducted with GPs analysed using thematic analysis

Focus groups conducted with patients with hypertension analysed using thematic analysis

Reducing the Patient Interval for Breast Cancer: a theory-, evidence- and person-based approach to digital intervention development

Emma Carr, Jane Walsh, AnnMarie Groarke

School of Psychology, National University of Ireland, Galway



OÉ Gaillimh
NUI Galway



IRISH RESEARCH COUNCIL
An Chomhairle um Thaighde in Éirinn

Breast Cancer

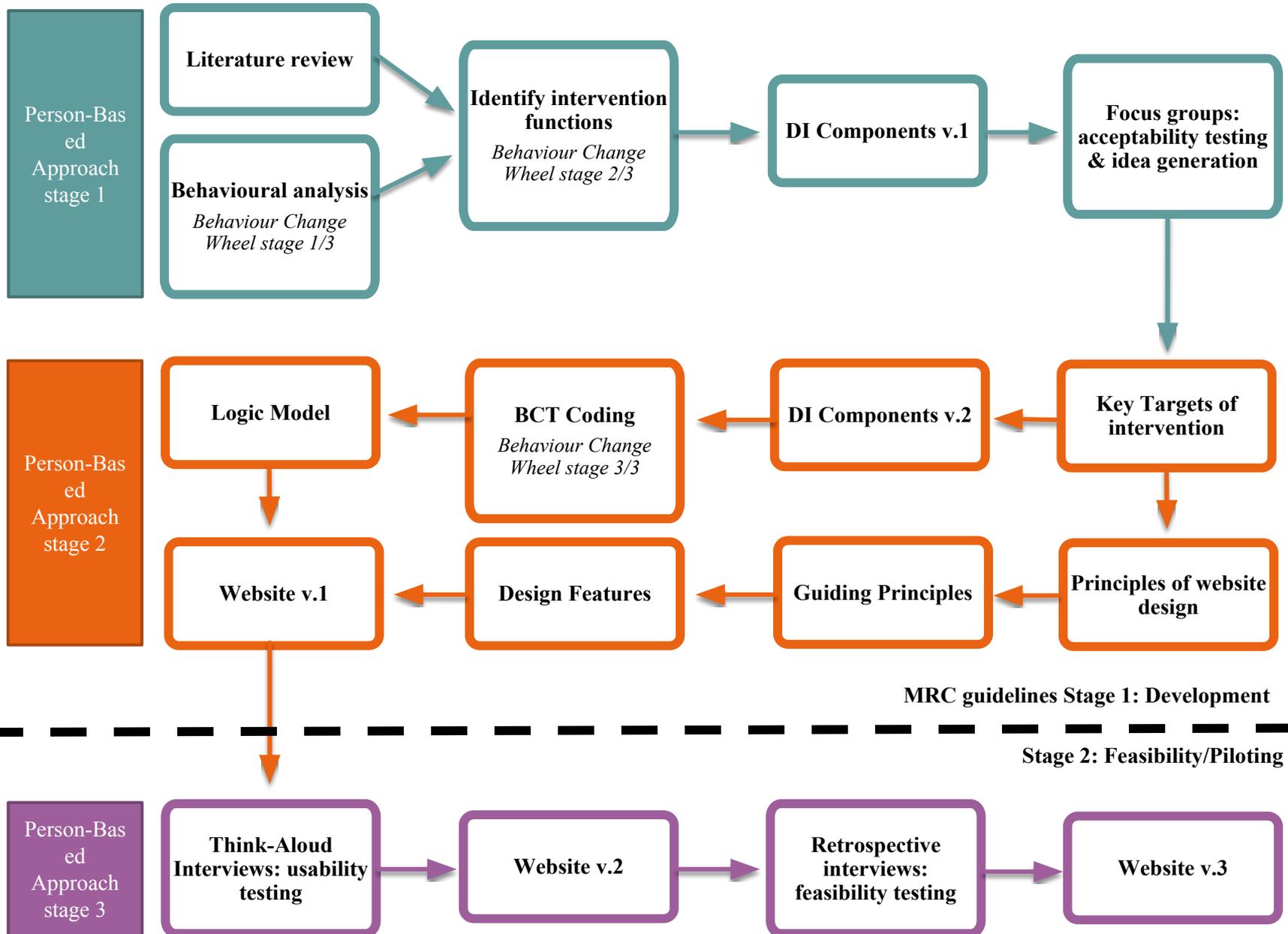
- Breast cancer is the primary cause of death among women globally
- In Ireland mortality rates from breast cancer are the third highest in Europe and 22% higher than the EU average
- Early diagnosis of breast cancer is linked to more favourable outcomes, early treatment and enhanced survival rates
- However, some women postpone help-seeking on finding a breast symptom
- Interventions to increase the number of women who present early to a HCP have the potential to increase early detection of breast cancer and therefore improve outcomes and survival rates

O'Mahony, M., Comber, H., Fitzgerald, T., Corrigan, M. A., Fitzgerald, E., Grunfeld, E. A., ... & Hegarty, J. (2017). Interventions for raising breast cancer awareness in women. *Cochrane Database of Systematic Reviews*.

