

GOVERNING BEHAVIOUR: HABITS AND THE SCIENCE OF BEHAVIOUR CHANGE

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The Decade of Behavior is an initiative encompassing about 50 societies representing the behavioral and social sciences, including the American Sociological Association At the end of the 20th century, the numbers of Americans facing challenges that could be prevented or mitigated through behavioral change is enormous. The goal of the Decade of Behavior initiative is to focus insights from the social and behavioral sciences and highlight how research on behavior can be brought to bear on meeting society's most significant challenges, for example, for ensuring and improving education and health and access to health care; ensuring safety in homes and communities; curbing drug use and abuse, poverty, racism, cynicism toward institutions of government, crime, and high risk behaviors; and actively addressing an aging population.

Launch of The Decade of Behavior, capitol Hill, Washington, 25 March 2020 ¹

Could there be a science of human behaviour, a scientific discipline that explained not only what shaped behaviour but also how that behaviour could be changed? How individuals could change their own behaviour? How parents could change the behaviour of their children? How authorities - priests, doctors, social workers and others - could control the behaviour of their charges? How politicians could manage the behaviour of their citizens?

Of course, many have tried to govern how we behave ourselves. We could go back to the spiritual exercises from the Greeks to the early Christians (Hadot, 1995). Religions down the ages have sought to encourage piety and banish sin, and that their pastors have tried to manage the morals of their flock through injunctions, admonitions, confessions and the like (Foucault, 2019). In the early twentieth century, the emerging social sciences emphasised the role of social norms in enabling and constraining conduct in different situations, and the ways these could be in strategies of social control (Ross, 1901). In the 1950s and 1960s we might consider those 'hidden persuaders' analysed by Vance Packard (Packard, 1962). At the close of the twentieth century, we would probably think first of the 'disciplines' of psy, the technologies they invented and the rise of the 'governors of the soul' whose territory was the mind, the psy-shaped space that lay behind, and shaped, human volition and hence human action (Rose, 1989).

But the most abiding theme in attempts to understand and manage human conduct is undoubtedly 'habit'. The *Oxford English Dictionary* dates the use of the term to denote the sum of the mental and moral qualities that constitute a person to the 14th Century.² In the 16th Century, habit is thought of as a settled disposition or tendency to act in a certain way, acquired by frequent repetition of the same act until it becomes almost involuntary. The *OED* also tells us that, centuries earlier, Cicero used the term for the acquisition of a settled way of acting. So it is no surprise that, in the eighteenth and nineteenth centuries, the idea of habit as an ingrained pattern of behaviour, learned in early life and then repeated more or less automatically in particular situations, seemed self-evident. From Rousseau's *Emile* onwards (Rousseau, 1817), experts gave advice on how the underlying instincts or impulses of children could be trained into particular patterns of conduct that were valued by parents, teachers, priests and other authorities. Once inculcated in early life, the habits of a person underpinned much of what a person did unreflectively, their dispositions and characters, and, by extension, their ways of living. These ingrained habits differed for townspeople and country bumpkins, paupers and respectable working folk, and of course between different races – by their habits you would know them.

From the mid-nineteenth century through the early decades of the twentieth, innumerable writers on child rearing, psychologists, advocates of kindergartens, nursery schools, reformatory school, pauper schools and the like put great focus on the need to train the will through inculcating habits (Abbott, 1871; Hall, 1892; Johnson, 1937; Sadler, 1909; Stow, 1854; Thom, 1922). While they differed on many things, none doubted that the training of good habits was crucial to the rearing of conscientious and well-adjusted citizens. A person's habits, taken together, created a particular pattern or set of dispositions which were consistent across situations, time and place, in other words, a character. Once ingrained, habits could sometimes be reformed, but this required effort and commitment to recognize an aspect of one's conduct as a habit, to judge it as problematic, and to work to change it (Valverde, 1998).

The idea that conduct is shaped by habit from the micro - personal hygiene, erotics, adornment - to the macro - cultural customs and social norms - was so ingrained that it hardly required conceptual reflection. By the end of the 19th Century, it was being framed in the styles of thought then emerging in neurology. As William James puts it:³

I believe that we are subject to the law of habit in consequence of the fact that we have bodies. The plasticity of the living matter of our nervous system, in short, is the reason why we do a thing with difficulty the first time, but soon do it more and more easily, and finally, with sufficient practice, do it semi-mechanically, or with hardly any consciousness at all. Our nervous systems have (in Dr. Carpenter's words) *grown* to the way in which they have been exercised, just as a sheet of paper or a coat, once creased or folded, tends to fall forever afterward into the same identical folds. (James, 1900: Ch. IV).

