

Module: Psychological Foundations of Mental Health

Week 5

Psychological therapies: from behaviour modification to behaviour therapy

Topic 1

The first wave – behavioural psychotherapy – Part 1 of 3

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Lecture transcript

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The potential for classical and operant conditioning to alter human behaviour was evident almost from the outset of behaviourism. Although neither Pavlov, Skinner, nor Watson conducted clinical research or sought to treat people with mental health problems, their work provided the essential foundation for a whole new behavioural approach to therapy. This was to challenge and eventually replace the predominant approach at the time, based on the psychoanalytic theories of Freud, Jung, and others.

Behavioural or first wave psychotherapy arose directly from the models and evidence of behaviourism and learning theory. In this first topic, we will trace and describe how behavioural approaches developed on both sides of the Atlantic from the middle of the 20th century. These approaches have often been called the American and the British traditions.

The names are somewhat misleading, as their developers and proponents, particularly the so-called British tradition, came from all areas of the world. However, there are some important distinguishing features between the two approaches. First, in how their methods drew on different aspects of behavioural theory and evidence. Second, the settings for which they were developed and used. And third, the nature of the problems that they sought to address.

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Let's look at the US tradition first. This was most strongly and directly influenced by the work of Skinner. It sought to apply operant methods to change behaviour, rather than treat emotional disturbance. For this reason, it is commonly known as behaviour modification. Operant behavioural approaches were most widely applied for use in psychiatric institutions or asylums, where people were committed for months or even years, as well as institutions for children and adults with severe learning disabilities or older adults with dementia.

For those unfortunate to be placed in such institutions, behavioural problems were common. Some risked harm to the individual themselves, such as self-injury or eating non-food objects, aggression that might harm others, or behaviour that was seen as disruptive, such as soiling, refusal to wear clothes, and prolonged screaming. Today, these are typically referred to by the term "challenging behaviours."

For psychologists at the time, these were seen as ideally suited to the principles and methods of operant conditioning, using positive and negative reinforcers to humanely increase the frequency of a positive or desired behaviour and so reduce the negative behaviours.

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Operant approaches were directly based on the three-term model that we covered in week one, the discriminative stimulus, the behaviour, and the reinforcer. In behaviour modification, they were more typically defined as the antecedent stimulus, the behaviour, and the consequence or outcome. This outcome was presumed to be the reinforcing event that maintained the behaviour. This three-term model is commonly called the ABC model.

Outside of the controlled laboratory situation, in the real world, especially somewhere as complex as an institutional setting for people with severe mental illness, identifying the specific stimulus that provokes the behaviour and the specific consequences that maintain it was far from easy. Without a good understanding of these relationships, operant methods would struggle to find the best ways to produce behaviour change.

To address this need, the techniques of applied behavioural analysis were developed and are still used today. Today they are also called functional analysis or functional assessment. The term “functional” is used because we assume that the behaviour in question has a specific function or purpose for that individual, to either gain a positive outcome or avoid a negative one.

Such a purpose may be highly specific and individual. However, they tend to fall into two broad categories, either to obtain or access something positive for the individual, or to escape or avoid something negative.

Let’s look at behaviours that can be reinforced by access to something positive. First, behaviour may serve the function of gaining attention from other people, whether from staff or other residents. In a busy setting and for people who may have poor communication skills, a disruptive behaviour, such as falling from a chair, may quickly bring a medical staff running and provides some one-to-one attention.

Second, a behaviour may result in some tangible reward, such as food. A person who screams loudly until they get their meal may often find that they get fed quicker than others. Finally, the behaviour may provide sensory stimulation. Behaviours such as rocking, shouting, or self-harm may provide stimulation in impoverished environments or distraction from negative emotions or physical discomfort.

In terms of escape or avoidance, the behaviour may be to allow them to get away from situations that they find uncomfortable or distressing. While some individuals may want attention, others find social interaction aversive and anxiety provoking. Disrupting a social situation may result in the person being sent away or not be included in such events in the future.

Avoidance of an unpleasant or demanding task or situation may also be the purpose served by disruptive behaviour. For example, someone who has to do chores, such as clearing tables, may be taken off that duty if they repeatedly drop the plates.

