

THE ROLE OF BEHAVIOURAL THERAPIES IN CLINICAL HYPNOSIS

- a discussion

Behavioural psychology is one of the main approaches in understanding human thinking, emotion and behaviour. It became popular in the first two decades of the twentieth century and was influenced by the philosophy of empiricism. Behaviourism postulates that knowledge is derived from the environment via the senses. It is very scientific and its principles are deduced from experiments. Central to the behaviourism is the assumptions that the majority of all behaviour is learned from the environment and only observable behaviour, not minds, should be studied in an objective and scientific manner. The experiments use strict scientific methodology on animals such as mice and pigeons. Animal testing is used because the behaviourists believe that the laws of learning are universal and, there is only quantitative, not qualitative, difference between animals and humans. In addition, animals are more practical and 'ethical' to test compared with humans. From these experiments, behavioural principles are applied in understanding language acquisition (Skinner's theory), moral development (conditioned emotional responses of guilt and conscience), attraction (Byrne & Clore's reinforcement affect model), abnormality (conditioning of phobias and their treatment) etc. In fact, behaviourist theory is widely used in programmed learning, systematic desensitization and token economies. The title 'founder' of behaviorism was bestowed upon John Broadus Watson (1878-1958), whose contributions to the spread of experimental psychology were as great, if not more than, those of 1905 Nobel Prize winner Ivan Pavlov, and Wolpe, Thorndike and Skinner. Behaviourism was the major force in experimental psychology until late 1950s, when ethologists and cognitive psychologists increasingly criticized its methods and principles. As behaviourism evolved, some of its theories were modified to provide a more realistic explanations, e.g. social learning theory by Albert Bandura. A more eclectic approach was attained as behaviourism embraced cognitive approach in psychology. The resulting cognitive-behavioural method proves a powerful force in psychology and has been widely accepted by psychologists and the medical fraternity until today.

The following will be a description and discussion of principles in behaviourism, mainly classical and operant conditioning, extinction, desensitization, reciprocal inhibition and learning theory. The techniques will be discussed, and where appropriate, famous studies will be included to enhance understanding of the principles. In vivo, in vitro and hypnobehavioural approaches will then be discussed in relation to phobias, anxiety and habit breaking.

One of the foremost behaviourists was Ivan Pavlov. His 25-year works in St. Petersburg were published and translated into English in 'Conditioned Reflexes: An investigation of the physiological activity of the cerebral cortex' in 1927, in which he described the procedure for acquiring conditioned response in his experimental dogs. According to Pavlov, when food (unconditioned stimulus) was given to the dogs, they would salivate (unconditioned reflex). When a neutral stimulus such as ringing of a bell

was paired with the food, the dogs would also salivate. With repeated pairing, the dogs would salivate whenever they heard the ringing of the bell, even in absence of the food. The ringing of the bell was hence called conditioned stimulus, and the reflex salivation would be called conditioned reflex. In a series of well controlled experiments, Pavlov found that many new external stimuli could be associated with the original stimulus (food) to produce reflex salivation. Pavlov discovered three interesting phenomena in this classical conditioning, they were: timing, duration and flexibility.

In the law of temporal contiguity, two stimuli (bell and food) must be presented close together in time for associations to be made. If the time between the bell and presentation of the food is too large, then learning would not happen. The variations in contiguity could be forward conditioning, backward conditioning, simultaneous conditioning and trace conditioning.

Forward conditioning means presenting the bell just before and during presentation of the food. This produces the strongest learning.

Backward conditioning means presenting the bell after the food. This produces very little learning.

Simultaneous conditioning is when the bell and food are presented at the same time, while trace conditioning involves presenting and removing the bell before the food is given.

In duration, the phenomena of reinforcement, extinction, spontaneous recovery and inhibition are observed. Reinforcement is the process where the unconditioned stimulus (food) is frequently, if not always, paired with the conditioned stimulus (bell) in order to produce the desired conditioned reflex (salivation). However, if the conditioned stimulus (bell) is presented repeatedly without pairing with the unconditioned stimulus (food), then extinction occurs, i.e. the conditioned reflex (salivation) will gradually extinguish. Nevertheless, if a period of time has lapsed, the conditioned reflex (salivation) will be exhibited again if the conditioned stimulus (bell) is presented. So, what does this mean? Pavlov concluded the fact that conditioned reflex (salivation) could show spontaneous recovery at a later date after extinction had occurred proved that the conditioned reflex did not actually fade away, but had been actively inhibited by the non-presentation of the unconditioned stimulus (food). Pavlov called this phenomenon inhibition.