Freud used a similar metaphor in his discussion of 'the mystic writing pad' which "has an unlimited receptive capacity for new perceptions and nevertheless lays down permanent—even though not unalterable—memory-traces of them" (Freud, 1925: 229). Weber thought of sociology as predominantly about intentional action and assumed that traditional action was largely habitual, hence he was ambivalent as to whether it admitted of sociological explanation. Mauss's 'techniques of the body', by contrast, were intrinsically social: "These 'habits' do not just vary with individuals and their imitations, they vary especially between societies, educations, proprieties and fashions, prestiges. In them we should see the techniques and work of collective and individual practical reason rather than, in the ordinary way, merely the soul and its repetitive faculties" (Mauss, 1973 [1936]: 75). According to Charles Camic, it was when John Watson, B. F. Skinner and their behaviourist disciples captured the idea of habit to explain human conduct without reference to 'the mind' that social scientists turned away from habit to focus on 'the structure of social action', the problem of 'agency' and the like (Camic, 1986). Animals may behave, but human beings, equipped with a rich inner life, inhabiting a world of meanings, symbols, language and communication, don't 'behave,' they 'act' and the task is to account, not for behaviour, but for 'action'.

But perhaps the era of disdain for behaviour in favour of agency and action is coming to an end. This was the ambition of those who launched the Decade of Behaviour at the start of our own century. In their comments on the 'decade', Marie Johnson and Diane Dixon regretted the fact that while many psychologists had done important research on observable behaviour, they tended not to term it as such:

we do not use a coherent language—we tend not to call behaviour 'behaviour'—but use diverse labels referring to specific forms and contexts, e.g. smoking, diet,

exercise, walking, condom use, sleeping, drop-out, participate, uptake, adherence, delay, referral, prescribing, taking medication, taking a screening/ genetic test, implementation, coping, help-seeking, social support, evidence-based practice, absenteeism, pain, disability/ physical limitations, activities of daily living, participation in social activities, substance use, etc. While accurate in themselves, these labels may fail to attract the benefits of using the label 'behaviour', both in communicating to our potential market and in gaining the insights offered by theories of behaviour (Johnston and Dixon, 2008: 510).

Psychologists were "failing to be recognised by the public, policy makers and researchers in related disciplines as having any expertise in that domain of knowledge. While people use various amateur or 'common sense' inputs in mending a leaking pipe, solving financial problems, or treating a child's fever, when they need expertise they turn to plumbers, bankers or economists and doctors or healers. By contrast, psychology does not appear to have captured a market in expertise in behaviour" (ibid.: 510). But perhaps, if psychology focussed on behaviour and represented itself as a science of 'behaviour change' it could 'capture' that market. In this science of behaviour change, habit was to play a somewhat ambiguous role.

What is Behaviour Change?

In September 2020, the Centre for Behavioural Change at University College London held its Annual Conference, CBC2020, on-line because of the Covid-19 pandemic, entitled *Behaviour Change for Health: New and Emerging Science and Technologies*.⁴ Promoted as the "go-to event for scientists and industry professions in the digital health and behaviour change sector,"⁵ the leading keynote speaker at this conference was Professor Wendy Wood, whose paper "Why don't we stick with behaviour change?" answered that question with one word – habit. But as we shall see, when it comes to 'behaviour change', things are not so simple.

The UCL Centre, directed by Professor Susan Michie, has noble ambitions: "Our strategic vision is to advance the science and practice of behaviour change to improve wellbeing, social justice and environmental sustainability on a global scale".⁶ While it has worked on projects ranging from combatting antimicrobial resistance to helping solve the plastic waste crisis, it came to particular prominence during the first wave of the COVID-19 pandemic in the UK, largely due to the public role accorded to its Director.⁷ In the so-called 'science-led'

approach to the pandemic adopted by the UK Government, behaviour change took centre stage, and Professor Michie was initially a key member of the UK government's Scientific Advisory Group for Emergencies (SAGE) as well as being a member of the Covid-19 Behavioural Science Advisory Group, before becoming a member of the critical group of leading scientists that called itself 'Independent SAGE'. Her move to this independent group seemed to be because of her view that the Government's communications strategy was inadequate to the challenges of securing the necessary behaviour changes to limit the spread of the virus.⁸ So what, for Michie, would be the best strategy? Before we look to her research on "developing methodologies for designing and evaluating theory-based interventions to change behaviour, and advancing scientific knowledge about, and applications of, behaviour change interventions,"⁹ a few words on the recent history of behavioural science will set the context.

