Module 1: Behaviour Change Theory – Outline

Structure of the Module:

This module provides a simple introduction to behaviour change. It begins by thinking about why people behave the way they do and then goes on to introduce several key concepts in behaviour change. There are many theories about how to do behaviour change and in this module we describe some of the similarities and differences between some of the dominant models. Lastly we describe WaterAid's strategic approach to hygiene behaviour change and how to apply what you have learned from this module to your programming. This module is broken into the following sections:

Key learning points:

- WaterAid's global strategy places a renewed emphasis on hygiene behaviour change. It proposes to make it more systematic, innovative and evidence-based by adopting one universal approach for designing, implementing and evaluating hygiene behaviour change programs.
- Although we like to think that we are in control of our behaviour, most of our decisions about hygiene behaviour happen at a sub-conscious level. This is why many people know what the 'right' behaviour is but don't actually do it.
- People often don't do the 'right' hygiene behaviours because the 'right' behaviours are more time consuming, costlier, more difficult or more inconvenient and are therefore less rewarding than the 'wrong' behaviours.
- Many hygiene promotion campaigns try to educate people about the 'right' behaviour but if people already know the right behaviour a then this is likely to be an ineffective approach.
- Some of our hygiene behaviour is goal oriented and relates to the fact that we might want to appear clean, be seen as a good parent or be seen as a good member of society, for example. There are 15 motives that drive human behaviour. Many of these motives can be used to form the basis of effective behaviour change campaigns.
- Much of our hygiene behaviour is influenced by the setting where it takes place. To change behaviour, we might think about how we can change the physical or social environment, the objects within in it and the rules or norms that are associated with the setting as all of these things predict how people will behave.
- Theory can be used to map the factors that are currently driving behaviour. It can also be used to plan an intervention.

Supporting Resources

- Motive definitions

What is behaviour change and is it really as difficult as everyone thinks?

Behaviour change occurs when someone is faced with a familiar situation but suddenly does something new or different. For example, if a particular family had always practiced open defecation but then one day build a toilet and begin using it, this would be an example of behaviour change. Behaviour change is often considered to be a hard, mysterious and time-consuming process. But it can be easy. Just think about how mobile phones have revolutionised the way we communicate and interact socially. Rapid technology adoption, as in that example, is often effective in changing our behaviour because the benefits are clear, immediate and there are relatively few barriers to learning the necessary skills. Our challenge then is to make it just as easy to adopt good hygiene behaviour as it is to use a mobile phone! In this module we will introduce some key concepts that underpin behaviour change; we will also explain a range of behaviour change theories and then outline WaterAid's approach for behaviour change.

How does behaviour operate?

Although we like to think of ourselves as fully in charge of all our decision making, most of our behavioural decisions happen at a sub-conscious level. In many ways our behaviour is a bit like a train running along railway tracks. The train will continue moving along the tracks as it always has done until someone pulls a lever to shift it onto a different track. Likewise, most of the behaviours we perform on a day-to-day basis are based on what we have always done before. These behaviours served us well in the past so unless anything changes (like someone pulling a lever) we stick to them.

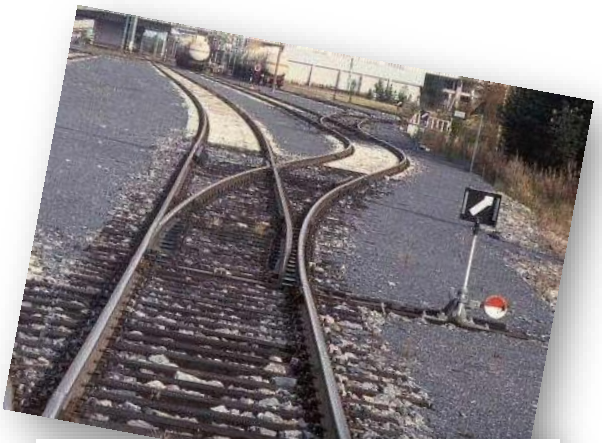

Figure 1: A train would continue to move along the straight left hand railway, unless a lever is pulled to shift the train's path to the right hand railway. Our behaviour operates in a very similar way.