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A number of screening tools have been developed to quickly assess possible situations and reinforcers, prior to a full functional analysis. One recent example, shown here, is the functional assessment screening tool developed by Brian Iwata and colleagues at the University of Florida for use with children with autism in the home, school, or other settings.

The brief, 16 item questionnaire is shown here. It collects information from a number of people or

informants who regularly interact with the adult or child in question, whether health professional, family member, teacher, and so on.

Pause if you want to look over the scale to see how it is constructed and the questions asked. Think about what ABC contingencies it is exploring. Remember, this is intended as a screening tool to guide further functional assessment. It provides an easy means of doing a preliminary, indirect analysis, based on reports of informants, rather than direct observation.

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A full behavioural or functional analysis is a systematic approach that is typically based on careful, direct observation over a period of time, either by staff in a hospital or care setting, teachers in a school, or family members at home. It requires record keeping, using so-called ABC charts. Using such tools accurately and reliably requires careful training.

The charts involve the assessor noting the precise characteristics and details of the observed behaviour and then recording the situation that immediately preceded it, the antecedents, and what happened immediately after, the consequences. The latter might include how others reacted and any changes in the behaviour of the individual. Note there is no interpretation of the situation, simply a reporting of what is observed.

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These two rather straightforward illustrations show how a problem behaviour, disruptiveness at the meal table in the first and self-harm in the second, followed straight on from situations in which the patient, X, was made either to wait for their meal or denied the opportunity to continue watching television.

The consequences in both cases was a member of staff giving X what they wanted, which led to the challenging behaviour ceasing. It's fairly evident from these simple examples that the staff member was inadvertently reinforcing the undesired behaviour, therefore increasing the probability that it would be repeated in the future.

We should note that such simple contingencies are not restricted to clinical settings. The practice of supermarkets placing sweets near check-out aisles has led to many parents reinforcing temper tantrums in their toddlers. They put up with the screaming for as long as they can, before their patience or embarrassment causes them to crack and buy a packet of sweets.

Not surprisingly, the child learns quickly how to get sweets in the future. The use of partial reinforcement makes it even worse.

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ABC analyses can lead to a range of different approaches to reduce the undesired behaviour. These fall into three main classes, those that address the antecedents, the behaviour itself, or the consequences. First, let's look at an approach based on the antecedents.

Let's imagine that an ABC analysis identifies that an individual's challenging behaviour typically follows high levels of noise, a potentially aversive and distressing stimulus. The behaviour leads to them being removed from the situation or others making the noise asked to leave. In such a situation, reducing the individual's exposure to noise at key times, such as meals, may be all that is needed. This might also involve serving the individual at a quieter table or at a quieter time, or allowing them to move if they want to.

If a reduction in the behaviour is observed as a result, the analysis would seem to be supported and the intervention successful. This approach may be much simpler and easier to implement and more humane than one aimed at increasing the individual's ability to tolerate loud noise.

Next, let's look at behavior-based approaches. These assume that a challenging behaviour may arise to achieve a purpose because the individual lacks alternative ways to achieve it. To take the mealtime noise example again, an individual who lacks effective verbal communication skills may be unable to ask for what they want and so find other ways to get it. This can be addressed by providing new skills, in this case, new and more effective ways of communicating. This may involve providing simple tools to allow non-verbal communication.

Such an approach can broaden their behavioural repertoire, increasing their ability to communicate their needs and wishes. Such skills-based approaches are often more costly in time and effort to implement, but pay dividends in that the new skill behaviour is available for use by the individual in other situations.

Skills-based approaches are also applicable in non-clinical settings. Episodes of aggression in day-to-day life can result where an individual, who can otherwise communicate effectively, lacking the repertoire of appropriate interpersonal skills to manage difficult interactions with other people. A programme of assertiveness or social skills training can be effective in reducing the unwanted behaviour. This is still the application of a behavioural skills-based approach within the ABC model.

Finally, let's consider strategies based on the consequences, the outcomes, essentially, what reinforcement is being obtained to maintain the problem behaviour. Having identified a possible candidate contingency from an ABC analysis, the easiest option is simply to break the link between the behaviour and the reinforcing outcome.