Taking it a step further is the term reciprocal inhibition which Gross (2005) described as the inhibition of the action of one neural pathway by the activity of another. In therapy, this principle can be used to produce an anxiety inhibiting response towards an anxiety evoking stimulus. Thus reciprocal inhibition will inhibit the reflexive response to a stimulus by replacing it with a more appropriate response.

In flexibility, Pavlov introduced generalization, discrimination and higher order conditioning in understanding his classical conditioning. He found that other stimuli that closely resembled the original conditioned stimulus (bell) could trigger the desired conditioned reflex (salivation). The closer the resemblance the greater the conditioned reflex. Moreover, by only presenting the unconditioned stimulus (food) with the original conditioned stimulus (bell), discrimination from the similar conditioned stimuli (bells) occurs. For higher order conditioning to happen, firstly, the conditioned stimulus (bell) must reliably produce the desired conditioned reflex (salivation). Then another new conditioned stimulus can be associated with the original conditioned stimulus until the new conditioned stimulus will produce the same conditioned reflex.

“Animal Education: An experimental study of the psychical development of the white rat, correlated with the growth of its nervous system” was the title of the doctorate of James B. Watson in 1903. At a relatively young age, he had produced important studies. This particular study dispelled earlier beliefs that rats were unable to have true ‘associative learning’. Watson’s subsequent works include the Watson-Carr ‘Maze studies’ in 1907 onwards. Here, they systematically eliminated the ability of the rats to use their senses when solving a maze based on the Hampton Court. Without their visual, auditory and olfactory senses, the rats were still able to learn solving the maze by kinesthetic sense. Watson’s works were not confined to the four walls of the laboratory as he was a keen naturalist having studied the behaviour of the bird terns in Bird Key. He observed that hatched birds followed him around the island, a similar behaviour studied by Spalding and Lorenz called imprinting.

1913 was the landmark for behaviourism movement as Watson spoke at Columbia University on moving away from introspective psychology that studied consciousness which was non-objective, toward a psychology of the study of behaviour. His speech was labeled as the ‘Behaviourist Manifesto’:

“...psychology as the behaviourist views it is a purely objective experimental branch of natural science. Its theoretical goal is the prediction and control of behaviour. Introspection forms no essential part of its methods, nor is the scientific value of its data dependent upon the readiness with which they lend themselves to interpretation in terms of consciousness. The behaviourist, in his efforts to get a unitary scheme of animal response, recognizes no dividing line between man and brute...”

He proclaimed that in a mature stimulus-response system, “given the response the stimuli can be predicted; and given the stimuli the response can be predicted”. But the one thing that made behaviourism popular among American psychologists were the applications of its principles to real life such as in advertising, drug effects, the law and the education. The opportunity to move away from studying laboratory animals to humans came when Watson was invited by Adolf Meyer, a renowned psychiatrist, to set up a human laboratory in Johns Hopkins Medical School. The research focused on the behaviour of infants in response to various stimuli in producing three instinctive emotions- of fear,

rage and love. In the famous 'Little Albert Study', Watson put forth his research and conclusions in "Conditioned Emotional Reactions" in the Journal of Experimental Psychology in 1920. In this experiment, little Albert was shown many things including a white rat, a rabbit, a dog, a monkey, masks with and without hair, cotton wool etc. These were unpaired and paired with a loud sound by striking a hammer upon a suspended steel bar. The produced reactions were described as a human example of classic conditioning, though some authors argued that operant conditioning might have occurred. This remains a popular study by Watson although it was not free from errors. Watson later supervised the research of Mary C. Jones, a graduate student at Columbia University, who studied removal of fear of various objects in children. It is interesting to note that; fears were not reduced simply by passage of time, or through the method of verbal appeal, or by having peers ridiculed the child. However, Watson and Rayner, his co-investigator in the little Albert study, suggested a method that did work! This was a pioneering study of the behaviour therapy technique known as systematic desensitization where a young boy's fear of rabbits was reduced. This will be further detailed later when discussing this subject.