The standard view is that behavioural science has its origins in US behaviourism, and its aspiration to provide the scientific basis for social control in the name of social progress (Mills, 1998). However Rhys Jones, Jessica Pykett and Mark Whitehead give a different account of the history of contemporary political interest in behaviour change (Jones, et al., 2013). They find its roots in behavioural economics, and trace a lineage from Herbert Simon's ideas about bounded rationality (Simon, 1945; Simon, 1957), through Amos Tversky and Daniel Kahneman's arguments that human decision making is almost always based on naive judgements about causality (Kahneman, et al., 1982). Eric Wanner developed these ideas for managing human decision making at the Sloan Foundation and Russell Sage Foundation; Robert Cipriani used similar arguments in marketing psychology; Donald Norman embodied them in his analyses of the design features of devices that cue particular ways of understanding their operation. Finally Richard Thaler and Cass Sunstein's book *Nudge: Improving Decisions About Health, Wealth and Happiness* (2008) claimed that decisions can be modulated without coercion by reshaping the 'choice architecture', designing the way options are presented to make it easier for people to make decisions that others think are good for them.

For Jones, Pykett and Whitehead, this was the trajectory that led to the take up of behaviour change in the UK, most notably in the Behavioural Insights Team (BIT) set up by the Coalition Government of Prime Minister David Cameron in 2010 and privatised four years later. The head of the BIT was David Hapern, who had been central to "the first comprehensive guide for the implementation of behavioural policies" (Jones, et al., 2013: 34):

MINDSPACE: Influencing Behaviour Through Public Policy (Dolan, et al., 2010). The role of the BIT was to develop “ intelligent ways to encourage, support and enable people to make better choices for themselves “ (Behavioural Insights Team, 2011: 3 quoted in Jones, et al., 2013: 35). Psychological theories of behaviour change were not only of interest to conservative politicians: they were also being explored by Demos, the left wing think tank that was close to the British government of Tony Blair. When in government, from 1997, Blair set up his own Cabinet Office Strategy Unit (COSU) which involved both David Halpern and Geoff Mulgan – the Director of Demos – in exploring what behavioural economics could contribute to New Labour’s strategy in which personal responsibility was to be the quid-pro-quo of social rights (Halpern et al, 2004). The key was to find “intelligent ways to encourage, support and enable people to make better choices for themselves “ (Behavioural Insights Team, 2011: 3 quoted in Jones, et al., 2013: 35). People should be brought to believe that behaving in the ways desired by their authorities was a matter of their personal choice.¹⁰

Jones, Pykett and Whitehead include behavioural economics, cognitive design, engineering psychology, neuroeconomics, psychographics, social cognition, theories of affect and user-centred design among the intellectual influences creating the behavioural science agenda, (Jones, et al., 2013: 43). However the term ‘habit’ does not appear once in their book. Indeed, in the UK’s Covid-19 strategy, the role of the BIT, seems principally to be about ‘messaging’¹¹ to increase the effectiveness of communication, for example in relation to the need for frequent handwashing.¹² But surely activities such as washing hands, face touching, handshaking, social distancing, are ‘habits’. So if habits are not central to the science of behaviour change, what is?

Technologies of Behaviour Change

Susan Michie and her colleagues set out their approach in a much cited journal article entitled “The behaviour change wheel: A new method for characterising and designing behaviour change interventions” (Michie, et al., 2011).¹³ They start by asserting that “behaviour change interventions are fundamental to the effective practice of clinical medicine and public health, as indeed they are to many pressing issues facing society ... ‘Behaviour change interventions’ can be defined as coordinated sets of activities designed to change specified behaviour patterns “ (ibid.: 1). But while there are many different ‘interventions’ into behaviour, for example those aim to change behaviours by education, or

by giving incentives, these are “commonly designed ... with no formal analysis of either the target behaviour or the theoretically predicted mechanisms of action. They are based on implicit commonsense models of behaviour” (ibid.: 2). As a consequence they often omit important variables, such as “the important roles of impulsivity, habit, self-control, associative learning, and emotional processing”(ibid.: 2).

