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UX and Behaviour Change

Aim

To enable you to have a greater understanding of Behaviour Change and how it connects to technology and UX

What is covered

- Behaviour Change
  - What is behaviour change
  - The dark side and the light
  - Individual and population behaviour change
- Individual Behaviour Change
  - Behaviour change in medicine adherence
  - How do people change their behaviours
  - TDF, BCW and COM-B
- Population Behaviour Change

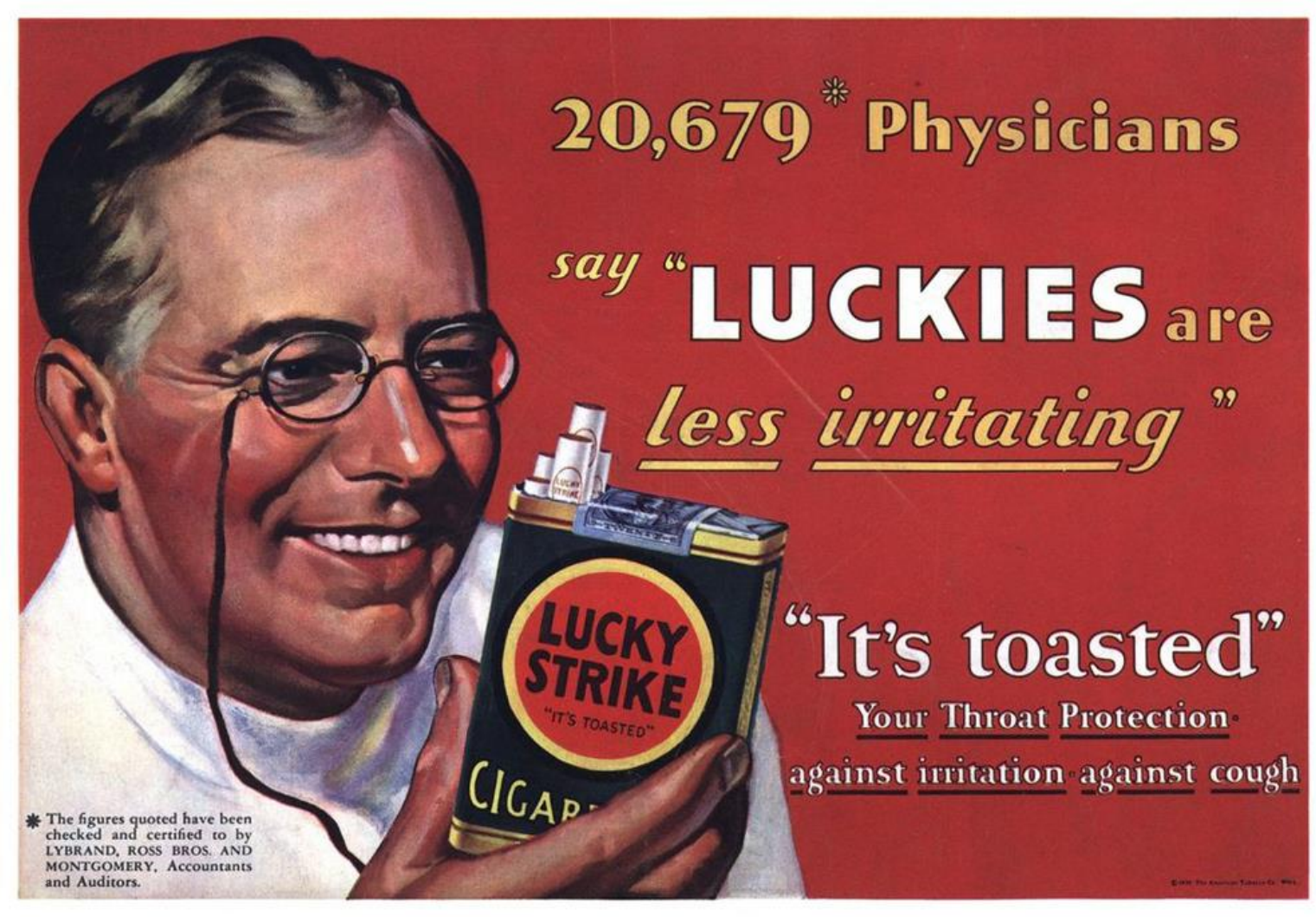
Definition

“Intentional modification of a persons behaviour”