Another very central principle in behaviourism is the operant conditioning. If classical conditioning is about reflex responses, then operant conditioning is about learning process through behavioural responses. Thorndike and Skinner were key persons in developing this principle. In Thorndike's puzzle box, the cat must learn to pull a string to release the door for its escape, which acted as a pleasant consequence. The more frequent the cat was put back into the box, the quicker it took for it to learn to escape. Thorndike discovered that any response which led to desirable consequences was more likely to happen again, compared with response that led to undesirable consequences was less likely to occur again. This was known as Law of Effect. Skinner researched operant conditioning in rats, and applied them to explain many aspects of human behaviour. In the Skinner box, the rats must learn through trial and error to press a lever that release a food pellet. After which the rats learn quickly enough to repeat the desired outcome by pressing the lever correctly. Three aspects are important in this 'reinforcement': the consequences, the frequency and the flexibility.

Pleasurable consequences that increase the likelihood of a response is called Positive Reinforcement. In the Skinner box for example, the positive reinforcement is food pellet, that is released by performing the correct action (or behaviour) of pressing the lever. On the other hand, Negative Reinforcement is the process that increases the likelihood of a response, which provides escape from unpleasant consequences, for example stopping an electric shock. Punishment, however, decreases the likelihood of a response being repeated, if it is followed by unpleasant consequences such as painful or noxious stimulus. Secondary reinforcers are those that are associated with naturally occurring primary reinforcers (food, water, comfort etc) such as money and tokens.

Frequency refers to the schedules of reinforcement. It can be continuous or partial schedules. In continuous schedules, there are reinforcers for every response. In partial schedules, the reinforcement occurs at varying frequencies to illicit the desired response. They may be fixed ratio schedule, variable ratio schedule, fixed interval schedule or variable interval schedule. However, extinction occurs if the response is not adequately reinforced, in other words, it will gradually diminish and extinguish. Experiment with pigeons showed that if a pigeon was reinforced for pecking a red key, it would also peck almost similarly colored keys like pink and orange keys, though less frequently. This phenomenon is called generalization. Discrimination occurs by only reinforcing the original response. A useful application of operant conditioning is in behaviour shaping. The principle is, by reinforcing responses that increasingly resemble a desired end behaviour in a step wise manner, a very complex behaviour can be built up.

Systematic desensitization is a behaviour therapy based on classical conditioning principle that was popularised by Wolpe, even though it was practiced even earlier by the likes of Mary C. Jones, under the supervision of Watson , who used it to reduce the fear in a child. In her experiment three year old 'Little Peter' had a fear of rabbit. His treatment began by putting the rabbit in a cage a distance away while he was eating. Through a series of moving the rabbit nearer and nearer each time the child was eating, he was able to overcome his fear of the rabbit after 40 sessions. It was reported that he was able to stroke the rabbit while eating at the same time. In other words, the pleasurable responses associated with eating were able to replace the fear response associated with the rabbit. Theoretically, systematic desensitization aims to extinguish the fear response of a phobia by substituting with a relaxation response to the conditioned stimulus, in a step wise manner. For this to be successful, firstly, a hierarchy of fear is formed. A list of fearful situations is ranked from the least fearful to the most fearful. Secondly, the subject must learn relaxation technique such as progressive muscular relaxation. Thirdly, starting from the least feared situation, the subject learns to relax, before progressing upwards to the next feared situation, each time associating with relaxation response before moving to the next level on the hierarchy of fear. This is because no two opposite emotions can exist together at the same time, with means, if the subject can relax he will not feel fear. It is considered more ethical and less directive (than flooding or implosion) because the patient has more control over the treatment where progression only happen after the subject feels suitably relaxed. Systematic desensitization is effective in treating specific phobias. However some authors questioned the technique claiming that hierarchy nor relaxation is necessary. It is the exposure to the feared situation or object that enables the subject to overcome his fear. The research done by Jones as illustrated above is an example of 'in-vivo' concept where the subject is physically exposed to the feared stimulus. The problem of this type of therapy is that the subject may experience immense trauma and discomfort in the process. However a less traumatizing way of carrying out this therapy is by means of 'in-vitro' method where the subject is asked to imagine the feared stimulus. On the other hand, hypnodesensitisation

is an example of hypnobeavioural method of treatment that combines the traditional behavioural therapy with the safe method of hypnosis.