The Behaviour Change Wheel sets out a standard framework to rectify this disarray. Its model of behaviour change is named COM-B which stands for **C**apability, **O**pportunity and **M**otivation, which interact to generate **B**ehaviour (ibid. 3):

Capability is defined as the individual's psychological and physical capacity to engage in the activity concerned. It includes having the necessary knowledge and skills. Motivation is defined as all those brain processes that energize and direct behaviour, not just goals and conscious decision-making. It includes habitual processes, emotional responding, as well as analytical decision-making.

Opportunity is defined as all the factors that lie outside the individual that make the behaviour possible or prompt it.

Habit is relegated to one small component of 'motivation' and indeed, it seems not a very important one: the papers they review which contain explicit or implicit theories of behaviour change seldom mention it.

In a later paper which aims to develop what they call “a cumulative science of behaviour change” they regret, once more, the use of ineffective techniques whose mechanisms of action are poorly understood, and hence the slow accumulation of evidence to enable judgements about which behaviour change interventions are effective. (Michie and Johnston, 2012: 1). Indeed, they feel the need to point out that if one is to assess the effectiveness of a behaviour change intervention, the “importance of defining behaviour as the end-point of a *behavioural* intervention cannot be overstated” (ibid.: 1, emphasis in original). This, of course, means that it is also rather important to define behaviour.

Michie and colleagues derive their definition from a “multidisciplinary consensus study of theories of behaviour change”: behaviour is “Anything a person does in response to internal or external events. Actions may be overt (motor or verbal) and directly measurable, or covert (e.g. physiological responses) and only indirectly measurable; behaviours are

physical events that occur in the body and are controlled by the brain" (Ibid.: 2). They conclude that it is crucial to classify the active components of behaviour change interventions and link these to a theory of the processes involved. Here is where we might expect habits and techniques to change habits to be prominent – but they are not. In the 77 individual behaviour change techniques (BCTs) listed in a recent review of 277 intervention articles, seeking to link BCTs to their Mechanisms of Action (MoAs), interventions on habits play a part in only two (Carey, et al., 2018). Indeed it is hard to see what these various BCTs and MoAs have in common, since some of them work on conscious intentions, such as education, persuasion and the setting of goals, some on a kind of self-reflexivity, such as the self-monitoring and self-judging of one's behaviour, and only a few on "all those brain processes that energize and direct behaviour, not just goals and conscious decision-making" (Michie, et al., 2011: 45). As anything and everything can, and has, been used to 'change behaviour', one wonders how one might speak of a science of behaviour change. Michie and her team remark, rather sadly, that: "A large number of interventions that are reported to be based on theory in fact draw on implicit or partially applied theories It is often unclear whether and/or how theory has been used in the selection of BCTs, and in the targeting and measurement of theoretical constructs that are considered to be mediating variables in the change process. Simply describing an intervention as having been informed by theory does not mean it has been" (Carey, et al., 2018: 704).

Given these regrets, it is all the more surprising that there is little explicit discussion of the role of habits in behaviour change, because when it comes to habits, interventions surely are 'informed by theory'. Let us turn back to Professor Wendy Wood's keynote address to the 2020 Conference of Michie's Centre for Behaviour Change. Wood answers her the question 'why don't we stick with behaviour change' succinctly: "habits are a central reason for this failure. Although people naturally persist by forming habits, it's not easy to understand how habits work. In fact, we may know least about the actions that we do most often."¹⁴ So how, do habits "work"?

What is a Habit?

In December 2017, *The Guardian* newspaper published an article about how to keep New Year Resolutions which relied heavily on advice from Wendy Wood on the crucial role of habits:¹⁵

It was neuroscientists who brought habits on to psychology's radar, since brain scans cast light on mechanisms unfolding in the deepest, darkest recesses of the brain, identifying which parts are activated as a behaviour becomes habitual. 'As we repeat actions, we engage different aspects of our neural system and you can actually see habit formation taking place in the brain,' says Wood 'When you have people in scanners, activation starts in the decision-making areas of the brain – the prefrontal cortex and the hippocampus. Over time, as you repeat a behaviour and keep getting that reward, activation shifts more to the basal ganglial areas, particularly the putamen, because we're no longer thinking actively; instead, we're responding based on habit.' Wood's research shows that 43% of what we do every day is performed out of habit. "It's a shortcut – if you do what you did before, in this context, you'll get the reward that you got before," she says."