For example, if episodes of screaming seem to result in increased attention, it suggests that gaining attention may be the purpose of the behaviour. Evidence and operant conditioning studies suggest that the screaming will eventually stop or extinguish if the attention is no longer given contingently on the behaviour, in other words, that it is ignored.

While this is likely to work, it can be hard to apply and neglects the underlying purpose of the behaviour. First, some behaviours cannot safely or practically be ignored. Even if they are for most of the time, a single lapse by a parent, teacher, or member of staff will undo the hard work done so far. Think back to the reinforcement schedules that you learned about in week one. If a person gets reinforced every 10th time that they behave in a certain way, they are effectively on a partial reinforcement schedule.

We learned how in rats and pigeons, this led to increased resistance to extinction. The same applies to us as human beings. When a parent eventually cracks and gives into the screams of their toddler, they are doing the worst possible thing for changing the behaviour, even if we all understand why they did it.

Indeed, if we are going to use an extinction approach, the best way to do it is to give the reinforcement immediately and consistently every time the behaviour happens for a period, before we remove the reinforcement completely, in other words, setting up a continuous reinforcement schedule, one that we know leads to the fastest extinction.

However, because extinction is so hard to put into practice, the approach is more usually not simply to ignore the behaviour, but to provide the reinforcement non-contingently or more often, at a time when the unwanted behaviour is not occurring. To take the attention seeking example again, minimal required attention may still be given to reduce disruption, but is provided more often and more positively at other times, when the individual is quiet.

This serves both to break the link between the unwanted behaviour and the outcome, and reinforces a more helpful behaviour. All of this accepts that the behaviour is designed for a perfectly valid and positive purpose, to gain attention and social interaction. There is no attempt to deny that purpose, simply to alter the ways in which the individual achieves it.

These examples give you a flavour of the types of approaches that can be taken on an individual basis to both reduce challenging behaviours, while typically, at the same time, increasing alternative behaviours that provide valued needs for the individual.

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Let's look at an example of how a simple ABC approach can be used effectively in practice in dementia care settings, with staff who have only a basic knowledge of functional analysis and behaviour change techniques. A range of challenging behaviours can be observed in people with dementia, typically termed "agitation," including aggression, swearing, screaming, refusal to take food or liquids. These can become increasingly common as the condition progresses.

The onset of persistent agitation is often the trigger that causes some family carers to place their relative in a formal care setting. As a result, such behaviours are common in dementia care homes, and their management is a clinical priority.

Although sedating drugs have been widely used in the past, there is an ever-growing focus on the use of behavioural approaches, including functional analysis. These have led to the development of the simple tool kit approach that care home staff can be easily trained to deliver.

One such tool kit has been developed by the American psychiatrist Jessica Cohen-Mansfield. This forms part of a comprehensive assessment and management programme, involving individualised ABC assessments and individualised treatment. This is called the Treatment Routes for Exploring Agitation programme.

Here's an example for one particular behaviour, verbal agitation. Rather than using a blank ABC chart, it provides the staff with the main situations in which the behaviour is observed and so suggests possible causes. For each, an intervention is suggested that might reduce the behaviour by introducing new positive consequences or take away negative ones.

Common antecedents may include pain and discomfort that cannot be communicated effectively, the need for social contact, and boredom. Targeted interventions arising from these include reducing the pain or discomfort, providing social contact, or finding meaningful activities to reduce the boredom.

An important point about this approaches is that it places the needs of the person at the centre. The aim is less to manage the problem behaviour for the staff's benefit and more to address the individual's basic needs.

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The TREA approach has been shown to be effective at reducing agitation in clinical trials. In this randomised control trial, 12 nursing homes took part, with half allocated to the TREA approach and half to continue with their standard care. This design is known as a cluster randomised trial. This means that the centres are randomised, not individual patients within them. The intervention involved 10 days of individualised treatment for residents at the care homes, during the four hours of greatest observed agitation.

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The figure here shows the mean agitation recorded for residents across all of the homes in the two groups, before and after the intervention. Agitation was measured using a standard rating scale, completed by an observer. The results show greater reduction in mean agitation in homes using the TREA method than those using standard care.

Also shown in the table below is improvement in indicators of patient pleasure and interest, although no change was noted in negative affect or mood. Other research has shown that

sustained use of such person-centered approaches have a range of other benefits, such as reduced use of tranquillising medication and lower levels of burnout in care staff.