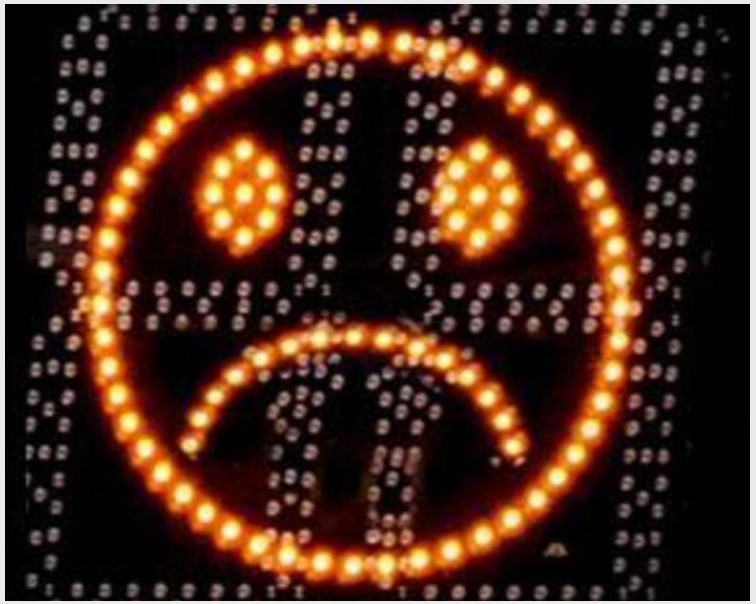
Behaviour Change

The Dark side and the Light

The Dark side



The Light side

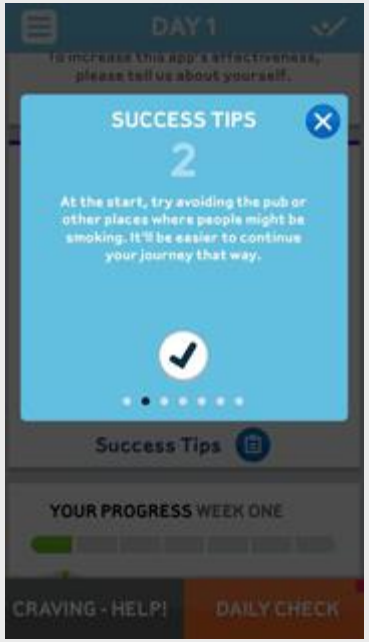


Individual and Population

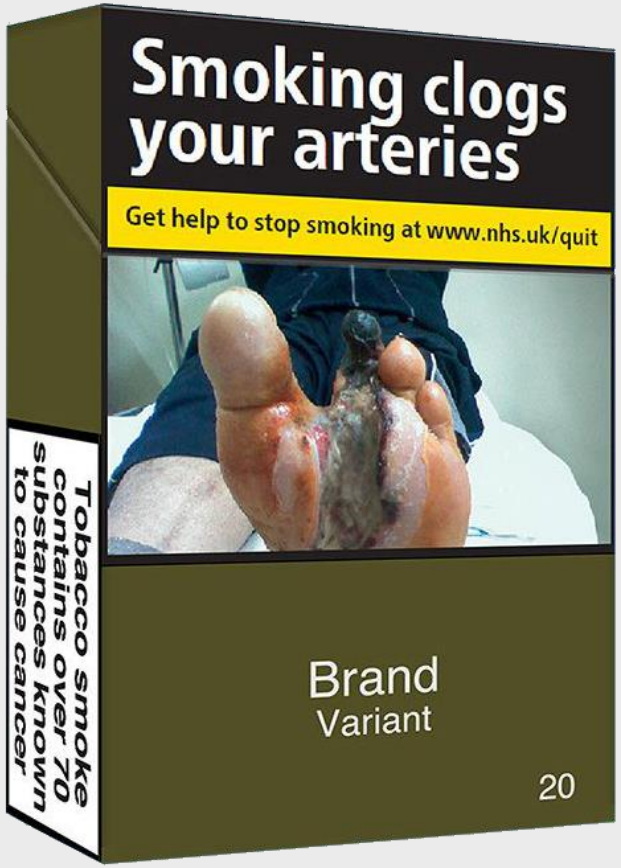
Individual behaviour change is focused on the individual who has control over how they engage with it.

Population behaviour change is a change in the wider environment for which an individual has little control over.