Patient Interval

- The Patient Interval refers to:
 1. the time taken to interpret a bodily change and
 2. the time taken to act upon that change and seek help from a HCP
- The most successful interventions designed to decrease the Patient Interval to date have been delivered by a HCP in a clinic setting
- HCP delivered interventions however are costly and time intensive to implement
- A novel way to decrease the Patient Interval is through an evidence-based digital intervention

Weller, D., Vedsted, P., Rubin, G., Walter, F. M., Emery, J., Scott, S., ... & Rose, P. (2012). The Aarhus statement: improving design and reporting of studies on early cancer diagnosis. *British Journal of Cancer*, 106(7), 1262.



Know Breast Health

Create Positive Breast Health Habits

Get started

Learn more

Get started now!

There are 3 key Breast Health Habits:



Breast Health Habit no. 1

KNOW YOUR BODY

Knowing what's normal for your body will allow you to confidently identify an unusual change if one occurs

GET STARTED



Breast Health Habit no. 2

KNOW YOUR GP

Having the confidence to talk to your GP about your Breast Health will allow you to address unusual changes promptly

GET STARTED



Breast Health Habit no. 3

KNOW BREAST CANCER

Knowledge is power! Understanding this disease, and your risk of getting it, will help you make better decisions about your Breast Health.

GET STARTED

Moving On: The impact of self-management intervention using mobile technology on health and wellbeing outcomes in cancer survivors

Jenny Groarke, Jane Walsh, Owen Harney, Liam Glynn, Jenny McSharry, AnnMarie Groarke

The Problem

- ▶ Approx 50% of cancer survivors are overweight (Reeves et al., 2014)
- ▶ High BMI, poor diet, lack of physical activity = risk factors for cancer development
- ▶ In survivors high BMI = increased risk of secondary cancer, subsequent primary cancer

The Moving on Programme

- ▶ Aim: increase physical activity behavior in cancer survivors

Lifestyle information & education

- 4 hour session with physio, dietician & psychologist
- BCTs used: Information on the health consequence of behavior, instruction on how to perform the behavior, problem solving

Personalised goal setting

- Fitbit and text messages
- BCTs used: Goal setting (behavior; increase average daily step count), graded tasks (steps +10% a week), feedback on behavior, review behavior goal(s)



Your average daily step count last week was 2000. Let's aim for 2200 this week?

Congrats on reaching your step count goal this week! Let's aim for 2420 steps a day next week?

Recruitment
from Oncology Outpatient Clinic
Informed Consent

- Inclusion Criteria:
- Aged 18-70 years
 - BMI >25
 - Diagnosed with a solid cancer
 - Post completion of cancer treatment
 - Willing to use mobile technology

Baseline Assessments
N = 123

Randomisation

Control
n=61

Intervention
n=62

did not attend
n = 8

Fitbit Distribution
group session
n = 53

Lifestyle Education
group Session
+ Fitbit distribution
n = 55

did not attend
n = 7

- SMS week 4
- SMS week 5
- SMS week 6
- SMS week 7
- SMS week 8
- SMS week 9
- SMS week 10
- SMS week 11

Baseline / T0

12 weeks / T1

24 weeks / T2

ITT
n = 1

did not attend
n = 1

Post-Intervention
Assessment
n = 52

Post-Intervention
Assessment
n = 55

ITT
n = 1

ITT
n = 1

did not attend
n = 4

Follow-Up
Assessment
n = 48

Follow-Up
Assessment
n = 53

did not attend
n = 1
deceased
n = 1

ITT
n = 1

Results



Clinical and psychological outcomes measured



Significant reduction in weight & BMI in intervention group at 3 months



Significant increase in exercise self-efficacy in intervention group at 3 months



Significantly higher step count in intervention group at 3 months



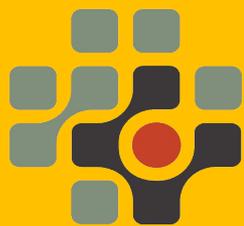
Summary

eHealth interventions need to be grounded in theory and evidence and centred on the person

Psychology can provide useful tools for designing eHealth intervention for health behaviour change

- Behaviour Change Wheel
- Person Based Approach

Come visit us in Galway!



HEALTH
BEHAVIOUR
CHANGE
RESEARCH
GROUP

Save the Date!

Designing Effective Interventions for Health Behaviour Change: An Introduction

Monday 21st October 2019

School of Psychology, NUI Galway (10am – 5pm)

Participants will learn about, and practice using, methods for designing and evaluating behavioural interventions. Suitable for researchers, practitioners, policy makers and students interested in behaviour change.

Workshop Facilitators



Prof Molly Byrne



Dr Jenny Mc Sharry

For more information, visit www.nuigalway.ie/hbcrg or email valerie.parker@nuigalway.ie

eHealth – what does psychology have to do with it?

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Acknowledgements

Dr Jane Walsh
Dr Gerry Molloy
Emma Carr
Dr Jenny Groarke



HEALTH BEHAVIOUR CHANGE
RESEARCH GROUP



mHealth
research group

School of Psychology, National University of Ireland, Galway



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Irish Cancer Society
Research