Like the traditional systematic desensitization, the patient begins by creating a 'subjective units of disturbance scale' or SUDS for short. From a scale of 0 being absolute calm (no fear) and 100 being worst feared situation, he progressively charts all situations that arouse fear in him within this scale. The therapist helps by thoroughly interviewing the patient regarding his fears and significant past history using both questionnaires and intuitions. It is essential to include all modalities of senses in eliciting the specific feared stimuli or situations, e.g, "which do you fear more, a white rat or a black rat?", "a furry rat or a less furry rat?" and so forth. Once the SUDS is obtained, hypnodesensitisation can begin by inducing and deepening the patient's trance. Ideomotor response is then established, i.e. lifting the left index finger signifies 'no' response and lifting the right index finger means 'yes' response. The therapist next presents a situation that is least feared (closest to 0 on the scale) and asks if the patient is comfortable. If the patient's response is 'yes', then the therapist can move up the anxiety scale asking if the patient is comfortable with the next situation. On the contrary, if the patient's response is 'no', the therapist must then reinforce suggestions of relaxation, calmness, security, safety and control. Assuming that the therapist obtains two consecutive 'no' response, then he must return to the previous scene that is less feared. It is good practice to always end the session on a 'yes' response if further up the hierarchy is impossible. The hypnosis will proceed to ego-strengthening and end with waking up the patient. A contract of action should be included where the patient must act on his feared situation within the next 2-3 weeks, i.e., he must face his fear in real life situation.

Flooding is a forced reality testing that aims to cause extinction of the phobia by continual and dramatic exposure to the feared object or situation. It involves physically (not imagined) exposing the subject to the feared stimulus. This can also be defined as an 'in vivo' technique where the patient is physically exposed to the feared situation where escape or avoidance is impossible. It is essential during therapy that the exposure is continuous and cannot be avoided. The patient's anxiety level heightened until it was exhausted, thus the conditioned fear response got extinguished. The patient finally learns that there will be no harmful effects to the stimulus or situation. In 1981, Marks et al used flooding on patients with agoraphobias. Agoraphobia is the fear of places/ situations where escape is impossible or embarrassing. It usually involves crowded places or open spaces. He found effectiveness up to nine years in his patients. Flooding appears to be consistently more successful than systematic desensitization in treating phobias according to Marks et al. It is quicker and cheaper but poses ethical questions of suffering and withdrawal from therapy which may actually worsen the phobia. On the other hand, flooding can also be achieved with less trauma by doing it 'in vitro' where he is asked to imagine the whole scenario while fully experiencing the emotions associated with it. Here the imagery is sustained until the fear extinguishes and the patient may soon realize

that 'there is nothing to fear, but fear itself.' In order to enhance the efficacy of the treatment, hypnosis can be used in conjunction with in-vitro imagery. This combination of hypnobehavioural method in flooding must exclude any kind of relaxation technique. The procedure will include inducing and deepening the patient, followed by asking him to imagine the worst feared situation and allowing him to exhaust his anxiety emotion. Once it is totally extinguished the patient can be given ego strengthening followed by awakening. It must be remembered that any method of in-vitro, with or without hypnobehavioural approach, must be tested in real life situation where the patient is advised to face his feared situation physically.

Wolpe in 1973 introduced the term massed practice or negative practice which is defined as eliminating a bad habit by continued repetition of the stimulus that triggers the bad habit, or by repeating the habit behaviour until it exhausts itself. Consequently, this method is only used in habit breaking where repetition would not damage or injure the patient. In the in-vivo method, the patient physically repeats the habit until the unwanted response is extinguished. As an example, a person who suffers from social phobia who feared embarrassing himself by talking to certain people is made to repeatedly talk to those people until his feared response (embarrassment) disappears. Less discomforting is using the method in-vitro. Here the patient is told to imagine repeating the unwanted habit until the response extinct. A person who repeatedly picks his nose in public is asked to imagine doing it continuously until the response no longer occurs. However one must be cautious as even repeating the behaviour in-vitro could actually leads to physically expressing it unconsciously. So the patient may have worsening of his bad habit by picking his nose more often in public. Like previous methods, hypnosis can be safely incorporated in in-vitro process to enhance its efficacy. Again, the patient is induced and deepened before ideomotor response (IMR) is installed. The patient is asked for an ideomotor response, i.e. lifting his index finger, when he starts to imagine repeating the unwanted habit. Suggestion of allowing the finger to go down only when the behaviour is no longer expressed is given. Hence, during the hypnobehavioural mass practice, look for the finger going down to suggest the habit being broken. However the therapist must beware of himself or herself slipping into trance as he or she focused on the patient's finger during hypnosis. In addition, one of the possible complications is worsening of the habit in patients who are obsessive, or those suffering for obsessive compulsive disorder.