Individual Behaviour Change



Population Behaviour Change



Population policy can work against individual behaviour change

Obesity

High fat and sugar foods are:

- VAT free
- Often the cheapest foods
- The majority of fast foods you see
- The majority of advertised foods
- Heavily displayed and marketed in supermarkets

Behaviour Change and Technology

- Individual Behaviour Change
  - Primarily will be used to support behaviour change i.e. Apps, websites
- Population Behaviour Change
  - Used to alter the environment to help facilitate a change. The change might be small, such as reducing frustration in completing a web form.

Individual Behaviour Change

How can we target behaviour change at an individual level and how can we use technology to support this: A case study of medication adherence research

You and Your Medicines Questionnaire

Many people often struggle to take their medicines as prescribed, for many different reasons. We understand that different things can 'get in the way' of following your doctors recommendations about taking your medicines.

This questionnaire lists 30 different statements about taking your medicines. For each statement:

- Please tick (✓) the box that best reflects your level of agreement with the statement
- Please only tick ONE box per statement

Some of the statements may appear to be similar to others but please be sure to respond to each statement.

	Statement	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
1	I know how to take my medicines as prescribed					
2	I am physically able to take my medicines as prescribed					
3	I remember to take my medicines as prescribed					
4	I trust my doctor(s) with decisions about my healthcare					
5	I can easily get hold of my prescribed medicines from the pharmacy or surgery					
6	I have negative emotions (e.g. frustration, embarrassment anger) about taking my medicines as prescribed					
7	I am motivated to take my medicines as prescribed					
8	I do not have to choose between paying for my prescriptions and paying for other things that are important to me					
9	I feel confident about all aspects of managing (ordering, collecting and taking) my medicines					
10	I worry about the unwanted effects (e.g. harmful effects or side effects) of taking my medicines					

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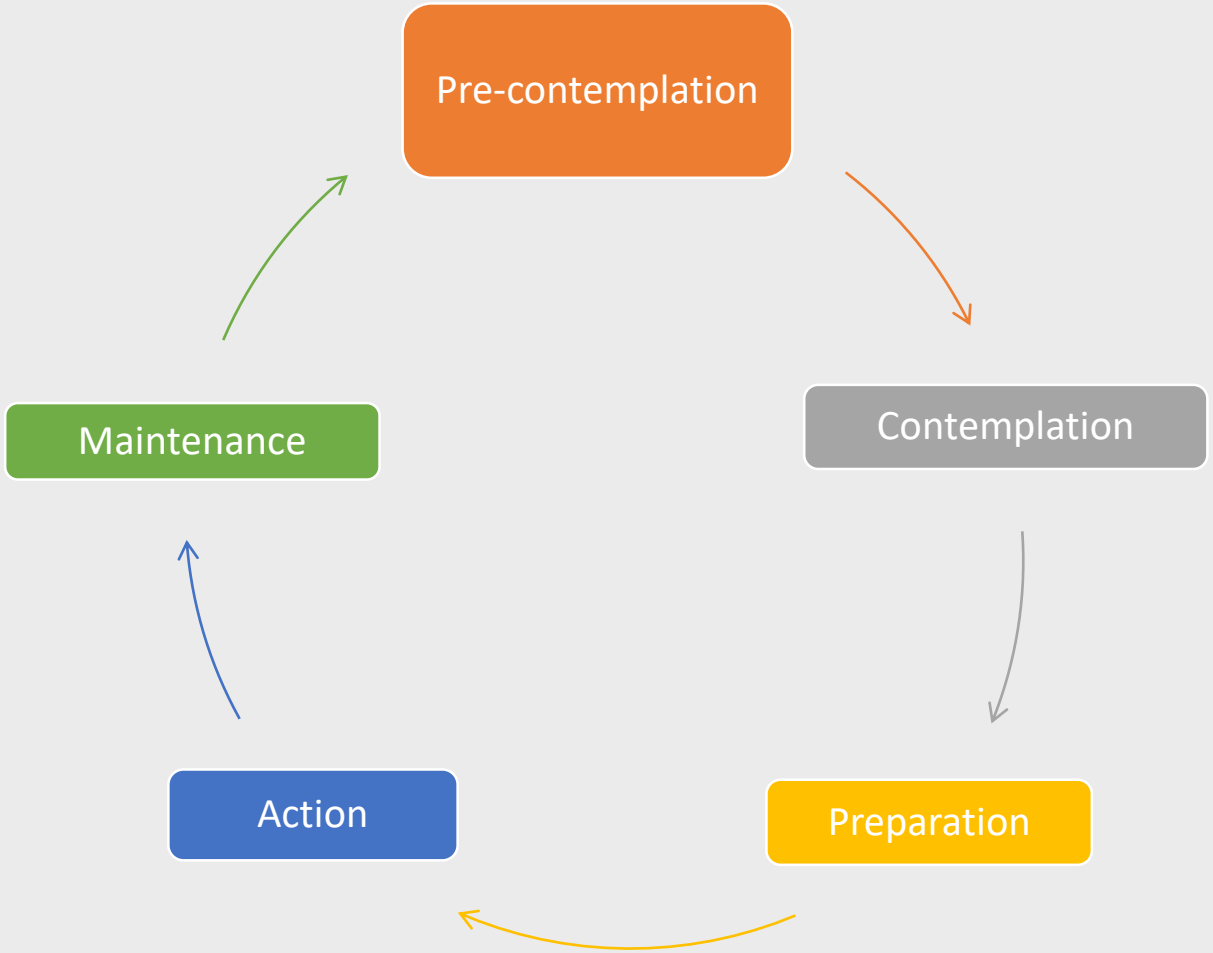
IMAB V1 07/01/2014