A sequence of actions that start off as deliberate and goal directed becomes linked to certain contexts by repetition, and gradually those contexts come to trigger of that sequence of actions, irrespective of whether the initial goal remains, let alone whether it is achieved. For instance, if you go into your favourite coffee shop, a sequence of actions to purchase and consume a cup of coffee, is triggered, regardless of whether you desire, or obtain, any pleasure from that drink. So what do neuroscientists think is going on? To find out, we can do no better than to turn to the leading neurobiologist of habit, Anne Graybiel. For Graybiel, habitual action is behaviour that is either not goal driven or has ceased to be goal driven – it continues despite the removal of the initial goal that drove the learning of the habit: the goal, that is to say, has become 'devalued' (Graybiel, 2008).

Working with animals, Graybiel locates the neural basis for habit learning in the plasticity of neural circuits in the region of the brain termed the striatum, a cluster of neurons in the basal ganglia of the brain, with multiple strong connections to the cortex and back. When animals learn new skills, many cortico-striatal loops change as neuronal circuits organize these repeated motor patterns into relatively fixed action sequences. Graybiel argues that a habit is actually a "chunk," a set of behaviours which, as a result of feedback following actions that achieve a positive outcome, is framed or 'bracketed' and released rapidly as a "set" to achieve optimal control (Graybiel and Grafton, 2015). Thus, she argues, skills and habit have a shared "seat" on the striatum in the basal ganglia; this is where habits are learned and motor skills are acquired. The striatum is thus seen as a hub for neuroplasticity; smooth behaviour performance, advance planning and behaviour learning all rely on striatal

structures (Graybiel and Grafton, 2015). Habits form through the stabilisation of neural circuits between the neocortex and striatum; associated patterns in the neocortex fade with the devaluation of the reward initially provided by reaching the goal, the striatum that maintains stable neural firing patterns after 'devaluation' of the reward.

Many concerned with human habits believe that such conclusions cannot simply be extrapolated to humans. Thus Javier Bernacer and Jose Ignacio Murillo argue that the opposition between goal-directed actions and habit works well for animals in experimental situations, where a habit is carried out despite goal degradation (Bernacer and Murillo, 2014). But humans are different: for humans "habits, even the simplest ones, such as tying one's shoelaces, are goal-directed" (ibid.: np). Habits, in humans, they argue, entail control via the pre-frontal cortex. Indeed, they make an 'Aristotelian' ethical distinction between 'good habits' which are subject to such control by goal direction, and bad habits which are rigid routines maintained independent of goals. So the question remains – for humans, what is the relation between the chunk of behaviour that constitutes the habit and the goal that this chunk of behaviour was initially intended to reach.

To understand the way that this question is usually answered today, we must turn to the psychologists, and to a significant shift in the conception of habit emerging from the 1920s onwards.. Behaviourists such as Watson took their lead from animal behaviour, where it seemed there was no internal world, no black box (or at least none beyond physiology) that must be opened in order to construct an account of behaviour (Watson, 1924). Biological accounts of the reflex developed in the nineteenth century (Canguilhem, 1977) enabled quite complex sequences of behaviour in animals to be construed as innate and inherited, shaped by evolution and co-evolved with the creation of their specific niche (Grinnell, 1917; Johnson, 1910; Pocheville, 2015). These sequences, later made famous in the work of Konrad Lorenz and Nico Tinbergen, became known as 'fixed action patterns' triggered by particular perceptual signals – a shape, a smell, which may occur in a particular place or season of the year, for example the acorn gathering and burying behaviour exhibited by Jays in the Autumn (Hinde, 1966). For the behaviourists, similar arguments could be applied to humans, thus effectively reducing human conduct to a series of learned reflex-like habits (Catania and Harnad, 1988; Skinner, 1972).

However, as the sub-discipline of social psychology developed, a different argument took shape, emphasizing the role of situational or contextual factors in cueing the activation of

habits, and hence in shaping what a person will do in a particular situation. Virtuous or vicious conduct was not an invariable expression of habits inculcated into one's character, but was dependent on the specifics of 'the situation', for example whether one is in a hurry or whether one is in the presence of others. Thus Stanley Milgram's famous studies of obedience showed that a person's conduct was determined by whether, an authority *in a particular situation* insists they act contrary to their moral dispositions (Milgram, et al., 1992). As summarised by Matthew Lieberman in 2005: "If a social psychologist was going to be marooned on a deserted island and could only take one principle of social psychology with him it would undoubtedly be 'the power of the situation'. All of the most classic studies [demonstrate] that situations can exert a powerful force over the actions of individuals" (Lieberman, 2005: 746).