This process of learning through experience is called **reinforcement learning**. Reinforcement learning typically results in an optimal policy for selecting behaviour. The process can be summarized in a relatively simple model. Imagine a rat in a cage. When a piece of cheese is placed in the cage, it generates cheesy smells which are picked up by the rat and interpreted by its brain as a source of food. The rat responds by nibbling the cheese. The rat is rewarded for his behavioural choice by its stomach filling up, reducing its hunger. This is the reward that the rat expected to get from an item of food. But in this case the rat is surprised to find that the cheese also tastes great, which is an additional reward. Next time when cheese is placed in his cage it is likely that he will rush to eat the cheese again because now he knows the rewards it will bring – it's yummy and filling! The same response will occur the time after that and the time after that, etc. Reinforcement learning is therefore the natural foundation for behaviour change as it tells us what is needed to get an old behaviour to become a new and different one. When there is a block preventing new learning from happening, public health problems can arise.

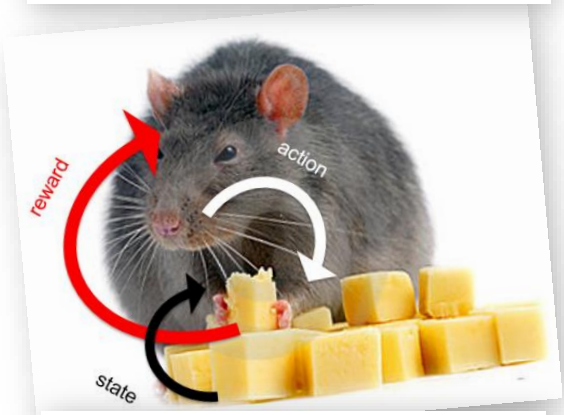

Figure 2: Once a rat has tried eating cheese and learned how tasty it is he is more likely to keep eating cheese. This is an example of reinforcement learning which occurs when we try out a new behaviour and find that it has positive rewards. This leads us to repeating the behaviour in the future.

How do we make behavioural choices?

Our brains, and the brains of all species, have evolved over a long time in response to our environment, our social structures and what is necessary to survive. To understand how we make behavioural choices today, it helps to look back in time.

The Automatic Brain

Our brains were once much simpler than they are now and as a consequence the kinds of behavioural responses were simpler too. In fact, the responses tended to be automatic – what we call **reflexes**. Reflex behaviours include ducking when a stone is thrown in your direction or removing your hand from a flame as soon as you feel the heat. It's worth noting that we share these same basic responses with all animals. Even now, with our more complex brains, we can still learn to perform automatic responses through repeating regular, routine behaviour – what we call **habits**.

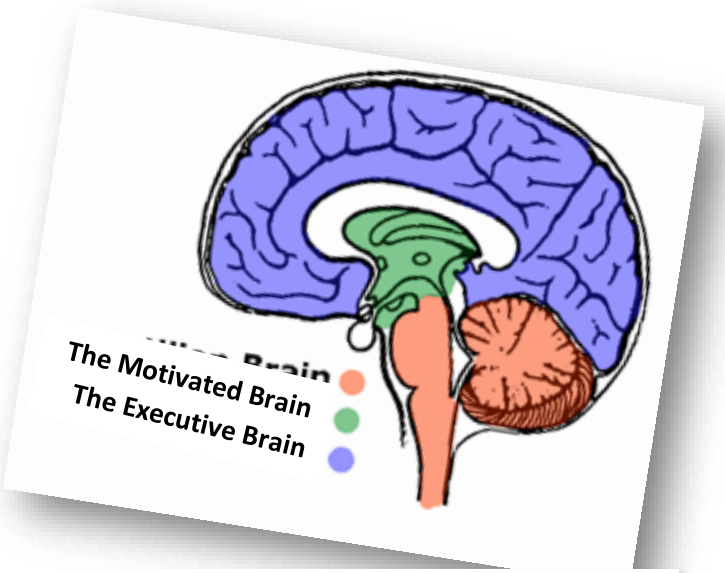

Figure 3: Although the brain is very complex, roughly speaking we can say that it has 3 regions with 3 different thinking capacities: The Automatic Brain, The Motivated Brain and the Executive Brain

The Motivated Brain

After some time, our ancestors learned it was more useful to live in social groups. In order to survive, gain access to resources and develop beneficial relationships, their behaviour became more complex too. Behaviour became guided by our desire to achieve goals – this is what we call **motivated behaviour**. There are 15 human motives that drive almost all of human behaviour. They are things that we all share. For example, when we feel hungry it motivates us to find and prepare food to eat. we all share. Similarly, we all have the desire to be liked by those around us, this motive of affiliation, drives us to act in ways that will generate social approval and allow us to form relationships. Simple descriptions of all the motives are given in Appendix 1.