How do people change their behaviour?



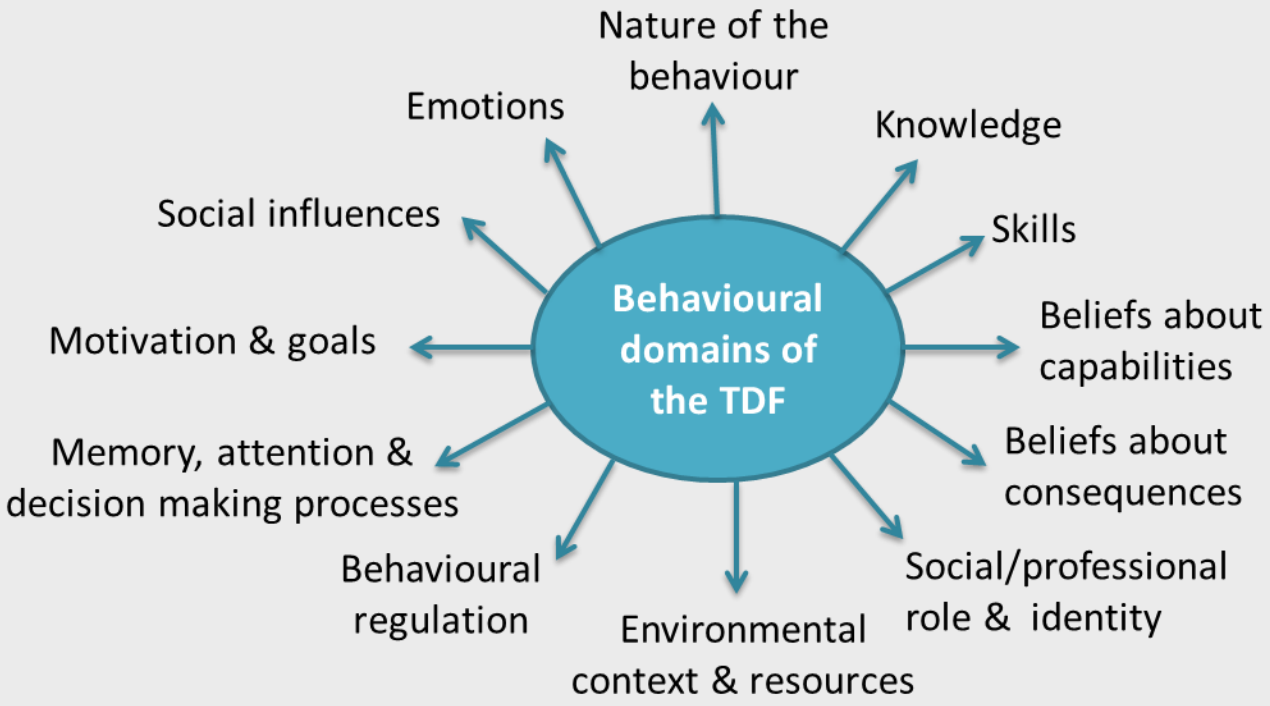
"Change is not made without inconvenience, even from worse to better" (Hooker 1554-1600)