Aversion therapy is another example of behaviour therapy that aims to remove unwanted responses to certain stimuli by pairing or associating them with noxious stimuli. In so doing, the unwanted responses will be avoided in the future. One of the treatments of alcoholism is using the medicine Antabuse (disulfiram) that induces nausea and vomiting when one drinks alcohol. When the subject is administered Antabuse and paired with drinking alcohol, it causes him to feel nausea. Initially, the Antabuse is the unconditioned stimulus with nausea as the unconditioned response. With repeated pairing with alcohol, the later becomes conditioned stimulus. Eventually even in the absence of

Antabuse, whenever the subject drinks alcohol, he will develop conditioned response which is nausea. Historically and controversially, aversion technique was used to treat a few sexual behaviours such as homosexuality and fetishism. Here an electric shock was paired to stop them from these sexual behaviours. The effectiveness of aversion therapy is equally controversial. Meyer and Chesser (1970) found only half the alcoholic patients abstained for at least one year following their treatments. O'Leary and Wilson (1987) found mixed results. Marks et al in 1970 reported effectiveness on sexual behaviours for up to two years, while Marshall et al (1991) found no such effectiveness. The relapse rates are high. The success of treatment depends on whether the patient can avoid the stimuli he has been conditioned against, and to maintain the aversion for years to come. However, in the case of the alcoholic, if he continues to go to the bars, sooner or later, the nausea response to alcohol will extinguish under repeated exposure. Like flooding, it has its ethical problems in deliberately conditioning aversions. All the above examples are in-vivo methods where they are physically performed in reality. In the in-vitro method, the patient would be asked to imagine in the mind the unwanted behaviour and asked to pair it with an imagined noxious or aversive stimulus. As with the previously mentioned patient who repeatedly picks his nose in public, in the in-vitro method, he can be told to imagine picking his nose and pairing it with imagining his finger is covered with foul smelling, sticky, brownish, nauseating faeces as it moved towards his nose and causing him to vomit. Kroger in 1977 claimed that in-vitro aversion therapy is more successful if done under hypnosis. Like all hypnobehavioural approaches, consent and a full case history to identify the bad habit and most aversive stimulus are taken. The patient is then induced and deepened in his trance followed by installing an ideomotor response. He is then made to imagine his problem behaviour and indicating it with an ideomotor response. The therapist will then ask the patient to imagine that most aversive stimulus and indicates to the therapist just before he feels like vomiting. Next the therapist will synthesize the bad habit and the aversion. This process is repeated at least three times or until the patient automatically experiences the aversion when thinking of the bad habit. Direct suggestions are given at this point to make the therapy successful. It ends by ego strengthening and awakening the patient in the usual way.

Wolpe is also a prominent figure in developing counterconditioning methods. Wolpe in his experiments classically conditioned his cats to experience anxiety in a room where they were electrically shocked. He later inhibited the anxiety by training the cats to associate the room with eating (rather than shock). He speculated that the counterconditioning of anxiety could be the basis for a new therapy model. In 1973, Wolpe developed assertiveness training, which is a counterconditioning treatment. Here the patient was taught to express justified anger, instead of being anxious and intimidated when other people were exploitive, disrespectful or unduly demanding. Again, the underlying rationale is that a person cannot experience opposing emotions; anger and anxiety at the same time. Thus by strengthening (justified) anger, the opposite emotion anxiety is unlearned in that situation. Carl Rogers included a humanistic element by including a list of human rights. This is the basis of the Bill of Rights, where people have the right to express their thoughts, feelings and needs appropriately. An assertive

behaviour ensures conflicts are dealt in an adult and mature manner. An assertive person appears relaxed, upright in posture, maintaining good eye contact, is responsive and expressive and sounds confident. Assertive training enables a person to ask what he wants directly, openly and appropriately. He can ask with confidence without undue anxiety and will not violate other people's rights. Hypnobeavioural approach can be used to enhance assertive training by reducing tension and anxiety. It is also useful to instill positive suggestions, increasing self-esteem and allow patients to practise in-vitro situations where they want to be assertive. It is equally important the patient learns effective communication methods to manage difficult situations more effectively.