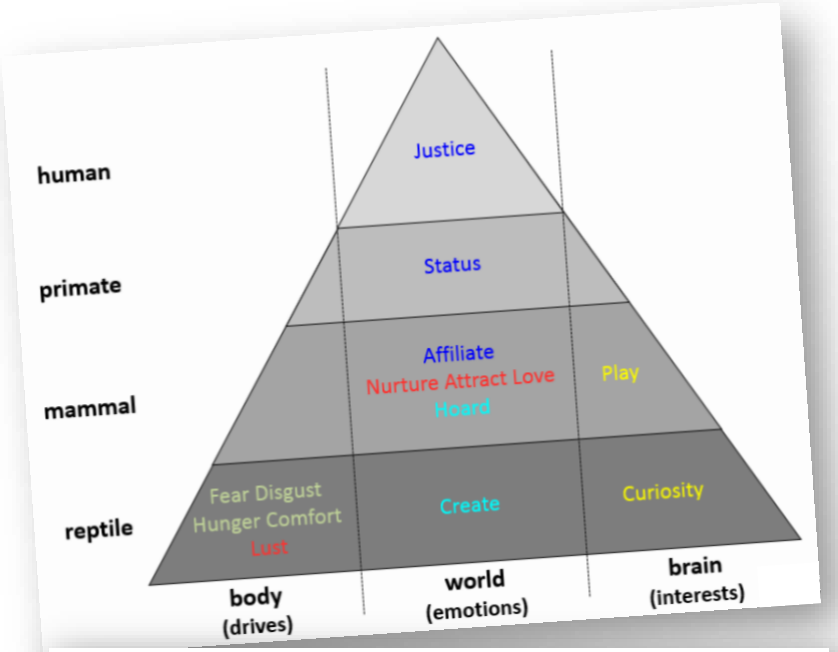

Figure 4: Diagram of the human motives of behaviours. The left- hand side of the triangle shows the stage at which these motives first evolved. The bottom shows which aspect of the world is primarily modified by achieving a goal related to that motive.

Executive control

The more we became accustomed to acting with long term goals in mind, the more humans found that it was useful to be able forecast the consequences of behavioural choices, before actually doing them. This is what we call **executive control**. The planning we do in our executive brain allows us to simulate people, including their characteristics, their motivations and their situations, just as if we are watching a film

where the ending can be changed. Watching these 'mini films' in our mind, in advance of making a behaviour decision, helps us to evaluate the worth of different courses of action.

If people know what behaviours are good for their health, why don't they do them?

Historically, the WASH sector has spent a lot of time and money educating people about how they should behave to prevent infection. So why do so many people seem unwilling to learn the appropriate behavioural responses to a given situation?

Figure 4: Posters like this which educate people on why they should wash their hands and how to do it are common. But there is little evidence that this teaching approach works to change behaviour.

These moments where an 'unhealthy' behaviour is selected over the behaviour which people know to be the 'correct' or 'healthy' option can be described as '**psychological mismatch**' situations. Psychological mismatch occurs when the psychological reward we get from doing the 'unhealthy' or 'incorrect' behaviour is somehow stronger than doing what we know to be the 'right' behaviour. Psychological mismatch can be seen as one of the main problems for behaviour change to solve as it creates a block to reinforcement learning. Here are some examples of different types of psychological mismatch:

Modern technology has produced many kinds of things that are very stimulating to use or consume. For example, soft drinks trick our digestive systems because they pack in artificial flavours and sugars, which are tastier than anything we could find in the natural world. We get so much pleasure from the soft drink that we end up drinking more than we should, winding up in an unhealthy state.

Many of us would like to excel at a sport which and this in turn be good for our health and wellbeing. However often we put off taking up a new sport because we are unlikely to be great at it the first time we try. In this case distant rewards are being offset against current punishments.

Everybody knows that handwashing can prevent diarrhoea and other illnesses. However, most people don't wash their hands at all critical times. This is because we know that most of the time we don't get sick and discount the significance of these rare serious 'punishments' like getting diarrhoea.

What kinds of behaviour change theories are out there?

There are many different behaviour change theories: over 100 can be identified in the literature! Here we provide a summary of some of the ones which are most commonly used within public health and the hygiene sector. These theories derive from three different academic disciplines – health psychology, social psychology and behavioural economics – but all of the approaches, regardless of disciplinary origin, can be divided into two classes: whether they make use of a single 'trick' to change behaviour, or include a more complex approach to behaviour change that allows for multiple avenues of change. Table 1 describes some of the dominant behaviour change theories currently being used in public health, broken down into these categories.