Many accounts of moral virtues had argued that moral character was independent of context: one would perform a virtuous act, or abstain from a vicious one, whether or not there were observers to see the behaviour in question. Situational accounts demonstrated the reverse: that habitual action was dependent on *mental representations* of contextual cues in a specific situation. Habits are "automated response dispositions that are cued by aspects of the performance context (i.e., environment, preceding actions). They are learned through a process in which repetition incrementally tunes cognitive processors in procedural memory (i.e., the memory system that supports the minimally conscious control of skilled action)" (Neal, et al., 2006: 198) Repetition was the key to linking contextual cues and habitual behaviours, hence the title of the paper by David Neal, Wendy Wood and Jeffrey Quinn - 'Habit- a repeat performance' (ibid.: 198):

approximately 45% of everyday behaviors [reading the newspaper, exercising, and eating fast food] tended to be repeated in the same location almost every day ... an indirect association then forms between the context and the behaviour... behavioral sequences (e.g., one's morning coffee-making routine) are performed repeatedly in similar contexts. When responses and features of context occur in contiguity, the potential exists for associations to form between them, such that contexts come to cue responses.

Habit, then, is a pattern or sequence of behaviour cued, not by an expected reward, but by context; once cued, the sequence proceeds to completion with limited conscious control. But the goals of the actor sometimes play a role. Wood and colleagues argue that the role of goal

direction differs between strong habits, that are performed with high frequency in specific contexts, and habits of weak and moderate strength that are performed with lower frequency and/or in more variable contexts. Many people think their behaviour is guided by goals, but while this may be true to some extent in the case of 'moderate' habits, experiments demonstrate that 'strong habits' are actually triggered by context cues such as location and previous performance – the actors' *perception* of goal direction may thus be at odds with the 'actual' trigger of the performance in question (Neal, et al., 2012).

But goals are not unimportant: there are three ways by which "habits interface with deliberate goal pursuit" (Wood and R nger, 2016). First, habits initially form to achieve a goal in a specific contextual environment. Second, habits and goal-directed actions act synergistically, thus psychological components, such as limited will power and task ability, shift the "scale" to determine which type of action is more influential in practice. Third, individuals themselves *believe* that their habits are driven by their goal-directed intentions. The formation and maintenance of habitual behaviour thus stands at the crossroad between psychology, neuroscience, biology and anthropology. This has important consequences if one wants to change habits:¹⁶

With habits, what you intend is not necessarily what you do. But habits typically are consistent with goals, because people tend to have repeated desired actions enough to form habits. Some habits, though, counter what people want to do (e.g., bad habits, action slips). Habits are not readily changed by changing minds (Verplanken and Wood, 2006). Instead, habits can be broken by controlling the cues that trigger performance. Cues change as part of everyday life events (Wood, et al., 2005). People also might exert effortful control to inhibit the unwanted response once it is activated by cues (Quinn, et al., 2010).

Wendy Wood thus has no doubt about the crucial significance of changing habits if one wants to change behaviour. Her website lists podcasts, blogs and newspaper articles including "How to Launch a Behaviour-Change Revolution"; "Trade In Bad Habits for Better Ones"; "Mindless behaviour applies to healthy habits, too"; and "How to make healthy habits stick".¹⁷ Given so much of what we do, what we eat, what we drink, how we organise our days, how we work, indeed our very form of life is shaped by forces of which we are scarcely aware, it follows that to change our behaviour is not a matter of 'will power'

- of volition - but of changing the things that provoke our habits. Will-power does not work, because behaviour is not guided by self-control but by habits: while we make and break so many of our resolutions to drink less and exercise more, those who do actually drink less and exercise more do it without thinking, not because they control their will but because they have built a "bedrock of habits" (Neal, et al., 2006: 198). Monitoring our conduct is not the same as changing it, so those fitness apps don't help you kick your bad habits no matter what they promise. But you *can* modify your habits by altering the contextual cues that activate them and replacing them with cues that promote desired behaviours.

For example, keep your fruit in the open and your sweets and biscuits out of sight.. Build a routine and stick to it, repeat, repeat, repeat, for "with habits, we learn not by learning, but by doing".¹⁸ Or, in more scholarly terms, behaviour change depends "not only on repetition but also ... the presence of stable context cues. Context cues can include times of day, locations, prior actions in a sequence, or even the presence of other people" (Wood and Neal, 2016: 74). Policy makers can promote health by disrupting "unhealthy habit cues (for example, funding the reengineering of school cafeterias) ... can effectively make healthy responses salient (for example, funding bike paths and bike-share programs) ... At its core, habit formation is promoted through the various public policies that incentivize repeated healthy responses in stable contexts" (ibid.: 80). If this is reminiscent of the strategy of managing 'choice architecture' in the libertarian paternalism of 'nudge' - but now with a rather more substantial neurobiological basis - that is unsurprising (Thaler, et al., 2013).