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In some situations, obvious operant approaches struggle, as there does not seem to be an effective reinforcer that can be applied. The person may refuse typical reinforcers or, if accepted, they may be ineffective, because they are not valued. Remember, reinforcers can only be considered such if behaviour changes as a result of their pairing with a particular response. While many primary and secondary reinforcers are universal, some people with severe mental health problems or with cognitive impairment may not respond with a change in behaviour, perhaps because the consequence is not valued.

A solution that is sometimes used in such situations is to apply work undertaken in animals by the behaviourist David Premack and is called Premack's principle. This proposes that a behaviour that is chosen frequently by an animal or human is itself reinforcing. It follows that a frequently chosen behaviour can be used as a reinforcer to alter another behaviour, particularly one that is chosen less frequently.

Although sounding technical, the basic principle is widely used without us realising it. A parent who says, you have to eat your cabbage before you can watch TV, is using a high frequency preferred behaviour, television watching, to increase a low frequency and less preferred behaviour, eating cabbage. This does not depend on making any assumptions that TV watching itself is more rewarding.

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Let's look at an example of this put into practice in a clinical setting. This study was by William Mitchell and Bertram Stoffelmayr, published in 1975. Extreme inactivity is one way in which schizophrenia can manifest, particularly in institutional settings of the time. Patients would sit for long periods of time, often resisting efforts for them to engage in other activities. These are examples of so-called negative symptoms in schizophrenia.

This study used Premack's principle in a psychiatric hospital, with a group of patients who were failing to engage in the activities offered. Typical of the time, these were very low demand, mundane activities that fall under the rather optimistic name of industrial therapy. Today, we would argue that changing the activity was more useful than changing the patients' engagement with it. Nevertheless, this study illustrates how Premack's principle can be used.

The figure on the left shows the work activity observed in a group of patients over six, 30 minute sessions. While activity was variable in most patients, in three, shown at the bottom, activity was very low. Two of these were identified, and a behavioural programme devised to increase their engagement in the work task.

The high frequency behaviour identified was sitting, something that these patients did most of the time if permitted. The behavioural intervention involved them being required to stand while at the workplace and being allowed to sit only if performing the task, in other words, working. A process of active shaping was used, followed by a period of time when it was observed.

The intervention was evaluated using what is known as an AB design. A control, non-intervention condition is assessed first, in this case, simple verbal instructions to work, followed by the intervention condition, B. In this case, the design was further refined by reversing the A condition before reinstating condition B.

Such designs use the patient's own behaviour as a control for the intervention. If behaviour changes systematically with the intervention, there is greater confidence that it is effective and that an effective reinforcer has been identified.

What we see here is the change in behaviour over the time in the two patients. We see that activity was initially completely absent, but increased significantly during the shaping period and continued so long as they were able to sit only when working. When this contingency was no longer in place, work activity stopped, and they sat non-contingently. Behaviour quickly resumed once the sitting rule was put in place.

We can look back at this example and feel uncomfortable about the manipulation of patients being made to do a fairly purposeless activity that probably had no therapeutic value. The potentially coercive nature of such behaviour modification approaches has led to concern about their use, particularly with vulnerable adults and children. However, Premack's principle remains a useful approach when obvious reinforcers are hard to find and are still used in more client-centered approaches.

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One of the most systematic applications of operant principles came with the development of so-called token economy methods. This is a form of contingency management based on the principle of secondary reinforcement.

You will remember from week one that some outcomes have reinforcing value through their association with others, often primary or tangible reinforcers. We considered how money, itself just a piece of paper or metal or even figures on a bank statement, have no intrinsic value, but can motivate and reinforce behaviour. Secondary reinforcers can therefore be considered tokens, something that allows us to acquire an outcome and so achieve a valued purpose, typically at a later time.

Using tokens as reinforcers offers a number of potential advantages. The first is that they are easier to control and manage than other reinforcers. Providing a reinforcer at the time of the behaviour leads to the quickest learning.

However, it is often neither possible nor desirable to use tangible reinforcers in this way. For example, a member of staff could not immediately provide attention or allow access to a quiet area immediately a desired behaviour occurred. Tokens, therefore, allow any gap between the time of the behaviour and the ultimate reinforcing outcome to be effectively bridged.