Table 1: Descriptions of common behaviour change theories used in public health

Name of BC theory	Key elements that define the approach	Key assumptions
Single Factor Approaches		
Social Norms Approach [1]	Perceived social norms can be used to influence behaviour.	• Individuals often incorrectly perceive that the attitudes or behaviours of others are different from their own, when in reality they are similar.
Cognitive dissonance approach [2]	Inconsistency between attitudes or behaviours forces us to either change our attitudes or change our behaviour so to avoid internal conflicts (or dissonance) around these ideas.	• Our brains prefer when our beliefs, attitudes and behaviour are aligned and consistent.
Default option [3]	Present the desired option as a default (what you get if you don't actively make a choice) and this will increase the chance it will be chosen.	• Defaults work partly by creating a perception of ownership because the pleasure we derive from gains is less intense than the pain from an equivalent loss.
Choice architecture manipulation [3]	Manipulate the number of options that are available and the kinds of options that are available, to influence which option most people will actually adopt.	• Reducing the total number of choices ('choice overload') increases the likelihood of any option being chosen • Broadening the range of choices can influence which choice is made
Sense of control [4]	Make people more responsible for their everyday choices.	Increasing people's perception about their ability to influence events will increase their active involvement in their own life.
Multi-Factor Approaches		
Health Belief Model [5]	Health-related behaviour is determined by the following factors: 1.Perceived susceptibility – a person's perception of how much they are at risk of a problem. 2.Perceived severity – a person's perception of how severe the problem is. 3.Perceived action efficacy – whether people believe that practicing the behaviour will reduce the problem. 4.Perceived social acceptability – whether a person feels the behaviour aligns with their social norms. 5.Perceived self-efficacy – a person's belief that they can do the behaviour given their knowledge and skills. 6.Cues for action – things that remind a person to do a behaviour.	• People engage in health behaviours for reasons linked to healthy outcomes, overlooking other potential motivations. • With the aid of a Barrier Analysis Tool these determinants can be quantified to understand which factors are most important in the design of an intervention.
Theory of Planned Behaviour [6]	Self-efficacy (an individual's belief in their own ability to perform a behaviour) is important in determining the likelihood of the individual's intention to perform a behaviour. A person's	• A person is not in control of all factors affecting the actual performance of a behaviour.

	sense of self-efficacy is understood to be informed by their attitudes and beliefs toward the behaviour, subjective norms (perceived social pressure to perform a behaviour), and their perceived behavioural control.	• Behaviour is predominantly influenced by conscious thought. • Self-efficacy is an important part of the process.
Health Action Process Approach [7]	Behaviour change can be achieved through a structured process. Intervention design should follow two distinct phases; motivation and volition. The first stage involves identifying the behavioural motivation and establishing goals, the second involves planning and acting to achieve these goals.	• Plans which are motivated by strong intentions are more likely to succeed. • People need to have plans to cope when unexpected barriers to change arise.
Stages of Change (Transtheoretical model) [8]	Behaviour change occurs through a 5 step process: 1. Pre-contemplation (the individual has not even thought about changing their behaviour) 2. Contemplation (begins to think about changing behaviour) 3. Preparation for action (begins planning to change behaviour) 4. Action (begins practicing the behaviour) 5. Maintenance (the behaviour is performed regularly)	• Behaviour is influenced only though consciously contemplating change. • Behaviour change is a linear and progressive process. • People can be 'ready' for behaviour change to differing degrees, and so are more or less susceptible to particular change strategies.
Multi-Factor Approaches targeting WASH-related behaviour change		
SaniFOAM [9]	Suggests behaviour change can be understood by asking three key questions: 1. Opportunity: Does the individual have the chance to perform the behaviour? 2. Ability: Is the individual capable of performing it? 3. Motivation: Does the individual want to perform it? The F in SaniFOAM stands for 'focus' – the need to be highly specific about the target population and the behaviour practitioners want to change.	• Infrastructure is insufficient to achieve WASH-related behaviour change
IBM-WASH [10]	Behaviour is influenced by 3 interacting 'dimensions': 1. The Contextual Dimension – includes determinants related to the individual, setting, and/or environment that can influence behaviour change and adoption of new technologies. 2. The Psychosocial Dimension – comprises the behavioural, social, or psychological determinants that influence behavioural outcomes and technology adoption. 3. The Technical dimension – specific attributes of a technology, product, or device that influence behavioural adoption. These operate at 5 levels: the society/structural level, the community level,	• Behaviour can only be understood within larger societal and communal contexts. • An enabling technology is essential (but not sufficient) for achieving WASH-related behaviour change.