But what, exactly is the habit in question. Is the habit the behaviour itself - smoking the cigarette, eating the cake, drinking the gin and tonic at 6.30 each evening? Or is the habit the process that leads to these actions? Habit cannot be both the cause of the behaviour and the behaviour that is caused, so a distinction is necessary. This may seem an arcane point, but it has consequences. For example, Benjamin Gardner defines a habit as "*a process by which a stimulus automatically generates an impulse towards action, based on learned stimulus-response associations*" (Gardner, 2015b: 280, emphasis in original). An impulsive process, established by repetition, is elicited by contextual cues and proceeds with minimal cognitive effort, awareness or control, finally stimulating an impulse to an action "that lies outside of awareness unless the impulse is frustrated, in which case it becomes consciously experienced as an urge to engage in behaviour" (Ibid.: 280). The impulse thus arises to

awareness only when the behaviour is blocked. Gardner gives the example of the mobile phone. Place it on a table next to you, but do not look at it, let alone answer it when it rings:

You will likely experience a strong urge to attend to the phone, due to learned associations between the cue (phone ringing) and response (looking at or answering it); that is, a habit of looking at or answering the phone when it rings ... Those with strong habits may feel themselves growing uneasy, tense and restless as the phone continues to ring. The feeling of wanting to attend to the phone is not usually consciously experienced because the impulse to do so is usually translated directly and immediately into action. It is only when this impulse is frustrated that it enters consciousness. We become aware of habit-generated impulses when we cannot act on them (Gardner, 2015a: 319).

So when it comes to governing something undesirable, it is possible to interpose some blockage between the habitual impulsive process and the action that would normally result without conscious intention – the urge enters awareness and can be overcome. And this leads to a different approach to behaviour change: people need to be motivated to construct a new habit, and must set realistic and attractive goals, ensuring context dependent repetition. In this way one can override the old habitual responses – to spend another few minutes in bed – with the new ones – to rise, put on one's gym kit and go out for a run, especially when this delivers a reinforcing reward (Gardner and Rebar, 2019).

Conclusion: Are we all 'behaviourists' now?

Where, then do we stand in relation to a science of behaviour that can underpin scientific strategies for behaviour change? Has the will – control of one's conduct by the exercise of 'will-power' – had its day? Has the ego been dethroned, yet again shown not to be master in its own house. Has the myth that one acts on the basis of conscious intentions been overthrown, not by the half second delay between the brain preparing for an action and the feeling of the urge to act so beloved of the advocates of 'non-representational theory' (Leys, 2011; Libet, et al., 1993), but by the shaping of behaviour by neural circuits between the neocortex and striatum inscribed by repetition and continuing without the need for passions, aspirations or desires. Are we all 'behaviourists' now?

Proposals from 'behavioural scientists' about best ways to manage individual conduct during the Covid-19 pandemic usually seem sensible. But they hardly amount to a radical

shift in self-understanding or a 'behaviourist' mutation in ways in which we are to be governed or to govern ourselves. Our authorities are advised to encourage a shared sense of identity by urging 'us' to act for the common good; use sources of advice that different groups find credible; emphasise that co-operation is the right thing to do and that most people share that view; give people a clear model of how viral transmission occurs and propose simple changes in their behaviour that can help reduce it, make people anxious enough to stimulate changes in behaviour, but not too anxious so that they feel nothing they do can help, make people aware that they themselves benefit from others accessing preventive measures and so forth (Michie, et al., 2020a; Michie, et al., 2020b; Van Bavel, et al., 2020). But these hardly cohere into a coherent or novel style of thought, certainly not one that is based on an explicit or implicit model of what humans are, or of the non-conscious cerebral or mental processes that shape and constrain their actions in the real world. While we may know more, now, about the neural seat of habitual behaviour, and why it persists in spite of goal devaluation, and how certain patterns of behaviour are cued by certain 'situations', the recipes for behaviour change proposed by Michie or Wood, or others in this domain are hardly radical departures from familiar explanations about our bad behaviour or from the multitude of injunctions as to how to improve our ways of life in self-help books or on the websites of internet 'influencers'. There is nothing startling in the recognition that situations cue behavior, that we will exercise in the gym but not in our living rooms, drink pints of beer in the pub but not in our kitchens, or, for some at least, crave drugs when this is 'cued' by the presence of drug related paraphernalia. Indeed, most of us would have found nothing astonishing in the suggestions that humans are not rational creatures who act to ensure our long term interests, but our good intentions are frequently hijacked by the attraction of some short term pleasures: those who design supermarket layouts or other consumer venues were artists in the covert shaping of decisions long before the invention of ideas of 'choice architecture' and the rise of the gurus of 'liberal paternalism'.