Phobias is a diagnosable disorder where the persistent fear of a specific situation or object is out of proportion to the reality of the danger. There are many methods of treating phobias, from pharmacological to psychological. The later include classic behavioural therapy and hypnobeavioural approach. As detailed earlier, hypnobeavioural approach can be safely combined with flooding in treating conditions such as a phobia for flying. An important element is the safety of this procedure as compared with conventional in-vivo exposure of flying in this patient. In hypnosis, the patient is secure, comfortable and at ease in a therapeutic setting. He is totally relaxed in a deep trance and only asked to imagine himself flying in an aeroplane. There is no danger of him becoming hysterically fearful in a real plane which may endanger himself or other passengers. Hypnobeavioural approach is also cost effective in this case, he does not need to actually buy a plane ticket and go through the time consuming process of ticketing, immigration etc. Once the patient has exhausted his fear response, he can receive a dose of ego strengthening and awakened in the usual way. This procedure can be safely used in all kinds of phobias such as acrophobia or fear of heights, arachnophobia or fear of spiders, claustrophobia or fear of enclosed spaces, hydrophobia or fear of water, erythrophobia or fear of blood etc.

Hypnodensitisation, on the other hand, is a great way in treating anxiety. The process of getting patient lists out and write down his subjective units of disturbance scale (SUDS) by itself is therapeutic. More often than not patient consciously learn the absurdity of some of his unwarranted fears as he writes them down. An appropriate induction technique such as Hartland's Progressive Relaxation Induction will definitely put the anxious patient at ease as he is deepened further for treatment to begin. By asking the patient to imagine his feared situation, for example anxiety during job interviews, he can be gently led to more and more anxiety provoking situations, all the time associating with relaxation and security. This gradual process is indeed helpful in overcoming all types of anxiety. It is useful to help patients overcome the anxiety of going to school, sitting for examinations, going out for dates, speaking on the stage, driving on the highways, going for dental checkup etc.

Hypnobeavioural approach is effective in breaking bad habits or unwanted behaviour. Hypnosis in conjunction with aversion therapy, or massed practice, can be used to stop repeating unwanted habits such as smoking, nail biting, bruxism, hair pulling (trichotillomania), biting the end of pencils, nose picking, tics, alcoholism and many

others. For example, some people like to bite the end of pencils when they are stressed in their office. Hypnosis with aversion technique can be safely used to pair the pencils with disgusting aversive stimuli to break the bad habit.

There are many benefits of using hypnobeavioural approaches compared with classic behavioural therapy. Hypnosis is known to heighten access to imagery and emotions which will enhance the success of hypnobeavioural treatments. Inductions and direct suggestions of relaxation are usefully incorporated to help put patients at ease instead of further provoking their anxiety. In-vitro technique that allows the patient to imagine his feared stimulus or situation is definitely safer and less traumatizing in helping the patient in overcoming his anxiety. It is also less time consuming with less therapy sessions while producing a more rapid positive change. In conclusion, hypnobeavioural approach is more cost effective and safe.

References:

American Psychiatric Association (1994). *Diagnostic & Statistical Manual of Mental Disorders*. 4th edition. APA.

Eve C. Johnstone, C.P.L. Freeman & A.K. Zealley (1998). *Companion to psychiatric studies*. 6th edition. Churchill Livingstone.

Goodwin, C. James (1999). *A history of modern psychology*. 1st edition. John Wiley & Sons.

Grahame Hill (2001). *A Level Psychology*. 2nd edition. Oxford University Press.

Harold I. Kaplan & Benjamin J. Sadock (1997). *Synopsis of psychiatry*. 8th edition. Williams & Wilkins.

John Hartland (1971). *Medical and dental hypnosis and its clinical applications*. 2nd edition. Bailliere Tindall.

Richard P. Halgin & Susan K. Whitbourne (2003). *Abnormal psychology: clinical perspective on psychological disorders*. 4th edition. McGraw Hill.