	the interpersonal/ community level, the individual level and the habitual level.	
Multi-Factor Approaches with Intervention Process Model		
COM-B [11]	Behaviour comes about from an interaction of 'capability' to perform the behaviour and 'opportunity' and 'motivation' to carry out the behaviour. Interventions need to alter one or more of these three things in order to achieve behaviour change. The model uses a behaviour change wheel to describe the potential functions of a behaviour change intervention policy categories that could support behaviour change.	• Self-efficacy is important. • Larger social structures (such as policies) contribute to individual behaviour change. • Some level of knowledge is essential (but not sufficient) for behaviour change.

Most of these approaches tend to assume that behaviour change is most effectively achieved by trying to alter how people plan their behaviour – that is to say that they target the brain's executive control. However, as we learned this is just one of three levels of control over behaviour. To date, many theories have overlooked other aspects which influence behaviour, in particular those associated with motivational drivers and habit formation.

WaterAid's strategic approach to hygiene behaviour change

Behaviour change is central to all the WASH programmes that WaterAid does. Since 1995 WaterAid has been experimenting with different behaviour change approaches. However, this has resulted in some inconsistencies across country programs in the levels of understanding about behaviour change and the methods used to achieve behaviour change. In the new global strategy for 2015-2020 there is a greater emphasis on hygiene behaviour change. In line with this strategy we now want to move towards using consistent and effective approaches across all country programs. This will allow for between-country comparisons of hygiene programs and create new learning opportunities for staff and the organization as a whole. WaterAid, at a central level, will also be able to provide more specific support and feedback to local implementers if everyone is following a similar process.

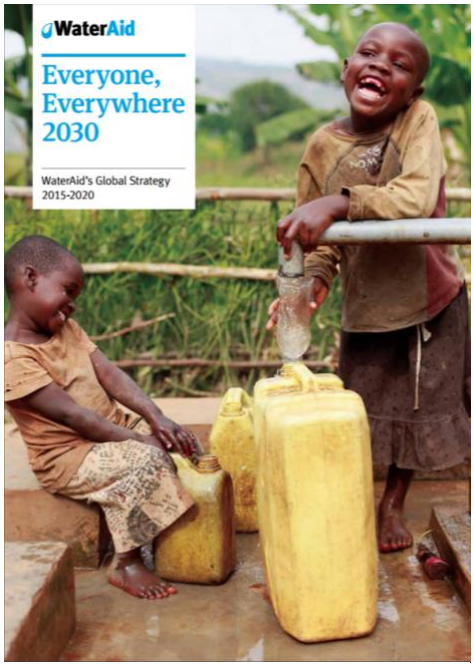

Figure 5: WaterAid's Global Strategy places a renewed focus on hygiene

WaterAid is trying to develop a model that would help explain behaviour as well as provide guidance to staff on how to design, implement and evaluate an intervention that could change behaviour. We wanted to find an approach that was rigorously tested and which could be applied to any behaviour.

With this in mind, we discovered that the Behaviour Centred Design (BCD) approach which is well positioned to guide our hygiene programme design and programming cycle [12]. BCD is now one of the most rigorously tested behaviour change approaches, with a growing number of randomized control trials quantifying the effect of interventions designed using this theory-driven process. BCD-designed interventions have been found to be effective in targeting a range of behaviours (e.g., food and hand hygiene [13], sanitation, Oral Rehydration Solution use [14], nutrition [15], exercise and HIV prevention) in a range of low to high-income settings (e.g., India, Nepal, Nigeria, Vietnam, Ethiopia, Indonesia, Zambia, Ireland and USA). The BCD approach brings together diverse theoretical ideas from fields such as animal

behaviour, neuroscience, operations research, cognitive and evolutionary psychology and marketing into one unified model, and can accommodate the insights of most other approaches into its generic framework. Uniquely it also provides a concrete framework (the ABCDE steps) which can be used by anyone to design a theory-driven, but context-specific behaviour change intervention.

WaterAid has successfully trialled the BCD approach in some country programs. For example, in Nepal the BCD approach was used to incorporate hygiene promotion into routine immunisation. Throughout the rest of this module we explain the BCD approach in more depth.