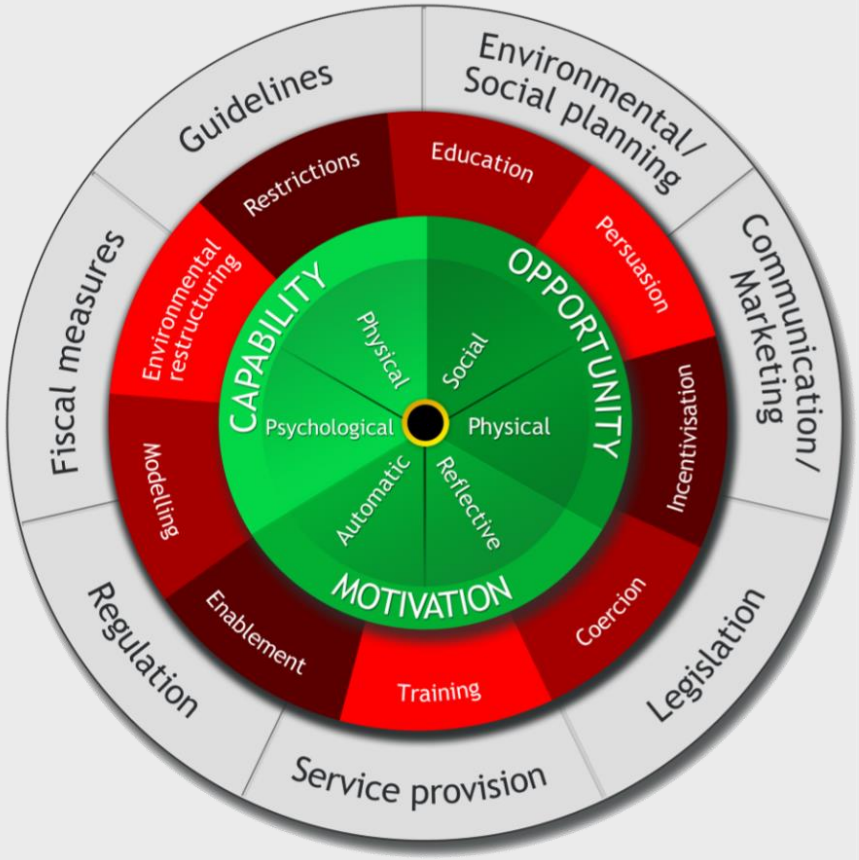
Stages of change model
(Prochaska & DiClemente, 1983)

Medication non-adherence

- “Worldwide problem of striking magnitude”
- Current interventions achieve modest improvements at best
  - Lack of grounding in theory and lack of tailoring to meet individual need
  - One size fits all approach does not work
- Ultimate aim is to develop a novel app which is capable of:
  - Identifying an individual’s barriers to medication adherence based on sound psychological theory
  - Utilise evidence based behaviour change techniques to target the specific ‘problem’ behaviour
  - Deliver these requirements using exemplars of best practice in usability theory and evidence

Incorporation of theory and targeting to meet individual need: The Theoretical Domains Framework (TDF) and Behaviour Change Wheel (BCW)





Theoretical Domains Framework (TDF)

TDF Domain	Example of medication adherence barriers
Knowledge	Not knowing how and when to take medicines
Skills	Not being physically able to take medicines e.g. swallowing difficulties or cognitively capable e.g. unable to understand instructions
Beliefs about capabilities	Lack of confidence to take medicines as prescribed
Beliefs about consequences	Fear of side effects or that medicines will be harmful
Env. context/ resources	Difficulty getting to the pharmacy to collect a prescription
Memory, attention & decisions	Forgetting to take medicines or being distracted
Motivation and goals	Conflicting priorities e.g. paying for prescription vs paying for other items
Social influences	Peer pressure, fear of stigma
Emotions	Reminder of illness, frustration, annoyance

- Domains of the TDF feed into the COM-B model
  - **C**apability
  - **O**pportunity
  - **M**otivation

	COM-B component	TDF Domain
CAPABILITY	Physical capability	Skills (physical)
	Psychological capability	Knowledge
		Skills (cognitive & interpersonal)
		Memory, attention & decisions
OPPORTUNITY	Physical opportunity	Environmental context & resources
	Social opportunity	Social Influences
MOTIVATION	Reflective motivation	Beliefs about capabilities
		Beliefs about consequences
		Intentions and goals
	Automatic motivation	Emotion