So how can one account for the prominence of a science of behaviour at this time of biopolitical crisis? Why should it have been 'behavioural science' that was on the lips of medics, politicians and policy makers, displacing reference to the 'psy' sciences, or to the social sciences more generally, who have all, in their different ways, pointed to non-conscious, non-rational determinants of so much of human conduct? Is it that the reference to behaviour immunises 'behavioural scientists' against the popular scorn poured upon the experts of psychology, anthropology and even sociology. Or is it that, in their direct focus

on recipes to change behaviour in the here and now, without diverting attention to the deeper psychological, social, cultural, political and economic determinants and constraints on that behaviour, indeed usually rendering those systematic embedded constraints invisible, they offer our authorities a seemingly direct route to governing conduct. A strategy for governing the conduct of each and hence of all – that is least inconsistent with liberal nostrums of individual freedom. One that might be scaffolded by laws and regulations, might even be backed by police powers, but that works through continuous campaigns of information and persuasion. This strategy of governing conduct through the relentless communication of ‘scientific evidence’ has the aim of intensifying each individual’s responsibility to care for themselves at the very same time as they enact their ‘citizenship’ responsibilities to others. The hope that seems to be offered by ‘behavioural science’ is that one can govern the behaviour of millions in the face of a crisis at the level of populations, by governing the ways that each individual behaves themselves. The future will judge whether this hope was well founded.

NOTES

- 1 <https://www.asanet.org/sites/default/files/savvy/footnotes/nov00/indextwo.html>
- 2 The OED tells us of many other meanings of ‘habit’.
- 3 John Dewey’s views on the psycho-physical basis of habits are harder to decipher: (Dewey, 1958 [1925])
- 4 <https://www.ucl.ac.uk/behaviour-change/events/cbc-online-conference-2020>
- 5 <https://www.ucl.ac.uk/behaviour-change/events/cbc-online-conference-2020>
- 6 https://adobeindd.com/view/publications/073715ad-cfb8-405b-8733-b8ac35e4e497/1/publication-web-resources/pdf/35901_BEHAVIOUR_REPORT_015.pdf
- 7 Wikipedia tells us that Susan Michie is a member of the Communist Party of Britain, and that before moving to UCL, she conducted research into genetic counselling and genetic testing at King’s College London. It does not enlighten us as to her reasons for her shift to focus on behaviour change: https://en.wikipedia.org/wiki/Susan_Michie.
- 8 <https://www.independentsage.org/wp-content/uploads/2020/05/The-Independent-SAGE-Report.pdf>
- 9 https://en.wikipedia.org/wiki/Susan_Michie.
- 10 For further details of the work of the BIT, see (Whitehead, et al., 2014; Whitehead, et al., 2019).
- 11 <https://www.bi.team/blogs/using-behavioural-insights-to-create-a-covid-19-text-service-for-the-nhs/>
- 12 <https://behavioralscientist.org/handwashing-can-stop-a-virus-so-why-dont-we-do-it-coronavirus-covid-19/>
- 13 This paper was published in a journal called *Implementation Science* and there is a close relation between work on behaviour change and this idea of ‘implementation science’.
- 14 <https://www.ucl.ac.uk/behaviour-change/events/cbc-online-conference-2020>
- 15 <https://www.theguardian.com/lifeandstyle/2017/dec/29/anyone-can-change-any-habit-science-keeping-2018-resolutions>
- 16 <https://dornsife.usc.edu/wendywood/habits/> For clarity, I have omitted references that restate what has been discussed above.

- ¹⁷ <https://dornsife.usc.edu/wendywood>. In the rest of this paragraph I am paraphrasing Wood's 2015 Washington Post article 'Five Myths About Our Habits' at https://dornsife.usc.edu/assets/sites/545/docs/5_habit_myths.WashingtonPost.2015.pdf
- ¹⁸ https://dornsife.usc.edu/assets/sites/545/docs/5_habit_myths.WashingtonPost.2015.pdf

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