Behaviour Centred Design

Behaviour Centred Design is a relatively new approach developed at the London School of Hygiene and Tropical Medicine founded on an appreciation of the mismatch problem (mentioned above) and the reinforcement learning solution. BCD draws on evolutionary psychology, the latest techniques in marketing and existing behaviour change approaches. BCD can be represented by a single diagram (see Figure 5 below). This diagram encompasses two different things: a theory of behaviour change through the middle of the diagram and a process model for designing behaviour change interventions around the outside (the blue arrows). The process model will primarily be discussed throughout the subsequent modules in this series.

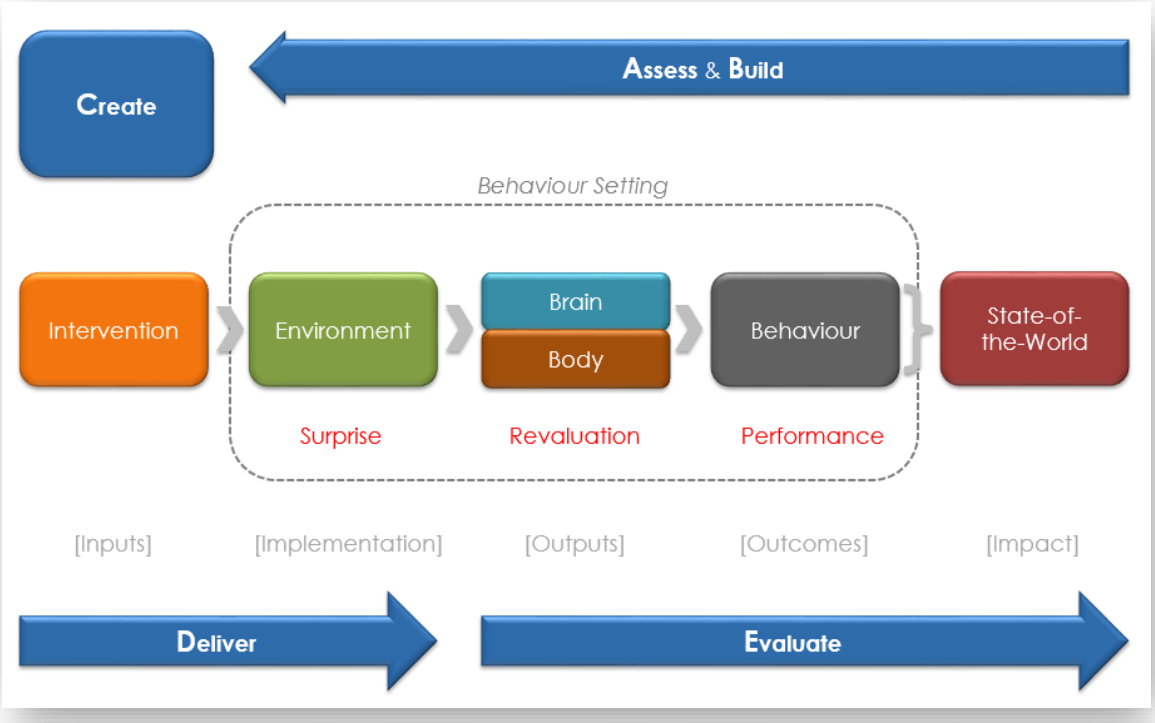

Figure 6: A pictorial representation of the Behaviour Centred Design (BCD) theory showing the theory of change across the centre of the diagram and a process for designing behaviour change interventions around the outside (using the blue arrows).

Theory of change

A 'theory of change' can be considered to be a causal chain working through various links necessary for a particular objective to be achieved. Most of you will probably be familiar with theories of change from your experience in WASH programming and WaterAid's in country strategy development process. Often theories of change are phrased as the process of moving from *inputs*, to *implementation activities*, to *outputs* and finally to *outcomes*.

The BCD theory of change reflects the reinforcement learning model. It assumes that in order to change the 'state of the world' a behaviour change intervention must change something within its behavioural setting. This should lead to changes in the way the behaviour is perceived by the brain and/or body, resulting in the selection and repeated adoption of the desired behaviour. The BCD theory of change makes more specific claims than usual: it says that, for a behaviour change campaign, an output should be considered a psychological change and an outcome should be a change in behaviour (although the impact can still reflect whatever the project's overall objective or aim is).