The Behaviour Change Wheel (BCW)

Evidence based strategy to match behaviour change techniques to determinants of behaviour

Problem behaviour	TDF domain	COM-B component	Appropriate intervention (BCT)
Patient is non-adherent as they do not know how to use their inhaler correctly	Knowledge / skills	Psychological capability	6.1 Demonstration of the behaviour 8.1 Behavioural practice/rehearsal
Patient is non-adherent as they don't believe their inhaler will work	Beliefs about consequences	Reflective motivation	2.5 Monitoring of outcomes of behaviour 5.1 Information about health consequences

The Identification of Medication Adherence Barriers Questionnaire (IMAB-Q): A tool for identifying an individuals barriers to medication adherence

- Patient reported barriers to adherence identified via questionnaire based around the domains of the TDF
- Multiple stages of development – roughly one year full time PhD
- Validation work – £75k charitable grant, 18 month project

IMAB-Q stages of development

Identification

- **Phase 1: Identification of medication adherence barriers**
- Literature search of barriers to medication adherence in chronic conditions
- Medication adherence barriers extracted & collated

Mapping

- **Phase 2: Mapping of medication adherence barriers to the domains of TDF**
- Adaptation of TDF to reflect context of medication adherence and mapping
- Multistage process involving three researchers (two pharmacists and one psychologist)

Consultation

- **Phase 3: Consultation with patients prescribed meds for the prevention of CV disease**
- Discussion of relevance and of meaning of identified adherence barriers
- Audio-recorded, transcribed and analysed according to behavioural domains of the TDF

IMAB-Q stages of development

Refinement

- **Phase 4: Reflection and refinement of adherence barrier mapping**
- Finding from consultation exercises used to refine mapping process
- Additional barriers from consultation exercises added

Questionnaire development

- **Phase 5: Development of the Identification of Medication Adherence Barriers Questionnaire (IMAB-Q)**
- Multistage, iterative process involving patient, practitioner and expert opinion

Validation

- **Phase 6: Validation of IMAB-Q**
- 30 item questionnaire distributed from nine community pharmacies across Norfolk
- 660 questionnaires returned for data analysis

Medication adherence interventions, IMAB-Q and apps in the future

- IMAB-Q is the tool to identify where an individuals adherence problems lie:
  - Capability, opportunity, motivation
- Behaviour Change Wheel will allow intervention components to be selected according to whether the nature of the problem
- The next challenge:
  - Establishing which intervention components are most effective for medication adherence and whether these can be delivered via technology rather than face to face
  - Building the app to incorporate the IMAB-Q and then select behaviour change techniques accordingly

Population Behaviour Change

Theoretical Domains Framework (TDF)

Capability

TDF Domain	**Web Form Example**
Skills (Physical)	Manual dexterity to control a mouse or touchscreen interface
Knowledge	Knowing how drop down menus work
Skills (Cognitive & interpersonal)	Understanding the flow of the form
Memory, attention & decision making	Recall of multiple previous addresses, form time-outs, payment options
Behavioural regulation	Progress bars

Theoretical Domains Framework (TDF)

Opportunity

TDF Domain	**Web Form Example**
Environmental context & resources	Internet/data requirements, power sources, memory/processor capacity, availability of address, postcode, credit card etc.
Social influences	Peer norms, social pressures, social support

Theoretical Domains Framework (TDF)

Motivation

TDF Domain	**Web Form Example**
Professional/social role & identity	Believing it's someone else's job to fill in the form
Beliefs about capabilities (optimism)	Lack of confidence to complete the form
Beliefs about consequences	Believing that something will go wrong with the process
Intentions and goals	Conflicting priorities e.g. financial pressures
Reinforcement	Lack of progress notifications
Emotion	Frustration and annoyance

Research Methods

- Ethnography
- Interviews
- Focus Groups

Things not covered

- Behaviour Change Grid (B.J. Fogg)
- Tiny Habits (B.J. Fogg)
- Persuasive Technology (B.J. Fogg)
- Dark Patterns

Summary

- Behaviour change is a complex multi-stage process
- It can be delivered at the individual or population level
- Theoretical models such as the TDF help us to understand the complexity and diversity of factors that influence behaviours
- Models such as the COM-B and BCW help us to select evidence based techniques to target specific determinants of behaviour
- Technology plays a crucial role in the delivery of behaviour change techniques both at the individual and population level
  - Lots of ‘groundwork’ needed to get it right

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