Second, the reinforcement is easily scalable. The value of the token can be adjusted as part of the process of shaping the desired behaviour. In other words, the exchange rate can be easily modified. As part of this, tokens can be earned in small units that need to be accumulated through continued performance of the behaviour to earn the outcome. Thus, there is no need to give a tangible reward every time the target behaviour occurs. The token is sufficient.

Third, while a reinforced behaviour occurs with high frequency, initially reinforcing every time with a tangible reward may be impractical and may cause satiety effects, where the reinforcer starts to become devalued and loses its ability to strengthen the behaviour. However, tokens, like money, seem resistant to satiety effects and so can be used much more freely.

Finally, token systems offer the opportunity to remove, rather than just award them. Such response costs can be considered more acceptable and ethical than completely withholding a material reinforcer or privilege. The individual simply has lost some of their accumulated tokens and so has to resume the desired behaviour to re-earn them.

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To work effectively, a token system needs five basic components. First, the nature and value of the token must be explicit and understood. Second, an accurate and transparent means of recording tokens earned, spent, or removed.

Third, there must be clear and valued actual reinforcers that can be acquired through accumulated tokens. Fourth, the rules governing the earning of tokens and possibly losing them must be clear. And fifth, consistent implementation, particularly not allowing access to the tangible reinforcer other than through the tokens.

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Token economy systems in mental health gained in popularity from the 1970s onward and continued to be used, more or less widely, in a range of inpatient and outpatient settings, typically as part of a wider therapeutic regime. They are also often used in the management of children and adults with learning disabilities and neurodevelopmental disorders, as well as in the areas of addiction or substance misuse, to develop and support abstinence.

Although evidence from single cases, case series, and small clinical trials abound, evidence of large-scale, well-conducted clinical trials is relatively rare. Generalising across disorders and settings is therefore not possible.

A recent review by Faith Dickinson and colleagues in 2005 reviewed published studies on the use of token economies in long stay psychiatric hospitals. Most of these studies were carried out between the 1960s and 1970s, with only a few later ones. A total of 13 control trials were reviewed and found that the token systems were generally successful in increasing adaptive behaviour, particularly around self-care and other activities of daily living and engagement with activities.

Let's look at a recent published study, this time in the context of short-term or acute hospital admission.

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Assaults by patients on other patients and staff can be a significant problem in acute hospitals that admit extremely ill and distressed people with severe mental health problems. In the past, such patients would have been managed with tranquillising medication to reduce such behaviour.

This study, within a single inpatient unit, compared the records for assaults for a period of 12 months before a token system was put in place and for two years afterwards. The specific system was designed on an individual basis within the overall ward environment. In other words, each person had their own identified behaviours and the rewards that they could choose to work for.

A token system comprised ink stamps on a record sheet or poker chips. Tokens could be traded for leave passes, extra smoking breaks, or trips to the cinema, or a range of items in the shop, such as cards or snacks. Tokens were awarded for behaviours that were deemed therapeutically useful, including being on time for ward activities, improved self-care, or involvement in social activities.

In this particular token system, a loss of tokens was used for violations of safety rules, such as smoking in the room or violence against another person or property. This led to the loss of all accumulated tokens.

The results are summarised in the graph. This shows a reduction in total injuries following the introduction and use of the token system, even though it was not aimed specifically at aggressive behaviour. The reduction was a substantial 33%, compared to the time before the token system was used. The largest change was in the injuries between patients that fell by 48%.

Injuries sustained by staff were relatively rare and showed only a small drop. However, the severity of the injuries was reduced. The average number of staff hours lost due to injury fell from just under three hours per week on average to less than 10 minutes, a drop of 93%.

Although showing some useful improvements in reducing challenging behaviour, this study still provides only weak evidence, typical of many trials of token systems. It used a simple AB design, which cannot control for other factors that might have changed over the study period, such as change in staff or other adjustments that may have affected patient behaviour unrelated to the contingency management approach.

Larger, better controlled and multi-center trials are typically needed to provide the best evidence of effectiveness of a complex intervention in a natural setting. Unfortunately, such trials remain rare.