Behaviour setting

A behavioural setting is more than just the physical location where a behaviour takes place. A behaviour setting, as we describe it here, refers to all of the circumstances and things that are involved in a behaviour taking place. The place itself can be considered the *stage* on which the components of the setting are enacted, where these components include objects (or *props*), the *physical infrastructure*, the *roles* we play and the control mechanisms that govern our behaviour such as *rules* or *norms* used to make sure the setting is executed successfully.

Let's think about a typical handwashing setting and the components that comprise it. The physical setting may be near a toilet or a kitchen as this is where we most frequently wash our hands. In these locations we find familiar *infrastructure* such as taps and basins. We also find *props* that are key to helping us perform the behaviour – such as soap. The people who come to wash their hands at this place are *actors* and each one plays a *role* within the setting. In figure 7 there are two roles being played 1) the older sister and 2) the younger brother. Both of the people playing these roles follow a *script*. The script for the younger brother is that when he gets his hands grubby he knows to go running and crying to his older sister for help. The older sister knows just what to do when this happens - she takes him to the basin, holds his hand, shows him how to use the soap and water until the desired behaviour is performed optimally. In this behavioural setting we have an explicit example of a control mechanism – the older sibling guiding her younger sibling's arm. Some control mechanisms are less obvious. For example, imagine that a neighbour saw the boy and his grubby hands and shook her head with disgust. This would be embarrassing for the boy and his family and would act as a behavioural lever to encourage handwashing in the future.

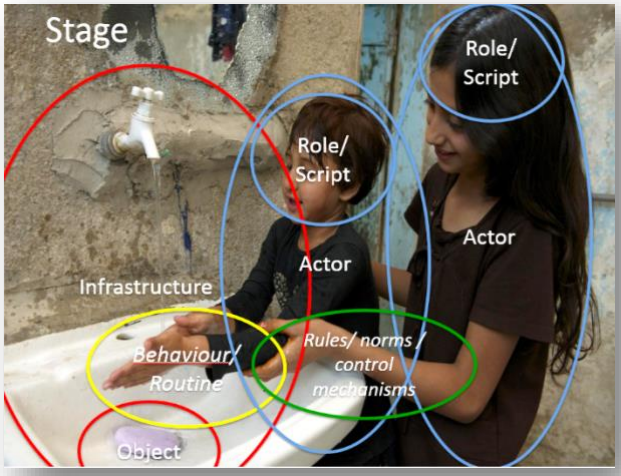

Figure 7: It is not surprising that most people behave the same in a classroom setting. Once we know the stage of the behavioural setting, the objects present, the roles people play and its rules or norms, it is easy to predict behaviour.

Once we understand a behaviour setting and the roles people play within it, it becomes easy to predict the way people will behave with a high degree of accuracy.

The BCD 'Challenge' Model

Finding the right behavioural lever – the thing that causes a switch to the new behaviour – is the primary challenge for behaviour change. The BCD approach breaks down this challenge by identifying three key tasks, each associated with changing one link in the theory of change. We summarize these three tasks below.

Make it surprising

The first task of a behavior change intervention is for it to be surprising. To achieve this, we must think firstly about how we intend for our target population to be exposed to the intervention. Secondly we must think about how our intervention can stand out and genuinely hold the attention of the target group.

Get exposure: We cannot expect behaviour change to happen unless individuals in the target population come into contact with the intervention. This requires us to consider how the intervention will reach our target group and also how many times the target group need to interact with the intervention in order for it to have the desired effect.

Grab attention: Behaviour change can only occur when the intervention grabs the attention of the target audience and causes some psychological change (e.g. a memory). This is particularly important when the intervention does not take place in the same location (e.g. a public event) as the target behavior (which might happen in a private place such as the household).

Cause revaluation of the behaviour

The second task is to cause the target behaviour to be revalued, so that it is more or less likely to win out as the best behavioural choice when the next opportunity arrises. This requires us to think about what motives are currently driving behavior (by using the motive triangle), and how we could modify these motives or increase the reward associated with the target behavior.

Modify value: The first step in doing this is to identify the '**proper domain motive**' of the target behavior. The proper domain motive is the motive which predominantly drives the target behavior. For example, the proper domain motive for all hygiene behaviour is disgust (avoiding disease by staying clean) while eating behaviours are associated with the motive of hunger and sexual behaviours are associated with lust. One way a behavior change intervention can choose to modify the value of the behavior is by increasing the strength of the proper domain motive. For example, if you were targeting hygiene behaviour you could amp up the disgust associated with poor hygiene by making people more aware of disgusting germs (e.g. by artificially making them visible).

Alter reward: Alternatively, you can add a new motive to the target behaviour, thus increasing its value. For example, nurture could be associated to a hygiene behaviour by associating good hygiene with being a good mother.

Ensure the behaviour is performed

The third task is making sure that the target behaviour gets selected (from among all other possible choices) and actually gets performed. This requires us to think about how we can alter the behavioural setting so that the target behaviour is the easiest and least costly to perform.

Disrupt setting: The intervention needs to modify one or more of the components of the setting (e.g., objects, infrastructure, script, roles or norms) so that the target behaviour becomes a vital part of it. For example, if you were trying to improve food hygiene you could try to physically change the kitchen setting. You could influence the script that people follow by hanging stickers or other cues in the kitchen environment to remind them of the target behaviour.

Get selected: Here the task is to reduce the costs of engaging in the behaviour itself. The cost of performing a behaviour includes 1) the financial cost of doing the behaviour, 2) the 'opportunity cost' (e.g. other missed opportunities) associated with doing the behaviour, or 3) the effort or physical cost associated with doing the behaviour. For example if we wanted to make handwashing easier, more convenient and use less water one idea might be to install a handwashing station near the toilet and kitchen.

How should behaviour change theories be applied in practice?

In addition to laying out a theory of behaviour change, Behaviour Centred Design provides a framework for designing a behaviour change intervention. In the Behaviour Centred Design diagram (Figure 6) this process is reflected in the blue arrows. The intervention design process is described through a simple acronym - ABCDE. Each letter explains one of the key steps in the process: A: Assess, B: Build, C: Create, D: Deliver and E: Evaluate. Later modules will explain each of these steps in turn.

References for other behaviour change theories

1. Perkins, H.W., *The Social Norms Approach to Preventing School and College Age Substance Abuse: A Handbook for Educators, Counselors, and Clinicians*. 2003, San Francisco: Jossey Bass.
2. Festinger, L., *A Theory of Cognitive Dissonance*. 1957, Stanford: Stanford University Press.
3. Sunstein, C. and R. Thaler, *Nudge: Improving Decisions about Health, Wealth, and Happiness* 2008, New Haven, CT: Yale University Press.
4. Rodin, J. and E.J. Langer, *Long-term effects of a control-relevant intervention with the institutionalized aged.* Journal of personality and social psychology, 1977. 35(12): p. 897.
5. Becker, M.H., *The health belief model and sick role behaviour.* Health Education Monographs, 1974. 2: p. 409-419.
6. Ajzen, I., *The theory of planned behavior. Organizational Behavior and Human Decision* Processes, 1991(50): p. 179-211.
7. Schwarzer, R., *Modeling health behavior change: How to predict and modify the adoption and maintenance of health behaviors.* Applied Psychology: An International Review, 2008. **57**: p. 1–29.
8. Prochaska, J. and C. DiClemente, *Towards a comprehensive model of change*, in *Treating addictive behaviors: Processes of change*, W. Miller and N. Heather, Editors. 1986, Plenum Press: New York. p. 3-27.
9. Devine, J., *Introducing SaniFOAM: A Framework to Analyze Sanitation Behaviors to Design Effective Sanitation Programs. Working Paper*. 2009, The World Bank, Water and Sanitation Program. : Washington DC.
10. Dreibelbis, R., et al., *The integrated behavioural model for water, sanitation, and hygiene: a systematic review of behavioural models and a framework for designing and evaluating behaviour change interventions in infrastructure-restricted settings.* BMC Public Health, 2013. 13(1): p. 1015.
11. Michie, S., M.M. Stralen, and R. West, *The behaviour change wheel: a new method for characterising and designing behaviour change interventions.* Implementation science : IS., 2011. 6.

References related to BCD

12. Aunger, R. and V. Curtis, *Behaviour Centred Design: Toward and applied science of behaviour change.* Health Psychology Review, 2016. http://www.tandfonline.com/doi/full/10.1080/17437199.2016.1219673
13. Biran, A., et al., *Effect of a behaviour-change intervention on handwashing with soap in India (SuperAmma): a cluster-randomised trial.* Lancet, 2014.
14. Greenland K, et al., *Multiple Behaviour Change Intervention for Diarrhoea Control in Lusaka, Zambia: Cluster Randomised Trial.* Lancet Global Health 2016.
15. White, S., et al., *Can gossip change nutrition behaviour? Results of a mass media and community-based intervention trial in East Java, Indonesia.* Trop Med Int Health, 2016. 21(3): p. 348-64.